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School of Economics and Business**

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**October 14, 2016**

**Sarajevo, Bosnia and Herzegovina**



**UNIVERSITY OF SARAJEVO**

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## FOREWORD

Following earlier conferences with participants from nearly all over the CEE region as well as from many other countries, the School of Economics and Business in Sarajevo is proud to host the 8th International Conference in Sarajevo, Bosnia and Herzegovina that also marks the 64th anniversary of our dynamic and forward looking school. This conference aims to bring together academics as well as practitioners to discuss topical issues and disseminate high quality research in economics and business with a focus on Central and Eastern Europe. Another goal of the conference is to encourage learning from each other by exchanging ideas, views, and building networks.

The selected papers are organized in eight track sessions. Within each track, papers were grouped according to similarity of topics and hence most of the sessions have an umbrella title. We hope this approach will assist conference delegates to select a session also on the basis of its more specific focus within each track session.

As was the case in earlier ICES conferences it is our pleasure to inform conference participants that selected papers presented at this conference will be considered for publication in a special issue of the South East European Journal of Economics and Business published by the School of Economics and Business.

I strongly believe that the discussions between prominent and experienced researchers at the conference will serve as a solid bases for improving your paper and enriching your further research focusing on transition countries.

### Acknowledgments

We would like to thank all the authors who prepared and submitted their abstracts and/or papers to ICES2016.

A special thank is addressed to keynote speakers, Othon Anastasakis, St. Antony's College, University of Oxford and Dejan Soskic, Faculty of Economics, University of Belgrade. We are aware that it has taken time and effort to take part in this Conference, and this is much appreciated.

We would also like to express our gratitude to all participants for their expertise and for sharing their views and ideas which present the most important contribution to the success of this Conference.

Sarajevo, October 2016

Eldin Mehic  
Editor

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# WHICH CREATES THE BIGGER 'HALO EFFECT' IN PRIVATE BRANDING: STORE IMAGE OR RETAIL SERVICE QUALITY?

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## Abstract

The purpose of this research is to highlight the role that store image and retail service quality can play in private brand image-building in the context of an emerging market in Southern **Eastern Europe** (i.e. Federation of Bosnia and Herzegovina). We propose to address this issue by seeking answers to the following questions: (1) Does a 'halo effect' take place between the store image and the private brand image? (2) How consumer's evaluation of the quality of service delivered by a retailer affects the image of its private brand? The cue utilization theory (Olson and Jacoby, 1972) and stimulus-organism-response (S-O-R) paradigm (Mehrabian and Russell, 1974) were applied to develop theoretical arguments underlying research hypotheses.

Data were collected through a field survey via store-intercept method. The sample consisted of 699 customers of the two large retail chains, namely *Konzum*, a large hypermarket chain, and *dm-Drogerie Markt*, a chain of drugstores. Private branded potato chips (*K Plus*) and private branded shower gel (*Balea*) were chosen as research brands for the two selected retail chains, respectively. Research instrument – questionnaire comprised scales which had been validated and found reliable in previous research (Brady and Cronin, 2001; Collins-Dodd and Lindley, 2003; Vahie and Paswan, 2006; Wu, Yeh and Hsiao, 2011). The data were analyzed using structural equation modeling (SEM) technique. Following Anderson and Gerbing (1988) methodological suggestions, the two-step approach for assessing structural equation models was employed. Once the measurement model was validated, subsequent structural equation modeling (SEM) analyses were conducted to support the proposed model and to test the hypotheses.

This study reveals that store image plays an important role in private brand image-building, suggesting that consumers may derive inferences about the image of brands owned by a retailer from their original perceptions of retailer's store image. This provides the evidence that store

image has a 'halo effect' on the customer's cognitive and affective judgments about private brands. Moreover, our research also shows that perceived service quality is positively related to the private brand image instilled in consumer's mind, suggesting that 'halo effect' exists between customer's evaluations of service quality and perceptions of private brands. This study offers some important insights for retailers who intend to build a desirable image of their private brands. Firstly, retailers should try to integrate the image of the store (e.g. quality and variety of product, store atmosphere, etc.) into the set of associations that make up the image of their private brands. Secondly, retailers should strive to elicit favourable image of private brands through the service quality improvements. This study is limited because it includes consumers of a specific geographic location and focuses only on two retail formats (hypermarkets and drugstores) and two product categories (potato chips and shower-gel). Caution should therefore be exercised when generalising the results across national markets, retail formats, and product categories.

**Keywords:** *Private brands, Store image, Retail service quality, Retailing, Brand image*

**JEL classification:** M30

# **ETHNIC DIVERSITY AND ECONOMIC PERFORMANCE OF INDIVIDUALS AND HOUSEHOLDS IN A POST-CONFLICT ENVIRONMENT: EVIDENCE FROM BOSNIA AND HERZEGOVINA**

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## **Abstract**

This empirical study is based on unique cross-sectional survey data gathered to investigate the effect of ethnic diversity on individual and household economic performance in Bosnia and Herzegovina. The complexity of their interrelationship in the context of this post-conflict country is addressed and investigated by estimating models in which ethnic diversity directly affects personal and family incomes. Although the last conflict (1992-1995) was ethnically characterized, and harmful for ethnic heterogeneity of this society, two decades later, where ethnic diversity has been preserved, the positive economic consequences on individuals and households are identified. We find that individuals and households in ethnically diverse areas systematically report around 9% higher income in comparison to ethnically homogenous ones. A corollary is that policy makers in this post-conflict country, and in similar environments elsewhere, should promote ethnic diversity and, across the broad range of public policies, take into consideration the negative effect of ethnic homogeneity on individuals and families.

**Key words:** *Ethnic tolerance; economic performance; Bosnia and Herzegovina*

**JEL codes:** I3, R2, Z1

# INTERNATIONALIZATION OF ISLAMIC BANKING: THE CASE OF BOSNIA AND HERZEGOVINA AND SERBIA

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## **Abstract**

Islamic banking and finance, from the economic point of view, studies the material aspect of the production, distribution, exchange and savings but in accordance with Islam respectively, religious Islamic law (Sharia), which includes a complete set of rules and values and clearly defines every aspect of human existence and activity. Islamic banking and finance today is present in over 75 countries worldwide and according to „*Islamic Financial Services Industry Stability Report 2015*“, the global Islamic finance industry's assets are estimated to be worth USD1.87 trillion as at 1H2014, having grown from USD1.79 trillion as at end of 2013. The largest segment of the global Islamic finance industry is the Islamic banking sector because the Islamic banks have increased the value of their assets by 600 billion US dollars in 2007 up to 1.3 trillion US dollars in 2012 (ECB, 2013, 19), achieving a growth rate of around 15-20%.

Although Islamic banks made a significant growth recently and became a new player in banking industry, generally they face a number of problems such as political aspects where people are confused by the use of the term “Islam”, legal dimensions such as problems with regulation and recognition by the central banks, low promotion of the Islamic banking products, locally and international, and a lack of communication between Islamic institutions and other market participants.

The aim of this paper is to explore how Islamic banks expand their business in countries with a Muslim majority and in countries with a majority of non-Muslim population, how the public in these countries react to the presence of Islamic banks and does the public understand how Islamic banking works. In this research the analysis will be done in Bosnia and Herzegovina (B&H) as the only country in the region that has one Islamic bank, Bosna Bank International (BBI) and Serbia, as a country that has attracted many Arab investors and has one bank from the GCC region, “Mirabank”, but that does not provide services of Islamic banking and is focused on providing services to companies.

During the research, the authors will use the system of a questionnaire in order to obtain the data on how the public in Bosnia and Herzegovina and Serbia perceive Islamic banks, how does Islamic Bank expands its business in these countries and what are the main problems they face. Results of the research will show in what direction the internationalization of Islamic banking in BiH and Serbia is taking place and is there a future for this type of business in these countries.

**Keywords:** *Islamic banking, internationalization, B&H, Serbia*

**JEL classification:** G21

# COMPARATIVE ANALYSIS OF DECENTRALISATION MODELS IN EUROPE: RELEVANCE FOR BiH CONTEXT

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## **Abstract**

Moving decision-making closer to the citizens became imperative of modern approach to public sector management. Decentralisation is recognised as a measure of applying this concept and promoting citizens engagement in establishing fair, accountable, incorruptible and responsive governance. However, effects of decentralisation efforts worldwide are rather mixed so far as a result of different factors that influence success of the reforms. Key of the success is in customization of the decentralisation framework to the specific needs of particular country. There is no one, best solution, neither pattern to be strictly followed and in any case decentralisation shall not be simplified to the pure technical adjustments in terms of division of responsibilities and allocation of resources. Still, there are certain rules and best practices that may be recognised. It is not unusual case that decentralisation is not driven by economic but rather democratic, political, ethnical or overall country stability reasons. Decentralisation in Bosnia and Herzegovina reflects the governing framework set by Dayton Peace Agreement and it is often referred as a major obstacle to reach efficiency in provision of public services. This paper aims to provide deep insight into experience of selected comparative countries where decentralisation was mainly driven by non-economical reasons and identify patterns and features of administrative, fiscal and political arrangements that perform better in the same or similar environment. In total, six countries (three developed and three transition countries) with relevant similarity to Bosnia and Herzegovina are analysed by using comparative analysis method. Analysis of the experience in developed countries identified different models in organising ethnically divided societies and establishing different forms of cooperation between sub-national government units to increase efficiency. Although the experience of transitional countries is rather mixed in terms of positive effects of decentralisation, the number of the features applied in FYR Macedonia, Croatia and Slovakia may be used to improve municipal efficiency in BiH. Having in mind very limited literature focused on specific BiH context as well as the need to improve efficiency at local community level, this paper takes an important first step in this direction by providing a systematic review of decentralisation design in countries which have similar challenges as BiH. Understanding challenges and the systems that efficiently addressing these challenges is crucial in identifying possible improvements in BiH decentralisation system and selecting the right mix of financial, political and community-based mechanisms to allow for efficient local service delivery in Bosnia and Herzegovina.

**Keywords:** Comparative analysis, Decentralisation, Intergovernmental Relations, State and Local Government, Transitional countries

**JEL classification:** H77, H11

# 1. Introduction

In last two decades decentralisation become one of the most popular trends in public sector management. Many developed and transition countries have taken this path and developed decentralisation framework aiming to increase efficiency in provision of public services, but also ensure balanced citizens engagement in decision making processes.

Decentralisation in Bosnia and Herzegovina has its roots in the principles set by Dayton Peace Agreement and it is often referred as a major obstacle in reaching efficiency in public services provision. Indeed Dayton Peace Agreement has established complex asymmetric government structure with two entities (The Federation BiH and Republic of Srpska) and one district (Brcko), rotating three-member presidency and bicameral parliament. Federation is further divided on ten cantons and 79 municipalities, each having its own parliament/assembly, while in RS there are only two tiers of government: Entity level and 62 municipalities. Two major mechanisms are established to guarantee ethnic representation: quotas at government and civil service, and veto rules at the parliament level.

There is no doubt that in stability of post-conflict divided society in BiH is important part of constitutional design and efficiency framework, but it is not so unique reason for decentralisation. It is also important to underline that all three major dimensions (political, administrative and fiscal) of decentralisation are addressed in BiH, but with different level of success in terms of accountability and responsibility of local and upper levels of the government. In general, government units have high level of autonomy, and vertical and horizontal cooperation between different levels of government is quite poor. While general compatibility of BiH legislation with European Charter on local self-government has been confirmed, there are also a number of deficiencies to be observed. These deficiencies mainly refer to the constitutional guarantees governing the relations between the various levels of local self-government, overlapping and/or lack of clarity of powers between different government levels, fragmentation of the territory and very limited inter-municipal cooperation.

The paper is consisted out of five chapters. After introduction to the topic in first chapter, the second one provides theoretical considerations of decentralisation challenges to set up the framework and ground for further analysis and interpretation of results. Third chapter analyse experience of European countries in terms of decentralisation models and their success. Besides overall analysis of European countries experience this chapter also includes specific country analysis for Belgium, Switzerland and Sweden. Belgium and Switzerland are selected due to the fact that decentralisation is shaped by accommodating ethnical groups and stability of the country, while Sweden is chosen due to the popularity of Swedish model as a best practice in decentralisation efforts. Fourth chapter deals with transition countries experience, also including general analysis and specific country analysis of Croatia, FYR Macedonia and Slovakia. All three selected transition countries have some similarities with BiH case and interesting solutions to address the efficiency gaps in provision of public services. Finally, conclusion part is summarizing major findings and provide inputs and scientific contribution to the design of improvements of current decentralisation framework in Bosnia and Herzegovina.



## **2. THEORETICAL CONSIDERATIONS OF DECENTRALISATION CHALLENGES**

Centralisation and decentralisation are not concepts that exclude each other. In practice, it is hard to find examples of completely centralised or fully decentralised state. The efficiency and functionality of government is rather reached by proper balance between these two concepts. While centralisation represents a concept where public decision making is concentrated at national level, decentralisation refers to transfer of powers and responsibility for public services provision, from central to sub-national government(s) or other entities (Rondinelli, 2000). The motives for decentralization may be different ranging from political to economical, but often; there is a combination of different reasons. In 70ties and 80ties, the decentralization process in Latin America was driven by cost efficiency and democratization of societies, following widely accepted Washington consensus whereby one of 10 major features on agenda was decentralisation. At the other side of the world, in Asia, decentralisation was only solution to provide public services to large population. In Africa, in many cases decentralisation process was a compromise to accommodate pressures from regional or ethnic groups for autonomy, simply to keep the country together (Mawhood, 1987). In transition countries, in particular Eastern Europe the mixture of mentioned reasons can be observed. Looking at the European countries experience, different approaches and combinations of (de)centralisation concepts were used.

Different authors recognise a number decentralisation types, but the wide agreement is reached about three major types of decentralisation: political, administrative and fiscal (Rondinelli, 2000, World Bank, 2000, UNDP, 2008). Political decentralisation is process of delegating power over development, economic, social and cultural life of its citizens. The major aim of this type of decentralisation is not primarily cost efficiency, but to increase democratisation and participation of citizens in public decision making process through elected officials. Administrative decentralisation is the way of redistributing responsibility and power between different tiers of government. It considers transfer of certain functions from central to sub-national government aiming to ensure regulatory discretion, procurement discretion and employment/civil service discretion Fiscal decentralisation refers to granting sub-national government authority and power to allocate the expenditures and/or revenues. It includes features such as discretion over expenditures, revenue autonomy, predictable and rule-based intergovernmental transfers and discretion over borrowing.

Decentralisation grants new powers which need to be matched with proper discretionary space to make decisions in best interest of citizens. The key success factor is establishment of upward and downward accountability i.e. accountability to upper levels of government and citizens, as well as public and social accountability. Public accountability needs mechanisms to avoid misuse of decision power, while social accountability requires direct engagement of citizens and is complementary to public accountability mechanisms (Yilmaz et al., 2008). To be effective, decentralisation, therefore need to address three major issues: (i) clear allocation of responsibilities and resources between central and sub-national government, (ii) capacity building of local governments and (iii) accountability to citizens (Levy, 2006, Simonsen, 2005, Thiessen, 2003, Treisman, 2002, Tiebout 1956; Musgrave 1959; Oates 1972). Some of unwanted results of decentralisation include: new charges to finance increased public employment, fragmentation of

internal markets, increased corruption, cross subsidizing effects, conflicts with macroeconomic policy (Dabla-Norris, 2006; Rodriguez-Pose & Gill, 2003; Bird, 2010; Alesina et al., 2002).

While in theory, the classical views respect the theory of symmetry, specifics of different countries call for more flexibility in designing functional system of decentralisation and applying asymmetry in organisation of government units. Asymmetry may be legal or factual (de jure or de facto) and may be implemented in the whole territory or just in one part, as it is case of Spain and Canada, for example. The criticism of asymmetric decentralisation considers this model as inefficient way of reaching allocative role of the government, with no advantages over centralism. So called “Federalism a la carte” preserve asymmetric level of development and led to even deepening the gap between developed and underdeveloped local communities (Lockwood, 2006; Harstad, 2008; Keating, 1999).

In making decision about decentralization it shall not be taken for granted that unitary or decentralized state is by default optimal solution. It has to be adjusted to the particular needs of the country looking for an optimal solution in given circumstances. Although decentralization become worldwide accepted as a trend, the results in terms of efficiency and quality of public service, so far show mixed results due to the different institutional capacities of countries undertaking such reforms.

### **3. DECENTRALISATION EXPERIENCE IN DEVELOPED EUROPEAN COUNTRIES**

Importance of having government closer to the citizens is recognised by European Charter of Local-Self Government, but the decentralisation models significantly vary among European countries. Charter is a legal tool and guidance in defining and legally guaranteeing autonomy, aiming to define basic principles in local self-government in terms of transfer of competences and resources, safeguards to protect local community rights and guaranteeing the independence of elected officials. Charter is guidance, not a prescription and it has been embedded in European legal systems, but on different ways, best adjusted to the specifics of different countries. There are three major characteristics of countries to be observed in terms of decentralisation: (i) Respecting country specifics in territorial organisation; (ii) Closeness to the people; (iii) Financial independency.

Majority of countries in Europe are unitary, with only five countries organized on federal principle: Austria, Bosnia and Herzegovina, Belgium, Germany and Switzerland. The number of government tiers varies from one to three, but majority of European countries have 2 tiers of sub-national government. Having in mind huge differences in population, the most relevant measure of closeness of government to the people is average population of 1<sup>st</sup> tier of government. The degree of decentralisation, and in particular fiscal decentralisation, varies significantly across European developed countries, from highly decentralised countries such as Switzerland, Sweden and Germany to very low level of decentralisation such as observed in Portugal, UK and Luxembourg. The trend of increasing degree of decentralisation is present in majority of European developed countries, Spain having particular intense process, but also some adverse processes happened, although with slight effects, in particular in Scandinavian countries (Dillinger, 1994; World Bank, 2000; Rodriguez-Pose & Gill, 2003).

By observing the figures for 30 European countries (including Bosnia and Herzegovina for comparison reasons) it is clear that there is no pattern in relation between average size of municipalities and number of tiers. The logical pattern would be to have more tiers in cases of small averages at first tier level and vice versa, but it is rather opposite. Both, United Kingdom and France have 3tier subnational government with huge difference in average population at 1<sup>st</sup> tier.

**Table 1. GOVERNMENT TIERS AND AVERAGE POPULATION PER MUNICIPALITY**

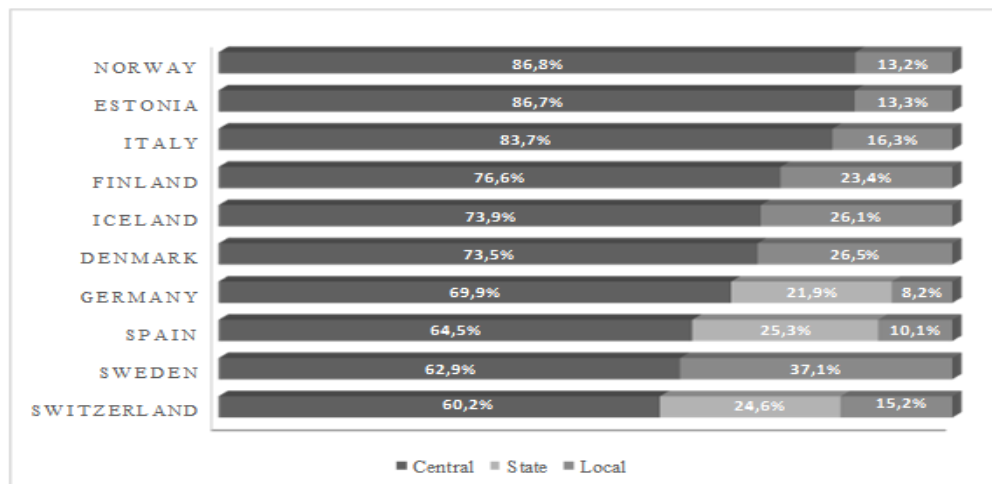
<b>3tier</b>		<b>2tier</b>		<b>1tier</b>	
<b>Country</b>	Average population	<b>Country</b>	Average population	<b>Country</b>	Average population
<b>UK</b>	148.984	<b>Denmark</b>	57.551	<b>Greece</b>	33.723
<b>BiH</b>	27.869	<b>Netherlands</b>	41.299	<b>Bulgaria</b>	27.371
<b>Belgium</b>	19.066	<b>Ireland</b>	40.465	<b>Finland</b>	17.075
<b>Poland</b>	15.329	<b>Portugal</b>	33.766	<b>Latvia</b>	16.723
<b>Italy</b>	7.580	<b>Sweden</b>	33.414	<b>Slovenia</b>	9.773
<b>Germany</b>	7.189	<b>Norway</b>	11.944	<b>Malta</b>	6.285
<b>Spain</b>	5.681	<b>Croatia</b>	7.619	<b>Luxembourg</b>	5.246
<b>France</b>	1.800	<b>Romania</b>	6.259	<b>Iceland</b>	4.386
		<b>Austria</b>	3.625	<b>Cyprus</b>	2.202
		<b>Switzerland</b>	3.401		
		<b>Hungary</b>	3.106		
		<b>Slovakia</b>	1.790		
		<b>Czech Rep</b>	1.686		

Source: own calculations from 2014 eurostat data

Table 1 shows extreme difference among countries with 3 tier government structure. Value for United Kingdom definitely represents an extreme in Europe, same as France at the other side of scale. The rest of countries also have diverse range confirming that there is no benchmark in terms of average size of population per municipality. Among countries with 3 tier subnational government Bosnia and Herzegovina, has second largest population per municipality. However, having in mind lack of any pattern in this regard, it does not reflect any particular (dis)advantage of such position of Bosnia and Herzegovina.

Ten leading developed European countries in terms of share of sub-national taxes in total taxes are presented in Figure 1.

**Figure 1: MOST FISCALLY DECENTRALISED OECD COUNTRIES**



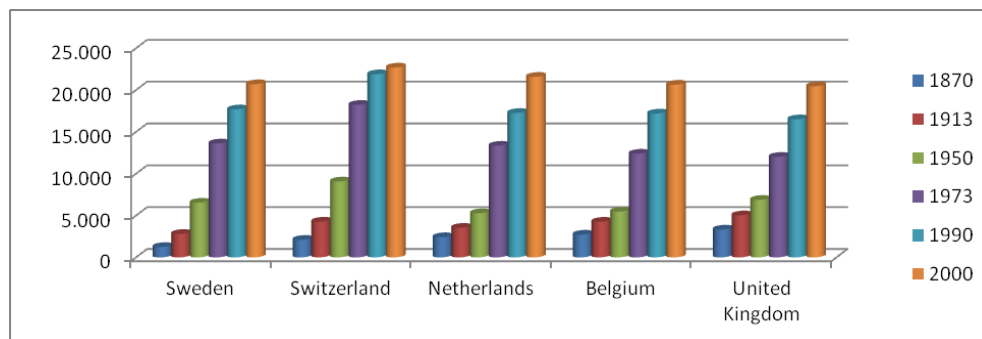
Source: OECD Fiscal Decentralisation Database, 2014

The share of sub-national taxes in total taxes collected represents important factor in reaching efficient decentralisation framework. In conducting out delegated responsibilities, sub-national governments need financial independence and therefore fiscal decentralisation is one of the major preconditions to set effective and efficient framework for public services. Still, even in most decentralised countries, the share of local taxes in total taxes collection is relatively low. In second part of this chapter decentralisation models of selected countries are analysed in more details: Sweden, Belgium and Switzerland. Selection is based on certain features of decentralisation and/or historical context to be relevant input for further research of BiH development paths and possible solutions in boosting economic growth using decentralisation advantages. Sweden has been selected because of popularity of Swedish model, while Switzerland and Belgium are interesting as the challenges related to political and ethnic division have shaped their decentralisation process.

### 3.1. SWEDISH MODEL

The Swedish model is one of most discussed growth models, thanks to tremendous improvement of economic wealth within only one century. Before decentralisation reform, Sweden was one of the poorest European countries measured by GDP per capita, as presented in Figure 2.

**Figure 2: GDP PER CAPITA 1870 – 2000**



Source: Broadberry & Klein, 2012

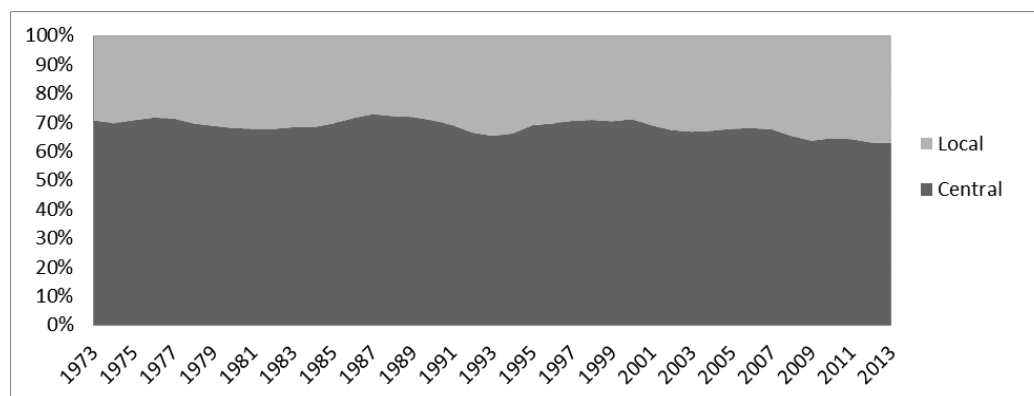
By international comparison Sweden has high degree of decentralisation and very light supervision system. Decentralisation in Sweden is dating back to 1862 when two-tier local government system, including counties and municipalities, has been introduced. Two large-scale territorial reforms took the place in 1952 and 1974 to increase the average size of municipalities. The central level government is focused on strategic and policy issues, while majority of tasks are carried out by municipalities and counties (Therborn, 1989).

Sweden is natural resources rich country, in particular iron, copper, timber as well as hydro energy, which formed a base of economic system in early 19<sup>th</sup> century along with agriculture where about half of population has worked. Since then Sweden shifted its focus to knowledge based sectors based on revolutionary inventions and innovations (Rojas, 2005). Sweden remained out of both World Wars and was in a position to take advantage over other countries in Europe. The major characteristic of Swedish model was a balance between public and private sector role. In short, the main features of model include: large privately owned industry, large public sector financed by taxes, strong trade union and active role of state in labour market policies and most important, focus on even distribution of income and wealth. Strong growth of private sector was followed by expansion of public sector and heavy tax burden, even today Sweden has one of the highest tax levels, and tax revenue is about 50% of GDP. Sweden provided extensive grant subsidies to affected industrial sectors, steel and shipbuilding, for example.

Public sector reforms in Sweden started 1862 when two tier government system has been introduced for the first time and 2,498 municipalities and 25 county councils have been established. This more-less have been in place until first large reform 1952 when number of municipalities was reduced to 1,023 and by next reform twenty years later, the number of municipalities dropped to 278. Since then number has been increased slightly to 290 due to partition of some municipalities. The local governments' rights and responsibilities are regulated by Local Government Act and although major reform on further merging of municipalities failed, voluntary merging and cooperation is strongly promoted. Municipalities or county councils may enter into so called local federations for cooperation on variety of local authority matters. There are about 80 federations, mainly organised for rescue services and education, while since 2003 municipalities and county councils also may enter into so called Joint committees which may take over some responsibilities from the state, usually in area of regional development.

As of today, Sweden has two-tier sub-national government system, consisting of 20 counties and 290 municipalities. Sub-national governments are in charge for majority of public services and have high degree of autonomy including determination of tax rates. Large portion of financing municipalities and counties collect from taxes and fees charged to citizens for various services. County Councils are responsible for Health care and Children and Youth dental care, both being mandatory tasks accounting for over 95% of total expenses, while voluntary tasks include culture, education and tourism. Shared mandatory tasks include regional and local public transport (OECD, 2012). Due to high autonomy of local governments, this is one of the most far reaching system of financial equalization in Europe (Wollmann, 2008). The responsibilities assigned to counties are not unified, but rather significant heterogeneity exists across counties. Usually, there are two main institutions at county level: County Council and County administrative board headed by central government appointee.

Figure 3: **SHARE OF SUBNATIONAL IN TOTAL TAX REVENUE**



Source: OECD database, 2013

Designation of these responsibilities is followed by fiscal decentralisation and relatively high share of sub-national tax revenue. As presented in Figure 3, sub-national government is collecting 35.7% of total tax revenue in Sweden and only 2.6% of all rates charged at the sub national level are set by central government, showing high independency of sub-national government to design and collect taxes. Sweden has much higher share of sub-national taxes in total tax revenue than OECD average which was 16.6% in 2013. Although the modest increase of sub-national taxes in total tax revenue may be observed in OECD countries, Sweden is recording much higher growth and much more fiscal independence of the sub-national government (Dahlberg et al, 2008; Pettersson-Lidbom, 2010).

### 3.2. PLURALISM IN BELGIUM

Belgium got its independency in 1830 and very soon joined to the wave of industrialisation initiated by UK. The country was rich in resources, in particular deposits of coal and metal which formed a basis for economic development along with good geographic position. By 1830 constitution Belgium became a parliamentary monarchy with division of powers to: legislative (House of Representatives and the Senate), executive (King and ministers), and judicial (courts). The cultural pluralism is important feature of Belgium state and all the challenges in terms of differences in language, culture and preferences had to be addressed. Despite the fact that majority of population (about 60%) speaks Flemish, the French was dominant and although 1935 Flemish was added as official language, the Flemish community till then has developed strong sense of nationalism. This has shaped reforms in the country as well as division of powers (Swenden et al., 2009; Billiet et al., 2006).

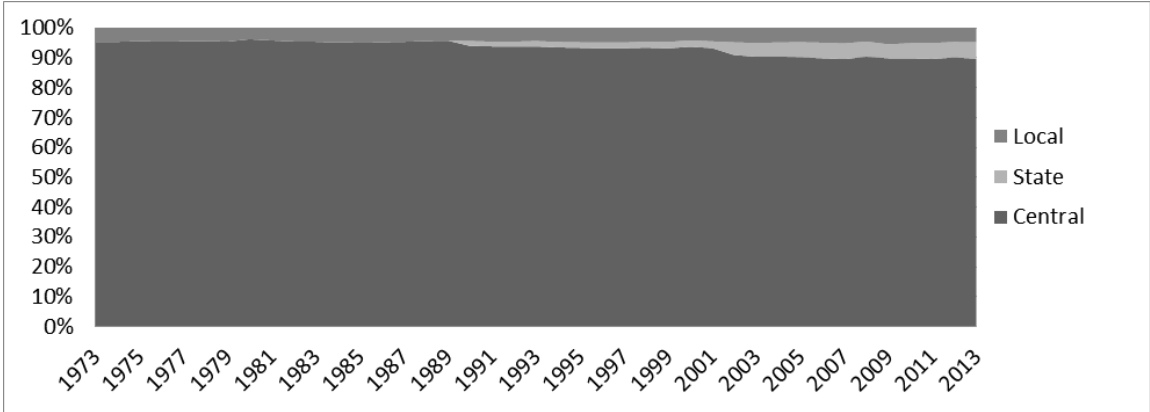
The first revision of the Constitution happened 1970 when three cultural communities have been set up, but with very limited power and jurisdiction. Only ten years later communities get more power through setting up a Parliament (Council) and Government in each Community. At the same time two regions, Flemish and Walloon, have been established, both having a Council and a Government. Again ten years later, 1990, third region has been formed - the Brussels-Capital Region. Finally in 1993 Belgium become a fully fledged federal state. But, the state reforms were not ended and another wave took the place in 2001 by introducing two accords: Lambermont Accord and the Lombard Accord. By Lambermont Accord devolution of powers was granted to regions and communities along with measures related to financing of the communities. The

Lombard Accord concerned the Brussels institutions and distribution of seats between the linguistic groups in the Brussels-Capital Region. In 2011 a judicial reform took the place and 12 new legal districts were created.

This comprehensive process of reforms resulted in 3 tiers government system which has accommodated specific needs of Belgian population. Belgium government system is now consisted out of the Federal state, 3 Communities, 3 Regions, 10 Provinces and 589 Municipalities. The established structure is quite complex with many layers and jurisdictions in relatively small country. The Federal State, the Communities and the Regions are equal from the legal viewpoint, but have jurisdiction over different areas. The next level is Province, which is supervised by one of the upper levels of government, depending on particular area of activities. The lowest level of government, communes (municipalities) are also under supervision of upper level of government depending on designated authorities. In general, they are mostly financed and supervised by the Regions (Billiet et al, 2006). Federal state is in charge of judicial system, army, police and foreign affairs, Communities have responsibility over culture and education, while all other areas are shared by Regions, Provinces and Municipalities.

The Figure 4 shows the reflection of the public sector reforms on fiscal decentralisation in Belgium.

Figure 4: **SHARE OF SUBNATIONAL IN TOTAL TAX REVENUE**



Source: OECD database, 2013

The autonomy of regions/communities was followed by decentralisation of tax system, but Belgium is still much centralised in fiscal terms as central government is collecting about 90% of total tax revenues. In terms of fiscal decentralization, Belgium dominantly using federal grants system. In the reform 1980, regions got financing for the first time and three main criteria for distribution are introduced: population, territory and yield of tax in the region. The first two criteria dropped in next reform (1989) and only reimbursement of public revenue collected in the region as personal income tax remained as criteria for allocation, with small interventions in terms of solidarity grants. Financing of the Communities responsibilities is based on lump sum grants according to needs-modulated population data related to schools, elderly care, and child care, health care. Belgian fiscal federalism is heavily based on grant system which leads to high overall expenditures and debt and low level of tax decentralisation in terms of sub-national government autonomy (OECD, 2013).

To conclude, Belgium state reforms mainly aimed at addressing non-economic issues and the economic effects of decentralization are not so visible. Also, Belgium is considered as one of the European countries with lowest level of fiscal decentralization.

### **3.3. SWITZERLAND FEDERAL CONSTITUTION**

Before establishing federal constitution in 1848, Switzerland was loose confederation of states. Unlike to Sweden and Belgium, Switzerland was not rich in natural resources, so that natural disadvantage, along with small territory and small population forced Switzerland to look for other advantages. The focus was on handicraft industry (clocks, cheese, chocolates), innovations (Henri Nestle invented substitution for mother's milk, Julius Maggi first precooked soup), textile industry and later financial markets. Core industry was agriculture which in mid- 19<sup>th</sup> century employed 60% of population; this percentage dropped to 25% during 20<sup>th</sup> century and now employs only 4% of population. Majority of employees is now in services (over 70%) with high rate of export. Today, the Swiss economy is one of the most globalised ones and about half of revenues come from subsidiaries abroad (Studer, 2008). An interesting fact is that thanks to the development of textile industry about 44% of wage earners in 1888 were women, but only 1970 women get voting rights in majority of Cantons, while two Cantons provided voting rights to women only in 1990.

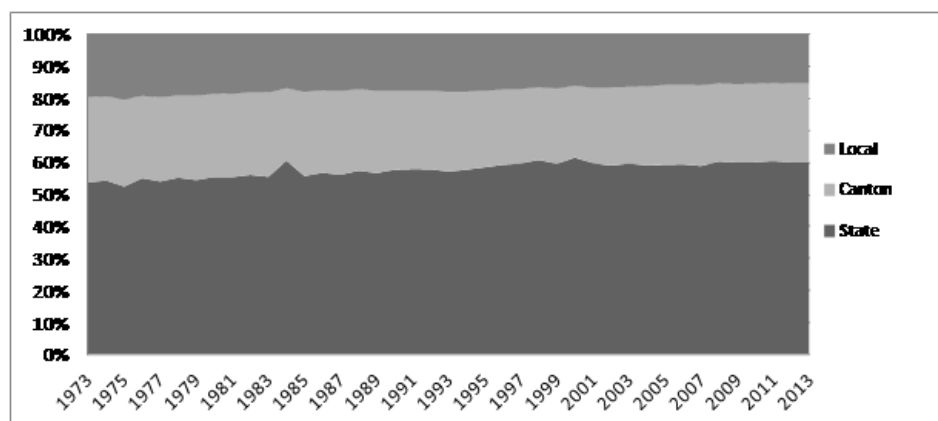
By Constitution from 1848, cantons kept its statehood to large extent, its own constitutions and political autonomy; while 1874 the constitutional reform transferred some of the cantonal powers to the federal level. Few decades later a democratic principle recognised in system of "right of initiative" was incorporated giving to the voters' right to request amendments to constitution. The next comprehensive revisions took the place 1990 resulting with more power of cantons to influence federal level activities (Benz & Stutzer, 2002).

In linguistic terms, there are three major cultural groups: German (70%), French (22%) and Italian (7%) and two religions: Roman Catholic (42%) and Protestants (35%). The sub national government is consisted of 26 cantons with high level of autonomy and 2,551 municipalities which may benefit from delegation of power by Canton. Cantons are in majority of cases homogenous in terms of language: 17 german speaking, 4 French speaking and 1 Italian speaking Canton, while there is 4 multilingual cantons. At the federal level, citizens elect members of parliament which elects Federal Council to execute roles of the Government. Parliament has two chambers: National Council and Council of States that together make the United Federal Assembly which is the highest authority. Federal Council has 7 members and presidency on rotational basis. Judicial system is dual with federal court and cantonal courts and Federal Supreme Court is the highest appellate court. There is also a parliament and administrative government at the Cantonal level. Cantons may enter into concordats – horizontal cooperation treaties to increase efficiency in some services which are beyond their capacities. There is no government body to monitor distribution of powers, it is rather a system incorporated in all levels of government. Cantons may influence federal decision making process, but they need to firstly reach consensus among themselves. Also, citizens may initiate changes though procedure of collecting 100,000 signatures.

Cantons are fiscally autonomous, so cantonal tax legislation and tax rates vary from one to another canton. Figure 5 shows the share of sub-national tax revenue in Switzerland.



Figure 5: **SHARE OF SUBNATIONAL IN TOTAL TAX REVENUE**



Source: OECD database, 2013

Still majority of tax revenue is collected at state level, about 60%, while the rest is collected at Cantonal (25%) and Municipal level (15%). Among OECD countries Switzerland is second most decentralised country in terms of fiscal decentralisation, right after Canada. The three main principles dominate Switzerland constitutional regime: autonomy, subsidiarity and consensus. Consensus is needed to change any of federal powers. Cantons are deciding on devolution of powers to municipal level. For instance, French speaking cantons devolve fewer political powers to the communes in comparison to German-speaking cantons (Rossi & Dafflon, 2004; Pomerahne, 1978).

#### **4. TRANSITION COUNTRIES AND DECENTRALIZATION**

There is no agreement among economists about existence of empirical evidence on decentralisation effects on quality and efficiency of public service delivery, and in transition countries it becomes even more complex to measure effects. Often, the reasons for decentralisation reforms are less economical and social, but more political and bounded by limited institutional capacity at both levels: national and local. There is very low level of coordination between different levels of government as well as with other stakeholders, like unions, private sector, NGOs, academia etc. In particular, in transition countries decentralisation reflects political, historical, ethnic and demographic differences. For larger countries decentralisation is needed for efficiency reasons while in smaller countries it may be result of ethnical diversities, or political factors such as EU accession (Aristovnik, 2012; Rodriguez-Pose & Gill, 2003).

The transition countries mainly had strong centralised systems and changes of constitution, in particular in Balkan and Caucasus countries, posed a challenge of decentralisation as a major change in making society more efficient. The types of centralisation varied from closed highly centralised system like Albania, to more relaxed systems such as ex-Yugoslavia. Political instability, collapsed systems, new countries with limited experience in running a state administration were not ideal starting point to create well-functioning decentralised system. In principle these countries have adopted principles set forth by the European Charter of Local Self Government. However, the lack of previous experience with market-based decision making has

affected heavily the path of decentralisation and limited efficiency of reforms. Transition countries based decentralisation on existing local communities, which have been created under completely different, centralised system whereby efficiency was not a major concern. Besides the economic viability of local communities, the success of decentralisation efforts has been limited by number of factors including: inappropriate legal framework, lack of strategic approach, capacity of central government, and accountability of local government. Most quoted unwanted effects of decentralisation are exhibit in small fragmented subnational governments which are good ground for creation of elites, special-interest groups, corruption, clientelism and nepotism (Inman & Rubinfeld, 2000; Storper, 2005).

One of the major challenges is to reach economy of scale in decentralisation concept. As presented in Table 2, the average size of municipality in transition countries varies significantly from 2,000 inhabitants per municipality in Turkey to 65,000 as average in Georgia. One common characteristic with developed countries is lack of any pattern in terms of correlation between number of government tiers and average population per municipality.

**Table 2: SUBNATIONAL GOVERNMENT STRUCTURE**

<b>Country</b>	<b>Number of tiers</b>	<b>Average population in municipality</b>	<b>% of population living in capital city</b>
<b>Georgia</b>	1	65.275	23%
<b>Kosovo</b>	1	58.867	17%
<b>Serbia</b>	2	49.166	21%
<b>Montenegro</b>	1	29.610	30%
<b>BiH</b>	3	27.869	8%
<b>FYR Macedonia</b>	2	25.630	25%
<b>Albania</b>	2	7.759	19%
<b>Ukraine</b>	3	3.939	7%
<b>Moldova</b>	2	3.419	17%
<b>Turkey</b>	2	2.038	65

*Source:* OECD database, 2013

Among analysed transition countries, only Ukraine and BiH have 3 tier sub-national governments, while Montenegro, Kosovo and Georgia do have only one tier. One important feature in transition countries is quite high concentration of the population at the capital city which create political and administrative impediments to decentralisation. Within this framework it is relatively difficult to assign proper revenues to municipalities or to create good equalisation mechanisms and often it results by conflicts between capital city and other municipalities. Except for BiH, Turkey and Ukraine, all transition countries have much higher share of population in capital city than EU average which is 7%.

Three transition countries have been selected for more detailed analysis: FYR Macedonia, Croatia and Slovakia. The selection of countries has been done taking into consideration historical similarities and relative relevance of country size in the process of decentralisation. FYR Macedonia has similar history as Bosnia and Herzegovina and ethnic conflicts were part of gaining independency and developing the governance system. Croatia is of the similar size and set up of sub-national government, as well as history of ethnical conflicts. Croatia recently joined to EU, which is proven to be important milestone for transitional countries to speed up public

sector reforms, including decentralisation and application of subsidiarity principle. Finally, Slovakia has been selected due to the path of public sector reforms and the pitfalls in the process caused by strong political opposition to the process of decentralisation. Case of Slovakia provides useful insight for the process of selection of determinants of efficiency, as Slovakia had no ethnical issues, neither violent process of getting independence, but still experienced difficulties in implementing reforms due to the lack of political consensus.

#### **4.1. FYR MACEDONIA: ASYMETRIC DECENTRALISATION**

FYR Macedonia has relatively short history of independence and government having declared independency back in 1991. Since very first day of independence, FYR Macedonia experienced political instability and after struggling for more than decade to resolve the ethnic conflicts, the Ohrid Framework Agreement (OFA) has been signed. The OFA goals were twofold: to address the grievances of the Albanian community and concerns of Macedonian majority to preserve unitary state (Lyon, 2011; Bieberr, 2005; Latifi, 2001). The OFA grants some special rights to local communities: (i) introduction of the second language in municipalities where minority has over 20% of inhabitants; (ii) equitable representation at both, the national and local level in public sector institutions; (iv) Introduction of so-called “double majority” or “Badiner majority” voting; (v) introduction of the parliamentary and municipal Committees for Inter-Community relations as arbitration mechanisms.

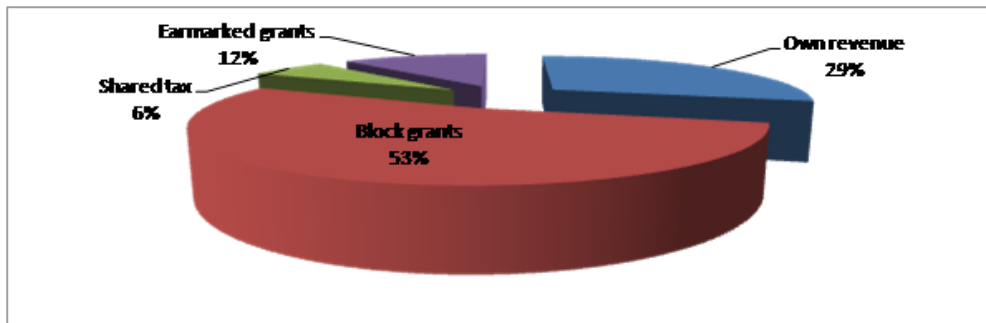
The Law on Local Self-Government provided a framework for territorial reorganization and as a result 124 municipalities have been created 1991 when FYR Macedonia declared independency from Yugoslavia. This was significant increase in number of municipalities as Macedonia before independence had only 34 municipalities.

By this Law very limited powers and responsibilities have been transferred to municipalities; namely urban planning and communal activities. The milestone for decentralization process was signing of OFA in 2001. A year later, Law on Self-Government has been enacted providing comprehensive framework for decentralization. By reforms till 2005 number of municipalities has been reduced from 124 to 85, and further on to 81 in 2013. Since 2007 municipalities that were able to fulfil financial management criteria were allowed to enter into Second Phase of Decentralisation. Under this framework municipalities benefit from block grants to cover additional responsibilities assigned. For that purpose government established the Commission for the Monitoring and Assessment of the Municipalities with main role to assess the extent to which municipalities meet conditions to enter a Second Phase of Decentralisation (UNDP, 2008). The reforms have resulted in redistribution of powers between different layers of government, by transferring majority of responsibilities in provision of public services closer to the citizens. At the state level, the minimum jurisdiction is kept over traditional state affairs such as foreign policy and security. Municipalities have very wide responsibilities including transport, utilities, healthcare, education, leisure etc.

In terms of fiscal independence, despite all reforms municipalities are still highly dependent on state level grants. As presented in Figure 6, majority of municipal revenue comes from grants which represent 65% of total revenues, while own sources are less than one third of total revenues. At the expenditure side 59% of funds are spent to education and social protection,

about 17% communal utilities, 12% municipal administration and remaining 12% on other municipal competences.

Figure 6: **COMPOSITION OF MUNICIPAL REVENUE 2014**



Source: EU Committee of the Regions at <https://portal.cor.europa.eu>.

To secure financing municipalities may borrow locally and abroad, with consent of Ministry of Finance. However, till 2008 municipalities were not allowed to directly enter into loan arrangements. Still, the total debt is at low level and mainly related to international projects.

#### **4.2. CROATIA: DEMOCRATISATION AND DECENTRALISATION**

Croatia declared its independence 1991 and it has been recognised by European Community in January 1992. This caused an armed conflict which to a certain extent shaped the attitude of public sector towards (de)centralization. According to the CIA fact book data for 2014, Croats represent 90,4% of population, Serbs 4,4%, while remaining 5,2% belongs to Bosniaks, Hungarians, Slovene, Czech, Roma and others). The first years after declaring independence were rather marked by continuous increase of authoritarian tendencies and centralization of financial flows and decision making. One of most extreme features of centralization and authoritarian approach was President's veto on appointing elected county president, which was abolished 2001 by the amendment to the Law on Local Self-government (Cabada, 2008; Zakosek, 2002). Until 2001 the semi-presidential system was in place, and it has been replaced with current parliamentary system.

After declaring independence, the major activities on decentralisation started 2001 when responsibilities over education (elementary and secondary), health care, social welfare and fire protection have been transferred to the sub-national level. Since 2000 number of municipalities decreased from 547 to 428 while number of towns (over 10,000 citizens) increased from 123 to 127. By reform in 2005 a concept of large town, namely those with over 35,000 inhabitants, has been introduced. In terms of regional government units there are 21 of them, including 20 Counties and City of Zagreb which have the status of County and Town at the same time. Counties have relatively high degree of autonomy and both sub-national layers of government exercise its right on the basis of subsidiarity principle, recognised by a constitutional principle in 2000. Another important event is EU accession in 2013 as in accession process strong commitment was required, in particular to prepare local government units to manage the funds that will be available within the Community Cohesion Policy.

Two major facts have influenced the shape and the speed of decentralisation reform in Croatia: Ethnical division and EU accession efforts. Although after independence declaration the new tier of government – Counties have been introduced, the first decade after independence was rather period of centralisation caused by ethnic conflict. The following decade was marked by completely opposite direction of reforms, caused by attempts to comply with EU accession requirements and developing capacity of sub-national government (Aristovnik, 2012; Cabada, 2008).

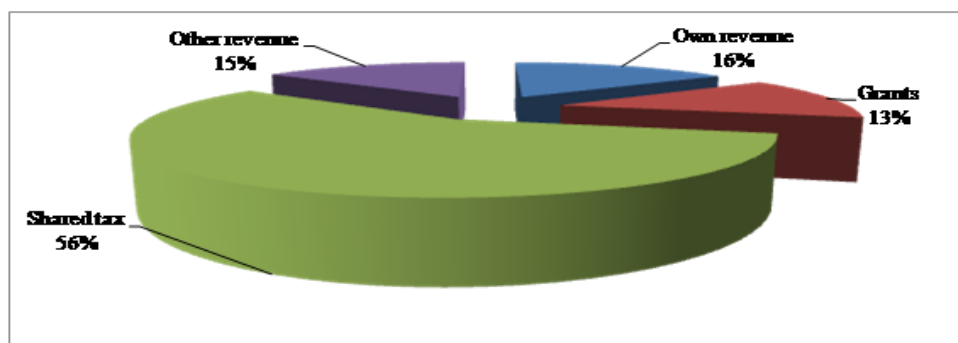
The legal framework for power distribution between different levels of government has been established by Law on Local and Regional Self-Government Units which defines competences and jurisdictions, while the Law on Local and Regional Self-Government financing is regulating financial flows. At the first tier, namely Municipalities and Towns, distinction is also made in case of large towns, which have some additional jurisdictions in comparison to Municipalities. At the level of Counties main powers are related to Education and Health care as well as important role of issuing location and construction permits. State level power is reserved for usual activities for this government level: defence, foreign policy and global policy in terms of economic development and establishment of overall framework for public service.

The overall framework in terms of competences is followed by financing system where decentralization allowed for revenues at municipal level from own sources, shared taxes, grants from state budget as well as equalization grants for less developed local units. Major source of own revenue for sub-national governments is related to the income gained from sub-national government property, different local taxes, fines, fees and charges. In structure of shared taxes the major ones are income tax and tax on real estate transactions.

All tax rates are set centrally, so there is no autonomy at local level in determining level of taxes. The similar case is also with charges and fees on local level. While generally local government set the taxes and fees, quite strict limits are imposed centrally through boundaries within which these rates must be fixed. Only case where full autonomy is granted to local government is the tax rate for use of public surface. This system quite significantly limits the fiscal autonomy of the local governments at both county and municipal level.

The Figure 7 shows that only 16% of revenue comes from own sources, while largest share, more than half of total revenue comes from tax share. Grants account for 13% of total revenue at sub-national level, while remaining 15% refers to the other revenue.

Figure 7: **COMPOSITION OF MUNICIPAL REVENUE 2014**



Source: IMF GFS database at <http://data.imf.org>

At the expenditure side 39% of total expenditure goes to Use of goods and services, followed by 26% of local budgets spent on Salaries and 18% spent on subsidies, grants and social benefits.

#### **4.3. SLOVAKIA: RESOLVING POLITICAL OBSTACLES**

As one of the two successor states of former Czechoslovakia, Slovakia gained independence back in 1993. It is a unitary state with de-concentrated state administration and independent regional and local government. Slovakia is ethnically coherent country having Slovaks representing 80.7% of population, Hungarian 8.5%, Roma 2%, and other/unspecified 8.8%.<sup>1</sup>

The decentralisation framework at the state level includes general and specialised state administration. General state administration is decentralised from central to district level. Specialised state administration is implemented through regional and district offices of state administration. This deconcentration is applied under developed scheme and certain exceptions are also in place. For example education is delegated fully to municipalities, as well as construction, while field of environment follows the standard scheme of line ministry-regional offices-district offices.

The government framework is composed of eight regions, 79 districts and 2.891 municipalities out of which 138 have city status. To get a city status municipality have to fulfil certain conditions such as: to be economic, cultural and administrative centre; provide services and dispose transport links to neighbouring municipalities; be urban environment and have population not less than 5,000 inhabitants. In additional two major municipalities, Bratislava and Kosice have a different status and are divided into city districts.

In general, the public sector reform path in Slovakia shows much turbulence. While the first wave of changes caused by Velvet revolution has contributed to decentralisation and afterwards deconcentration of government system, interesting enough, after joining EU, Slovakia experienced a kind of backward reform. The major issue was actual politicisation of civil service until 2013 when so called ESO reform has been initiated. The fragmentation and implementation of subsidiarity principle reflects high level of local democracy, but yet it is far of reaching effectiveness and efficacy (Jacko & Malikova, 2013).

The path of the public sector reforms was characterised with many obstacles and delays. Although the first strategy has been adopted 1999, due to the lack of political consensus, the implementation of the Strategy has been constantly delayed and at the end turned to be more political debate on number of regions and the election system, rather than solving inefficiencies of current system. Law on Transfer of Competencies adopted in 2001, enabled transfer of competencies to municipalities, in particular in area of road transport, water management, citizen registries, education etc. These competences have been re-allocated from line ministries ensuring vertical and horizontal decentralisation. There were no political support to the reform, but it has been strongly pushed by EU accession requirements and 2004, where accession happened was important milestone for reform speed.

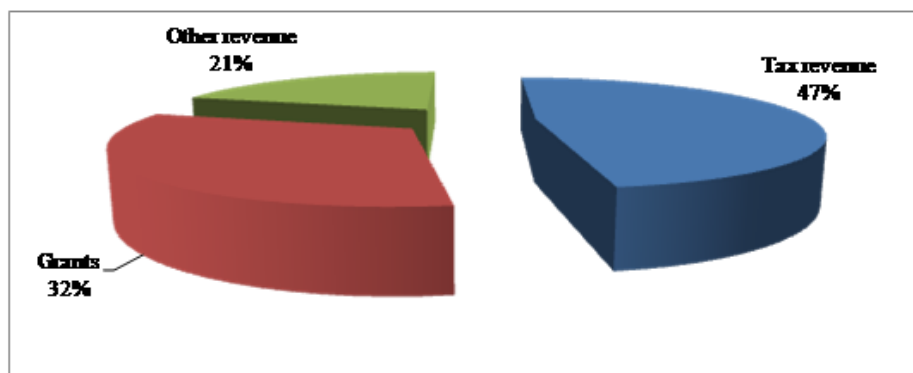
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<sup>1</sup> CIA factbook at <https://www.cia.gov/library/publications/the-world-factbook/geos/af.html>

In general, number of municipalities is very high and the threshold for city status is quite low. About two thirds of municipalities have less than 1,000 inhabitants which poses significant challenge in terms of reaching economy of scale as well as institutional capacity of such small units to provide high quality public service to the citizens. Current distribution of powers in different tiers of Slovakia government is characterised by high level of vertical and horizontal decentralisation and de-concentration of powers towards local government. Even the issues such as civil defence are delegated to the Region level, while the state level kept more coordination role. Regions and municipalities share some responsibilities yet having primary services at the level of municipality. This is the case with education and healthcare, for example.

As presented in the Figure 8 major source of financing at municipal level is related to tax revenues, while grants are also quite significant and represent almost one third of total revenue. At the side of expenditures 53% is spent on Compensation of employees, 31% is related to the Use of goods and services and remaining 16% refers to other costs. Major source in terms of taxes revenue is related to income and corporate tax 72% of total tax revenue, while property tax accounts for 13% and taxes on goods and services for 14% of total tax revenue.

Figure 8: **COMPOSITION OF MUNICIPAL REVENUE 2014**



Source: IMF GFS database at <http://data.imf.org>

Although the decentralization level is relatively high in administrative sense, it is not properly followed by funding of sub-national governments. Lack of funding is combined with poor fiscal discipline and in 2013 due to many fiscal problems government has introduced audit of effectiveness and efficiency of sub-national governments. The new laws even prescribe fines to be paid in case of breaching these rules.

In terms of dependency on transfers, revenue autonomy of local government in Slovakia is higher than EU average. Namely, dependency on central government transfers is 38% versus EU average of 47%. Sub-national government is limited in borrowing activity by debt ceilings and rules whereby local governments may enter into debt arrangements only if the total sums of the debt do not exceed 60% of current revenues and the sum of annual repayments do not exceed 25% of current revenues.

## Conclusion

The need for constitutional reform primarily arises from efficiency concerns and the ability of BiH to assume obligations on the way towards EU membership. The process of European integration, have been proven as a successful mechanism for resolving inter-state conflicts in Europe after the Second World War and therefore is crucial to BiH efforts as well. The major decentralisation challenge: to find a proper balance between efficiency and preserving democracy is multidimensional in BiH context. BiH society is divided at many levels, economical, administrative, territorial, ethnic, political, all having different interests and aspirations. Although it looks like mission impossible in given context, there is a number of success stories at local government level which confirm that it is possible to find solutions even in current circumstances. The two major issues have to be balanced: building up efficient administrative capacity and preserve democratic representation. The importance of politics in fiscal decentralisation shall not be undermined; it is always about vertical power and allocation of resources. The limited success of decentralisation reforms and slow pace in implementing decentralisation measures is signal that something went wrong in the whole concept.

Acceptance of BiH application for EU membership is an important step and is expected to be strong push in public sector reforms. Respecting main principles of European Charter of Local-Self Government is not a choice, but BiH obligation in the way to EU accession. Charter is guidance and not prescribed framework with strict rules. Three major characteristics have to be addressed: country specifics, moving decision making as close to the citizens as possible and securing financial independency of local communities.

Asymmetric decentralisation in BiH as result of Dayton Peace Agreement is often referred as a main obstacle in reaching municipal efficiency. Six analysed country cases in this paper, show that the complex administrative set up may be overcome by different forms of intergovernmental arrangements and community based mechanisms. Voluntarily mergers of municipalities to increase efficiency failed in majority of cases, even in highly developed countries and best practice models such is Swedish model. Based on this experience Bosnia and Herzegovina shall rather apply mechanisms of vertical and horizontal cooperation applied in Switzerland, Sweden and Belgium. Example of Belgium model in addressing specific cultural and educational needs of Communities may be used in Bosnia and Herzegovina as well, making different tiers equal from legal point of view with jurisdiction over different areas.

The responsibilities assigned to counties are not unified in analysed countries and features of asymmetric decentralisation are applied. Certain rules have been established to increase efficiency in some services which are beyond municipal capacities. The example of FYR Macedonia may be used as a way of implementing decentralisation process in stages following fulfillment of certain criteri by municipalities. Example of Croatia shows that EU accession indeed may be a strong push factor and similar scenario may be expected in Bosnia and Herzegovina as well. Finally, Slovakian case shows that political concensus is crucial for reform's success.

Fiscal independence varies significantly among analysed countries, being high in some of developed countries, but still majority of European developed countries have low level of local taxes share in total taxes collected. In transition countries, municipality budgets are highly



dependent on upper government level transfers, including BiH where in average it reaches 65% of total budget, versus EU average of 47%. So, the measures in fiscal decentralisation on seems to be premature for BiH environment and firstly some other model deficiencies shall be addressed. Still, allocation mechanisms may be powerful tool of upper levels of government in promoting and encouraging municipal cooperation for example.

There is no one approach that fits all. Every country have to find out the best model customized to address specifics of the historical, cultural, political and economic development. However, rich experience of countries in decentralisation processes shall be used to find right formula for Bosnia and Herzegovina.

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# FINANCING DEVELOPMENT OF MUNICIPALITIES BY ISSUING MUNICIPAL BONDS

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## Abstract

In this paper scientific research was conducted to evaluate financing model to build infrastructure by issuing municipal bonds of the Municipality Stari Grad Sarajevo. Municipalities have their own competence established by the Constitution and the Law and have the right to deal with all matters of local interest which are not excluded from their competence nor assigned to any other authority under the Constitution and the Law. Municipalities have their own funds in accordance with the law and have a choice of ways of financing local projects, whether it be by issuing municipal bonds or by loan at commercial banks.

This research covers municipalities of Stari Grad Sarajevo, Cazin, Tesanj, Hadzici in the Federation of Bosnia and Herzegovina and eighteen municipalities in the Republika Srpska, and also seven municipalities in Croatia and fourteen municipalities in Montenegro.

This paper presents the results of research, which showed that hypothesis is not correct, that financing infrastructure of local governments by municipal bonds is not cost-effective. Emission of municipal bonds costs more comparing to other sources of financing in the case of selected construction project of public garage with square in Stari Grad Municipality. The project that Stari Grad Municipality wants to finance is self-financing, meaning Municipality will make profit out of it in next years. Instead of being financed by the local population, with lower interest rate than the active is, better financing conditions are given by commercial bank. Benefits which municipal bonds bring, unfortunately, are not yet recognized in the Federation of Bosnia and Herzegovina.

This conclusion came as the result of comparative analysis of financing model. Model has been chosen and ex ante evaluation is given, which shows that it is feasible to loan from commercial banks in relation to financing by issuing municipal bonds of the Municipality of Stari Grad.

**Keywords:** *municipality, municipal bond, commercial bank, comparative analysis, ex ante evaluation*

# NUTRITIONAL ANALYSIS OF THE FOOD BASKET IN BIH: A LINEAR PROGRAMMING APPROACH

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## Abstract

This paper presents linear programming and goal programming optimization models for determining and analyzing the food basket in BiH with adequate nutritionally need according to the World Health Organization (WHO) standards and the World Bank (WB) recommendation. Linear programming (LP) model and Goal linear programming model (GLP) are adequate since price and nutrient contents are linearly related to food weight.

LP model will give us the information of minimal value of the food basket for average person in BiH based on nutrient needs defined by WHO, and the structure of food basket according to the nutrients needs. GLP models are designed to give us the information of minimal deviations from the nutrients needs if the budget is fixed. Based on the results, the poverty analysis will be performed according to WB definition.

Data used for the models consisting of 158 food items from the general consumption of the population of Bosnia and Herzegovina according to COICOP classifications with average prices in 2015 for these products. In order to compare with BiH consumer basket, defined by the recommendation of the WB and consisting of only 66 products, one of the models includes only these 66 food items. The budget constraints are formed based on average net salary in 2015, number of employment and population according to preliminary results of the census in Bosnia and Herzegovina from 2013.

Key words: linear programming, goal programming, optimization, cost, nutrition, budget

**JEL Classification:** C61, C82, I31, I32

## 1. Introduction

Two specialized agencies of the United Nations, FAO (Food and Agriculture Organization) and WHO (World Health Organization) are making efforts in the definition of international recommendations for the intake of the essential nutrients. Estimation of quality and quantity of food lack for the people with compromised nutritional status is based on nutritional needs standards. The results of that estimation can be used for targeting of food supply.

The results also can be used in a planning of agricultural production and the creation of national programs for example, enrichment of food. The target intake of nutrients for a population is the average intake of certain food components or individual food groups, which is preferred to maintain health where health is defined as a low incidence of disease directly associated with the food intake. Unlike many countries that have set nutrition based recommendations, for B&H are not available such recommendations or studies that address the question of setting nutrition based recommendations for its citizens.

That is the reason why this study aims to apply the linear programming and goal programming optimization models for determining and analyzing the food basket in BiH with the nutritional needs harmonized to recommendations of World Health Organization (WHO) and the World Bank (WB). Linear programming (LP) model and Goal linear programming model (GLP) are adequate since prices and nutrient contents are linearly related to food items weight.

The paper is divided into five parts. Literature review provides an overview of theoretical background and application of linear programming models for analyzing nutrition's needs for specific age group and specific countries. Section 3 explains the data and methodology used for the analysis of food basket in Bosnia and Herzegovina. The results and analysis are presented in section 4 which is structured in four main parts: determination of the absolute minimal daily costs; determination of minimal daily costs according to food pyramid; analysis of B&H food basket provided by WB and creation of LP model to increase food basket efficiency. Finally, brief summary and concluding remarks are given in Section 5.

## 2. Literature review

Application of linear programming to analyze food intake is mostly related to costs minimization. Therefore, the most of the studies that uses linear programming approach are focused on countries with registered extreme poverty or society's vulnerable groups such as: infants, kids, elders, people that suffer from specific diseases etc. This literature overview contains some interesting application of linear programming in optimizing food intake patterns.

Skau, J. et al. (2013) have used linear programming to investigate whether 4 different complementary food products could contribute to fill nutrient gaps in the local diets for 6-11 months old Cambodian infants and therefore to ensure adequate diet. Even though this study has its limitations (small sample size regarding dietary data, dietary data were collected by using average recipes of mixed-food dishes etc.), it emphasized the value of LP for planning a nutritional - intervention program.

Darmon, N., Ferguson, E. & Briend, A. (2002) explained the use of linear programming as a method to design nutrient-adequate diets of optimal nutrient density and to identify the most stringent

constraints in nutritional recommendations and food consumption patterns in a population's diet in rural Malawi, Africa. This study showed that linear programming can be used to identify dietary patterns and limiting nutrients and to assess whether a nutritionally adequate diet is achievable with locally available foods in different seasons as well as to identify combinations of foods and portion sizes needed to achieve a nutrient-dense diet and desirable modifications to observed food patterns.

Oktubi, H. et al. (2015) developed mathematically optimized food intake patterns that met the Recommended daily intakes for a 28 nutrients studied in each sex and age group (192 healthy Japanese adults aged 31 -76 years divided into two groups <50 and  $\geq 50$  years). Using a linear programming model, Oktubi et al. (2015) identified optimal food intake patterns providing practical food choices and meeting nutritional recommendations for Japanese population.

Pasic, Catovic & Crnovrsanin (2011) developed a linear programming optimization model of food consumption with the minimal costs, to meet daily nutritional needs of the average woman and the average man, respecting the World Health Organization standards. They have used 59 most frequent food items gained out of the survey of 50 households, as decision variables. Pasic et al. (2011) showed that it is possible to develop linear programming model which minimizes the cost of food commodities but at the same time meets the required nutritional needs.

### 3. The Data and Methodology

This paper is aimed to find the absolute minimal daily food intake costs that meet nutritional needs and to analyze the adequacy of official B&H food basket provided by World Bank. Based on the official food basket, the linear programming modeling is used to provide more efficient solution for the food basket. We used World Health Organization recommendations for daily nutritional needs of average men and women, and 158 food items price information from B&H Statistical Agency. Data used to modeling consists of 158 food items from the B&H consumption expenditure according to COICOP classification. The food item's average prices in 2015 are used.

The form of the basic model used in this study is:

$$\begin{aligned} \min f &= c_1x_1 + c_2x_2 + \dots + c_nx_n \\ a_{i1}x_1 + a_{i2}x_2 + \dots + a_{in}x_n &\leq UL(i) \\ a_{i1}x_1 + a_{i2}x_2 + \dots + a_{in}x_n &\geq RDI(i) \\ x_j &\geq 0; i = 1, m; j = 1, n \end{aligned}$$

Where,  $c_i$  - are average prices of included products in 2015;  $x_i$  - are 158 food items decision variables ( $n = 158$ ).

Constraints are UL -Upper daily limits and RDI -Recommended daily intake for nutrients. The daily nutritional needs of average adults are used according to US Department of Health & Human Services – NIH (National Institutes of Health)<sup>2</sup> and incorporated into model constraints. Nutrients that are used in constraints are divided into three groups: macronutrients, vitamins and minerals. Finally we formed model with 54 constraints ( $m = 27$ ).

Later, according to analysis goals and requirements, basic model is modified. We have developed goal programming model in order to minimize deviations from nutrients constraints for fixed budget. The LP model is modified and improved by using the parts of solution obtained by application of GP model.

<sup>2</sup> [https://ods.od.nih.gov/Health\\_Information/Dietary\\_Reference\\_Intakes.aspx](https://ods.od.nih.gov/Health_Information/Dietary_Reference_Intakes.aspx)

## 4. Results and Discussion

By the application of linear programming are determined models with the absolute minimal daily costs, models with minimal daily costs according to food pyramid, models that increases food basket efficiency and analyzed the official B&H food basket provided by WB.

### 4.1 Determination of the absolute minimal daily costs

We estimated the model with the absolute minimal costs and with satisfied nutritional needs. Resulting food basket is analyzed according to US Department of Health and Human Services food pyramid (The food items are divided into 6 major groups according to food pyramid: 1. cereals, bread and pasta 40%; 2. sugar and fat 1-2%; 3. meat, fish and eggs (12,5%) 4. milk and dairy products (12,5%); 5. fruits (14%) and 6. vegetables (20%)).

The obtained results show that minimal daily costs for men amounts 1,95 KM. However, by analyzing the content of optimal food basket for the first model, we founded that a small number of food items (just 11 of them) is included. Also, by comparing percentage shares of food groups with the corresponding groups in food pyramid, we found that obtained values significantly deviate from recommended ones (Figure 1).

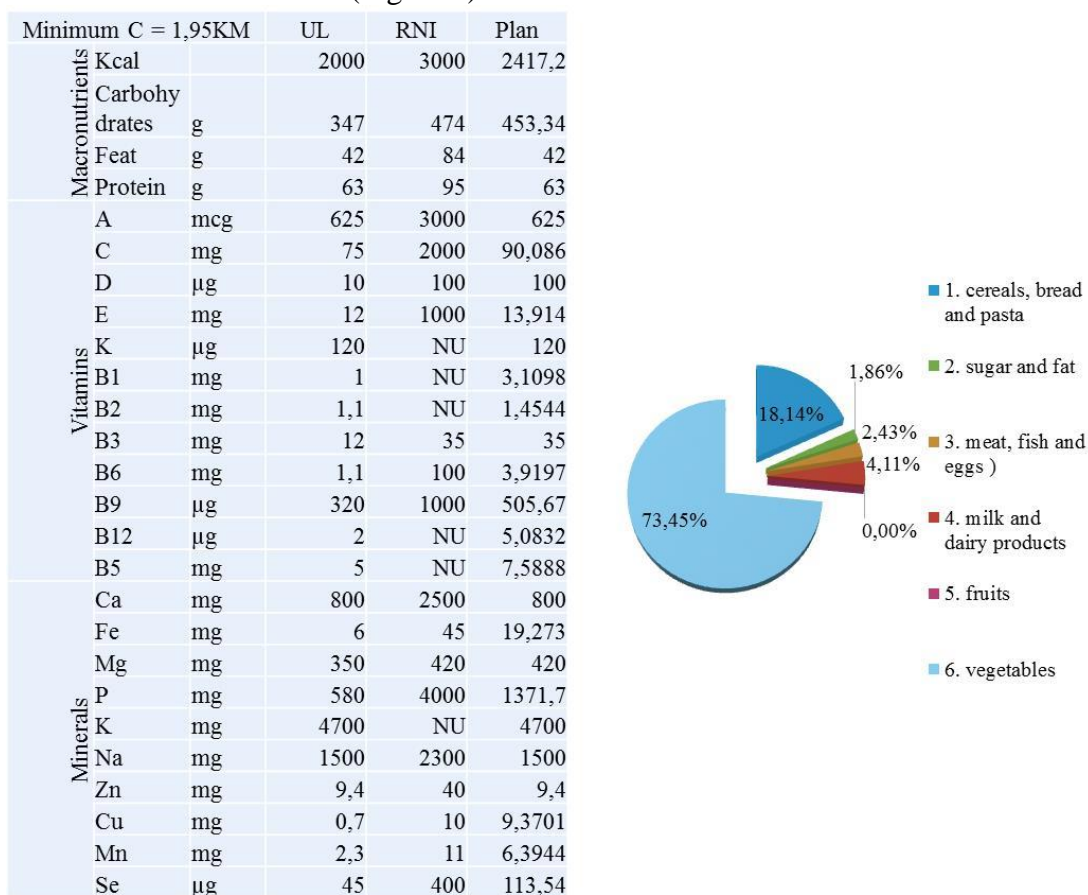


Figure 1: Nutritional constraint report and percentage of food groups in optimal LP solution for average man. The similar results are obtained for women with the minimal daily food cost of 1,84 KM (Figure 2). Again, a very few food items are included in the food basket and there is significant deviation from the percentage shares of food groups recommended by food pyramid.



Minimum C = 1,84KM		UL	RNI	Plan
Macronutrients	Kcal	1800	2400	1,8404
	Carbohydrates g	271	369	1956,4
	Feat g	33	65	369
	Protein g	49	74	34,527
Vitamins	A mcg	500	3000	49
	C mg	60	2000	1098,1
	D µg	10	100	97,796
	E mg	12	1000	100
	K µg	90		12
	B1 mg	0,9		90
	B2 mg	0,9		2,3279
	B3 mg	11	35	1,1511
	B6 mg	1,1	100	29,183
	B9 µg	320	1000	4,1652
	B12 µg	2		351,81
	B5 mg	5		11,518
Minerals	Ca mg	800	2500	7,8624
	Fe mg	8,1	45	800
	Mg mg	265	350	13,575
	P mg	580	4000	350
	K mg	4700		1170
	Na mg	1500	2300	4700
	Zn mg	6,8	40	1500
	Cu mg	0,7	10	6,9323
	Mn mg	1,8	11	4,4564
	Se µg	45	400	3,5435

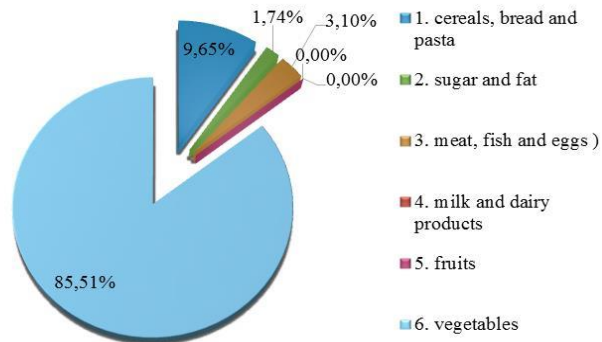


Figure 2: Nutritional constraint report and percentage of food groups in optimal LP solution for average woman

## 4.2 Determination of minimal daily costs according to food pyramid

In order to improve the first model, we have expanded the set of constraints by the percentage shares of food groups recommended by food pyramid. The models with the exact percentage shares and also with +/- 10 % and +/- 20% from recommended percentage shares are tested. Table 1 presents results of these analyses for standard men. Based on tested models, obtained minimal daily costs are still too high and again, the models didn't provide sufficient food diversity. For example, the daily cost of 4,3 KM implies minimal monthly food consumption of 130 KM per person.

Based on this conclusion, we decided to include the food items suggested in B&H food basket, in our model.

Food pyramid constraints	Men	Min Daily Cost	No of food items	Food pyramid constraints	Women	Min Daily Cost	No of food items
	exactly	4,36 KM	14		exactly	4,62 KM	13
	± 10%	4,17 KM	13		± 10%	4,68 KM	11
	± 20%	3,96 KM	13		± 20%	4,51 KM	11

Table 1. Minimal daily food cost according to nutrition's needs and food pyramid for standard man and woman



### 4.3 Analysis of B&H food basket provided by WB

According with selected nutritional constraints, we have analyzed two B&H food basket structures, provided by WB. We used the food basket structure given in “Poverty and Living Conditions” report from the Household Budget Survey 2007. This document doesn’t provide methodology that is used for food items selection or the criteria for corresponding quantities, so we aimed to investigate whether the LP model fits into presented frame or can it provide better solution, from a nutritional point of view.

The suggested B&H food basket consists of 66 food items. There are given two different structures of food basket: first named “starting food basket” and second named “optimal food basket”. The list of food items is different from that we obtained under COICOOP classification, so it was necessary to make certain adjustments. Based on LP model, we obtained the minimal costs with the suggestions of structures of “food basket 1” and “food basket 2”.

The results for the average men are given in the table 2. In the first food basket, minimal costs amounts 3,45 KM but all constraints are not met. For example, in a case of adult man, there are the lacks in adequate intake of: vitamins B12 and B5, and also Calcium, Magnesium, Sodium and Potassium. It can be investigated whether permanent lack of these nutrients can cause certain diseases.

In the second model, the minimal costs are 3,21 KM and, in several cases, exceeded lower or upper limits. Table 3 presents the second model results.

	men	3,54 KM	RDI	UL		
Macronutrients	Kcal		2000	3000	ok	2000
	Carbohydrates	g	347	474	ll	<b>306,9991</b>
	Fat	g	42	84	ok	66,15347
	Protein	g	63	95	ll	<b>51,09395</b>
Vitamins	A	mcg	625	3000	ok	1953,259
	C	mg	75	2000	ll	<b>65,43405</b>
	D	µg	10	100	ok	19,02411
	E	mg	12	1000	ok	13,17377
	K	µg	120	NU	ok	169,164
	B1	mg	1	NU	ok	3,590987
	B2	mg	1,1	NU	ok	2,164912
	B3	mg	12	35	ok	25,95973
	B6	mg	1,1	100	ok	1,585679
	B9	µg	320	1000	ok	428,3192
	B12	µg	<b>2</b>	NU	ll	<b>1,667882</b>
	B5	mg	5	NU	ll	<b>2,333042</b>
Minerals	Ca	mg	800	2500	ll	<b>584,9441</b>
	Fe	mg	6	45	ok	22,64579
	Mg	mg	350	420	ll	<b>203,0001</b>
	P	mg	580	4000	ok	783,3849
	K	mg	4700	NU	ll	<b>1541,688</b>
	Na	mg	1500	2300	ll	<b>1266,622</b>
	Zn	mg	9,4	40	ll	<b>5,957296</b>
	Cu	mg	0,7	10	ok	3,081497
	Mn	mg	2,3	11	ok	3,618263
Se	µg	45	400	ok	82,44921	

Table 2: Minimal costs with constraint analysis of the WB suggestions of “food basket 1” for average man

3,21						
KM	men	RDI	UL			
Macronutrients	Kcal		2000	3000	ok	2247,519
	Carbohydrates	g	347	474	ok	360,4525
	Feat	g	42	84	ok	57,72526
	Protein	g	63	95	ok	74,58268
Vitamins	A	mcg	625	3000	ul	<b>4831,09</b>
	C	mg	75	2000	ok	104,9127
	D	µg	10	100	ok	17,31491
	E	mg	12	1000	ll	<b>9,239797</b>
	K	µg	120	NU	ok	123,6699
	B1	mg	1	NU	ok	4,339763
	B2	mg	1,1	NU	ok	4,383855
	B3	mg	12	35	ul	<b>40,57393</b>
	B6	mg	1,1	100	ok	2,412989
	B9	µg	320	1000	ok	751,0716
	B12	µg	2	NU	ok	44,63358
	B5	mg	5	NU	ok	6,857796
Minerals	Ca	mg	800	2500	ll	<b>620,8137</b>
	Fe	mg	6	45	ok	28,36377
	Mg	mg	350	420	ll	<b>243,5362</b>
	P	mg	580	4000	ok	1219,308
	K	mg	4700	NU	ll	<b>2138,072</b>
	Na	mg	1500	2300	ul	<b>5306,798</b>
	Zn	mg	9,4	40	ok	9,695113
	Cu	mg	0,7	10	ul	<b>11,01624</b>
	Mn	mg	2,3	11	ok	4,410381
Se	µg	45	400	ok	131,4906	

Table 3: Minimal costs with constraint analysis of the WB suggestions of “food basket 2” for average man

Again, there are lacks in adequate intake of: E vitamin, Calcium, Magnesium and Potassium and excessive intake of vitamins A and B3, and also Sodium.

#### 4.4 Creation of LP model to increase food basket efficiency

At the end, based on LP model, we suggested more efficient food basket structure, meeting all constraints with lower costs. We have modified the LP model constraints by including restrictions related to variables or set of variables according to structure of food basket suggested by WB. We also used results of GP model obtained on the basis of hypothetical fixed budget to modified constraints of LP model in order to minimize deviation from original food basket.

The resulting food basket, presented in Table 4, follows the structure of the “66 items” food basket, costs 3,71 KM on a daily basis and satisfies all recommended nutritional needs.

Food items	Unit of measure	Quantity	Food items	Unit of measure	Quantity
Riža	kg	0,0462	Sol i začini (biber, paprika, peršun ...)	kg	0,2482
Ostale žitarice	kg	0,279	Kafa	kg	0,0489
Pšenično brašno (sve	kg	8,71365	Voćni sirup, sokovi,	kg	0,0873
Ostala brašna	kg	1,00309	Pivo	kg	0,2481
Hljeb	kg	1,0875	Svježi citrusi	kg	0,511
Tjestenina	kg	0,1065	Banane	kg	0,525
Biskviti, slastičarski	kg	0,03	Jabuke	kg	0,0636
Junetina, teletina	kg	0,123	Kruške	kg	0,0243
Perad (friška ili	kg	0,1449	Grožđe	kg	0,0225
Ostali proizvodi	kg	0,015	Koštunjčavo voće	kg	0,0562
Slatkovodna i morska riba	kg	0,09701	Ostalo voće (jagode, ...)	kg	0,7875
Ostali riblji proizvodi	kg	0,015	Orasi, bademi ...	kg	0
Svježe mlijeko	kg	17,094	Suho voće	kg	2,891
Jogurt i kiselo mlijeko,	kg	0,2313	Lisnato svježe povrće	kg	0,3465
Pavlaka	kg	0,0681	Kupusnjače	kg	10,171
Krem sirovi	kg	0,0861	Paradajz	kg	1,1655
Bijeli sir	kg	0,0555	Paprika	kg	0,0789
Jaja	kg	0,072	Krastavac	kg	0,045
Puter	kg	0,027	grašak i buranija	kg	0,0192
Margarin, biljno maslo	kg	0,0297	Sušeni grah	kg	0,987
Jestivo ulje	kg	0,31128	Mrkva	kg	0,027
Ostale masti životinjskog porijekla	kg	0,0948	Luk	kg	0,8575
Šećer	kg	0,1638	Bijeli luk	kg	0,027
Džem, pekmez, marmelada, žele	kg	0,0423	Krompir	kg	8,246
Ostali konditorski proizvodi (sladoled, ...)	kg	0,015	ostalo svježe povrće	kg	1,7745
Sirće	kg	0,0231	Prerađeno i konz povrće	kg	0,045

Table 4: Food basket optimal structure based on LP model

The resulting food basket follows the structure of the food pyramid more efficient than food basket from the first model (Figure 2).

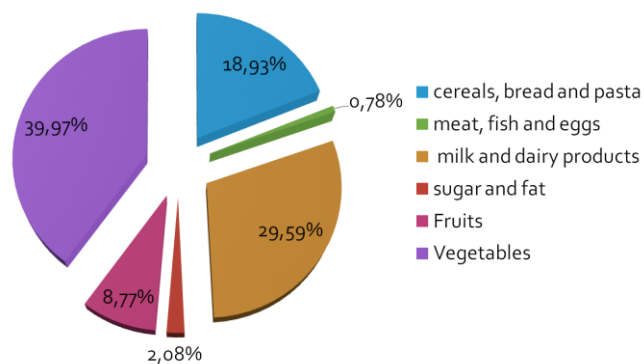


Figure 3: Percentage of food groups in optimal food basket obtained by LP

Note that the structure of **food basket follows** the list of food items contained in the document “Poverty and Living Conditions” report from the Household Budget Survey 2007, from B&H Statistical Agency. In this document, certain groups of products are classified into groups or not listed. For example, no. 36 is the coffee and the numbers 37, 38 are omitted and in the original list should be tea and cocoa.

## 5. Conclusion

In this paper, the authors analyze the food basket, aiming to minimize daily food costs with satisfying recommended nutritional daily requirements at the same time. A few LP models were created and results showed that minimal daily food costs were 1,95 KM for average men and 1,84 KM for average women. We believe that this result can be used in the poverty analysis in Bosnia and Herzegovina for the analysis of adequacy of nutritional poverty threshold or in determining size and causes of the extreme poverty.

The structure of the optimal food basket contained approximately 74% of vegetables. Therefore, the additional request about fitting into food pyramid structure was included.

In the sequel, instead of food pyramid, the structure of food basket provided by World Bank, was used. For the proposed two food baskets (starting and optimal), determined LP models resulted with the daily food costs of 3,21 KM and 3,54 KM, but nutritional constraints were not met. For the LP model with the set food basket structure and nutritional constraints, there was not feasible solution. The LP model was modified in several ways and the GP model was introduced in order to minimize deviation from proposed food basket proposition with nutritional needs met. The results were included into modified LP model.

The linear models were successfully applied in the analysis and construction of optimal food basket. The optimal food basket resulted with the daily food costs of 3,7 KM and all nutritional needs satisfied. The obtained structure of optimal food basket meets predefined criteria related to food basket requirements and can be easily followed in optimal diet planning and also agricultural production planning.

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# **EXTRAVERSION-INTROVERSION AND STUDENTS PERFORMANCE: DOES PERSONAL INNOVATIVENESS MATTER?**

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## **Abstract**

Personality factors may influence students' classroom activities as well as performance. Extraverted people are usually social and they get energy from others. At the other hand, introverted people lose energy when around others and need to spend more time alone than extraverts. Consequently, it is expected for introversion to have negative impact on students' classroom activity. On the other side, extroversion will positively relate to students' classroom performance. Also, students' innovativeness was found to have very important role in students' performance. The ideology behind innovation work concerns individual's abilities to use their creative powers and creative intelligence to modify their environment. Creativity is important as it enhances the quality of solutions to life's problems. In this connection, this study explores the relationship between the introversion-extroversion tendencies and classroom activity and performance for university students. Extraversion and introversion will be seen through the prism of Big Five model, which has extended history in previous research. Also, the impact of students' innovativeness and social skills will be the object of the analysis. Structural equation modelling is employed in order to offer integrated model with interdependences and interrelations of mentioned constructs.

**Keywords:** extraversion, social skills, performance, innovativeness

**JEL classification:** I21

## 1. Introduction

In contemporary world knowledge has an important role as well as impact on society in general. Different forms of learning are available including those with formal, non-formal and informal content. Most of these forms have some kind of performance evaluation system. Previous researches have measured students' performances using exact measures such as grade, GPA and scores average (Puerta, 2015), or through the subjective students' self-evaluation (Pintrich & Groot, 1990). At the same time, it is evident, from the scientific and practical point of view, that upcoming research should offer a deeper analysis of performances antecedents, which are playing a crucial role in creating a better academic environment.

Studies that examine impact of personality on individual and academic performances showed inconsistent results. Due to the unsolved nature, the primary goal of this study was to evaluate student's attitudes and beliefs how their personality characteristics (extraversion and social skills) and innovativeness have an important influence toward better academic performance.

To the best of our knowledge, similar studies are very limited, especially in cultures outside the USA. Empirical study was conducted at the School of Economics and Business, University of Sarajevo. In total 185 students took a part during the summer semester 2016. For the analysis, we followed two-step procedure suggested by Anderson & Gerbing (1988). At the beginning, we examined measurement model in order to test convergent and discriminant validity. Second step encompasses testing structural model with primary goal to test the strength and direction of the relationships among theoretical constructs. Consequently, we define three research questions:

1. What are the interaction among innovativeness and students' academic performance?
2. How the social skills are related to the extroversion characteristics of students?
3. How is the extraversion related to the student's academic performance?

## 2. Literature review and research model

The research model of this paper is based on Achievement Goal Theory, which has focus on goals and the purpose in behavioural sense of academic performances (Urduan & Maehr, 1995; Dweck & Leggett, 1988; Ames, 1992). The Theory is partly concerned with *what*, in our case, students want to achieve, and mostly *why* they are trying to achieve something. Achievement Goal Theory is dealing with behaviour (Machr & Zusho, 2009), and consequently we can conclude that it is possible to incorporate it within personality factors, which are the main focus of this paper. In this sense, we are going to introduce the concepts of interest (performances, social skills, extraversion and innovativeness) as well as relationship between them.

In general, we can define performances as efficiency of individuals within specific tasks and responsibilities (Meyer et al., 1989, pp. 153-156). When it comes to academic performances, they are related to the extent to which students deal with their studies and how they cope with or accomplish different tasks given to them by their teachers" (Helou & Rahim, 2014). Individual performances have been researched in many contexts mostly as a dependent variable. The most researched individual performance relationships are with emotional intelligence (Rafiee, Kazemi & Alimiri, 2013; Samad, 2011; Shahhosseini et al., 2012), job satisfaction (Ram, 2013;

Funmilola et al., 2013; Judge, 1994), stress (Mohsan et al., 2011; Bashir & Ramay, 2010) and personality (Salgado, 1997; Lilford et al., 2014; Barrick, Mount & Judge, 2003). On the other hand, academic performances have been researched in a similar manner, especially in relationship with self-efficacy (Schunk, 1981; Bandura, 1986), optimism (Scheier et al., 2000; Aspinwall & Taylor, 1992) and motivational processes (Bandura & Cervone, 1983; Wood et al., 1990). Going beyond existing studies, this paper offer an analysis of student's personality (extraversion and social skills) and innovativeness and how they relate with academic performances.

Studies from the last four decades were brought extraversion as the most important dimension of personality (Digman, 1990; Norman, 1963). Individuals who possess high level of extraversion are described as more talkative, assertive, active and energetic (John, 1990), given that they have remarkable level of positive attitudes (Lucas & Baird, 2004). It has even been claimed that this concept gives more happiness to individuals and positive view of the environment (Uziel, 2006).

Contemporary approach to the study of social skills began with the study of Crossman from the sixties. He marked these skills as the most important in communication between people (Welford, 1981, p. 847). Although this concept is not unknown, studies have not progressed a lot, since this concept just recently started to attract a lot of attention in an industrial context (Hochwarter et al., 2006). Although consensus not yet been achieved (Trower, 1982; Phillips, 1985; Witt & Ferris, 2003), Patrick (2008) believes that social skills are a set of skills that people use for the purpose of interaction and communication with other people. On the other hand, Hers and Bellack (1977) state that they are an individual's ability to express positive and negative feelings within the interpersonal context.

According to Rogers (1995), we can define innovativeness as "the degree to which an individual or other unit of adaption is relatively earlier in adopting new ideas than other members of social system." Innovativeness can also encompasses the creation of upcoming new ideas covering all business and other areas (Adair, 2007). This concept could be seen through the prism of individuals, organizations and social societies. According to Nail (1994) it can be defined as process where new ideas are putted into practice. However, Rogers (1995) gives broader definition as "the degree to which an individual or other unit of adoption is relatively earlier in adopting new ideas than other members of a social system". Innovation is a basic tool for progress in any society or community. It is so important that any area of development must not lose sight of it.

**Social skills and extraversion.** Several theoretical perspectives highlight social skills as an important factor in achieving high performances. Hogan and Shelton (1998, pp. 131-137) claim that this concept is crucial component of performances, since it provides reaching the both individual and organizational goals. According to Mohrman i Cohen (1995, p. 384), social skills are needed to individuals, in order to provide them an effective communication, as well as enabling to achieve goals.

Parker and Asher (1987) claim that social skills are necessary to provide academic success, due to the fact that students with poor social skills do not make high academic performances. To be advanced, every student must to realize how to develop self-esteem and healthy relationship (Gresham & Elliot, 1990), since Wentzel (1993) found classroom behaviour to be important in academic performances achieving. Nevertheless, the relationship between social skills and extraversion is still not clear due to the fact that research from this area are very limited. Saklofske (2006) claim that social skills have an impact on extraversion but through the elements of emotional intelligence. If we take into consideration a specific theoretical framework, then we can highlight several of them who suggest that social skilled individuals are those with



extraversion type of personality (Eysenck, 1967). In this sense, one of the aim of the paper is to investigate and establish the relationship between mentioned concepts.

**Extraversion and performances.** Recent studies are mostly upon agreement with the fact that dimensions of Big Five Model contribute creating comprehensive personality understanding (Goldberg, 1992; John & Srivastava, 1991), given that the Model and its dimensions provide meaningful systematization in studying individual differences (Shi, Ling, Wang & Wang, 2009). The Model is consisted by well-known five dimensions namely Agreeableness, Conscientiousness, Emotional stability, Extraversion and Imagination (Judge, Heller & Mount, 2002; Barrick & Mount, 1991). However, in a focus of this study is extraversion, given that the dimension is often researched as a predictor of performance in many contexts (Blickle et al., 2015; Klumper et al., 2015; Macht et al., 2014; Eysenck, 1974).

Research proposed by Chi et al. (2012) claims that high performances depend on Extraversion, while introverts show lower level of performance. On the other hand, early researches brought by Savage (1962) and Child (1964) highlight introverts as a better performers, which obviously is not along the same lines with the study offered by Chi et al. (2012). Extraversion is sometimes negatively related to performance according to a meta-analysis offered by O'Connor and Paunonen (2007), while other studies show mixed results. Besides, extraversion has been found to be moderating variable between idea generation and performance (Jung et al., 2012), which could be one of the recommendations for upcoming researches.

**Innovativeness and performances.** It is expected for personal innovativeness to influence both job and academic performance. This impact is based on the premise that individual who is innovative will be more adaptive to changes and thus achieve better performances. This expectation is in the accordance with the definition of the personal innovativeness i.e. individual who will adopt new idea relatively earlier than other members of a social system are expected to be more successful (Amabile, 1998; Oldham & Cummings, 1996).

This is very important nowadays, bearing in mind continuous changes in business and education environment. Relation between personal innovativeness and student's performance is mainly analysed with the usage of technology as a mediating construct lately (Khanlarian & Singh, 2015). However, many studies reported that innovative and creative students will achieve better academic performance (Yamamoto, 1964). Many course curriculums encourage and request for innovative ideas and behaviour of students. With this regard, it is worldwide trend in teaching students courses which are related to idea generations, innovations and start-ups. In other words, students are asked to be innovative. Personal innovativeness or creativity is defined as *"the ability to make or bring to existence something new, whether a new solution to a problem, a new method or device or a new artistic object or form"* (Olatoye et al., 2010).

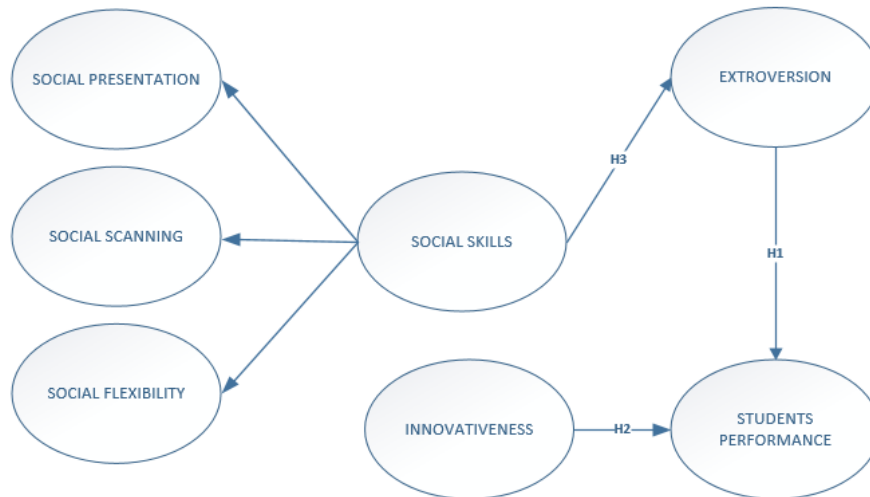
In accordance with theoretical assumptions and previously explained relationships recognized in the literature, we formulated hypotheses as answers on research questions. These hypotheses will be the main subjects of this paper's analysis:

H1: Extraversion is positively related to the student's academic performance.

H2: Innovativeness and students' academic performance are positively related.

H3: Social skills are positively related to the extraversion characteristics of students.

**Figure 3. Research model**



Source: Author's illustration

### 3. Data analysis

The primary goal of this study was to evaluate student's attitudes and beliefs how their personality and innovativeness have an important influence toward better academic performance. The identification of these important personal characteristics as crucial and valuable predictor for academic success will have an important practical implications as well as the contribution to the knowledge. For example, with identification of these predictors, school managers, teachers and students may have different approach for further study and learning process. We employed Lisrel 8.8. software tool for testing research hypothesis.

#### 3.1 Instruments

The questionnaire used for the purpose of this paper had one-dimensional scales for two constructs (extraversion and innovativeness) and multi-dimensional scale for construct social skills. Besides, the questionnaire was consisted of two parts: demographic questions and questions related to the constructs of the research model (extraversion, innovativeness and social skills). Each item corresponding to the constructs was measured using seven-point Likert scale with choices ranging from "Strongly disagree" (1) to "Strongly agree" (7) and were adopted from the literature, with minor changes in wording regarding to a specific research context.

- The measurement scale for the *extraversion* is adopted from Francis et al. (1992). However, considering that the authors of this research were developing a wider personality measuring scale for, we adopted only the part related to extraversion. Also, we have started with all the items that the authors offered in their paper. After CFA, a certain

number of items are removed. Ultimately, 6 items is used in this research which is same as the final measuring scale of Francis et al. (1992).

- *Social skills* is the ability to effectively interact with others and, again, we adopted full measurement scale from the research of Wu (2008). In his research, Wu (2008) developed measurement scale for the social skills in order to analyse its importance in the workplace. Based on the EFA and CFA results, we removed a few items so the final measurement scale had 18 items.
- The measurement scale for the *innovativeness* is adopted from the Marcinkiewicz (1993) with minor changes during translation of items.
- Academic performance can be defined as “*the assessment issued by the school as a particular kind of educational evaluation specially characterized by the decisions that trigger its realization*” (Puerta, 2015). However, many researches use self-evaluation measurement scales for *students’ academic performance*. In this regard, we used the scale from the Pintrich & Groot (1990). They also measured the impact of certain students’ psychological and cognitive characteristics on their performance.

The definitions of concepts that are the subject of analysis of this paper are given in the table below. Besides, information on authors of each adopted scale are also provided.

**Table 1. Definitions of constructs and source of selected scales**

<b>Construct</b>	<b>Definition</b>	<b>Scale adopted from</b>
Extraversion	“A trait characterized by a keen interest in other people and external events, and venturing forth with confidence into the unknown” (Ewen, 1998, p. 289).	Francis et al. (1992)
Social skills	“An individual's ability to express positive and negative feelings within the interpersonal context.” Hers and Bellack (1977)	Wu (2008)
Innovativeness	“The degree to which an individual or other unit of adoption is relatively earlier in adopting new ideas than other members of a social system”. Rogers (1995)	Marcinkiewicz (1993)
Student performance	“How students deal with their studies and how they cope with or accomplish different tasks given to them by their teachers?” (Helou & Rahim, 2014).	Pintrich & Groot (1990)

Source: Author’s illustration

### 3.2 Data collection and sample

Empirical study was conducted at the School of Economics and Business, University of Sarajevo. The questionnaires were delivered online using Limesurvey software tool to undergraduate students at the end of the summer semester 2016, from May to June 2016. Out of 350 students who accessed the survey, 185 completed and usable questionnaires were returned, corresponding to net response rate of approximately 53%. Analysing the demographics of the respondents, we found that 72,43% were female and 27,57% were male. Detailed demographics of the respondents are shown in Table 2.

**Table 2. Demographics characteristics of the respondents**

<b>Questions</b>	<b>F</b>	<b>%</b>
<b>Gender</b>		
Female	134	72.43
Male	51	27.57
<b>Study year</b>		
1 <sup>st</sup>	58	31.35
2 <sup>nd</sup>	121	65.41
3 <sup>rd</sup>	6	3.24
<b>Program</b>		
Economics	9	4.86
Management	160	86.49
Business Management	16	8.65
<b>Years Average</b>	20.86	
<b>Grades Average</b>	6.91	

*Source:* Author's illustration

## 4. Analysis and results

For the analysis, we followed two-step procedure suggested by Anderson & Gerbing (1988). At the beginning, we examined measurement model in order to test convergent and discriminant validity. In the second step, we tested structural model with primary goal to test the strength and direction of the relationships among theoretical constructs.

### 4.1 Analysis of the measurement models

Convergent validity shows degree to which items of the instrument are related and it was assessed based on Fornell & Larcker (1981) criteria as following:

1. All factor loadings (Alpha coefficient) should exceed 0.5;
2. Construct reliabilities (CR) should exceed 0.8;
3. Average variance extracted (AVE) should exceed 0.5.

Results of confirmatory factor analysis for all research variables are presented in Table 3 and they verify the theoretical measurement model.

**Table 3. Results of convergent analysis***Source:* Author's illustration

Measurement variable	Standardized factor loadings	t- value	Std. errors	CR	AVE
Are you a talkative person?	0.752	-	0.435	0.897	0.565
Do you enjoy meeting new people?	0.836	11.728	0.302		
Can you usually let yourself go and enjoy yourself at a lively party?	0.793	11.016	0.372		
Do you usually take the initiative in making new friends?	0.794	11.068	0.370		
Can you easily get some life into a rather dull party?	0.762	10.532	0.419		
Do you like plenty of bustle and excitement around you?	0.840	11.799	0.294		
People tell me that I have good manners.	0.727	-	0.472	0.895	0.589
I can express my ideas easily.	0.711	10.941	0.494		
I can start a pleasant conversation.	0.827	13.758	0.316		
People often say that I am good at expressing myself.	0.858	9.842	0.566		
I am very good at presenting myself in a social situation.	0.719	11.115	0.483		
I am well aware of how to present myself in social interactions.	0.751	11.847	0.435		
I am able to read people well.	0.770	-	0.407	0.899	0.529
I know when people are upset.	0.738	10.366	0.455		
I can usually tell if someone is lying.	0.759	10.703	0.424		
I am good at sensing what other people are feeling.	0.784	11.114	0.386		
I seem to know people's true feelings no matter how hard they try to hide them.	0.841	12.079	0.292		
I pay close attention to people's nonverbal behavior.	0.534	7.204	0.715		
I am able to accurately assess someone's general character upon the first meeting.	0.669	9.261	0.552		
I know when people enjoy the conversation.	0.682	9.453	0.535		
I am able to fit in any social situation well.	0.928	-	0.140	0.883	0.658
I am able to adjust my behavior quickly.	0.867	17.348	0.249		
I am able to engage in conversations with people who have different backgrounds.	0.696	11.539	0.516		
I fit in with just about any crowd.	0.730	12.488	0.467		
I rarely trust new ideas until I can see whether the vast majority of people around me accept them.	0.791	-	0.374	0.866	0.525
I am usually one of the last people in my group to accept something new.	0.818	12.050	0.331		
I am reluctant about adopting new ways of doing things until I see them working for people around me.	0.870	13.443	0.243		
I must see other people using new innovations before I will consider them.	0.824	12.183	0.320		
I often find myself sceptical/wary of new ideas.	0.775	11.538	0.400		
I tend to feel that the old way of living and doing things is the best way.	0.587	8.250	0.655		
Compared with other students in this class I expect to do well.	0.697	-	0.515	0.878	0.548
I'm certain I can understand the ideas taught in this course.	0.602	7.536	0.637		
Compared with others in this class, I think I'm a good student.	0.816	9.965	0.335		
I am sure I can do an excellent job on the problems and tasks assigned for this class.	0.807	9.871	0.350		
I think I will receive a good grade in this class.	0.773	9.514	0.402		
My study skills are excellent compared with others in this class.	0.724	8.961	0.476		

This model indicates that each measurement model has a strong internal reliability and that is appropriate in comparison to all generally recommended standards. All our measures fulfilled the recommended levels of composite reliability and average variance extracted. The standard loadings for each research variable are significant ( $t > 1.96$ ) (Anderson & Gerbing, 1988).

#### 4.2 Analysis of the structural model

In the second step, we tested structural model with primary goal to test the strength and direction of the relationships among theoretical constructs. According to Schumacker & Lomax (2004) no single index can serve as the only standard for judging the quality of a model. We adopted and followed recommended indices and their respected values from Bentler (1989) and Hair et al. (2010) which we presented in Table 4.

**Table 4. Results of fit indices for structural model**

<b>Goodness-of-fit measure</b>	<b>Recommended value*</b>	<b>Structural model</b>
Chi square/degree of freedom	$\leq 3.000$	<b>1.590</b>
Normalized fit index (NFI)	$\geq 0.900$	<b>0.908</b>
Non-normalized fit index (NNFI)	$\geq 0.900$	<b>0.957</b>
Comparative fit index (CFI)	$\geq 0.900$	<b>0.960</b>
Root mean square error of approximation (RMSEA)	$\leq 0.100$	<b>0.056</b>
SRMR	$\leq 0.050$	<b>0.093</b>

\* Recommended values have been adopted from Hair et al. (2010) and Bentler (1989).

Source: Author's illustration

As shown in Table 4, almost all listed indices are above thresholds of the recommended values. That fact gives us the right to conclude that our model presents a good fit. In other words, the collected data are matching the research model.

**Table 5. Results of discriminant validity**

	<b>INNO</b>	<b>SOCP</b>	<b>EXTRA</b>	<b>SOCS</b>	<b>SOF</b>	<b>PERF</b>
<b>INNO</b>	0.783					
<b>SOCP</b>	0.035	0.734				
<b>EXTRA</b>	0.033	0.803	0.802			
<b>SOCS</b>	0.024	0.573	0.537	0.727		
<b>SOCF</b>	0.033	0.813	0.763	0.544	0.811	
<b>PERF</b>	-0.022	0.302	0.376	0.202	0.287	0.740

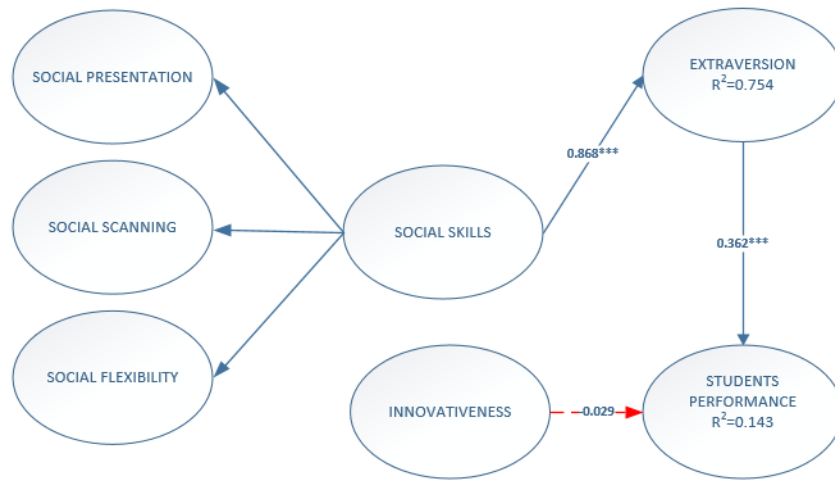
Source: Author's illustration

Table 5 shows the results of discriminant validity of latent variables based on square root of their respective average variance extracted (Fornell & Larcker, 1981). As table shows, the square root of average variance extracted for most of the variables is greater than the off-diagonal correlations, suggesting satisfactory discriminant validity among variables.

### 4.3 Hypotheses testing

To examine the statistical significance of proposed causal relationships we applied a t-test. We have found, as Figure 2 and Table 6 show, that Social skills has a significant and positive effect on Extraversion ( $\beta=0.868, p<0.001$ ) and that Extraversion has significant and positive effect on Student performance ( $\beta=0.362, p<0.001$ ). With these results, our hypotheses 1 and 3 are therefore supported. On the other hand, hypothesis related to the positive impact of innovativeness to student performance were not supported ( $\beta=-0.029, p>0.05$ ).

**Figure 4. SEM results of the proposed model**



\*P < 0.05; \*\* p<0.01; \*\*\* p<0.001.

Source: Author's illustration

**Table 6. Hypotheses testing**

Hypotheses	Standardized coefficient	T-value	Results
H1: Extraversion → Performance	0.362	4.418	Supported
H2: Innovativeness → Performance	-0.029	-0.457	Not supported
H3: Social skills → Extraversion	0.868	10.474	Supported

Source: Author's illustration

Also, with proposed model we manage to explain 75% of the variance in Extraversion ( $R^2=0.754$ ) and 14% of the variance in Students performance ( $R^2=0.143$ ). Discussion related to results of our analysis is presented below.

## 5. Results discussion and conclusion

This study attempts to answer an important questions related to the personality factors that affect students' academic performance. By comparing the students' extroversion and innovativeness tendencies as well as social skills with the self-evaluated performances, we attempted to confirm

or dispute the presence of the relationship between social skills and extroversion, extroversion and performance and innovativeness and performance. Our results indicates that social skills relates to the extraversion and extraversion impacts students' academic performance. This influence is in accordance with previous researchers (Chi et al. 2012; Eysensk, 1967) and proposed Achievement Goal Theory, which has been the theoretical basis of the paper. Results of our research doesn't support the relation between innovativeness and academic performance. This relation has been investigated by many educational researchers and psychologists over the past decades. Some researchers have called this characteristic as innovativeness while other refer to it as creativity. Some results supported relation between creativity and students' achievement (Asha, 1980) while other failed to prove it (Marjoribanks, 1976). Ai (1999) concluded that the relation between creativity and academic achievement is very complex and it requires an analysis of other control variables. Most of the researchers have dealt with some concepts as mediating constructs between innovativeness and students performance, and mostly usage of different types of technology.

These results are very important indicating that individuals should try and pursue to develop these skills. Importance for the educational institutions is even greater. Educational institutions and society should develop programs that would enable introverts to develop appropriate skills that will help them to communicate effectively with others, but also to succeed in education.

Main limitation of this study is that it included only students of one school. Future research should examine these propositions within longitudinal research design to examine the propositions among a number of student of different studding areas. Then, systematically evaluation of the proposed structural model can be analysed. However, because of the complex nature of the personality characteristics, a key challenge for future research should be on model development which will include as many characteristics related to persons' abilities and skills to interact with others and socialize. In other words, future research can extend the proposed model by digging deeper into the psychological characteristics of students.

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# USER ACCEPTANCE AND USE OF MOBILE INTERNET IN BOSNIA AND HERZEGOVINA: APPLYING AN ADAPTED UTAUT2 MODEL

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## Abstract

The purpose of this paper is to examine user behavior in the context of technology innovation. This paper proposes applying Extended Unified Theory of Acceptance and Use of Technology (UTAUT2) model to explore mobile internet adoption in a developing country.

The adapted UTAUT2 model includes a new predicted variable called Quality of Technology. This research measured its impact on Intention to Use and Use of Mobile Internet moderated by Gender, Age and Experience. Quality of Technology was tested through four variables: Speed of access to internet, Availability, Connection Stability and Response Time. It was also assumed that Motivation does not have a merely hedonistic character.

The objective of the empirical research was to test the adapted UTAUT2 model by applying structural equation modelling (SEM) using LISREL software solutions. The research was firstly done by a pilot study followed by a survey of a statistically relevant sample. The pilot study was conducted to test the validity and reliability of the questionnaire. SEM includes confirmatory factor analysis (CFA), path analysis, partial least squares analysis and modelling latent variables. The sample for the quantitative survey has a total of 562 respondents. The target population consists of mobile users. The "snowball" sampling method was applied. The direct and indirect effects on the new variable by applying moderator analyses were checked.

The results confirmed that Quality of Technology has a significant impact on Intention to Use and is not dependent on moderators. Furthermore Quality of Technology has also a significant impact on Use of Mobile Internet and is dependent on Experience and Age regardless of the fact whether they are men or women.

This paper confirmed that the adapted UTAUT2 model with Quality of Technology as a new variable can be applied in a country in transition. It recommends testing this extended model in other similar countries.

This research will fill a gap in the theory of user acceptance of technology, especially because the UTAUT2 model has not been applied in the Balkan region so far.

**Keywords:** UTAUT2, mobile internet, quality of technology, developing countries

**JEL classification:** M30, M39, O33

## 1. Introductory discussion

In the late 20<sup>th</sup> and early 21<sup>st</sup> century, Information and Communication Technologies – ICT have experienced a significant development and impact on the prosperity of social communities and business organizations. The concept of information and communication technology is the integration of telecommunications, computer devices and necessary software and applications which allow users to access information, store and manipulate them (Rouse, 2005). The accelerated development of information and communication technologies gave rise to various research trends in this area, including the acceptance or adoption of the technologies and their use. Technology acceptance implies conditions under which an information system is accepted and used (Venkatesh & Davis, 2000). Technology acceptance models can be used in order to predict the future use of information systems to measure the acceptance of the existing systems. Information and communication technologies have offered, to humankind, uses reflected in the access to and manipulation of information in a faster and simpler way.

Mobile internet appeared as a result of the fusion of technological innovation in the area of electronics and mobile communication, and is included in information and communication technologies. There are many different definitions of mobile internet, which are used in different contexts. One of the oldest definitions is one that defines mobile internet as using the internet via mobile devices (Francis, 1997). The definition of the mobile internet that is acceptable for this paper is that the mobile internet is a wireless access to digitalized content on the global network, the internet, using mobile devices (Chae & Kim, 2003).

Although the mobile internet appeared some fifteen years ago, this technology can still be viewed in the context of technological innovation, since its use in underdeveloped and developing countries is still incomparably smaller than in developed countries (ITU, 2014), and there is no replacement for it yet. According to Chigona, Kamkwend and Manjoo (2008), mobile internet is innovation, which constitutes a new way of internet access in area where people do not have the privilege of accessing the internet in the traditional way, i.e. by wire or fixed access. Given that this research was conducted for South Africa, where vast areas are still not covered with any infrastructure, mobile internet is indeed an innovative way of networking South African population with the internet world. It also points to the possibility that in countries with poor cable infrastructure it is more profitable to invest in wireless technologies, which allow access to mobile internet, than in traditional technologies such as fixed telephony or cable internet, and in this way to practically skip the usual sequence of technology adoption typical of developed countries. According to a report by McKinsey Company (2013), mobile internet is included in one of the 12 technologies that have shaken the world.

According to the same report, the number of mobile internet users of 47.2% was supposed to exceed the number of fixed internet users, regardless of the fact that fixed internet is a far older technology used since the early 1970s. The accuracy of these assumptions has not been established by the time this paper was finalized. With respect to data on the regional use of mobile internet for 2014, it is noted that the mobile internet penetration is greatest in Europe and America, amounting to around 78%, while Africa is the only region where the penetration is below 20%. The average mobile internet penetration in developed countries is at the level of 87%, while in the developing countries it is at the level of 39%. From the aspect of price analyses, it is said that the average monthly bill of the basic mobile internet package user is up to twice higher in the developing countries than in the developed ones. The comparisons were made

according to the principle of purchasing power parity. Figure 1 shows some results from the ITU report.

In Bosnia and Herzegovina, the telecommunication market and mobile internet presence are not nearly at the same level of development as in the European or American countries. Indubitably, the potentials of such a potent market are not nearly utilized as in the countries of the region, even less than in the developed world. According to the latest Agency's report (2015) approximately 95% population in Bosnia and Herzegovina constitute the base of mobile telephony users. However, only 26% of the population uses the mobile internet, which is far below the European average, even the average for developing countries.

The subject of research includes the acceptance and use of mobile internet in Bosnia and Herzegovina. The research is aimed at examining the impact of Quality of Technology on the Intention to Use and Use of Mobile Internet, and testing the applicability of the UTAUT2 Model, which was expanded with the variable Quality of Technology, and where the variable Motivation was modified. The assumption that constituted the starting point of the research is that Quality of Technology affects the Intention to Use and Use of Mobile Internet in the developing country, and that the Use of Mobile Internet is also affected by other motives besides the hedonistic ones.

In order to reach the set goal and define the conceptual model of the research it was necessary to become familiar with the known theories and models for technology acceptance. The following section initially explains the role of mobile communication and mobile internet's effect on humankind, and presents the penetration of this technology in the world.

## **2. Literature overview**

The basis for the research includes theories on mobile internet acceptance and discovering factors that affect mobile service users' acceptance or non-acceptance of mobile internet as a technological innovation. Extended and Unified Theory of Acceptance and Use of Technology (UTAUT2) (Venkatesh, Thong & Xu, 2012) was used as the reference model. The key topics studied in the paper include technological innovation and the concept of technology acceptance, mobile internet as an information and communication innovation, theories and models describing the process of technology acceptance by users with the focus on the UTAUT2 model, and the significance of infrastructure quality and its effect on mobile internet acceptance.

Technology in human society has evolved over the past few thousand years. There are several definitions that describe technology, and a common element in them is that all of them describe technology as a process that develops and is used continually in order to satisfy people's needs and desires. There are two technology components that are the subject of various stakeholders' research: the nature of technology and its impact on change acceleration. The nature of technology reflects the evolutionary development from the idea up to the acceptance and optimization of the technology over time. When a technology reaches maturity, a need often arises for introducing innovative combinations with other technologies to avoid their decreased usage.

Studies dealing with individuals' intentions to purchase, consume services or goods belong to the area of user behavior research. Researchers strive to understand the process and activities that make an individual to make a decision on accepting and using a new technology. In the age of extremely fast changes, the survival or growth of many companies depends on the knowledge of user behavior. Many users are not aware of external effects that spur them to make a decision on accepting, using or purchasing a product or service. There are many definitions of user behavior.

According to the definition by the American Marketing Association of 2001, user behavior is a “dynamic interaction between recognition and events (effects) from the environment whereby human beings change aspects of their lives”. User behavior undergoes two stages, a cognitive (recognizing) and social (effective, active, which implies adopting a view, intention and a given behavior) (Kesic, 1999). User behavior consists of activities that are directly involved in viewing, using and disposing with a product or service, including the decision-making processes that precede and determine these activities.

As explained earlier in the paper, the degree of acceptance and use of mobile internet in developing countries is not at the level registered in the developed world countries. The basic theories applied on explaining the acceptance and use of technologies include Diffusion of Innovations (Rogers, 1995), TRA (Ajzen & Fishboin, 1980), TAM (Davis, 1989), TAM2 (Venkatech & Davis, 2000), UTAUT (Venkatesh et al., 2003), UTAUT2 (Venkatesh et al., 2012). The Quality of Technology factor was examined in other available studies.

The expanded UTAUT model (Extended Unified Theory of Acceptance and Use of technology – UTAUT2) interprets the technology acceptance by users beyond the business environment, which in turn implies the voluntary, rather than imposed use of technology. It is one of the basic differences between UTAUT and UTAUT2 models, and that is why Venkatesh et al. (2012) remove the indirect variable Voluntariness from the UTAUT model considering it as irrelevant, since the use of a new technology is not imposed on users; instead, they decide about it on their own. Further, besides modifying some of the existing four constructs in the UTAUT model, they introduce three new constructs in the UTAUT2, as is shown in Figure 1.

In this theory, Venkatesh modifies interpretations for four constructs of the UTAUT model. Here are the definitions of variables in UTAUT2 model:

Performance Expectancy (similar to the construct Performance Expectancy in the TAM model) is the degree in which the use of the new technology will be useful for users in performing other activities;

Effort Expectancy (similar to Effort Expectancy in TAM) primarily refers to the Simplicity of using the new technology;

Construct Social Influence signifies the impact of individuals essential for the user (from the circle of family, friends, colleagues, public) on his/her views of the technology, its acceptance and use. In earlier papers, this construct was defined as Group influence (TAM2).

Construct Facilitating Conditions includes conditions under which an individual uses the technology.

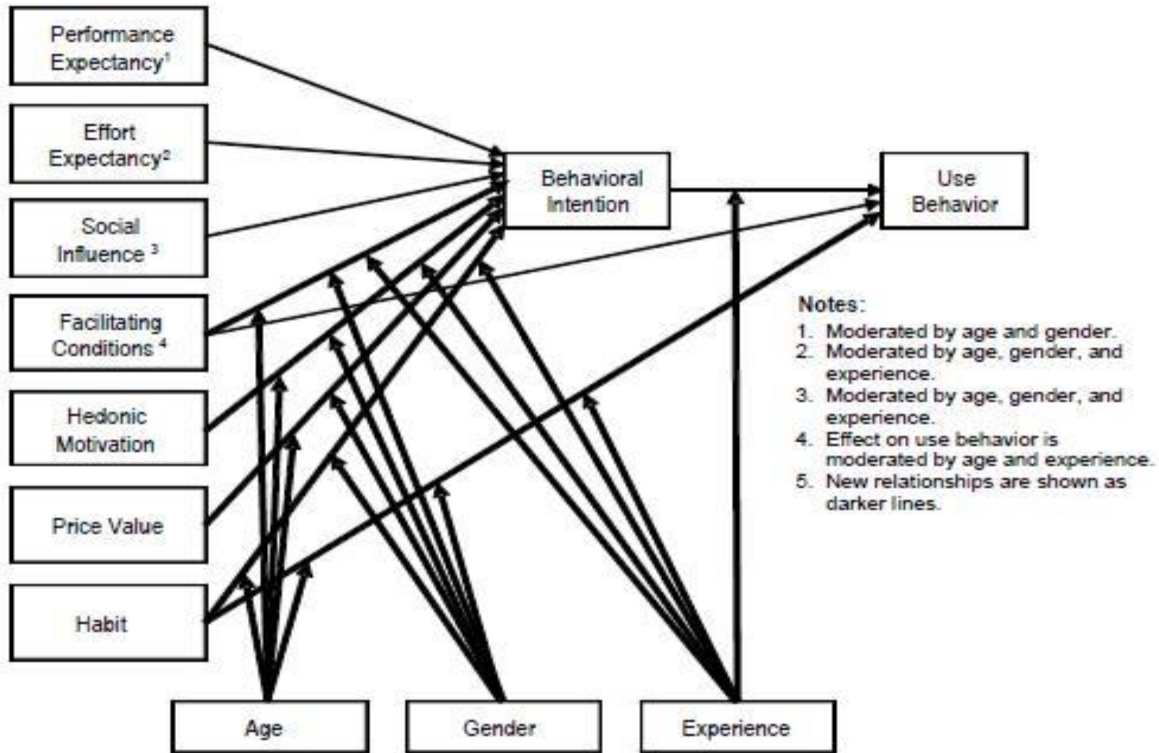
The three new constructs introduced into the UTAUT2 model by Venkatesh (2012) are: Hedonic Motivation, Value and Habit. These constructs are defined and explained below.

Hedonic Motivation is a construct that implies entertainment and pastime as basic reasons why users use a new technology.

(Price) Value – a factor that includes costs that a user must bear in order to have the opportunity to use the new technology. Venkatesh analyzed costs in his earlier papers as well (Brown & Venkatesh, 2005), same as other authors (Dodds, Monroe and Grewal, 1991; Coulter & Coulter, 2007; Chan et al., 2008) and could not ignore the significant impact of costs on the acceptance and use of technology.



**Figure 1.** Extended Unified Theory of Acceptance and Use of Technology



Source: Adapted from Venkatesh (2012)

Habit – This construct has a crucial effect on technology use. Dodds (1991) proved that Habit has a direct effect on Use and Intention to use. Limayem, Hirt & Cheung (2007) treat habit as a measure according to which users use a technology by automatism, based on the already acquired experience; in other words, habit essentially reflects the previous experience. According to Venkatesh (2012), habit has a direct impact on the use of technology while the absence of habit weakens the correlation between Intention to use and Use of Technology.

According to Cullen’s report (2014), acceptance of the internet is closely related to infrastructure development, i.e. to the National broadband plan (NBBP), which includes the analysis of the conditions on broadband development in 15 countries. Particular goals set in some countries include covering the areas that pertain to the internet accessibility. These are goals that pertain to the development or improvement of infrastructure.

The available studies prove that there is a correlation between infrastructure development, acceptance and use of mobile internet. Actually, huge capital resources (money, knowledge, time) are spent on the development and sustainability of any innovation, and if they fail in any way it inevitably affects a lower productivity and lower standard of living (James, Dan & Ray, 1983). The necessary prerequisites for using possibilities offered by mobile internet include a high-quality mobile internet and mobile device (Chae & Kim, 2003; Koh et al., 2011).

The quality of mobile internet is described by several variables such as speed of accessing content, signal coverage or, briefly, quality of infrastructure (Feng et al., 2011; Jeon, 2008; Ahmed & Qazi, 2011). If infrastructure is modestly developed, it is assumed that the lower quality of technology has a negative impact on the intention to use and use of mobile internet.

The analysis of quality in internet context was also dealt with by Jayawardhen (2004), who viewed the internet as a service, rather than technology; he therefore adjusted the original SERVQUAL scale and developed 21 elements that can measure the quality of e-banking. After an exploratory and confirmatory factor analysis, the 21 elements were grouped into five quality dimensions: access, website, trust, attention and credibility. Although the described research pertains to e-banking, it can be claimed that the quality dimension denoted as *access* should be a particularly important factor of quality for mobile internet as well, since this dimension is even more sensitive because internet access is achieved wirelessly or in motion. The acceptance of mobile internet in developing countries often encounters insurmountable barriers. Most often these include a lack of national infrastructure (Odedra et al., 1993), capital resources or government policies that have not provided prerequisites for the so-called technology transfer, i.e. displacement of the old technology by the new one (Goodman & Green, 1992). With respect to technology acceptance, Mahler and Rogers (2000) determined that there is a correlation between the innovation's attributes and characteristics of the network needed for using the innovation. They claimed that the existence of a difference in the process of technology acceptance can be explained by the very differences between network effects of the two technologies, which they demonstrated on the example of mobile and fixed telecommunication services.

The conceptual research model is a modified UTAUT2 model adapted due to the conditions of a developing country with the variable Quality of Technology. The new construct essentially implies the users' perception of the technical quality of mobile internet. The concept technical quality of mobile internet (Lu et al., 2008) reflects the quality of infrastructure (Unyolo, 2012) which allows access to mobile internet. The research used variables according to Jeon (2008), who showed that users create the perception of the mobile internet quality based on the following factors: Connection stability, Reachability and Instant Connectivity.

The conceptual model used in the paper derives from the analysis of the available literature. It is based on the Extended Unified Theory of Acceptance and Use of Technology, UTAUT2 (Venkatesh et al., 2012).

The independent variables include Performance Expectancy, Effort Expectancy, Social Influence, Facilitating Conditions, Value, Habit taken from the basic UTAUT2 model, Motivation (here a modified basic variable since we deal both the hedonic and business motivation), and Quality of Technology as a new variable of the study, while the dependent variables include Intention to Use and Use, also taken from the basic UTAUT2 model. Intention is a degree to which an individual plans to implement (or not) the future behavior. The moderating variables discussed include all the three demographic variables of Venkatesh's model: Age, Experience and Gender.

### **3. Methodology**

In the paper, the quantitative research was applied in two stages. A pilot survey was conducted prior to distributing questionnaires in order to collect primary data. The aim of the pilot research was to measure the validity and reliability of the questionnaire (Nunnally & Bernstein, 1994; Bhattacharjee, 2004, 2012), i.e. to discover errors or difficulties in understanding the questionnaire. The questionnaire was based on the original questionnaire (Venkatesh, 2012), and the variables describing the Quality of Technology on Jeon's research (2008). The primary research used online surveys with the snowball method. The expected number of responses to the

research was 800. The number of valid responses collected for the research was 562, and thus the response rate was 70.25%.

## **4. Research findings**

Primary data were analyzed using structural equation modeling (Head & Ziolkowski, 2010). This method is considered to be the most appropriate for analyzing relations between the latent and manifest variables, and relations between constructs. Structural equation modeling has become the dominant method for testing the existing theories in social sciences, particularly for studies related to information systems and technologies (Freeze & Rasche, 2007; Polites, Roberts & Thatcher, 2012) and marketing (Hair, Ringle & Sarstedt, 2011; Hair, Sarstedt, Ringle & Mena, 2012). The analysis will above all include a descriptive analysis, and the data will then be processed using the structural equation modeling (SEM), the so-called covariance-based SEM.

The respondents' demographic profile reveals that there is a disproportion between the numbers of male and female respondents in favor of the male respondents, who constituted 63.9% as opposed to 36.1% female respondents. Most respondents were aged 18 to 25. Almost all respondents have previously used mobile applications and have them installed on their mobile devices. Besides, most respondents have less than five months' experience in using mobile internet, and 32.7% of all respondents are employed in privately-owned companies. Most respondents, 52.8% of them, have university-level education. For future research, it would be interesting to explore the impact of these two moderating factors, the kind of employment and education, on the Intention to Use and Use of Mobile Internet.

### **4.1. Confirmatory factor analysis**

In order to deal with the issue of the set research goals of the analysis, i.e. test the factorial structure of the adjusted UTAUT2 model (Intention and Use of Mobile Internet), on a sample of 562 respondents, a confirmatory factor analysis was conducted. Each of the ten dimensions of the UTAUT2 model (Performance expectancy, Effort expectancy, Social influence, Facilitating conditions, Motivation, Values, Habit, Quality of Technology, Intention to Use, and Use) was formed as a latent variable with two, three or four associated indicators each.

The value of indices calculated on the model with the collected primary data, as well as relations between variables of this conceptual model, for a ten-factor model amounts to ( $\chi^2/df = 3,703$ ), and is smaller than the recommended value of  $\chi^2/df \leq 5$ , which indicates that the data are appropriate, i.e. that the model is set up in an appropriate manner. The standardized root mean square residual (RMSEA) equals 0.10, which indicates that the degree of model's fit is within limits of acceptability. The goodness-of-fit index (GFI = 0.877), as well as indices that pertain to the overall amount of explained variance range between values of 0 and 1 (CFI = 0.808, NFI = 0.879), and the fit is better if the values are closer to 1, which is the case in our research.

A review of Table 1 reveals a greater number of statistically significant positive correlations. Greater positive correlations were obtained within relations between Use of Mobile Internet and Performance expectancy (PE), then between Use of Mobile Internet (UB) and Motivation (HE), and between Use of Mobile Internet (UB) and Habit (HT). The variable Intention to Use (BI) has significant positive correlations with factors Performance expectancy (PE), Motivation (HM) and Habit (HT).

In the correlation matrix it is evident that there are no negative correlations, beyond what was predicted in the conceptual model. No statistically significant correlation was measured between some variables, such as correlation between Performance expectancy (PE) and Value (PV), between Performance expectancy (PE) and Effort expectancy (EE), and between Performance expectancy (PE) and Quality of technology (QM). It is also evident that Use of Mobile Internet (UB) has a low positive correlation with Facilitating conditions (FC) and Value (PV). Intention to Use has lower positive correlations with Social influence (SI) and Value (PV).

**Table 1.** Correlation matrix

	PE	EE	SI	FC	HM	PV	HT	QM	BI	UB
PE	1									
EE	0,451	1								
SI	0,441	0,305	1							
FC	0,417	0,319	0,479	1						
HM	0,568	0,522	0,442	0,279	1					
PV	0,277	0,18	0,346	0,512	0,416	1				
HT	0,562	0,218	0,248	0,374	0,583	0,453	1			
QM	0,243	0,299	0,214	0,319	0,388	0,622	0,274	1		
BI	0,736	0,524	0,454	0,419	0,834	0,364	0,678	0,544	1	
UB	0,711	0,584	0,527	0,399	0,761	0,408	0,751	0,517	0,539	1

Source: Author

#### 4.2. Regression analysis (path analysis)

In order to understand the conceptual model, a regression (path) analysis was conducted. The conceptual model has eight constructs which were assumed to have some effect on the Intention to Use. There are: Performance expectancy, Effort expectancy, Social influence, Facilitating conditions, Motivation, Value, consumers' Habit and Quality of Technology, as well as two factors: Motivation and Quality of Technology, which are assumed to affect the Use.

**Table 2:** Regression of Intention to use and Use of Mobile Internet

Intention to use	R <sup>2</sup> = 67,4 %			
	Predictor variables	Coefficient	t - Value	P-Value
	Performance expectancy	,294	3,825	,000*
	Effort expectancy	,135	1,759	,079**
	Social influence	,049	,859	,390**
	Facilitating conditions	,793	7,236	,000*

	Motivation	,315	8,177	,000*
	Price value	-,082	-1,476	,141**
	Habit	,316	8,277	,000*
	Quality of technology	,146	3,662	,000*
Use	$R^2 = 55,2\%$			
	<b>Predictor variables</b>	<b>Coefficient</b>	<b>t - Value</b>	<b>P-Value</b>
	Motivation	,837	11,770	,000*
	Quality of Technology	,102	2,424	,016*

*Note:* \* indicates that p-value < 0.05, which means that the predictor variable is statistically significant *Note:* \*\* indicates p-value > 0.05, which implies that the predictor variable is not statistically significant *Source:* Author

The results have shown that three predictor independent variables do not have a statistically significant impact on the Intention to Use mobile internet, and that the other predictor independent variables do. Thus, Values, Effort expectancy and Social influence are variables whose impact on Intention to Use is not statistically significant. Besides, it means that the Intention to Use mobile internet among respondents is affected by Performance expectancy, Facilitating conditions, Quality of Technology and Habit. On the other hand, Use of Mobile Internet by respondents is significantly affected by both predictor variables: Quality of Technology and Motivation.

In the model with Intention to Use mobile internet as a dependent variable, the level of the explanation of the dependent variable using the model is  $R^2 = 67.4\%$ . In the model with Use as a dependent variable, the level of the explanation of the dependent variable using the model is  $R^2 = 55.2\%$ .

Besides, results show that almost all the predictor variables are statistically significant, except for Effort expectancy, Social influence and Value, whose p-value is higher than 0.05. This research has shown that all the independent variables have a positive effect compared to the Intention to use, as well as to Use, except for Value, which makes sense since the increase in prices leads to a decrease in the Intention to use. The path analysis has determined the direct and indirect contributions of the predictor variables to the explanation of the dependent variable, moderated by gender, age and experience.

#### 4.3. Significance of moderator variables in the model

In order to determine the effects of gender, age and experience as moderator variables on the significance of Quality of Technology in Intention to Use, a series of “Path” analyses were conducted.

The following section presents the results of the contribution of gender for the case of to what degree Intention to use depends on Quality of Technology. It has been established that gender accounts for 11.3% variance of Intention to use ( $R^2 = 11,3$ ). t-value has not changed compared to the initially calculated results (7.970).

Thus, with the control of gender, it was tested whether Quality of Technology has an impact on the Intention to Use mobile internet. The model set up in this way (without including the moderator variable of gender) only slightly more explains the variance Intention to Use ( $\Delta R^2 = 0,002$ ;  $p > 0,05$ ), compared to the initial model with the predictor and dependent variable. Thus, these results point to the conclusion that there are no indications that gender moderates the correlation between the value of Intention to use and Quality of Technology.

The research also tested the interaction effects to determine if Experience moderates the correlation between predictor variable Quality of Technology and Intention to Use. It was established that there is no interaction effect between Experience and Quality of Technology ( $\Delta R^2 = 0,002$ ;  $p > 0,05$ ). Separate analyses of the correlation of moderator and predictor variable on subsets of different experience categories also reveal that there is no statistically significant correlation in different categories ranging from ( $r=0,03$ ;  $p>0,05$ ) to ( $r=0,05$ ;  $p>0,05$ ). It can be concluded that experience has no moderating effects on the relation between Quality of Technology and Intention to Use.

Predictor variable Quality of Technology has not significantly changed the value of coefficient  $\beta$  after the introduction of a moderator variable in the analysis. Besides, no significant variations of t-value occurred after the introduction of moderator variable.

## 5. Concluding discussion

The confirmatory factor analysis confirmed that the model was set up in the appropriate way. All the obtained values of goodness-of-fit index indicate that the ten-factor adjusted UTAUT2 model fits data to a satisfactory degree.

The analysis showed that there are no negative correlations between the variables and that all the assumed variables affect Intention to Use and Use of Mobile Internet.

The result of structural modeling of the correlation of predictor and dependent variables revealed that almost all predictor variables are statistically significant, except for Effort expectancy, Social influence and Value, and that they significantly affect Use of Mobile Internet and Intention to Use. There were no problems with multicollinearity between predictor variables in the models. It was established that moderator variables do not affect relations between Quality of Technology and Intention to Use.

A great number of available papers that use theories and models for the acceptance and use of technology in the context of mobile telecommunications mostly pertain to the developed markets of Asia, America, Europe and Australia. However, papers pertaining to similar research related to the area of Bosnia and Herzegovina or even the region are not available.

The paper fills the gap in theoretical materials since this area is insufficiently studied and since it is not known why users in Bosnia and Herzegovina have not accepted mobile internet in the way and scope present in Western Europe. The paper gives a positive contribution to the theory dealing with user behavior in accepting and using technology, since it proved that the variable Quality of Technology, which has not been discussed so far in any known model of technology acceptance, has a significant impact on the mobile internet use in a developing country such as Bosnia and Herzegovina.

From the aspect of academic significance, the paper can form a basis for further research aimed at testing the UTAUT2 model, expanded with the variable Quality of Technology, on other technologies in Bosnia and Herzegovina or other developing countries, which could additionally contribute to the model improvement.

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# **THE EFFECTS OF BUSINESS INTELLIGENCE (BI) SYSTEM IMPLEMENTATION ON DECISION MAKING PROCESS IN FIRMS**

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## **Abstract**

Effective decision making is an essential characteristic of every worthy management practice. Fostering more accurate decision making process within companies has become an important aspect due to the fact that market is constantly changing and the number of competitors as well as potential customers is increasing. Usage of Business Intelligence (BI) can provide decision making authorities in the firm with precise information in a timely manner and, therefore, BI can support company's better positioning in the business market. The objective of the paper is to explore effects of implementation of BI system in Bosnian-Herzegovinian and Croatian companies which conduct business in various industries.

Big data is the next generation of data warehousing and business analytics. It includes data collection from numerous sources following appropriate analytics of selecting, processing and applying this data to make operational, strategic or tactical decisions. An interrelated set of business and technology drivers is reshaping the method by which BI will be deployed within the enterprise. However, BI is meaningless without users who read and interpret outputs and add knowledge to it. This makes human capital as one of the vital components of BI process. Hence, enterprises' agility may be considered as a capability to rapidly adapt and successfully respond to various environmental changes.

The purpose of this paper is to evaluate significance of link between usage of BI and quality of decision making process in all industry segments, including SME, corporate and public. Hypotheses include following statements: "Volume of the market share is linked to the usage or application of BI system within the firm", "Investment in BI system has a positive correlation with a firm's volume of market share", and "There is correlation between views and attitudes of examinees about BI development and competitiveness of the firm". Following statistical methods were applied in testing above mention hypotheses: Linear Regression, Two-sample t-test and

Pearson's correlation. The methods were selected in regard to type of variables - categorical, binominal, continuous or ordinal, within the primary data which was collected from around 200 companies in selected countries.

Research results show that adequate BI system allows easier interpretation of large volumes of data as well as improves identification of new internal and external opportunities and implementation of a strategy based on insights that can provide businesses with a competitive advantage and long-term stability. There are two main reasons why usage of BI provides added value to firms: more effective costs and income management by improvement in Return on Investment (ROI) ratio and constant development of firm's processes agility level. Hence, agile BI is not just supporting company in its proper adaptation to market dynamics, but it also positively affects the level of quality in firm's decision making processes.

Practical implications highlight the importance of organizational investments towards information technology (IT) development with purpose of improvement in responsiveness and agility. Specifically, organizations with greater IT investment levels tend to have more effective and efficient decision making processes and, thus, are more agile in responding to environmental fluctuations and turbulences.

**Keywords:** *business intelligence, information technology, decision making, effectiveness and efficiency, business strategy, human capital*

**JEL classification:** L15, M15, O33

# DIVERSIFICATION POTENTIAL OF SOUTH-EAST EUROPEAN EQUITY MARKETS

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## **Abstract**

Diversification potential enables investors to manage their risk and decrease exposure to it. Good diversification policy is a safety net preventing portfolio from losing value. Well-diversified portfolio is the one that contains different categories of property with low correlations, while highly correlated markets have feature of low possibilities of diversification. One of the biggest problems in the world of investments is to find the optimal portfolio for a set of available assets and a given amount of capital. There are numerous studies and mathematical models that deal with determining the investment in each portfolio that provide the greatest positive effects of diversification, taking into account the cost of spreading investments over several financial instruments. Modern portfolio theory seeks to find the optimal model that will achieve best results.

This paper tries to identify relationships between returns of companies traded in the South-East European equity markets. Markowitz mean-variance (MV) portfolio optimization method is used to identify possibilities of diversification among these markets. Principal component analysis (PCA) is used to determine components that describe strong patterns and co-movements of the dataset. Finally we combined MV efficient frontier and equity that represent PCA components to draw conclusions. Results of the paper have practical applications for investors.

JEL Classification: G11, G32

Keywords: Diversification, Stock Markets, Markowitz portfolio optimization theory, Principal component analysis

## 1. Introduction

The issue of diversification possibilities is always interesting to investors since diversification decreases the risk exposure. Other way of protection against risk exposure is hedging, but it can be costly. Market correlations affect the possibilities of diversification; more correlated markets lower the diversification possibilities.

In this paper we will investigate the integration and correlation of South-East European equity markets and their neighbouring markets. We will try to identify is there potential for diversification, and to which extent. More specifically, we shall focus our attention on addressing the following questions: Does it make sense to diversify portfolio though out the markets in question? How can we select stocks that create diversified portfolio and how many stocks are needed for efficient diversification?

For the purpose of the analysis we have used two methodological approaches: principal component analysis (PCA) and Markowitz portfolio optimization method.

The paper is divided into five parts. Section 2. Literature review provides an overview of theoretical background of the research on potential gains from diversification, and shows the results on previously conducted researches. Section 3 explains the methodology used for the analysis. Section 4 explains the data, gives the results of principal component analysis and identifies the diversification possibilities using Markowitz portfolio optimization method. Finally, brief summary and concluding remarks are given in Section 5.

## 2. Literature review

Notion of diversification is known to mankind since ever, as idiom: “*Never put all your eggs in one basket*”. Lowenfeld (1909) is to be considered as the first academic who introduced discussion on topic of diversification scientific cycles, while it was known subject much earlier among market practitioners. Modern understanding of diversification goes back to work of Markowitz (1952). With his work “Portfolio Selection” in 1952 author set the foundations to Modern Portfolio Theory and gave directions how to distinguish effective from ineffective portfolio. For the first time, Markowitz introduces efficient frontier, or as author referred to set of efficient mean-variance combinations (Markowitz and Todd, 2000) (return - mean return of investment and risk – square root of variance of returns). Thereby, he explains the portfolio space as space defined by the return and risk, where efficient portfolios are those that have highest returns for given risk, and lowest risk for given return. The total risk of an asset is divided on the idiosyncratic risk and the systematic risk where idiosyncratic is the risk that can be diversified while systematic cannot be diversified. Therefore diversification would represent combination of assets that reduces the idiosyncratic risk and leaves the group (portfolio of assets) only with, in ideal case, systematic risk (Bodie, Kane and Marcus, 2009). Markowitz diversification is defined a strategy that combines those portfolios that have correlation less than 1 (that are not perfectly correlated) with goal of minimizing risk while not decreasing return.

After emergence of Modern Portfolio Theory researchers investigated the possibilities of diversification on the market. Two opposite thoughts came out, one in favor and other against diversification theory. Shawky, Kuenzel and Mikhail (1997) synthesized researches in this field and identified the flow of thoughts. They argue that when looked ex-post data, there is potential

for international diversification while results for ex-ante data are questionable, since the correlations change through time. In the paper they also refer to authors who have investigated the importance and rapid growth of emerging markets and possibilities of diversification on those markets Claessens and Goptu (1994) and Tesar and Werner (1993). Finally, they concluded two important findings: it is difficult to determine an optimal investment strategy ex-ante because of an unstable correlation structure and stronger co-movements among international capital markets can be caused by increased worldwide integration, leading to reduced possibilities of international diversification. However, they concluded that: “...*there is compelling evidence in favour of international portfolio diversification as a reasonable method to reduce the risk of an investment portfolio without negatively affecting its expected return.*”

Analysis of South-East European (SEE) stock markets have been reported by several papers with conflicting findings, which makes this field of research interesting and challenging.

Guidi and Ugur (2014) identify three reasons for increased interest for this investment region. First, both European Bank for Reconstruction and Development (EBRD) and the European Union (EU) are encouraging financial reforms in these countries in order to enable them the inflow of FDI. Secondly, significant integration with EU markets has been reported as a result of increased trade and direct investment flows. Finally, market capitalization of these markets doubled as a percentage of GDP from 2000 to 2010. They analyzed the stock markets of Bulgaria, Croatia and whether they are integrated with developed counterparts in Germany, the UK and the USA. Static cointegration analysis showed existence of relation with German and the UK markets over the period 2000-2013, but not with the USA market. Further, they investigated diversification possibilities on these markets and concluded that there is existing potential. Diversification benefits did exist from September 2007 to June 2013 despite evidence of dynamic cointegration during most of the crisis period from September 2008 to May 2010. Syriopoulos and Roumpis (2009) investigated the short- and long-run behaviour of major emerging Central European (Poland, Czech Republic, Hungary, Slovakia), and developed (Germany, US) stock markets and the impact of the EMU on stock market linkages. They found that correlations between Balkan and developed stock markets are modest and stable over time. In contrary Guidi and Ugur (2014) reports that Syllignakis and Kouretas (2011) show that correlations between Central and South-Eastern European markets and the USA and German markets vary over time, with a tendency to increase during periods of financial turmoil.

Horvath and Petrovski (2012) compared Central and South Eastern Europe stock market's integration. As countries of Central Europe they included Czech Republic, Hungary and Poland, while for analysis of South Eastern Europe they included Croatia, Macedonia and Serbia. For the analysis they used GARCH models for period from 2006 until 2011. The analysis was divided according to these groups. As final conclusion they reported that the correlation is much higher for Central European than for South Eastern European stock markets. The correlation is essentially zero for South Eastern European stock markets with developed markets, where exception is Croatia which has a slightly higher integration with Western Europe, but lower than those of Central European stock markets.

Arnaut Berilo and Zaimovic (2014) conducted a unique research on subject of diversification possibilities between stock markets in Bosnia and Herzegovina and Germany. The trade of Bosnia and Herzegovina with Germany in 2015 amounted 15,7% of total export and 12% of total import, implying the importance of trade with Germany for Bosnia and Herzegovina. Arnaut Berilo and Zaimovic (2014) reported that German equity market is more mean variance efficient than the Bosnian. They conclude that investment spreading among these markets can decrease portfolio risk in the pre-crisis and post-crisis periods.

Several papers refer also to the diversification possibilities on a single market. Benakovic and Posedel (2010) use factor model approach to analyse movement of returns on fourteen stocks of the Croatian capital market in the period from 2004 to 2009. Kovacic (2007) investigated the behavior of stock returns in Macedonian Stock Exchange. Bogdan, Baresa and Ivanovic (2010) analysed portfolio consisted of stocks from Zagreb Stock Exchange and questioned whether there are any diversification possibilities within this market for chosen securities. They have identified the correlation coefficients among chosen stocks but were careful with reporting results since there was problem of low turnover and liquidity of stocks in question for analysed period.

### 3. Methodology

For analysis of diversification possibilities in this paper we will use two approaches: principal component analysis and Markowitz portfolio optimization method<sup>3</sup>. Markowitz's methodology is used to demonstrate the diversification possibilities on the selected capital markets, and to examine MV efficiency for selected equities. PCA analysis is used to identify the set of equities which best describe variability of selected equity market.

The classical Markowitz portfolio model is used to determine the efficient return-risk combination, i.e. efficient frontier (EF)<sup>4</sup>. Efficient frontier is convex curve and lies between the portfolio with minimal standard deviation and the portfolio with maximum rate of return (mean).

Model includes portfolio expected return  $\bar{R}_p = \sum_{i=1}^n \bar{R}_i x_i$  (1) and portfolio variances

$\sigma_p^2 = \sum_{j=1}^n \sum_{i=1}^n x_j x_i Cov(R_i, R_j)$  (2) where investments satisfy the investment

constraints:  $\sum_{i=1}^n x_i = 1$  (3) and no negativity conditions  $x_i \geq 0, i = \overline{1, n}$ .

Square root of portfolio variance is used as measure of portfolio risk and it includes correlations between equity return. Markowitz argued that low or negative correlations will eliminate portfolio risk, measured by  $\sigma_p^2$ . In determining the efficient combination of a set of securities several optimization problems are detected. Firstly, model must identify portfolio with the lowest possible variance (the starting point of EF), secondly, model must identify portfolio with the highest return possible (the ending point of EF). In addition, for every rate of return the lowest variance portfolio must be determined, and for every variance, the highest return portfolio must be determined.

If the investor considers investing in a portfolio, with a pre-determined value of expected return on investment  $E$ , we have additional constraint:  $\sum_{i=1}^n \bar{R}_i \cdot x_i = E$  (4). As a result, model present the

investment vectors that provide the absolutely minimum portfolio return variance  $\sigma_{\min}^2$  with the pre-set return  $E$ . By choosing randomly expected return of investment in the range

<sup>3</sup>MV model – Mean Variance model

<sup>4</sup>The mean-variance combination of a portfolio is efficient if there are no other combinations with the same return, and a lower variance, or the same variance and higher return.

$\bar{R}_{\min} \leq E \leq \bar{R}_{\max}$ <sup>5</sup> we can determine the efficient set of the observed security (Arnaut-Berilo, Zaimovic, 2012).

PCA has ability to decompose interrelated variables into uncorrelated components. So, the idea is to observe correlations structure of equity, identify uncorrelated risk sources in the market and chose the equity from different risk source. We used Kaiser – Meyer – Olkin (KMO) measure of sampling adequacy and Bartlett's Test of Sphericity.

The KMO statistic compares the value of correlation between stocks return to those of the partial correlations. If stocks share more common variations the KMO will be close to 1 while KMO close to 0 indicates that PCA will not extract much useful information.

$$KMO = \frac{\sum_{i=1}^n \sum_{\substack{j=1 \\ j \neq i}}^n r_{ij}^2}{\sum_{i=1}^n \sum_{\substack{j=1 \\ j \neq i}}^n r_{ij}^2 + \sum_{i=1}^n \sum_{\substack{j=1 \\ j \neq i}}^n a_{ij}^2},$$

where  $r_{ij}$  is correlation between stocks return and  $a_{ij} = r_{ij \setminus \{1,2,\dots,n\} \setminus \{i,j\}}$  are partial correlations.

Bartlett's test of sphericity tests the null hypothesis that the correlation matrix is equal to the unit matrix. If we accept the null hypothesis, this means that there is no inter correlation between variables. The statistics Bartlett Tests is given by:

$$b = -\left(m - 1 - \frac{2n + 5}{6}\right) \ln |\mathbf{R}|$$

and follows  $\chi^2$  distributions with  $df = \frac{(p-1)(p-2)}{2}$  degrees of freedom.

For the purpose of this paper we will use principal component approach recommended by Yang, Rea, and Rea (2015) which follows the Jolliffe (1986) variable selection method and Kaiser's rule (Kaiser, 1960).

## 4. Results and Discussion

### 4.1 Data

Our sample consists of 46 stocks and 24 indices, observed in the period from 1<sup>st</sup> January 2006 until 1<sup>st</sup> April 2016. The selection criterion for stocks was their liquidity measured by the number of trading days in the observed period. Most liquid stocks and wide indices from analysed markets are included in the sample.

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<sup>5</sup>If the following is true  $E > \bar{R}_{\max}$  the model would be unsolvable, and if  $E < \bar{R}_{\min}$  then the solution to the system (1- 4) would not be an element of the efficient set, where  $\bar{R}_{\min}$  and  $\bar{R}_{\max}$  corresponds to the efficient portfolio with the lowest variance and maximum return, respectively.



Selected stocks are being traded in five SEE capital markets (Croatian, Serbian, Montenegro's, Macedonian and Bosnia-Herzegovina's), while analysed stock market indices cover beside the named five SEE capital markets also capital markets of Romania and Bulgaria. In addition some world leading market indices are included also (representing the US, the UK, German, Austrian, Italian and Japanese capital markets).

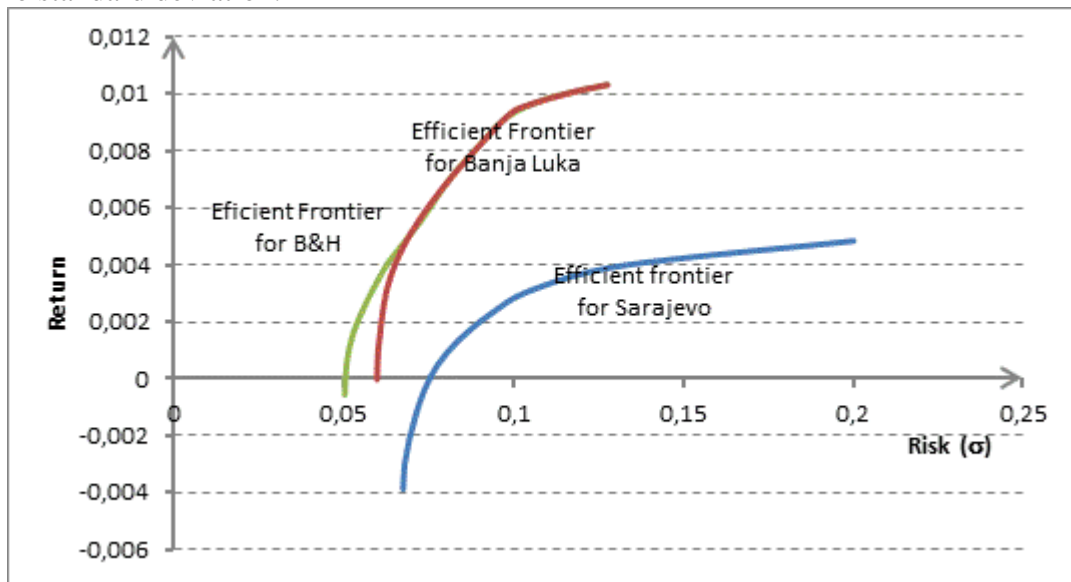
The analysis was conducted using monthly logarithmic returns calculated based on the stock prices (in case of indices – index values) at the beginning of each month. Price on the first trading day of each month in analysed period is used, if not available, the first prices prior to the first trading day of each month. Due to missing data, and nonsynchronous trading problems we have excluded 10 stocks and indices from the further analysis.

## 4.2 Diversifications possibilities on SEE equity markets

### 4.3

In order to examine the possibilities for diversification in SEE equity markets we have used MV efficient set, i.e. efficient frontier. Notice, once again, that efficient frontier is convex curve in mean-variance coordinate system and that every dot (representing portfolio of stocks) inside this convex set is less efficient then portfolios on efficient frontier.

We start the analysis of diversification possibilities in observed markets with the domestic market (Bosnia-Herzegovina) that consist of two stock exchanges (Sarajevo and Banja Luka). The graph 1 shows the MV efficient frontier formed from sample stocks from both stock exchanges. The absolute domination in efficiency is on Banja Luka Stock Exchange side, while the only benefit from adding stocks from Sarajevo Stock Exchange is in the reduction of the boundaries of portfolio standard deviation.



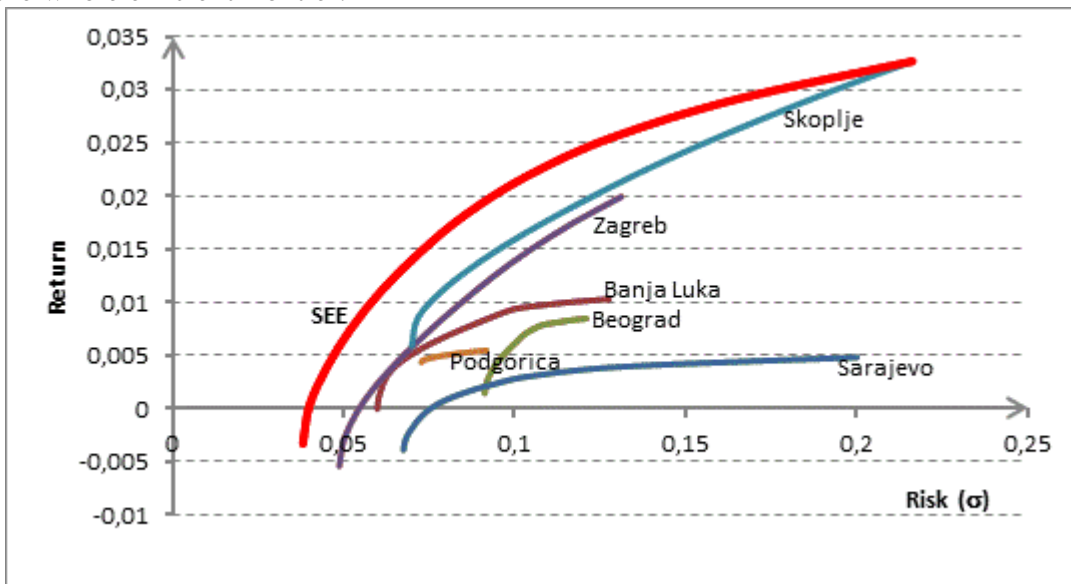
**Graph 1:** Diversification potential on B&H equity market

Diversification effects on B&H equity market can be seen as the ability to reduce risk (measuring by standard deviations) on Efficient Frontier by combining those two markets, as shown in the following table.

Pre-given return (%)	Sarajevo (%)	Banja Luka (%)	Risk (%)	Pre-given return (%)	Sarajevo (%)	Banja Luka (%)	Risk (%)	Pre-given return (%)	Sarajevo (%)	Banja Luka (%)	Risk (%)
0.1006	33.88	66.12	5.14	0.2041	29.08	70.9	5.42	0.3076	23.89	76.11	5.83
	0	100	6.02		0	100	6.11		0	100	6.26

**Table 2 Diversification effects on B&H equity market**

The graph 2 shows the MV efficient frontier formed from sample stocks from six stock exchanges (Sarajevo, Banja Luka, Belgrade, Zagreb, Skopje, Podgorica) and two stock exchange indices (from Sofia and Bucharest stock exchanges). The effects of diversification are visible along the whole efficient frontier.



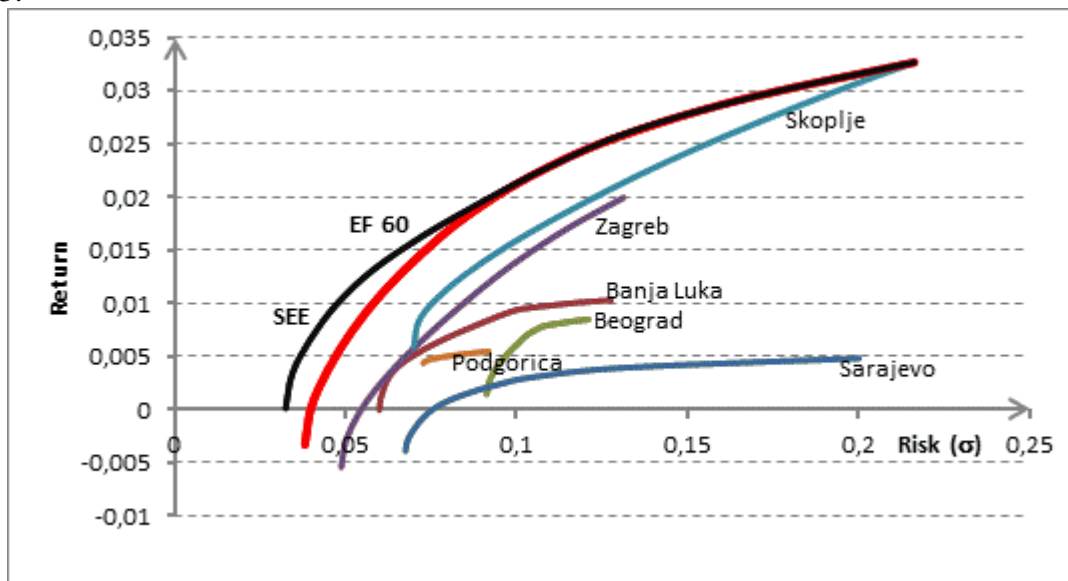
**Graph 2: Diversification potential on SEE markets**

The effects of diversification in terms of the value of the standard deviation on different efficient frontiers can be seen in the following table. The table 2 shows efficient portfolios' standard deviation for the pre-given level of return, observed individually for every stock exchange, and combined, for the whole SEE markets. Visible reduction is achieved by combining stocks from different SEE markets. The table also shows the investment weights for every market in the SEE efficient portfolio with the expected return of 4.84% and standard deviation of 4.66%. We find a substantial benefit from spreading investments in the whole SEE region, than investing in one market only.

Pre-given return	Risk (standard deviation as a %) of efficient portfolio from selected equity market						Risk SEE (%)	Investment weights (%)						
	Sarajevo	Zagreb	Belgrade	Podgorica	Banja Luka	Skopje		Bucharest	Sarajevo	Zagreb	Belgrade	Podgorica	Banja Luka	Skopje
4.84	19.93	11.67	9.61	7.29	6.84	5.98	4.66	8.2	6.74	23.5	0	8.4%	32.54	20.63

**Table 2: Diversification effects on SEE markets for pre-given level of return**

In addition, we created mean-variance efficient frontier from all sample stocks and indices (in total 60). Besides the above SEE market stocks and indices we added the following indices: S&P, DJIA, NASDAQ, DAX, FTSE 100, Nikkei, ATX and FTSE MIB. The effects of diversification are visible in the "lower" part of the efficient frontier, i.e. in achieving lower standard deviation, graph 3.



**Graph 3:** Diversification potential – world indices and SEE markets

The question is whether we can choose a subset of the dataset stocks, which would be simple in terms of portfolio management selection, and yet good enough to explain the previously defined efficient frontiers. The answer we find by using principal component analysis.

#### 4. 4 Results of principal component analysis

The process conducting principal component analysis for the purpose of removes highly correlated investments in the sample in the way that it identifies correlated assets that have same high numbered PC, each with a high loading. The procedure eliminates one of these highly correlated investments. In diversification context, this elimination will result only in small decrease in diversification potential.

In our analysis of 60 stocks and indices four iterations have been conducted with deletion criteria of 1 and stopping criteria of 0.7. Principal component analysis conducted on 60 assets extracted 60 components, among which 45 components had eigenvalues lower than 1. Those 45 components with eigenvalues lower than 1 were included into further analysis, while components with eigenvalues higher than 1 were excluded. The Component Matrix was used to select which stocks or indices among 60 should be excluded. Those components with eigenvalues lower than 1 are further analyzed in the Component Matrix. Stocks and indices with extremes within the component are excluded from next iteration. Out of 60 assets included, 36 unique stocks and indices were excluded in first iteration of the analysis. The dimension reduction process was repeated second time. In second iteration 24 components were identified, among which 18 had eigenvalues lower than 1. Out of 24 investments included, 14 unique stocks and indices were excluded in second iteration of the analysis.

The dimension reduction process was repeated third time. In third iteration 10 components were identified, among which 6 had eigenvalues lower than 1. Out of 10 investments included, 6 unique stocks and indices were excluded in third iteration of the analysis. Final fourth iteration resulted in 4 components and 4 assets. The last eigenvalue was 0.717, higher than the 0.7 stop criteria, and the process was finished, presented in table 3.

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	1.677	41.919	41.919	1.677	41.919	41.919
2	.876	21.898	63.818	.876	21.898	63.818
3	.730	18.250	82.068	.730	18.250	82.068
4	.717	17.932	100.000	.717	17.932	100.000

**Table 3.** Total variance explained after fourth iteration

For all iterations Kaiser-Meyer-Olkin Measure of Sampling Adequacy and Bartlett's Test of Sphericity allowed the conduction of PCA, table 4. The principal components obtained from the selected four stocks and indices were approximately the same as the original 4 assets. This is the case of when there is a low correlation among the original investments a PCA extracts little useful information.

Iteration	1	2	3	4	
<b>Kaiser-Meyer-Olkin</b>	.645	.830	.732	.667	
<b>Bartlett's Test</b>	<b>Chi-Square</b>	4831.334	1173.614	248.811	31.465
	<b>df</b>	1770	276	45	6
	<b>Sig.</b>	.000	.000	.000	.000

**Table 4.** KMO and Bartlett's Test

Table 5 shows the reduction of correlation among remaining assets in every out of four iterations in PC analysis.

No. Stocks and Indices Retained	Maximum Correlation
<b>60</b>	<b>0.979</b>
<b>24</b>	<b>0.735</b>
<b>10</b>	<b>0.592</b>
<b>4</b>	<b>0.281</b>

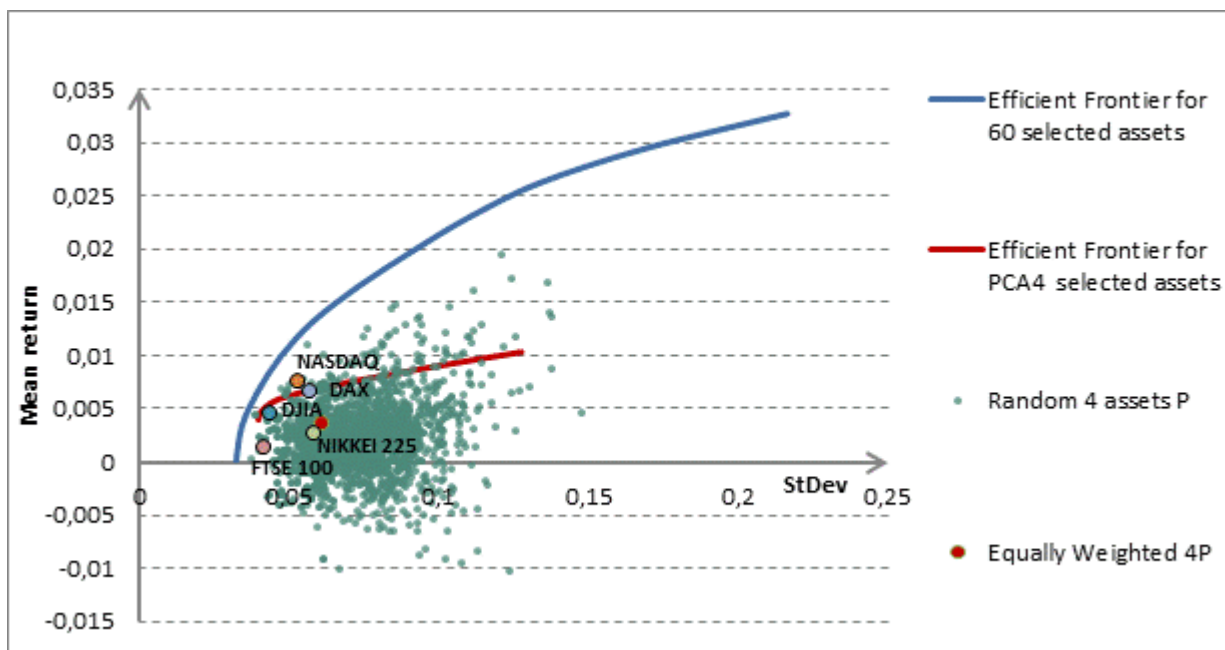
**Table 5.** Maximum correlation depending on the number of stocks retained

Further we investigate what are the differences in mean-variance efficiency of 4 asset portfolios obtained in the fourth iteration. The selected four PCA assets consist of Sojaprotein, Dow Jones, Telekom Srpske and ZTC Banja Vrucica.

With the selected 4 PCA assets we formed MV efficient frontier and we checked how many randomly selected portfolio made up of any 4 assets were contained within this convex set. In

total, we have created 3000 portfolios formed from 4 randomly selected investments. The results show that only 138 portfolios could be found outside the convex region bounded by PCA 4 assets' efficient frontier. Based on these result we can conclude that efficient portfolio composed of these four assets dominate over 95% of all portfolios composed of any 4 assets in terms of Markowitz definition of dominancy. We checked domination of efficient set over the randomly selected portfolio consisting of more than 4 equities and we concluded that these MV portfolios are far more homogeneous, so that this percentage is only higher. These results are not present in the paper but there are available on request.

Graph 4 shows two lines, the red one represents efficient frontier derived from PCA selected assets (PCA4) and the blue one represents efficient frontier derived from all observed equities (EF 60). Green dots in the graph represent 3000 randomly selected portfolios formed from 4 randomly selected equities. The red dot represents equally weighted PCA 4 asset portfolio.



**Graph 4:** Diversification possibilities of four (PCA) asset portfolios

Note that PCA 4 stocks and indices are from three different markets. The Minimum Variance portfolio of PCA 4 assets does not match the Minimum Variance portfolio of 60 assets, but the graph 4 shows that the efficient frontier of PCA 4 assets is very close to the efficient frontier of 60 assets in the "lower" part. From our analysis it can be concluded that PCA 4 asset efficient frontier portfolios offer good risk reduction effect, achieved by applying PCA method.

## 5. Conclusion

In this paper we tested diversification possibilities in South-East European equity markets. We selected stocks with sufficient liquidity, namely minimum 440 daily trading, in 10 years and 3 months period (1st January 2006 till 1st April 2016). Our sample consists of 51 stocks and indices from capital markets in following SEE countries: Croatia, Serbia, Montenegro,

Macedonia, Romania and Bosnia and Herzegovina. In addition we included 9 indices from capital markets in developed countries: USA, Germany, Great Britain, Japan, Italy and Austria. Analysis was conducted on monthly stock and indices returns.

The basic idea of our work was to select the subset of the observed set of investments, which is the best represent of the return variability. Markowitz modern portfolio theory states that portfolio risk is being reduced by combining asset with low or negative correlation. That was the reason why we decided to apply the principal component analysis as the way for asset selection. So, the idea is to observe correlations structure of assets, identify uncorrelated risk sources in the market and chose assets from different risk sources.

Results and conclusions of this study rely on efficient frontier construction for the beginning set of asset as well for the selected subset of asset. We tested the selection quality by comparison of the mean-variance characteristics of randomly selected portfolios and efficient portfolios of assets derived from PCA analysis.

Based on the results of our analysis, we conclude that 4 PCA selected asset portfolios dominate over 95% of all potential portfolios composed of any 4 assets in terms of Markowitz definition of dominance. Unfortunately, the 4 PCA assets do not dominate over all developed stock market indices. For further analysis we recommend formulation of efficient frontier with 10 PCA selected asset and its comparison with the opportunity set of all possible portfolios of sample stocks and developed capital market indices.

The main conclusion of our analysis is that the PC analysis substantially simplifies asset selection process in portfolio management. PCA selected asset portfolios dominate over 95% of all potential portfolios with the same number of assets included. We hope that PCA might reduce the number of need calculations and estimation, when it comes to efficient portfolio investing.

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# **ENTREPRENEURIAL INTENTIONS AMONG STUDENTS: TO BE OR NOT TO BE AN ENTREPRENEUR?**

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## **Abstract**

Entrepreneurial intentions among students are considered to be one of the most interesting ways of implementing and testing Theory of planned behaviour (developed by Ajzen, I., 1991.). This Theory explains that Attitude towards behaviour, Perceived Social Norms and Perceived Behavioral Control are three motivational factors that constitute the construct which explains entrepreneurial intention. However, entrepreneurial intentions are deciding factor and the single most influencing predictor for performing entrepreneurial behaviour. Therefore, the purpose of this paper is to examine entrepreneurial intentions among business students in Bosnia and Herzegovina.

In this research, The Model of Entrepreneurial Intentions, based on Theory of planned behaviour was tested. We tested 255 students in School of Economics and Business Sarajevo (University in Sarajevo), at two measurement points. The first point of measurement was in the end of the school year 2014./15. when 91 students who passed Entrepreneurship course were tested, and in the second wave of measurement, which took place in the beginning of the school year 2015./16., another 164 students (freshmen) who did not have any education about Entrepreneurship were tested. Collected data were analyzed in SPSS 19.0 statistical program, using standard descriptives for general information about the demographic characteristics of two samples. After performing Factor analysis, four different factors emerged. This supports the previously defined one dependent variable Entrepreneurial Intentions and three independent variables Attitude towards entrepreneurship, Social Norms about entrepreneurship and Self-efficacy.

For analyzing data parametric statistics was used (series of T-tests and ANOVA). After comparing results of both samples, one statistically significant difference appeared. First group of students has significantly higher entrepreneurial intentions than second group of students, and therefore it can be concluded that entrepreneurial education has significant role in forming attitudes and perceived self-efficacy among students. In the reliability analysis the Cronbach coefficient Alpha (greater than 0,7) showed that questionnaire was reliable.



We used correlation and regression analysis to test the hypothesis 1, 2 and 3. Correlation showed significantly higher Pearson's coefficients in group one. In the first group of students all three independent variables together explains 31,9% of entrepreneurial intention variance.

The regression analysis in the first group generally supports Hypothesis 1 and 3. Students who have more positive attitude toward entrepreneurship and higher self-efficacy have higher entrepreneurial intentions. Results in the second group of students indicates generally weaker results, correlation between variables is lower and results of regression in the second group showed that only 7,3% of entrepreneurial intention variance was explained by this model in this group. However, this difference between two groups was anticipated because of the main characteristics in two samples.

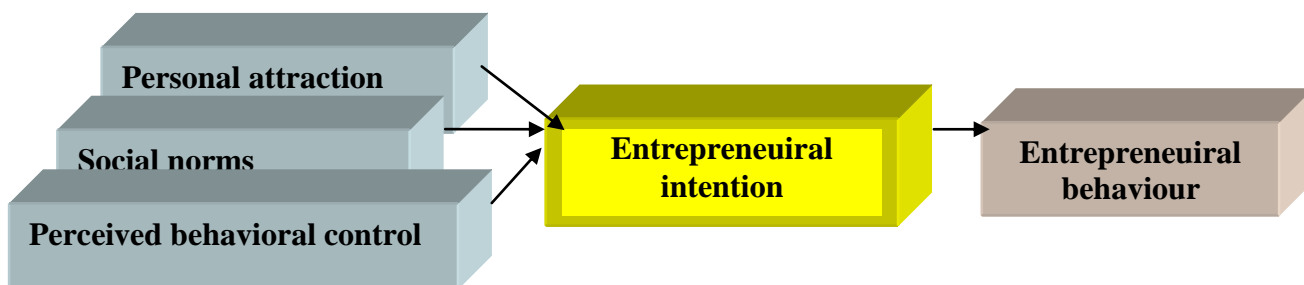
**Keywords:** *entrepreneurial intentions, Theory of planned behaviour, entrepreneurial traits, self-efficacy, entrepreneurial education*

**JEL classification:** L26

## INTRODUCTION

The importance of entrepreneurship to society has been identified and discussed since at least the fifteenth century (Schumpeter, 1912), and that discussion remains topical (Maresch et al., 2015; Kirchhoff et al., 2013; Grichnik and Harms, 2007). Process of entrepreneurship is a very complex activity, and for bringing more lights on it, it requires a multidisciplinary approach. Who is an entrepreneur, why is he/she different from the rest of the population? What are the motives for becoming entrepreneur? These are some of the question which always cause debates. Organizational emergence is usually considered as a key outcome of entrepreneurship (Shirokova et al, 2015; Aldrich, 1999; Gartner, 1985; Katz & Gartner, 1988; Shane & Delmar, 2004).

Entrepreneurial activity is intentional, resulting from motivation and cognition (Frese, 2009; Kautonen, Van Gelderen, & Tornikoski, 2013; Kolvereid & Isaksen, 2006; Krueger, 2005). Starting point for every rational and important action is intention. Social psychology scholars define intentions as cognitive states immediately prior to the decision to act (Theory of Planned Behavior: Ajzen, 1991; Theory of reasoned action: Ajzen & Fishbein, 1980; Fishbein & Ajzen, 1975). Entrepreneurial intentions are the single most important predictor of one's later entrepreneurial behavior. But not all intentions are transformed into the planned behaviour. But this obvious gap between intention to behave and behavior will be part of another research.



Picture 1. Entrepreneurial intention model EIM

Entrepreneurial intention is defined as the conscious state of mind that precedes action and directs attention towards a goal, such as starting a new business (Linan et al., 2016; Fayolle et al., 2014). Several models (Shapero & Sokol, 1982., Moore, 1986.; Scott & Twomey, 1988.; Herron & Sapienza, 1992.; Naffzinger et al., 1994.; Krueger i Brazeal, 1994.; Baum et al., 2001.; Bandura, 2006.) have been used to explain EI – although these have not been as influential as the Ajzen’s (1991) Theory of Planned Behavior (Linan et al., 2016; Kautonen et al., 2013; Griffiths et al., 2009; Van Gelderen et al., 2008). Unlike othere EI models, the TPB offers a coherent and generally applicable and replicable theoretical framework. TPB recognizes three key elements which directly influences one on his/her intention to become an entrepreneur.

The attitude towards the behavior or personal attraction PA refers to the attractiveness of the proposed behavior or degree to which the individual holds a positive or negative personal valuation about being an entrepreneur (Ajzen, 1991, 2002; Kolvereid 1996). Subjective norms or social norms measure the perceived social pressure from family, friends or significant others (Ajzen, 1991) to perform the entrepreneurial behavior. It refers to the perception that ‘reference people’ may or may not approve of the decision to become an entrepreneur (Ajzen 2001). The third motivational factor is Perceived behavioral control PBC and it describes the perceived easiness or difficulty of becoming an entrepreneur (Ajzen 1991). Some researchers have considered this concept confusing for interpretation and they used self-efficacy instead of PBC (Moriano et al., 2012; van Gelderen et al., 2008., Kvereid & Isaksen, 2007.; Krueger et al., 2000.), but Ajzen (2002) specifies that it is a wider construct, since it encompasses self-efficacy and perceived controllability of the behavior.

Entrepreneurship becomes more and more attractive for people who are about to make their first career choice, as this perspective allows participation in the labor market while keeping personal freedom (Shirokova et al, 2015; Martinez, Mora, & Vila, 2007). Special form of a entrepreneurship is student entrepreneurship, which has the early start-up activities during the studies. According to latest published GEM Report for Bosnia and Herzegovina (2012) relatively small number of young people started their own business (5.9%), and between them there are more male entrepreneurs. Students' involvement in entrepreneurial activity depends on their career plans and attitude toward self-employment, which are contingent on various factors (Shirokova et al, 2015).

In this research we are going to examine intentions among students to start and run their own business. What are the driving factor(s) who pull/push students in entrepreneurship? According to the foundations of Theory of planned behavior three main hypothesis are formed:

H1: Personal attraction (PA) has positive influence on Entrepreneurial intentions (EI) among students in Bosnia and Herzegovina.

H2: Social norms (SN) have positive influence on Entrepreneurial intentions (EI) among students in Bosnia and Herzegovina.

H3: Perceived behavioral control (PBC) has positive influence on Entrepreneurial intentions (EI) among students in Bosnia and Herzegovina.

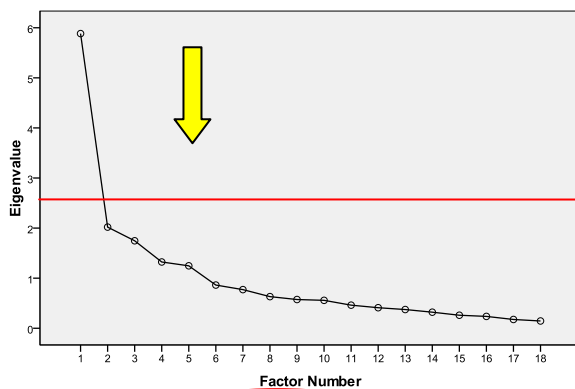
This paper will follow the IMRaD structure. After Introduction, in the second part (Methods) the answer to when, where, and how was the study done will be given. Results will present what did

the study find, and were the tested hypothesis supported. And finally in the last section it will be discussed what might the answer imply and why does it matter, how does it fit in with what other researchers have found and what are the perspectives for future research.

## 1. METHODS & RESULTS

In this research, The Model of Entrepreneurial Intentions (MEI), based on Theory of planned behavior was tested on the sample of business students from School of Economics and Business Sarajevo (overall sample size was 255 students, at two measurement points). The first measurement point was in the school year 2015./16., when 91 student who passed Entrepreneurship course were asked to participate in a survey. Questionnaire used in this research was developed by Autio et al. 2001. Students were asked to give answers on 20 questions (which were measuring PA, SN, PBC and EI). Scale used in this questionnaire was five point Likert type. Collected data were analyzed in SPSS 19.0 statistical program. After performing Factor analysis (KMO and Bartlett's Test were significant), five different factors emerged.

Fig. 1 Scree Plot



On the screeplot and in the table we can see that factor 1 explains **32.67%** of variance.  
Factors 1-5 explain together **67.86%** of variance.

Table 1. Total variance explained

Fact	Initial Eigenvalues			Rotation Sums of Squared Loadings
	Total	% of Var	Cum %	Total
1	5.883	<b>32.686</b>	32.686	3.882
2	2.020	11.220	43.906	2.358
3	1.746	9.702	53.608	2.884
4	1.323	7.352	60.960	2.694
5	1.247	6.925	67.885	3.000
6	.863	4.792	72.678	
7	.772	4.287	76.964	
8	.632	3.509	80.473	
9	.574	3.188	83.661	
10	.557	3.097	86.758	
11	.461	2.563	89.321	
12	.410	2.279	91.599	
13	.374	2.077	93.676	
14	.321	1.783	95.459	
15	.260	1.445	96.904	
16	.237	1.315	98.219	
17	.175	.975	99.193	
18	.145	.807	100.000	

\*Extraction Method: Principal Axis Factoring

\*Extraction method used for this analysis was Principal axis factoring and oblique rotation. Criteria for obtaining factors were: Kaiser's rule ( $\leq 1$ ) and point of inflection on screeplot.

Table 2. KMO and Bartlett's Test

<b>Kaiser-Meyer-Olkin Measure of Sampling Adequacy.</b>	<b>0.758</b>
Bartlett's Test of Sphericity      Approx. Chi-Square	646.495
Df	153
Sig.	<b>0.000</b>

Three questions were problematic (after rotation they were in a wrong factor, they were not measuring what they were suppose to), and they were dropped out. In the structure matrix we can see the final version of items, where rotation converged after 9 iterations (using Oblimin with Kaiser normalization). Factor 1 is representing the questions which measure the construct PBC. Factor 2 represents PA positive, Factor 3 SN, Factor 4 PA negative and finally Factor 5 represents questions which measure construct EI.

Table 3. Structure Matrix

Questionnaire	Factor				
	1	2	3	4	5
Uspjesan(na) sam u identifikovanju poslovnih mogucnosti.	<b>.752</b>	.346	-.305	.326	-.402
Posjedujem vjestine i mogucnosti da uspijem kao preduzetnik/preduzetnica.	<b>.750</b>	.135	-.227	.124	-.292
Veoma dobro uocavam poslovne mogucnosti.	<b>.749</b>	.344	-.356	.361	-.351
Znam uociti i neutralisati prepreke za ostvarenje svoje ideje.	<b>.699</b>	.279	-.440	.367	-.550
Siguran(a) sam da bih bila uspjesna ukoliko bih pokrenuo(la) sopstveni biznis.	<b>.585</b>	.258	-.130	.524	-.265
Za mene je pozeljna jedino karijera u velikoj firmi (rad u privatnom sektoru).	.216	<b>.799</b>	-.139	.014	-.196
Za mene je pozeljna jedino karijera u javnom sektoru.	.210	<b>.755</b>	-.185	-.016	-.223
Na mom Fakultetu, traze se nove ideje za nove biznise.	.342	.253	<b>-.903</b>	.244	-.239
Na mom Fakultetu mogu se susresti ljudi koji imaju nove ideje za nove biznise.	.230	.093	<b>-.790</b>	.162	-.094
Poznajem mnogo ljudi koji su nakon zavsetka studija pokrenuli svoj sopstveni biznis.	.464	.405	<b>-.543</b>	.173	-.210
Postoji povoljna infrastruktura kao potpora pokretanju novih biznisa.	.322	.444	<b>-.469</b>	.155	-.297
Zapoceti sopstveni biznis meni zvuci atraktivno.	.222	-.045	-.107	<b>.746</b>	-.220
Preduzetnicka karijera je pozeljna opcija za mene.	.388	.137	-.359	<b>.724</b>	-.344
Prednost svog obrazovanja na najbolji nacin bih iskoristio(la), ukoliko bih pokrenu(la) sopstveni biznis.	.293	.109	-.251	<b>.679</b>	-.229
Zapoceti sopstveni biznis, sa pola radnog vremena, u narednih godinu dana	.416	.279	-.246	.071	<b>-.790</b>
Zapoceti sopstveni biznis, uz puno radno vrijeme, u narednih godinu dana	.317	.368	-.055	.386	<b>-.660</b>
Zapoceti sopstveni biznis, uz puno radno vrijeme, u narednih pet godina	.229	.139	-.057	.438	<b>-.656</b>
Zapoceti sopstveni biznis, sa pola radnog vremena, u narednih pet godina	.414	.221	-.354	.068	<b>-.512</b>

Extraction Method: Principal Axis Factoring.

Rotation Method: Oblimin with Kaiser Normalization.

a. Rotation converged in 9 iterations.

Standard descriptives for general information about the demographic characteristics of sample 1 were done. In the sample 1 (first group of 91 student) 71.4% were female participants and most of them (46.2) were 20-21 years old.

Table 4. Age (sample 1)

Age	<20	20-21	22-23	24-25	>25
Percentage	34,1%	46,2%	7,7%	3,3%	6,6%
Frequency	31	42	7	3	6
M	2,00				
SD	1,09				

Sex	Male	Female
Percentage	25,3%	71,4%
Frequency	23	65

Five variables listed in the table down were transformed relying on the results from dimension reduction technique. Questions which were measuring the same construct were computed. In the correlation and regression analysis these five variables will be used.

Table 6. Descriptive statistics for variables

Variable	N	min	Max	M	SD	Skew	SE_S	Kurt	SE_K
Perceived behavioral control	87	11.00	25.00	20.02	3.35	-0.25	0.26	-0.65	0.51
Personal attraction negative	88	2.00	10.00	6.67	2.27	-0.54	0.26	-0.57	0.51
Social norms	89	6.00	20.00	14.75	3.56	-0.67	0.25	-0.39	0.51
Personal attraction positive	87	6.00	15.00	13.01	2.04	-1.22	0.26	1.32	0.51
Entrepreneurial intentions	88	4.00	20.00	13.56	3.91	-0.11	0.26	-0.56	0.51

\* N = sample, M = mean, SD = standard deviation, Skew = skewness-asymmetry, SE\_S = standard error of skewness, Kurt = kurtosis, SE\_K = standard error of kurtosis.

For analyzing data parametric statistics was used (series of T-tests and ANOVA). After analyzing results of the sample 1, one statistically significant difference appeared. Male students have significantly higher entrepreneurial intentions than female group of students. We can be 95% confident that the mean for male value falls between 12.50 and 15.68 (on EI scale 4 is min and 20 is max). This finding is coherent with previous findings in similar studies.

However, previous work experience does not have statistically important influence on entrepreneurial intention for students in sample 1. It is important to point out that in this study there is no statistically significant difference in entrepreneurial intentions among students who do and do not have an entrepreneur among their close relatives/friends either. This is an unexpected finding that needs closer inspection in future studies among students in Bosnia and Herzegovina.

Table 7. Difference in EI between male and female students (sample 1)

		M	SD	t	Df	P	Confidence interval 95%	
Entrepreneurial intentions	M	14,09	3,68	18.36	22	0.00	12.50	15.68
	F	13,30	4,10	26.20	62	0.00	12.37	14.42

(\* M = mean, SD = standard deviation, t = T-test, Df = degrees of freedom, p = Sig. of t: if p is less or equal 0,05, difference is statistically significant).

In the reliability analysis we measured consistency of a questionnaire. Cronbach coefficient Alpha is greater than 0.7 (in this study 0.866) showed that questionnaire is reliable. As mentioned earlier this questionnaire is developed in 2001. by Autio et al. and it has been in use ever since in numerous studies.

Table 8. Cronbach's Alpha( $\alpha$ )

Cronbach's Alpha( $\alpha$ )	( $\alpha$ ) Based on Standardized Items	N of Items
<b>0.866</b>	0.868	18

We used correlation and regression to test the hypothesis 1, 2 and 3 for sample 1. Correlation analysis showed significant moderate and high correlation coefficients. Only correlation between PAneg and PApos was very weak and not significant.

Table 9. Correlation matrix for sample 1

		PBC	PA neg	PA pos	SN	EI
1	<b>Perceived behavioral control</b>	1				
2	<b>Personal attraction negative</b>	0.28**	1			
3	<b>Personal attraction positive</b>	0.47**	<b>0.042</b>	1		
4	<b>Social norms</b>	0.48**	0.33**	0.34**	1	
5	<b>Entrepreneurial intentions</b>	<b>0.53**</b>	0.30**	0.36**	0.34**	1

\*\* . Correlation is significant at the 0.01 level (2-tailed).

For the regression analysis it is important to underline that dependent variable is Entrepreneurial intentions EI, and four independent variables are Perceived behavioral control PBC, Personal attraction negative PAneg, Social norms SN, Personal attraction positive PApos. According to Ajzen's TPB these four predictors directly and positively influence dependent variable EI.

After running regression analysis on this sample of 91 student all four independent variables together explain 32,0% of entrepreneurial intention variance. The method used in the analysis was Forced entry or Enter (all predictors were forced into model simultaneously). We inspected values of variance inflation factor VIF, it is very close to 1 (1.15-1.53) and concluded that there is no multicollinearity (which we could have guessed after observing value of correlation coefficients). In the sense of statistical significance, only predictor PBC is on statistically significant level ( $p=0.001$ ).

We have included confidence interval in the report. Regarding the estimate for confidence interval for regression coefficients we conclude that we can be 95% confident that the slope parameter for PBC falls between 0.18 and 0.73, for PAneg the value of CI is -0.07 and 0.63, for PA pos the value of CI is -0.19 and 0.29.

Table 10. Model summary<sup>b</sup> with coefficients<sup>a</sup> for sample 1

Variable	B <sup>a</sup>	Beta (β) <sup>a</sup>	t	P	Model summary <sup>b</sup>	Confidence interval 95%	VIF
Constant	-2.11					-7.67 3.45	
PBC	0.45	0.387	3.32	0.001	R=565 <sup>a</sup>	0.18 0.73	1.53
PAneg	0.28	0.163	1.62	0.110	R <sup>2</sup> =0.32	-0.07 0.63	1.15
PApos	0.31	0.162	1.49	0.140	ΔF=9.04 **	-0.19 0.29	1.39
SN	0.05	0.042	0.37	0.709	SigF=0,00	0.10 0.73	1.33

a. Predictors: (Constant), Personal\_attraction\_positive, Personal\_attraction\_negative, Social\_norms, Perceived\_behavioral\_control

b. Dependent Variable: Entrepreneurial\_intentions

And finally we can be 95% confident that the slope parameter for SN falls between 0.1 and 0.73. Intercept parameter  $\alpha$  (const) has value -2.11 and we can be 95% confident that the intercept parameter falls between -7.67 and 3.43. It is very difficult to discuss these value, because we cannot say that when attitudes towards entrepreneurship and other independent variables are equal to zero, entrepreneurial intentions are -2.11. Therefore, we will not discuss it in that manner. However, the regression equation for this model has this form:

$$\hat{y} = -2.11 + 0.45x_1 + 0.28x_2 + 0.31x_3 + 0.05x_4 + \epsilon$$

(where  $x_1$ -  $x_4$  are independent variables, predictors PBC, PAneg, PApos i SN respectively;

$\epsilon$  – error)

Measurement units for attitudes, norms, control are not expressed in units, so we use standardized regression coefficients for comparing results.

$$\hat{y} = 0.39x_1 + 0.16x_2 + 0.16x_3 + 0.04x_4 + \epsilon$$

(When  $x_1$  increases for 1 SD,  $\hat{y}$  will increase for 0.39 SD, respecting ceteris paribus.)

Missing values were excluded listwise. In general, missing values are closely examined and no pattern or frequency arose. This is an example of missing completely at random. One observation was excluded because the student gave all 1s to all the questions (we believe that it was very malicious behavior, but not honest answers to given questions).

In the hierarchical model predictors are selected based on past work or from other researchers. Known predictors are entered in model first in order of their importance in predicting outcome. In this case we respected the outcome of Factor analysis where factor 1 alone explained the most of variance (32,67%). This factor is represented by PBC. This variable PBC explained 27.4% variance of EI, PApos explained additionally 2.3%, SN explained additionally 0.4%, PApos explained additionally 2%. Only PBC predictor was at statistically significant level (SigΔF=0.000)

Table 11. Hierarchical model building for sample 1

Model	Predictors	Beta ( $\beta$ )	t	p	Model summary
1	<b>Perceived behavioral control</b>	0.52	5.49	0.00	$R^2 = 0.274$ <b><math>\Delta R^2 = 0.274</math></b> $\Delta F = 30.141$ <b>Sig. <math>\Delta F = 0.000</math></b>
2	<b>Perceived behavioral control</b> <b>Personal attraction negative</b>	0.483 0.155	4.95 1.59	0.00 0.12	$R^2 = 0.296$ <b><math>\Delta R^2 = 0.023</math></b> $\Delta F = 2.53$ Sig. $\Delta F = 0.12$
3	<b>Perceived behavioral control</b> <b>Personal attraction negative</b> <b>Social norms</b>	0.454 0.141 0.070	4.18 1.40 0.63	0.00 0.16 0.53	$R^2 = 0.300$ <b><math>\Delta R^2 = 0.004</math></b> $\Delta F = 0.401$ Sig. $\Delta F = 0.53$
4	<b>Perceived behavioral control</b> <b>Personal attraction negative</b> <b>Social norms</b> <b>Personal attraction positive</b>	0.387 0.163 0.042 0.162	3.32 1.62 0.37 1.49	0.00 0.11 0.71 0.14	$R^2 = 0.320$ <b><math>\Delta R^2 = 0.020</math></b> $\Delta F = 2.23$ Sig. $\Delta F = 0.14$

- a. Predictors: (Constant), Perceived\_behavioral\_control
- b. Predictors: (Constant), Perceived\_behavioral\_control, Personal\_attraction\_negative
- c. Predictors: (Constant), Perceived\_behavioral\_control, Personal\_attraction\_negative, Social\_norms
- d. Predictors: (Constant), Perceived\_behavioral\_control, Personal\_attraction\_negative, Social\_norms, Personal\_attraction\_positive
- e. Dependent Variable: Entrepreneurial\_intentions

We use standardized residuals (z-scores) which are residuals divided by an estimate of their standard deviation. We know that 95% z-scores should lie between -1.96 and +1.96 (assumption of normal distribution). Since there is no value greater than absolute 3.29, we conclude that there is no reason to worry about outliers. However on the normal P-P plot and on the histogram we can see some deviation marked with arrow, it is not perfectly normally distributed. Outliers outside three standars deviations were excluded.

Figure 2. Normal P-P plot of regression standardized residual

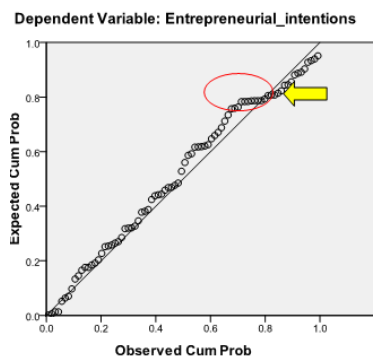
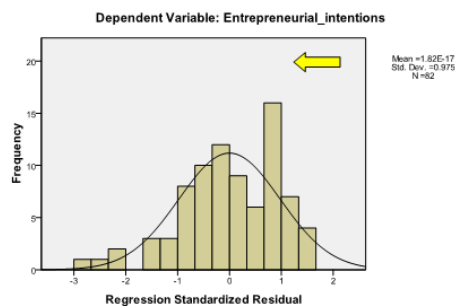


Figure 3. Histogram of regression standardized residual





In the course of analysis some other techniques might be used (ex. factor scores for later analysis). In the Factor analysis all the other methods were run, but the most logical and best results gave the ones we used (oblique). When it comes to normality Papos showed moderate asymmetry (negative one). Even after transformation (reflection and log 10 or square root) normal distribution was not achieved. That is why variables were not transformed at all. Kolmogorow-Smirnow and Shapiro-Wilk test were significant for two variables. They are sensitive in general, so we relied on normal distribution observed on histogram. And finally for more significance, we should enlarge the sample. That would most probably improve the model overall.

The first point of measurement was in the end of the school year 2014./15. when 91 students who passed Entrepreneurship course were tested, and those rasuls were presented earlier. In the second measurement point, which took place in the beginning of the school year 2015./16., another 164 students (freshmen) who did not have any education about Entrepreneurship were tested. Overall sample size is 255 business students from SEBS. Results for the sample 2 (second group) are presented in the following.

Table 12. Overall sample structure

General sample	First measurement point	Second measurement point
Percentage	35,7%	64,3%
Frequency	91	164

Collected data were analyzed in spss 19.0 statistical program as well, using standard descriptives for general information about the demographic characteristics of two samples. After performing Factor analysis, four different factors emerged. This supports the previously defined one dependent variable Entrepreneurial Intentions (in the model marked as PN) and three independent variables Attitude towards entrepreneurship (S1), Social Norms about entrepreneurship (S2) and Self-efficacy (S3).

Figure 4. Age (sample 2)

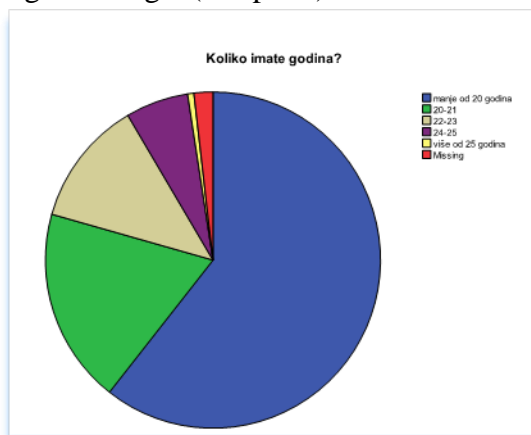
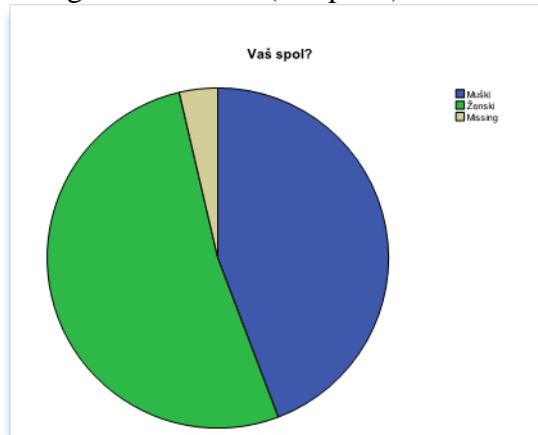


Figure 5. Gender (sample 2)



Demographic structure of the sample 2 is very similar to sample 1, except that students in the sample two are younger (it is expected because those are freshmen), and the gender structure is well balanced. For analyzing data parametric statistics was used (series of T-tests and ANOVA). After comparing results of both samples, one statistically significant difference appeared. First group of students has significantly higher entrepreneurial intentions than second group of students, and therefore it can be concluded that entrepreneurial education has significant role in forming attitudes and perceived self-efficacy among students. No other demographic characteristic appeared to have statistically significant influence on entrepreneurial intentions among students in sample 2.

Table 13. Difference in entrepreneurial intentions

		<b>M</b>	<b>SD</b>	<b>t</b>	<b>Df</b>	<b>P</b>
<b>Group of students</b>	Sample 1	13,48	3,95	2,47	251	0,01
	Sample 2	12,28	3,19			

(\* M = mean, SD = standard deviation, t = T-test, Df = degrees of freedom, p = Sig. of t: if p is less or equal 0,05, difference is statistically significant).

In the reliability analysis the Cronbach coefficient Alpha for second group (grater than 0,7) showed that survey was reliable. We used correlation and regression to test the hypothesis 1, 2 and 3 for sample 2. Correlation analysis showed significantly higher correlation coefficients in previously presented group one.

Table 14. Correlation matrix for sample 2

		1 (EI)	2 (A)	3 (SN)	4 (PBC)
<b>1 (EI)</b>	<b>Entrepreneurial intentions EI</b>	<b>1</b>			
<b>2 (A)</b>	<b>Attitudes toward entreprenurship A</b>	<b>0,09</b>	<b>1</b>		
<b>3 (SN)</b>	<b>Social norms SN</b>	<b>0,16*</b>	<b>0,16*</b>	<b>1</b>	
<b>4 (PBC)</b>	<b>Perceived behavioral control PBC</b>	<b>0,26**</b>	<b>0,19*</b>	<b>0,21**</b>	<b>1</b>

In the first group of students all three independent variables together explains 31,9% of entrepreneurial intention variance. Results in the second group of students indicates generally lower results, correlation between variables is weaker and results of regression in the second

group showed that only 7,3% of entrepreneurial intention variance was explained by this model in this group. However, this difference between two group was anticipated because of the main characteristics in two samples.

Table 15. Model summary<sup>b</sup> with coefficients<sup>a</sup> for sample 2

Variable	Beta ( $\beta$ )	T	p	Model summary
<b>Entrepreneurial intentions</b>				
Attitudes	0,05	0,62	0,54	$R^2=0,073$
Social norms	-0,05	-0,58	0,56	$\Delta F=4,15$
Perceived behavioreal control	0,26	3,32	0,01**	SigF=0,007

Table 16. Hierarchical model building for sample 2

Model	Prediktori	Beta ( $\beta$ )	T	p	Sazetak modela
1	Attitudes	0,09	1,15	0,25	$R^2 = 0,008$ $\Delta R^2=0,008$ $\Delta F= 1,33$ Sig. $\Delta F=0,25$
2	Attitudes Social norms	0,09 0,01	1,13 0,02	0,26 0,99	$R^2 = 0,008$ $\Delta R^2=0,000$ $\Delta F= 0,00$ Sig $\Delta F=0,99$
3	Attitudes Social norms Perceived behavioral control	0,05 -0,05 0,26	0,62 -0,58 3,32	0,54 0,56 0,00	$R^2 = 0,073$ $\Delta R^2=0,064$ $\Delta F= 11,04$ Sig $\Delta F=0,00$

The regression analysis in the overall sample generally supports Hypothesis 3. Students who have higher self-efficacy (Perceived behavrioreal control) have higher entrepreneurial intentions. Those are student who believe that they are able to start and run their own business. Perceived behavioral control directly and positively influence EI among business students in SEBS. Hypothesis 1 and 2 did not find any support in this research. Attitudes toward entrepreneurship and social norms do not have a statistically significant role in predicting entrepreneurial intentions among stuentns in SEBS.

With this research model 32% of variance (for sample 1) and 7.3% of variance (for sample 2) of Entrepreneurial intentions is explained. It is important to compare these results with similar studies. Since these are social studies, high level of  $R^2$  is difficult to obtain. In the early application of TPB Krueger (1993) got high  $R^2=0.54$  for his model, Davidsson (1995)  $R^2=0.32$ , Reitan=0.32, Autio et al. (2001) obtained  $R^2=0.21$  on swedish sample,  $R^2=0.42$  on finish sample and  $R^2=0.35$  on english sample.

## 2. DISCUSSION

The research about entrepreneurial intentions among business students in SEBS pointed out few very important findings, which are coherent with other similar studies. Perceived behavioral control (very close concept to self-efficacy) is a belief that a person is capable of starting and running a successful business. This is the main predictor which influences formation of entrepreneurial intentions. This construct alone explains 27.4% of variance (of Entrepreneurial intentions) in this research.

Social norms have very little influence on young people (in this sample), and it is explained with locus of control. Individuals who have high internal locus of control believe that they are responsible for outcomes and their life, they keep things under control. In the other hand individuals with high external locus of control believe that other people influences and direct their life. Entrepreneurs typically have high internal locus of control, and they do not wait for the approval from the others to start business. Social norms explain 0.4% of variance EI (this contribution was not statistically significant).

Personal attraction was divided in two categories (positive and negative aspects). This was done because Factor analysis did not put corresponding questions in one factor, but in two. There was an option to drop out two questions and in that case 4 factors would emerged. But, please note that this analysis was mostly done for the demonstration purpose (exam) and there is a strict rule that for this assignment we need at least 5 variables. However, statistically those two predictors PA<sub>pos</sub> i PN<sub>neg</sub> explained respectively 2.3% and 2% of variance EI (this contribution was not statistically significant). This construct measured attitudes towards entrepreneurship and we can conclude that those attitudes do not impact highly enough on EI among students. This may be explained with the fact that those are student freshmen and that they will develop stronger pro/contra attitudes towards entrepreneurship in the course of their studies. Certainly intense education and practice will have positive effect on their overall knowledge and attitudes.

Highest level of propensity to act, or highest level of entrepreneurial intentions is in general among last year students who are actively considering all career options because they will soon step out in the labor market. Gap between entrepreneurial intentions and behavior (start-up activity) is than smallest. Therefore, similar research should be undertaken among those students. The sample should include engineering and other studies to have a fully representative sample.

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# ANALYSIS OF SERVQUAL DIMENSIONS: THE CASE OF THE SCHOOL OF ECONOMICS AND BUSINESS, UNIVERSITY OF SARAJEVO

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## Abstract

The purpose of this paper is to analyze SERVQUAL dimensions at School of Economics and Business Sarajevo at all three cycles of study. From the purpose of the thesis, one main research question is derived: How is it possible to describe concept of service quality and specifically service quality in higher education and how can we measure it? After defining service quality, the author will answer the next research question: What are key elements of service quality in higher education institutions? The third research question is: Are there differences in the perception of certain dimensions of the SERVQUAL model by students of three cycles of study at School of Economics and Business in Sarajevo? And the fourth research question is: How to improve services quality at the School of Business and Economics in Sarajevo? The main goal of this paper is to identify the SERVQUAL dimensions that affect student satisfaction in higher education institutions.

In the empirical part author presents: SERVQUAL model, data collection, sampling, data analysis and the results of the research. The author has done a survey among students of all three cycles of studies at School of Business and Economics Sarajevo about service quality. The survey was done through SERVQUAL model, and it included 450 students from School of Business and Economics Sarajevo: 200 students from first cycle (undergraduate studies), 200 students from second cycle (master studies), and 50 students from third cycle (PhD studies).

The results showed that students overall expectations were higher than the perceived service at School of Economics and Business Sarajevo. The highest overall gap appears among PhD students. The highest gap appeared in the dimension of tangibles, -4.07, while the lowest gap appeared in the field of reliability which means that School of Economics and Business Sarajevo has to do improvements in the field of tangibles. The next highest gap was in the dimension of empathy, which means that School of Economics and Business Sarajevo has to do improvements in this field, since the gap is very high -3.71. The lowest negative gap appeared in the dimension of reliability, -1.80, but however there is a place for improvement.

A major limitation in this research is that the questionnaire respondents were mainly local students, and none of the respondents was international student. Another limitation of this research was sample size, lack of available data and lack of prior research studies on the topic.

**Keywords:** *SERVQUAL, service quality, higher education, perception, expectation*

**JEL classification:** M310 Marketing

## 1. Introduction

Educational service is intangible, expendable and at the same time it is produced by the service provider and consumed by users. The quality of education services in higher education institutions can not be objectively measured, but it is a complex and varied concept that should be explored. The conditions in which they operate academic institutions have significantly changed in recent years. In this sense it is important to mention technologically progress that has improved ways of teaching and learning. High quality service is an essential prerequisite for competitiveness and survival in the market of higher education. As with most of the services, also in higher education students' expectations significantly affect the assessment of service quality, and satisfaction of students. For the admission to higher education institutions, students' expectations are based on their past experiences of high school and the oral tradition of students who attend or have attended some of the programs. Apart from their concern about the quality of services, academic institutions are aware that satisfaction of students is very important since the students' satisfaction has a positive influence on their decision to continue their education at that institution.

Numerous studies in this area have shown that students' satisfaction has a positive effect on students' motivation, their attendance, to attract prospective students and increase revenue (Vranesovic, 2006, p. 13). Faculties are aware that education is a service industry and that it is of paramount importance to meet the needs and desires of their clients/students. Nowadays educational service does not merely mean the teacher - student relationship and lectures, but the process involves a comprehensive process - from the entrance of the student, ie. their applications for enrollment until the completion of the study and its inclusion in the alumni association.

Quality is one of the most used and most determined terms in the business world. According to Golder, Mitra and Moorman (2012, p. 18) quality is probably the most important and most complex component of a business strategy. Customers look for quality in services and products, so companies compete on quality and markets are transformed by it. Quality is important and one of the most frequent focuses of research in many disciplines such as: marketing, management, economics, engineering, and operations, strategy and market research.

Measuring customer satisfaction is not a new concept, but not everyone is fully aware of the importance of satisfaction (Hameed & Amjad, 2011, p. 154). According to Yanhong Li and Kaye (1999, p. 119) it is far more expensive to attract new costumers than to retain existing ones, and this also applies for higher educations institutions in the sense of keeping current students to continue their education (2<sup>nd</sup> and 3<sup>rd</sup> cycle of studies) at their institution. In addition, a large number of prospective students base their decision on the experiences of former students. In this part experience of students is essential, and a powerful influence in the transmission of positive and negative experiences in particular has a "word of mouth" whose influence is often underestimated. Interference on the issue of student satisfaction may lead us to the conclusion that the key problem in meeting the needs of students lies in meeting the expectations of students that are directly related to student motivation, ability of the teaching staff and the opportunities that faculty offers in terms of technical support. But what does quality service in higher education mean? From the client's perspective American Society for Quality gave a definition of quality: Quality is a subjective term for which each person has their own definition. According to Yanhong Li and Kaye (1999, p. 120) quality management is a group of measures that are regularly taken at the institutions, to ensure the quality of higher education, with an emphasis on quality improvement as a whole. The quality of educational experience of students is influenced by many factors, so the institution must guarantee the quality of each element.

Measurement of service quality in higher education confronts the complexity of services intangibility and the presence of the various stakeholders quality requirements (Klaric & Kulasin, 2011, p. 824). Such circumstances require dominant approach in solving problem of measuring service quality in higher education which is similar to the approach in other service sectors, where are used surveys with internally designed questionnaires. Interest in the measurement of service quality is high and service quality is an abstract and elusive concept that is difficult to define and measure. Also, it is significant that such measurements often overlook or completely ignore the problem factors of service quality in higher education, because the quality of services is often viewed as a one-dimensional category (Klaric & Kulasin, 2011, p. 826). Public universities, therefore, as the solution suggest general acceptance of instruments measuring service quality, statistically reliable and valid, where the quality of service is treated as a multidimensional construct.

The purpose of this paper is to analyze service quality at School of Economics and Business Sarajevo at all three cycles of study. From the purpose of the paper, one main research question is derived: How is it possible to describe concept of service quality and specifically service quality in higher education and how can we measure it? After defining service quality, the author will answer the next research question: What are key elements of service quality in higher education institutions? The third research question is: Are there differences in the perception of certain dimensions of the SERVQUAL model by students of three cycles of study at School of Economics and Business in Sarajevo? And the fourth research question is: How to improve services quality at the School of Business and Economics in Sarajevo?

The main goal of this paper is to identify the basic elements that affect student satisfaction in higher education institutions. In the paper author plans to achieve the following objectives: to present the theoretical background of service quality; to present ways of measurement of service quality; to examine elements of service quality; to analyze service quality at School of Economics and Business Sarajevo at all three cycles of studies; to analyze differences in the perception of certain dimensions of the SERVQUAL model by students of all three cycles of study at School of Economics and Business in Sarajevo; to give recommendations for improvement of service quality.

The paper consists of two main parts – theoretical part and empirical research. The theoretical part will be based on the available literature, published scientific articles and other resource related to the service quality literature review. Research will be provided in the empirical part the: SERVQUAL model, data collection, sampling, data analysis and the results of the research. The survey has been done trough SERVQUAL model questionnaire, and included 450 students from School of Business and Economics Sarajevo: 200 students from first cycle (undergraduate studies), 200 students from second cycle (master studies), and 50 students from third cycle (PhD studies).

## **2. Literature review**

This chapter presents an overview of current literature in the frame of the presented research problem. Following sections of this chapter begins with background of quality, after that author will present the concept of service quality, quality in higher education and measurement of service quality.

## **2.1 Background of Quality**

The concept of quality is derived from the Latin word *qualitas* (property, excellence, value, quality, characteristic, feature, capability). Our distant ancestors manage the quality, as evidenced by the stored data from Mesopotamia, Egypt and China. Demand for quality is likely to occur in the very first forms of business, so-called barter or exchange of tangible goods.

The beginning of development of quality control begins in 1910th, when the company Ford (founded in 1907th year) introduced the practice of manufacturing automotive industry based on principles of Organization F. W. Taylor. A function of control was in the process of separating the bad of good products and it became independent and separate from the production function.

In the most general sense, the quality is a trait that denotes a particular object or phenomenon and distinguishes them from other objects or phenomena. There is no unique definition of quality. The reason is that the quality is in fact perception of quality. What the user perceives as quality, it is the quality (Kelly, 1997). Deming (1986) says that quality is predictable ratio of standardization and costumization with low price and market orientation, and Juran (1970) considers that quality as the suitability requirements estimated by the user.

The history of quality is as old as the history of mankind. Quality has different meanings for people, organizations, nations and civilizations. Therefore, there are different interpretations of scientists, philosophers, producers, users, etc. System series of ISO 9000 defines quality as the totality of features and product features underlying their ability to meet the explicit requirements.

## **2.2 The concept of Service Quality**

The main tasks of a company are quality assurance and quality management. According to Trivun, Vranic and Kenjic (2009, p. 321) in the last decade quality has become an important preoccupation of enterprises, companies and educational institutions among many others in the world. The adoption of quality system has to be a strategic decision of an organization. The application of the quality management system in the organization is under the influence of different requirements, specific objectives, products or services offered the process and the size and structure of the organization (Trivun et al., 2009, p. 322). Kotler and Lee (2006) claim that it is important to satisfy all five stakeholders: owners; employees; partners; members; environments (communities).

It is very difficult to unambiguously determine the definition of quality that would encompass all its aspects and accurately determine the essential elements. Although in principle, all people can recognize quality, the problem usually occurs when we try to clarify what it does. Different views of observation further complicate attempts to clarify the phenomenon of quality. Depending on the perspective of the individual, the quality can vary. What for someone is a high level of quality, the other person may consider as an average quality or even low level of quality. Depending on the perception of quality, and established standards for certain areas, the process of comparing the standards can approximately determine the level of quality (Thompson & Strickland, 2001). According to Yanhong Li and Kaye (1999, p. 119) measuring the level of achievement of agreed indicators, success in achieving quality standards is the usual way, which is used to facilitate the understanding of the quantitative, but also qualitative characteristics of the product or service. Quality understanding from the client's perspective is very close to the definition of quality that gave the American Society for Quality: "Quality is a subjective issue for which each person has his/her own definition."

## 2.3 Quality in higher education

The last decade was characterized by increasing of competition among higher education institutions. High quality service is an essential prerequisite for competitiveness and survival in the market of higher education. The biggest challenge for academic institutions is which level of quality institutions must achieve in order to remain competitive in the market. To successfully overcome the aforementioned challenges higher education institutions are required to identify students' needs and understand the formation of student perceptions of service quality. Students' expectations significantly affect the assessment of service quality, and students' satisfaction. For the admission to higher education institutions, students' expectations are largely based on their past experiences of high school and the positive experience of students who attend or have attended that program.

Besides taking care about the quality of services, academic institutions are becoming more aware of the importance of student satisfaction since students' satisfaction has a positive influence on their decision to continue their education at that institution. Students' satisfaction influences on student motivation, their attendance and increase of revenue of educational institution (Vranesevic, 2006, p. 14). Because of all the foregoing, higher education institutions are under pressure from government and society to achieve better relationship between the provided services and the financial compensation they receive and to make an effort to ensure a higher quality of education that will meet individual and social needs of students.

## 2.4 Measurement of Service Quality

Service quality is a major part of higher education institutions, which makes it important to correctly and properly research and measure its effectiveness. As mentioned above, service quality is based on multiple dimensions (Parasuraman et al., 1988, p. 29). The relationship between students' expectations and their satisfaction with teaching quality and success in overcoming some courses has an important role in shaping the reputation of academic institutions. At the same time, it affects the choice of students to switch from one institution to another. Recognizing the importance of these issues, many universities attach great attention to them when creating guidelines to improve the quality of their services. Here we will present four models of measuring the quality of services, which can be used by higher education institutions.

Parasuraman, Zeithaml and Berry (1988, p. 26) have published results of their research that they have done on service quality. Parasuraman, Zeithaml and Berry (1988, p. 28) introduced ten dimensions of service quality: reliability, accessibility, responsiveness, courtesy, competence, credibility, security, communication, understanding the customer and tangibles. In 1988, these ten components were reduced to five major dimensions that enable the acronym RATER: reliability, assurance, tangibles, empathy and responsiveness.

Based on disconfirmation models, Parasuraman et al. (1988, p. 30) supported the idea that service quality results from a comparison of actual performance of services and customer expectations. According to Çerri (2012, p. 120) in a research study that was published in 1988, Parasuraman et al. have reduced the number of service quality dimensions from ten to five, asserting that these five dimensions capture the domain of service quality. SERVQUAL is a reliable and robust instrument for measuring service quality. Since the 1985 when SERVQUAL was first published, its creators Parasuraman, Zeithaml and Berry (1988), have been working on its further development and to promote the technology through a series of publications.

SERVQUAL is designed to measure the quality of service in many service sectors: tire sales, dental services, hotel industry, travel and tourism, automobile maintenance, business schools, higher education, hospitals, accounting firms, banks, government agencies, etc.

The original SERVQUAL instrument consists of two sections, each containing 22 items. The first 22 items relate to respondents' expectations of service quality, while the other 22 items measure the actual performance of service provision. The level of service quality is represented by the gap between the expected and the perceived service. The 22 items represent the five service quality dimensions that have been specified as SERVQUAL dimensions. Quality service occurs when expectations are exceeded, while the opposite occurs as a gap. The gap may be negative when customers will be dissatisfied, or positive when customers could be delighted. The gap is the results for each statement calculated as the difference between perception and expectations. The essence of this instrument is called the gap or difference between the users' perception of service quality and their expectation. Authors of SERVQUAL define quality of service as a relation (1):

$$Q = P - E \quad (1)$$

where:

E - expectations of service users (expectations), measured with a 22 elements

P - perceptions of service users (perceptions), measured with 22 elements (Armstrong, Connie & Go, 1997, p. 104).

Cronin and Taylor (1992, p. 60) have quite strongly criticized the role of expectations in measuring the quality of services and they used the not confirming paradigm. They claimed that SERVQUAL is conceptually and operationally inadequate and together with SERVPERF they tested it in four service sectors: banking sector, fast food sector, dry cleaning sector and sector dealing with pest control services. Their study was later replicated and further results have shown empirical evidence supports the relevance of the P-E=quality gap as the basis for service quality measurement. According to Fogarty, Catts and Forlin (2000, p. 109) the questions of the SERVPERF scale can cover most of the wide area of service quality.

Besides SERVQUAL and SERVPERF, many authors also use Kano Model. Kano Model classifies product attributes into three categories: basic needs, performance needs, and delighters. A competitive product meets basic attributes, maximizes performances attributes, and includes as many "excitement" attributes as possible at a cost the market can bear (Ullman, 1997).

### **3. Previous empirical research about measuring service quality**

Service quality is often measured using SERVQUAL instrument, developed by Parasuraman et al. (1988, p. 26), especially when it comes to high-contact services such as: health care, education and tourism. In the following chapter author will present previous empirical research about measuring service quality in above mentioned high-contact services. These areas were chosen among other because this are high-contact services that can belong to the public sector, and a lot of research was done exactly in these areas, where SERVQUAL model was used.

In the empirical literature there exists a lot of service quality literature. Studies dealing with the expectations of students and their satisfaction and success in mastering the course of the study can be divided into two groups: studies that explain how students' expectations affect their perception of the quality of teaching and research to determine the factors of student satisfaction. Yahnong Li and Kaye (1999, p. 115) conducted a study on a sample of 228 students enrolled at



the University of Portsmouth who have attended courses in Construction and Mathematics. By using the non-parametric Mann-Whitney test they have proved that the expectations of students are relatively stable over time, while their perception of service quality changes during the study and the perceived level of quality decreases as the study progress decreases.

Chonko et al. (2002, p. 39) conducted a study on a sample of 750 students enrolled in the course Introduction to Economics at Baylor University in Texas. The results suggest that the actual perception of students often varies in relation to items that are assessed in the evaluation of teachers, and that there is a high correlation between the expectations that students have on teachers and teaching and how students evaluate teachers and teaching.

A certain number of studies of the economics of education are concerned with identifying the attitudes of students toward courses in theoretical economics. This research attempts to analyze the tendency of students to learn theoretical economics and explore their views on the importance of knowledge of theoretical courses to master other subjects or for future careers. Research suggests that courses in theoretical economics have often caused fear among a large section of students. For some students that fear has a positive impact that results in a greater effort, and sometimes it has a negative impact on the success as well as the student's perception of the economy (Benedict and Hoag, 2002, p. 69).

Vranesevic et al. (2006, p. 117) conducted a study on a sample of 350 students of the Faculty of Economics in Zagreb. Their study showed that the largest number of students considered that the teaching staff has an extremely important influence on their satisfaction with the services at Faculty of Economics in Zagreb, while nearly half (47%) believes that non-teaching staff has an extremely insignificant impact on their satisfaction even though students are the least satisfied with non-teaching staff.

Babic-Hodovic and Mehic (2004, p. 181) have conducted a research at School of Economics and Business Sarajevo. They have researched basis for marketing strategy of higher educational institutions, using Kano and SERVQUAL model. The main goal of this research was to apply dimensions of quality models evaluated by students, provided in the Kano model and SERVQUAL model on the education process of School of Economics and Business Sarajevo in order to approve that they may be used as a sound basis for creating a marketing strategy (Babic-Hodovic & Mehic, 2004, p. 182). Fah and Kandasamy (2011) remarked that SERVQUAL five dimensions, as well as ecological concept and desing had major relationship with customer satisfaction in Malaysian hotels (Markovic&Jankovic, 2013).

#### **4. Empirical research: service quality at School of Economics and Business Sarajevo**

In this chapter author will present the results of empirical research that has been done at School of Economics and Business Sarajevo. Here methodology, empirical data and results will be presented. The concept of research methodology is extensive and it can be classified as a tool for problem solving or a way to conduct and gather new knowledge.

## 4.1 Data and Research methodology

The empirical research was conducted at School of Economics and Business Sarajevo. The primary data was collected through SERVQUAL model questionnaire. The questionnaire was divided into three parts. The first part of the questionnaire dealt with demographic questions. In the second part of the questionnaire students were expected to rank their expectations regarding service quality at School of Economics and Business Sarajevo. The third part of the questionnaire examined the student's perceptions toward the service quality at School of Economics and Business Sarajevo. The model SERVQUAL that was used has 22 questions (Appendix A). The 22 attributes of the SERVQUAL model that was used are classified in five dimensions: reliability, assurance, tangibles, empathy and responsiveness. The attributes were assessed by the respondents by using a seven-point Likert scale where 1 represented “strongly disagree” and 7 represented “strongly agree”. The questionnaire was distributed online in June 2014, through the program Google Drive and the data was collected in June 2014. Author has distributed 450 questionnaires to current students at School of Economics and Business Sarajevo, and by the end of June 2014 all 450 students have answered the questionnaire, and all the questionnaires were valid. Respondents were chosen according to cycle of study. The respondents that were of interest were current students of all three cycles of study at School of Economics and Business Sarajevo. The paired t-test analysis was used to make a comparison of students’ perception and their expectations. The effect size evaluates the standard mean effect, and expresses the mean difference between two groups in standard deviation units. This means that the value of the means for students' expectations was compared to the mean value of students' perceptions.

## 4.2 Respondents profile

Demographic features of the respondents are shown in Table 5 and were analyzed through descriptive statistical analysis. The sample had more female respondents (56%) than male respondents (44%). Most of the respondents are from the age group of 22-25 (49%), and the age group of 18-21 (33%). From the sample of 450 respondents, 11% of them are from the age group of 26-30, 5% of the age group of 31-40, and 1% each from the age groups of 41-50 and above 51. Most of the respondents, 45% each, are studying at the first and second cycle of study (bachelor and master) and 11% of respondents are studying their third cycle, PhD.

**Table 1.** Profile of respondents

Item	Number (n=450)	Percentage of the sample (n=450)
<b>Gender</b>		
Female	253	56
Male	197	44
<b>Age</b>		
18-21	148	33
22-25	221	49
26-30	47	11
31-40	27	5
41-50	6	1
51 and more	1	1
<b>Level of study</b>		
Bachelor – 1st cycle	200	45
Master – 2nd cycle	200	45
PhD – 3rd cycle	50	11

### 4.3 Results

In the following tables there is given detailed overview of the attributes that students were asked to observe. They were first asked about their expectations, and then about the perceptions they have about service quality at School of Economics and Business Sarajevo. Perceptions and expectations are compared and shown as the service quality gap.

**Table 2.** Students' of 1st cycle of study expectations and perception of service quality at School of Economics and Business Sarajevo

Statement	Expectations		Perceptions		Gap	t-value	D Effect size
	Mean	SD	Mean	SD			
<b>Tangibles</b>							
1 SEBS* has up-to-date equipment.	6.68	0.46	3.08	1.07	-3.60	3.91	4.68
2 The facilities of SEBS are visually appealing.	6.77	0.62	2.19	1.09	-4.58	3.67	5.31
3 The employees of SEBS are well dressed and appear neat.	6.48	0.81	2.66	1.04	-3.82	1.08	4.11
4 The appearance of SEBS facilities corresponds to the services provided.	6.68	0.46	2.40	0.98	-4.28	4.42	5.90
<b>Reliability</b>							
5 When SEBS makes a commitment to provide a service at the scheduled time, it does so.	6.59	0.67	3.85	1.15	-2.73	1.79	3.00
6 SEBS shows consideration for students' problems.	6.65	0.68	2.72	1.88	-3.93	3.50	3.06
7 SEBS is reliable.	6.58	0.67	3.50	1.47	-3.08	2.48	2.87
8 SEBS provides services at the scheduled time.	6.55	0.82	4.16	0.87	-2.39	6.29	2.80
9 SEBS keeps its records accurately.	6.61	0.63	3.91	0.48	-2.70	7.05	4.82
<b>Responsiveness</b>							
10 Working hours of SEBS are adjusted to all students.	4.77	1.34	4.43	1.61	-0.34	0.02	0.23
11 The employees of SEBS do provide prompt service.	2.69	2.28	5.21	2.05	2.51	8.62	-1.15
12 The employees of SEBS are always willing to help students.	2.46	2.16	5.93	1.60	3.47	5.72	-1.84
13 The employees of SEBS are never too busy to answer students' requests.	2.58	2.33	5.73	1.49	3.15	1.68	-1.64
<b>Assurance</b>							
14 Students can have confidence in employees at SEBS.	6.38	0.91	3.79	1.55	-2.58	4.06	2.08
15 While performing transactions with employees at SEBS you feel confident.	6.25	0.81	4.52	0.71	-1.73	4.10	2.27
16 Employees of SEBS are polite.	6.69	0.46	4.27	2.00	-2.42	1.16	1.96
17 Employees are provided adequate support by SEBS in order to perform their jobs successfully.	5.98	1.07	3.86	0.69	-2.12	5.73	2.40
<b>Empathy</b>							
18 SEBS does give students individual attention.	2.83	1.99	4.28	1.99	1.45	2.14	-0.72
19 Employees of SEBS give you individual attention.	3.07	2.22	4.50	1.94	1.43	3.55	-0.68
20 Employees of SEBS know your needs.	2.72	2.07	5.75	1.90	3.03	2.78	-1.52
21 SEBS takes thoughtful care of you.	2.49	2.22	5.83	1.31	3.33	1.34	-1.88
22 SEBS informs students about the time of a service to be provided.	3.00	2.41	4.44	1.03	1.43	2.48	-0.83

Note: \*School of Economics and Business Sarajevo

**Table 3.** Students' of 1st cycle of study expectations and perception of service quality at School of Economics and Business Sarajevo through dimensions

Dimensions	Expectations	Perceptions	
	Mean	Mean	Gap
Tangibles	6.65	2.58	-4.07
Reliability	6.59	3.62	-2.96
Responsiveness	3.12	5.32	2.19
Assurance	6.32	4.11	-2.21
Emphaty	2.82	4.96	2.13
<b>Overall mean of five dimensions</b>	<b>5.10</b>	<b>4.12</b>	<b>-0.98</b>

**Table 4.** Students' of 2nd cycle of study expectations and perception of service quality at School of Economics and Business Sarajevo

Statement	Expectations		Perceptions		Gap	t-value	D Effect size
	Mean	SD	Mean	SD			
<b>Tangibles</b>							
1 SEBS has up-to-date equipment.	5.99	0.24	3.00	0.00	-2.99	1.44	24.49
2 The facilities of SEBS are visually appealing.	5.95	0.99	3.47	0.49	-2.47	2.72	3.30
3 The employees of SEBS are well dressed and appear neat.	5.52	0.49	3.47	0.49	-2.04	8.84	4.09
4 The appearance of SEBS facilities corresponds to the services provided.	6.00	0.00	2.52	0.49	-3.47	1.62	13.92
<b>Reliability</b>							
5 When SEBS makes a commitment to provide a service at the scheduled time, it does so.	5.47	0.49	4.00	0.00	-1.47	3.04	5.91
6 SEBS shows consideration for students' problems.	5.52	0.49	2.47	0.49	-3.04	7.12	6.09
7 SEBS is reliable.	5.47	0.49	4.47	0.49	-1.00	5.46	2.00
8 SEBS provides services at the scheduled time.	5.00	0.14	4.00	0.00	-1.00	6.26	14.35
9 SEBS keeps its records accurately.	6.00	0.00	3.52	0.49	-2.47	5.03	9.92
<b>Responsiveness</b>							
10 Working hours of SEBS are adjusted to all students.	5.52	0.49	3.47	0.49	-2.04	8.84	4.093
11 The employees of SEBS do provide prompt service.	5.52	0.49	2.52	0.49	-3.00	2.68	6.00
12 The employees of SEBS are always willing to help students.	5.52	0.49	3.52	0.49	-2.00	2.40	4.00
13 The employees of SEBS are never too busy to answer students' requests.	6.00	0.00	3.52	0.49	-2.47	5.03	9.92
<b>Assurance</b>							
14 Students can have confidence in employees at SEBS.	5.00	0.00	4.04	0.99	-0.95	1.16	1.91
15 While performing transactions with employees at SEBS you feel confident.	6.00	0.00	4.52	0.49	-1.47	3.04	5.91
16 Employees of SEBS are polite.	6.00	0.00	3.52	0.49	-2.47	5.03	9.92
17 Employees are provided adequate support by SEBS in order to perform their jobs successfully.	5.47	0.49	2.95	0.99	-2.52	2.93	3.36
<b>Empathy</b>							
18 SEBS does give students individual attention.	5.00	0.00	2.95	0.99	-2.04	2.80	4.09
19 Employees of SEBS give you individual attention.	6.00	0.00	3.47	0.49	-2.52	1.09	10.09
20 Employees of SEBS know your needs.	5.00	0.00	2.95	0.99	-2.04	2.80	4.09

21 SEBS takes thoughtful care of you.	6.00	0.07	4.00	0.00	-2.00	2.56	56.99
22 SEBS informs students about the time of a service to be provided.	6.00	0.07	3.00	0.00	-3.00	0.00	85.41

**Table 5.** Students' of 2nd cycle of study expectations and perception of service quality at School of Economics and Business Sarajevo through dimensions

Dimensions	Expectations	Perceptions	
	Mean	Mean	Gap
Tangibles	5.86	3.11	-2.74
Reliability	5.49	3.69	-1.80
Responsiveness	5.64	3.26	-2.38
Assurance	5.61	2.25	-3.36
Emphaty	5.60	1.88	-3.71
<b>Overall mean of five dimensions</b>	<b>5.64</b>	<b>2.84</b>	<b>-2.80</b>

**Table 6.** Students' of 3rd cycle of study expectations and perception of service quality at School of Economics and Business Sarajevo

Statement	Expectations		Perceptions		Gap	t-value	D Effect size
	Mean	SD	Mean	SD			
<b>Tangibles</b>							
1 SEBS has up-to-date equipment.	6.11	0.32	3.01	0.14	-3.09	1.00	13.31
2 The facilities of SEBS are visually appealing.	6.01	1.00	3.50	0.50	-2.50	1.83	3.31
3 The employees of SEBS are well dressed and appear neat.	5.49	0.50	3.50	0.50	-1.98	2.16	3.92
4 The appearance of SEBS facilities corresponds to the services provided.	5.98	0.24	2.49	0.50	-3.49	3.55	9.31
<b>Reliability</b>							
5 When SEBS makes a commitment to provide a service at the scheduled time, it does so.	5.50	0.50	4.01	0.14	-1.49	5.93	4.62
6 SEBS shows consideration for students' problems.	5.49	0.50	2.50	0.50	-2.98	1.48	5.90
7 SEBS is reliable.	5.50	0.50	4.50	0.50	-1.00	9.80	1.98
8 SEBS provides services at the scheduled time.	5.13	0.44	4.01	0.14	-1.11	1.49	3.80
9 SEBS keeps its records accurately.	6.05	0.23	3.49	0.50	-2.56	9.62	6.91
<b>Responsiveness</b>							
10 Working hours of SEBS are adjusted to all students.	5.49	0.50	3.50	0.50	-1.98	2.16	3.92
11 The employees of SEBS do provide prompt service.	5.49	0.50	2.49	0.50	-3.00	8.23	5.94
12 The employees of SEBS are always willing to help students.	5.49	0.50	3.49	0.50	-2.00	9.84	3.96
13 The employees of SEBS are never too busy to answer students' requests.	6.01	0.14	3.49	0.50	-2.52	3.58	7.84
<b>Assurance</b>							
14 Students can have confidence in employees at SEBS.	5.05	0.31	3.98	1.00	-1.07	8.44	1.63
15 While performing transactions with employees at SEBS you feel confident.	6.01	0.14	4.49	0.50	-1.52	1.58	4.74
16 Employees of SEBS are polite.	6.01	0.14	3.49	0.50	-2.52	3.58	7.84
17 Employees are provided adequate support by SEBS in order to perform their jobs successfully.	5.50	0.50	3.01	1.00	-2.49	2.86	3.28
<b>Empathy</b>							

18 SEBS does give students individual attention.	5.03	0.28	3.01	1.00	-2.01	7.18	3.13
19 Employees of SEBS give you individual attention.	6.01	0.14	3.50	0.50	-2.50	5.50	7.78
20 Employees of SEBS know your needs.	5.01	0.24	3.01	1.00	-2.00	1.44	3.19
21 SEBS takes thoughtful care of you.	6.01	0.14	3.98	0.14	-2.03	7.16	14.56
22 SEBS informs students about the time of a service to be provided.	5.98	0.14	3.01	0.14	-2.96	7.36	21.14

**Table 7.** Students' of 3rd cycle of study expectations and perception of service quality at School of Economics and Business Sarajevo through dimensions

Dimensions	Expectations	Perceptions	
	Mean	Mean	Gap
Tangibles	5.90	3.13	-2.76
Reliability	5.54	3.70	-1.83
Responsiveness	5.62	3.24	-2.37
Assurance	5.65	2.25	-3.40
Emphaty	5.61	1.93	-3.68
<b>Overall mean of five dimensions</b>	<b>5.66</b>	<b>2.85</b>	<b>-2.81</b>

**Table 8.** Comparison between students' of all three cycle of study expectations and perception of service quality at School of Economics and Business Sarajevo through dimensions

Dimension	1st cycle of study			2nd cycle of study			3rd cycle of study		
	E	P	GAP	E	P	GAP	E	P	GAP
Tangibles	6.65	2.58	-4.07	5.86	3.11	-2.74	5.90	3.13	-2.76
Reliability	6.59	3.62	-2.96	5.49	3.69	-1.80	5.54	3.70	-1.83
Responsiveness	3.12	5.32	2.19	5.64	3.26	-2.38	5.62	3.24	-2.37
Assurance	6.32	4.11	-2.21	5.61	2.25	-3.36	5.65	2.25	-3.40
Emphaty	2.82	4.96	2.13	5.60	1.88	-3.71	5.61	1.93	-3.68
<b>Overall mean of five dimensions</b>	<b>5.10</b>	<b>4.12</b>	<b>-0.98</b>	<b>5.64</b>	<b>2.84</b>	<b>-2.80</b>	<b>5.66</b>	<b>2.85</b>	<b>-2.81</b>

#### 4.4 Discussion of the results

The objective of this paper was to analyze and evaluate perception of service quality provided by the School of Economics and Business Sarajevo. The results showed that students overall expectations were higher than the perceived service at School of Economics and Business Sarajevo. Students of bachelor studies had highest expectations in the dimension of tangibles, as well as students of master studies and of PhD studies. Bachelor students had the lowest expectation in the dimension of empathy, while master and PhD students had lowest expectations in the dimension of reliability. Bachelor students had the highest perception in the dimension of responsiveness, while master and PhD students in the dimension of reliability. Their lowest perception was in the dimension of tangibles and empathy. If we compare all three cycles, we can see that students of higher cycles of studies have lower expectations. The reason for this may lie in their changes in life, such as employment, so their primary obligation is no longer only university, as it was in the first cycle of studies, and they are oriented towards other obligations.

The highest overall gap appears among PhD students. The highest gap appeared in the dimension of tangibles, -4.07, while the lowest gap appeared in the field of reliability which means that School of Economics and Business Sarajevo has to do improvements in the field of tangibles: up-to-date equipment, facilities visual appealing, well dressed and neat employees and

appearance should correspond to the services provided. The next highest gap was in the dimension of empathy, which means that School of Economics and Business Sarajevo has to do improvements in this field, since the gap is very high -3.71. Empathy dimensions are as follows: School of Economics and Business Sarajevo gives students individual attention; employees of School of Economics and Business Sarajevo give individual attention to students; employees of School of Economics and Business Sarajevo know students needs; School of Economics and Business Sarajevo does not take thoughtful care of you; School of Economics and Business Sarajevo informs students about the time of a service to be provided. The lowest negative gap appeared in the dimension of reliability, -1.80, but however there is a place for improvement. The attribute that had the lowest mean expectation score should not be ignored; because it does not mean that it is not important, only that among all the attributes the students found that it was less important in comparison to other attributes.

There is always room for future improvement in any type of service, including the case of the examined School of Economics and Business Sarajevo. In order to make an improvement in service quality at School of Economics and Business Sarajevo few things should be brought to attention. One of the most important prerequisites for all of the other dimensions is empathy. Empathy dimension is fundamental for high-contact services and that is why a lot of attention has to be given to it. In the research analysis this dimension showed negative gap between expectations and perceptions, so a high standard should be set for this dimension and maintained. The employees of Schools of Economics and Business have to give students individual attention, they have to know the students' needs, to take thoughtful care of the students and to inform students about the time of a service to be provided.

Reliability is an important aspect in which service quality improvement should be made, especially through the example of School of Business and Economics Sarajevo. When promises are made to students, and especially when these promises are related to service delivery, including a certain time, these services have to be performed by that time. Time is an important aspect for students, especially to students who are employed, and they want to know and plan how long certain things will take. This should change and students should be informed roughly on how long a procedure should take, in condition that these are students who are active and responsible, and who did everything they needed from their side. By improving ways of informing the students, potential misunderstandings can be avoided. Once School of Economics and Business Sarajevo services move to the next level and provide better interaction with students, the biggest change will be that students will have a more personalized service approach, which means more interaction with professors, assistants, faculty board, etc. By knowing what the students needs are School of Economics and Business Sarajevo can have a better understanding of students' personal needs. Teachers are required to be excellent teachers with the adoption of new teaching methods, new technologies delivery of knowledge, innovation of the syllabus and curriculum within the department, and perform all administrative tasks.

One of the primary activities of all employees is to design programs of study attractive to prospective students, as well as for the labor market, of course, using the relevant input indicators. The focus is on the creation of flexible programs, multidisciplinary and interdisciplinary, as well as the planning and execution of programs or only certain subjects in English. Increasing the quality of teaching that is done in a foreign language is promoted through continuous training of teachers and assistants through mobility programs. In addition to the activities of teachers are regularly monitored, reviewed and improves the effectiveness of the support services that are available to students.

In the end School of Economics and Business Sarajevo should try to focus on promoting their educational programs and to make them available as much as possible to students, by educating students about School of Economics and Business Sarajevo. The website of School of Business and Economics should definitely have more language options on the site such as: German and Turkish, and in future the School of Economics and Business Sarajevo should consider moving their web page to the next level so that students can complete entire transactions online and make online payments and online applications possible. School of Economics and Business Sarajevo should also promote interaction with students in such a way that students do not hesitate to contact them and insist on interaction students service, teachers, management, etc.

## **Conclusion**

The quality of higher education remains an important concern in both research and practice. As the international competition intensifies, which is particularly the case with business schools across the globe, the quality of the offering and guarantees of that quality become a substantial concern for the schools themselves. On the other hand, finding the “right” way to measure service quality in general has been a subject of academic debate for a long time.

Higher education institutions are under pressure from government and society to realize what is possible to do in order to achieve better relationship between the services provided and students' satisfaction. According to the law on higher education in Bosna and Herzegovina every higher education institution is required to conduct the evaluation of the personnel, or the success of the implementation of curricula after the end of each year of study. During the evaluation higher education institutions are required to evaluate: quality of teaching, correctness in communication, relationship of teachers and students in the classroom, availability of literature to which teaching staff indicates the student, the presence of the teacher in the classroom, as well as other elements that higher education institution established in its statute. According to the law on higher education in Bosnia and Herzegovina higher education institutions are required to analyze the results of the evaluation. However, none of these results are published on the websites of faculties.

The main difficulty with educational services is that students are not customers and School of Economics and Business Sarajevo is not a business. The success of an educational institution is not measured in terms of profits, and students do not actually buy any products/services from the educational institution. This makes it harder to understand the motivation that should exist between both parties to make this work and function well. Students and School of Business and Economics Sarajevo need to have a mutual interest in their relations. This means that as much as School of Business and Economics Sarajevo needs to provide something to students, students need to be willing to provide feedback and interact. Considering what has been mentioned above, the contribution of this paper is to create awareness at School of Economics and Business Sarajevo to give more attention to service quality.

A major limitation in this research is that the questionnaire respondents were mainly local students, and none of the respondents was international student. Another limitation of this research was sample size, lack of available data and lack of prior research studies on the topic. Also, one of the limitations was SERVQUAL model itself, since this model examines only service quality, but not education curricula, so we do have results about service quality, but we do not know are the students satisfied with learning outcomes. So therefore, this can be an opportunity for expansion of this study. In the future, authors can add to the SERVQUAL model few questions that are of interest for higher education institutions, and in that way one can



research students satisfaction in the field of education at the institution. One can add questions about specific program, academic curricula, course, or learning outcomes, and those results would imply should higher education institutions put more effort in teaching process.

There are many opportunities to extend this study. For example, further studies on service quality measurements in higher education can focus on issues such as the impact of socio-demographic variables on service quality in higher education. Another opportunity may also look out whether the perceived quality levels differ by private and public universities in Bosnia and Herzegovina. This research can be also expanded in the direction researching higher cycle studies based on previously completed bachelor studies. It is possible to make comparisons between the satisfaction of students who have completed their bachelor studies at School of Economics and Business Sarajevo and students who are graduates of some other faculties. This research has treated perceived service quality from the students' perspective. Future research could be directed at investigating perceived service quality from a perspective of the business environment or other stakeholders. Additionally, it would be advisable to expand the present study involving international students.

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# INNOVATIONS IN DISTRIBUTION CHANNELS IN FMCG INDUSTRY AND COMPANY GROWTH

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## **Abstract**

The purpose of this paper is to investigate the impact of innovation in distribution channels on the market performance of the companies in the long run. This research is designed to thoroughly examine and evaluate the impact of innovation on the performance and growth of companies operating in FMCG (Fast Moving Consumer Goods) industry. FMCG are the products being sold fast on a relatively low price and in large quantities. Those are important items individuals purchase whenever they go for shopping and use in their daily lives. In this research paper snowball sampling is used to gather primary data from employee of FMCG industry 108 company and referrals multiple at each step to provide large sample for the research. Using a regression analysis, the findings show that innovation in had positive and significant relationships with firm growth. This paper also found that contemporary trends in FMCG industry require consolidation of local distributors/wholesalers in order to effectively use innovations successfully applied on major markets. This information could be crucial for companies, who intend to remain competitive in the global market. This paper briefly assesses the dynamics of FMCG industry and importance of innovation for organizational growth, development, market position of companies operating in FMCG industry. It will investigate the impact of innovation in complex international distribution systems on local distributors and help local distributors in realizing the importance of innovation for strong competitive position and its positive effects on company growth.

**Keywords:** *FMCG industry, innovations, Distributions Channels, regression analysis, company growth*

**JEL classification:** D3, L1, L2, M1, M3, O3, Y1

# DEMOGRAPHIC GROWTH AND GENDER INEQUALITY ON LABOUR MARKET IN CAMEROON

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## **Abstract**

The aim of this study is to measure the fertility and the children health impact on the inequality in labour market between men and women. Women are in majority without employment. The study concerns Cameroon, a sub-Saharan African country where many changes have been implemented since the enforcement of GESP<sup>6</sup>, with the view to achieve the MDGs<sup>7</sup>. We bid to show from our estimations that the number of births enlarges the family, what is an obstacle for women access to some high level of employment. The children health, which proceeds out of nutritional qualities of first and second child of the interval, reduces women's presence in labour market, despite their competences, and thus slows down sex equality on the labour market. The challenge is to propose to authorities' adequate policies and solutions to decrease this disparity by maintaining the birth level which secures child blossoming.

**Keywords:** female work, Gender Inequality, Labour market, fertility, Child health, Cameroon

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<sup>6</sup> Growth and Employment Strategy Paper

<sup>7</sup> Millennium Development Goals

# HOW EFFECTIVE IS ENVIRONMENTAL POLICY IN CURBING CO<sub>2</sub> EMISSIONS?: EVIDENCE FROM CEECs

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## Abstract

The purpose of this study was to analyse the presence of EKC hypothesis in the context of transition, namely CEEC-10 countries. More importantly, an attempt has been made to identify what role does the environmental policy and its specific policy measures play in understanding the EKC hypothesis. The results of our analysis provide robust evidence in support of EKC. However, economic significance of the squared income variable seems to suggest that environment is not sole function of income and that other, presumably and predominantly policy factors, along technological progress, play crucial role in protecting the environments. The results of econometric analysis indicate that environmental taxes pose important incentives structures that are effective in lowering CO<sub>2</sub> at initial stages of industrial development, while rigid regulatory framework and public investments in research and development seem to be strongly associated with lower CO<sub>2</sub> emissions. Likewise, technological innovation does play important role in curbing CO<sub>2</sub> emissions. This paper advances our understanding on the underlying mechanisms that explain the relationship between income and pollution while referring to the sample of transition economies, and by incorporating a number of policy factors that have not been empirically investigated in previous literature.

**Keywords:** *Environmental Kuznets Curve (EKC) Hypothesis, environmental policy, pollution, CO<sub>2</sub> emissions, transition countries*

**JEL classification:** Q51, Q55, Q58

# **THE IMPACT OF BUSINESS CLIMATE ON ENTREPRENEURSHIP DEVELOPMENT IN SOUTH-EASTERN EUROPEAN COUNTRIES**

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## **Abstract**

Entrepreneurship stimulates economic growth and development as well as innovation while at the same time simultaneously increasing opportunity and unleashing the creativity of citizens. Thus, entrepreneurs are central element in constructing prosperous communities that provide opportunity to all. In emerging markets around the world, including South-Eastern European countries, interest in entrepreneurship is presently at the highest level ever, especially among population of young people who desire to move up value chains. Hence, entrepreneurship is perceived as one of the most effective economy instruments for solving the issue of youth unemployment, which is particularly high in the selected countries: Albania, Bosnia and Herzegovina, Bulgaria, Croatia, Greece, Kosovo, FYR Macedonia, Montenegro, Romania, Serbia, Slovenia and Turkey. In the process of creating adequate business climate suitable for the growth and development of private sector, national governments play a significant role representing the essential subject in creating opportunities for entrepreneurs and accelerating dynamics of the marketplace. The objective of this research paper is to evaluate role and importance of business climate on entrepreneurship development as a critical factor of market function with special focus on Bosnia and Herzegovina for which it represents one of the requirements on path towards European Union, Euro-Atlantic and regional integrations.

SMEs as a foundation stone of innovation and competitiveness of any market are presented in context of South-Eastern Europe focusing on their unquestionable correlation with the national economic growth and development. Certain attention is devoted in clarification of entrepreneurial philosophy regardless of business entity size, ownership or industry as an important factor of effective management strategy in contemporary business environment which is characterized by continuous change and speedy ICT development. Secondary data form several internationally

recognized sources relevant to the subject matter were collected, such as reports from World Bank, International Monetary Fund, Global Entrepreneurship Monitor, Doing Business and Eurostat as well as reports from national statistical agencies on entrepreneurship activity. Then appropriate data were integrated and used for methodological execution of longitudinal comparative analysis between thirteen selected countries. Dynamics of prospect entrepreneurship development in the South-Eastern Europe region is evaluated based on the analysis and current trends, while institutional and economic factors that possibly could become barriers and challenges are identified. In the end, economic policy recommendation and necessary future activities are highlighted with aim to increase the pace of entrepreneurship activity as an essential pillar of growth and development in the region, especially in the case of Bosnia and Herzegovina for which results show very limited progress in entrepreneurship development and creating adequate business climate which will support SMEs as well as foreign investments.

**Keywords:** *entrepreneurship, SMEs, economic growth and development, EU and regional integrations, economic policy*

**JEL classification:** L26, F15, R11

# ANALYSIS OF NON-PERFORMING LOANS IMPACT ON FINANCIAL STABILITY: EVIDENCE FROM BOSNIA AND HERZEGOVINA BANKING SECTOR

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## Abstract

Non-performing loans are one of the main sources of systematic risk and threat to financial stability. Recent financial crisis resulted in non-performing loans growth what causes a lot of problems in financial stability of banking systems all around world. This paper examines the impulse response function of financial stability measured by capital adequacy ratio and non-performing loans in Bosnia and Herzegovina banking sector. Vector autoregression analysis was employed in order to explore how the Bosnia and Herzegovina banking sector financial stability responds to the impulse of changes in non-performing loans. Before running the vector autoregression analysis, the determination of appropriate lags length through the Akaike Information Criterion, Schwarz's Bayesian Information Criterion and Hannan and Quinn Information Criterion was carried out. Quarterly data for capital adequacy and non-performing loans for the period 2000-2015, were used. Time period covered by this research is appropriate since it covers pre-crisis and crisis period. Therefore, it enables identification of point at time when a large proportion of non-performing loans occurs and, followed by that, possible deterioration in financial stability. Data for Bosnia and Herzegovina banking sector have been gathered from International Monetary Fund Financial Soundness Indicators. Main goal of this research is analysis of financial stability response on changes in non-performing loans. Therefore, purpose of this paper is modelling relations between non-performing loans and financial stability. The study shows that financial stability of Bosnia and Herzegovina banking sector, measured by capital adequacy ratio, negatively reacts to changes in non-performing loans. Regression model have shown that increase in non-performing loans leads to deterioration in financial stability of the banking sector. The Granger causality Wald test was performed in order to determine if the changes in non-performing loans Granger-cause financial stability in Bosnia and Herzegovina banking sector. Given results indicate on long-term and short-term connection between these variables and causation of changes in financial stability from non-performing loans. Further, these results indicates on importance of non-performing loans monitoring as one of the main sources of systematic risk which could threaten banking sector financial stability.

**Keywords:** non-performing loans, financial stability, impulse, banking, restructuring

**JEL classification:** G00, G2



## **1. Introduction**

High level of non-performing loans in banking sector and rising tendency leads to increase of allocated assets for those credits and, thus, potential decrease in profitability and capital adequacy of single banks and entire banking sector. Existing literature pointed out that increase in non-performing loans negatively affects economic growth by decrease in loanable funds. Therefore, banking sector financial stability is the greatest concern of regulatory authorities and other financial participants in Bosnia and Herzegovina. Financial literature as well as researches from other countries indicates on importance of non-performing loans in sense of banking sector financial stability. The maintenance of financial stability is of a huge importance, not just for Bosnia and Herzegovina, but also for other Balkan countries. Global financial crisis has opened a new chapter in observing the objectives of central banks. In fact, the question of central banks role in the prevention, management and resolution of crises arises. Last crisis has shown that the functioning of the economy and the financial system is less affected by inflation (if it does not exceed to the hyperinflation) than financial instability. In inflationary conditions real and financial system can operate with fewer or greater difficulties, however, in terms of financial instability there is a complete "paralysis" of real and financial flows. Central bank of Bosnia and Herzegovina under the financial stability means a condition in which financial system is capable to absorb shocks without significant disruptions in its temporary and future functioning, without negative effects on entire economy. The primary goal of Central bank of Bosnia and Herzegovina is financial stability maintenance. The task of the Central Bank of Bosnia and Herzegovina arising from the Law on the CBBH. Thus, this institution play a significant role in development and implementation of policy stability. The greatest part of Bosnia and Herzegovina financial sector represent banking sector. Thus, problems in financial stability in this part of financial sector could cause problems in financial stability of entire financial sector.

Analyzing the banking sector of Bosnia and Herzegovina from its beginning to today, it can be concluded that it has been significantly changed. First of all, there has been a rise in importance of banks at entire financial system. Also, significant credit growth is noticeable. Furthermore, it's obvious that demand for credits is extremely fast growing. Capital adequacy is, mainly, at satisfactory level. Despite all advantages and positive data from Bosnia and Herzegovina banking sector, it's important to mention that non-performing loans representing the greatest threat to banking health and financial stability. Thus, level of non-performing loans at second quarter of 2015th was 14.07%, which was, mainly, caused by high level of non-performing loans in several banks.

Non-performing loans are one of the greatest obstacle to economic development since their direct impact on credit growth. This lead to decrease in credit activity what make this problem solution as priority. They have achieved the highest level in countries that have experienced a deep economic crisis and which even before the crisis has significant credit expansion.

## **2. Literature review**

By analyzing the available literature and other authors' papers, better insight into research situation in this area was gotten. It was researched what the authors of similar intentions are written in the area of credit risk, non-performing loans, financial stability and banking in general. Practical and empirical results of research conducted in United Kingdom indicates on positive relation between market concentration and non-performing loans ratio that can be only explained

by market expansion caused by granting risk groups. On the other hand it was shown that capital adequacy positively correlates with market concentration (Yoonhee, 2006). Further, the impact of bank ownership concentration on two riskiness indicators: non-performing loans and capital adequacy was measured. It was proven that concentrated ownership significantly reduce the non-performing loans and that this depends on supervisory control and the right to protection of shareholders. Berle-Means model was tested in order to check if the higher ownership concentration means better performances. Results indicates that banks with greater credit portfolio have better capital adequacy ratios. Also it was disclosed that banks with poorer managerial efficiency have poorer capital adequacy ratios. Therefore, it was proven that ownership concentration doesn't have impact on capital adequacy ratio, but does have negative impact on non-performing loans. Also it was proven that stronger supervisory control reduces the impact of ownership concentration on non-performing loans (Shehzad, Haan, & Scholthes, 2010). Further, the research conducted in Croatia for the subject had level of non-performing loans, level of individual and portfolio risk of Croatia banking sector. The correlations between these variables with macroeconomic indicators were investigated (Sverko, et al., 2010). The connection between credit growth, asset quality and internal and external factors in developing countries was investigated. Authors have proved that economic growth slowdown, the weakening of the exchange rate and fast credit growth are independently connected with higher non-performing loans ratio. (De Bock & Demyanets, 2012). Next research has proved significant negative impact of import and industrial production on non-performing loans. This means that increase in export and industrial production causes economy increase and follow by that decrease of non-performing loans (Fawad & Taqadus, 2013). The following research focused only on the financial system in general and its correlation with global imbalances. It was shown that the global imbalance has only a weak correlation with the financial imbalance, in comparison with the indicators obtained from the financial system (Taylor, 2013). The effect of pro-cyclicality in the euro area together with impact of Basel III on cyclicality and their reflection on non-performing loans was investigated (Horvatova, 2013).

Since in Croatia as well as in Bosnia and Herzegovina, banking sector is dominant in the financial system, and in a way that banks play a major role in financing the Croatian economy, the financial stability of this sector during the financial crisis was investigated. The authors analyzed the effects of the financial crisis on the stability of the banking sector through a series of indicators of the banking sector, including: the number of banks, banking intermediation, concentration, foreign ownership and liquidity. Based on the analysis of data showed that the Croatian banking sector, despite exposure to the financial crisis, remained stable (Zivko & Kandzija, 2013). Financial stability in the 14 countries of Asia from 2003 to 2010 and the impact of banking competition, concentration, control and state institutions on the likelihood of banks bankruptcy were analyzed. Results have affirmed that greater concentration encourages financial fragility, so that the lower prices cause greater banks exposure (Xiaoqing , Yongjia, & Molyneux, 2014). The following paper investigated the importance of conducting stress tests to support the monitoring of financial stability and the interconnections in the financial system. This research has indicated on those short-term and long-term goals of the stress tests to which attention should be paid (Bookstaber, et al., 2014). The following research analyze the strengths of Central Eastern Europe banking market and impact of financial crisis. The paper presents three conclusions as follows: there is an obvious convergence of the country's development and market power in the pre-crisis period, asset quality and capitalization have direct impact on margin in pre-crisis as well in crisis period (Efthyvoulou & Yildirim, 2014). Further, research conducted in banking sector of Turkey examines effects of macroeconomic variables such as commercial loan

interest rates and public debt to GDP ratio, on non-performing loans for period 2002-2013. Econometric analysis has shown that changes in non-performing loans could be explained by analyzed macroeconomic variables (Islamoglu, 2015). The authors of following paper have shown development of an aggregate index for financial stability measurement at Balkans. Actual, this index collapse selected International Monetary Fund Financial Soundness Indicators and macro prudential indicators together with World Bank development indicators and measures of world economic climate (Karanovic & Karanovic, 2015). The following research analyze Bosnia and Herzegovina banking sector. It focuses on identification of causes and consequences of non-performing loans. Research prove that better liquidity control leads to lower level of non-performing loans as well as that higher level of non-performing loans leads to lower financial result. This potentially could threaten the bank's capital (Kozaric & Zunic, 2015).

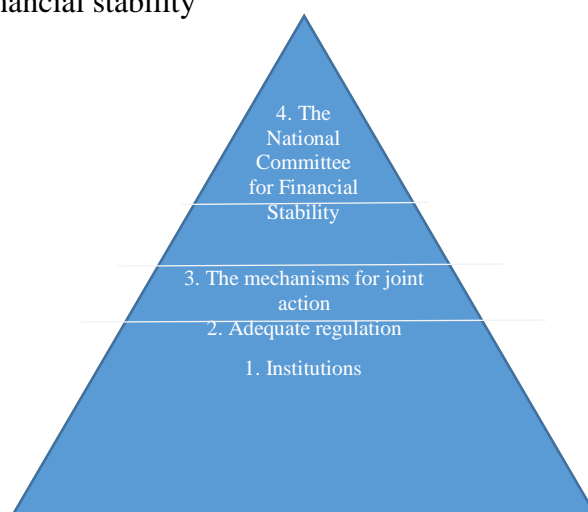
## 2. Theoretical framework and practical implications

There are different definitions of non-performing loans. In the narrow sense of the term called, non-performing means those loans that doesn't earn revenue and of which it is not expected a full refund of principal and interest in the future, as well as loans that delay in interest and principal 90 or more days. International Monetary Fund non-performing loans define as follows:

- Borrower delay with principal or interest repayment 90 days or more;
- Interest for delay longer than 90 days is refinanced, capitalized or its payment was postponed.

Numerous researches demonstrated that changes in economic activity have led to weakening of bank asset quality during still present crisis. Financial stability doesn't have general accepted definition. Different authors and institutions define it on different way. Thus, for example, Bundesbank define financial stability as conditions that enables financial system to fulfil its key functions and that can fulfil them even in in situations occurrence of shocks, stresses and structural disorder. In order to ensure and maintain financial stability it's necessary to create adequate system for maintenance which could be represented as follows.

**Figure1.** Pyramid of financial stability



Source: (Fabris, 2010)

Some central banks are still in dilemma whether to accept financial stability as their goal since those institutions couldn't cover all aspects of financial stability. However it could be predicted that central banks in coming years will accept financial stability as its goal and that will be explicitly or implicitly determined. In most countries financial stability maintenance isn't just jurisdiction of central bank, but it's divided between central bank, ministry of finance and supervisor authorities. Central bank of Bosnia and Herzegovina financial stability define as conditions that enables financial system to absorb shocks without significant disorder in current and future functioning and that won't negatively affect entire economy. This task of Central bank of Bosnia and Herzegovina derives from the Law on the CBBH. Thus, this institution play important role in development and implementation of policy of stability and sustainable growth through the maintenance of local currency stability and financial and economic stability of entire country. Central bank of Bosnia and Herzegovina through communication with relevant international and domestic institutions ensure process of systematic risk and financial stability tracking. Additional contribution to financial stability maintenance this institution provides through its membership in Standing Committee for Financial Stability.

Bosnia and Herzegovina banking sector has significantly changed since its beginnings to today. It's necessary to emphasize mining of banks in entire economic system. Further, indicators point to growth in the share of assets in GDP. Until beginning of crisis, even during the crisis, credit growth is present. Also, demand for loans have extremely fast growth. The banking sector and its assets are well managed and the level of bad assets is kept at a low level until the advent of the financial crisis. However, crisis advent caused more rigorous credit policy, further highlighting the importance of adequate credit risk management. Current banks capital adequacy is, mainly, at satisfactory level and it's far above those required by the Basel Principles. Non-performing loans are still the greatest threat to health of banking system and its financial stability. Share of non-performing loans in total loans of Bosnia and Herzegovina banking sector at the second quarter of 2015<sup>th</sup> was 14.07%. If we look at the quality of the loan portfolio through the relationship of non-performing loans net provisions and the basic capital that represents percentage of capital that will be lost if those non-performing loans become uncollectible, it could be noticed that this ratio has increased in 2015<sup>th</sup>. Namely, significant credit growth wasn't accompanied by the necessary increase in reserves. Therefore, this type of loans are main source of systematic risk, together with a fact that there isn't adequate solution for this problem. According to Central bank of Bosnia and Herzegovina data, risks from the region that are primarily related to the repayment of parent banks to their subsidiaries in Bosnia and Herzegovina continued in 2015<sup>th</sup>. This process is influenced by capital position strengthen in the euro area banks, what was caused by European Central Bank stress testing that was obtained in all European banking groups. Starting application of new European regulatory framework could potentially affect strengthening effects of the deleveraging process in the coming years. Namely, new regulation implies application of international standards of capital and liquidity risk management. Besides, further development of the banking system determinant is the commitment of foreign banking groups to lend to the economy and inhabitants, wherein it is essential to develop system of non-performing loans problem solving. Namely, all other risks to banking sector financial stability mainly resulting from credit risk.

### 3. Research methodology

Examination of impulse response function between banking sector financial stability and non-performing loans for Bosnia and Herzegovina banking sector is subject of this paper. For that purposes quarterly data on non-performing loans and capital adequacy ratio for period 2000-2015 were used. These data are obtained from International Monetary Fund Financial Soundness Indicators. Before running the vector autoregression analysis, the determination of appropriate lags length through the Akaike Information Criterion, Schwarz's Bayesian Information Criterion and Hannan and Quinn Information Criterion was carried out. After optimal lag length determination vector autoregression analysis was employed in order to explore how the Bosnia and Herzegovina banking sector financial stability responds to the impulse of changes in non-performing loans. For that purposes the following vector autoregression models were defined.

$$FS_t = \lambda_0 + \sum_{i=1}^n \lambda_i \Delta NPL_{t-i} + \sum_{i=1}^n \varphi_i FS_{t-i} + \varepsilon_t \quad (1)$$

$$\Delta NPL_t = \lambda_0 + \sum_{i=1}^n \lambda_i \Delta NPL_{t-i} + \sum_{i=1}^n \varphi_i FS_{t-i} + \varepsilon_t \quad (2)$$

Wherein the:

- $FS_t$  denotes banking sector financial stability measured by banking sector capital adequacy ratio in time t;
- $\Delta NPL_t$  denotes change in non-performing loans ratio in Bosnia and Herzegovina banking sector by taking first difference;
- $\Delta NPL_{t-1}$  denotes change in non-performing loans ratio in Bosnia and Herzegovina banking sector in period t-1.

The Granger causality Wald test was performed in order to determine if the changes in non-performing loans Granger-cause financial stability in Bosnia and Herzegovina banking sector. Namely, it was investigated if banking sector financial stability and non-performing loans moves together until finding a stable long-term equilibrium following the so-called Granger model. Thus, these assumptions are tested on data from Bosnia and Herzegovina banking sector by the Granger causality model on following way (Engle & Clive Granger, 1987).

$$Y_t = \beta_0 + \sum_{j=1}^J \beta_j Y_{t-j} + \sum_{k=1}^K \tau_k X_{t-k} + u_t \quad (3)$$

Wherein  $Y_t$  denotes banking sector financial stability,  $X_{t-k}$  denotes non-performing loans in period t-k and  $u_t$  denotes error term. Further, F test will be used to examine the null hypothesis and test whether these two variables moves together. Critical problem was choice of lags J and K what was solved by application of above mentioned criteria for optimal lag length selection. This approach enables determination of the causal direction of the relationships, so the revers model can be examined. Namely, X Granger causes Y if Y can be better predicted using historical values of X and Y than using only historical values of Y. At the end of research Ordinary Least Squares model was used in order to determine if the changes in non-performing loans could predict Bosnia and Herzegovina banking sector financial stability. This regression model is defined as follows.

$$FS_t = \lambda + \delta \Delta NPL_t + \varepsilon_t \quad (4)$$

## 4. Results

First step in analysis was determination of optimal lag length that will be included in the model. According to all criteria's (Schwarz's Bayesian information criterion, Akaike's information criterion and Hannan and Quinn information criterion) two lags should be included in the model. After that, vector autoregression was applied. As it can be seen form following table, Bosnia and Herzegovina banking sector financial stability negatively reacts to changes in non-performing loans and this response is statistically significant.

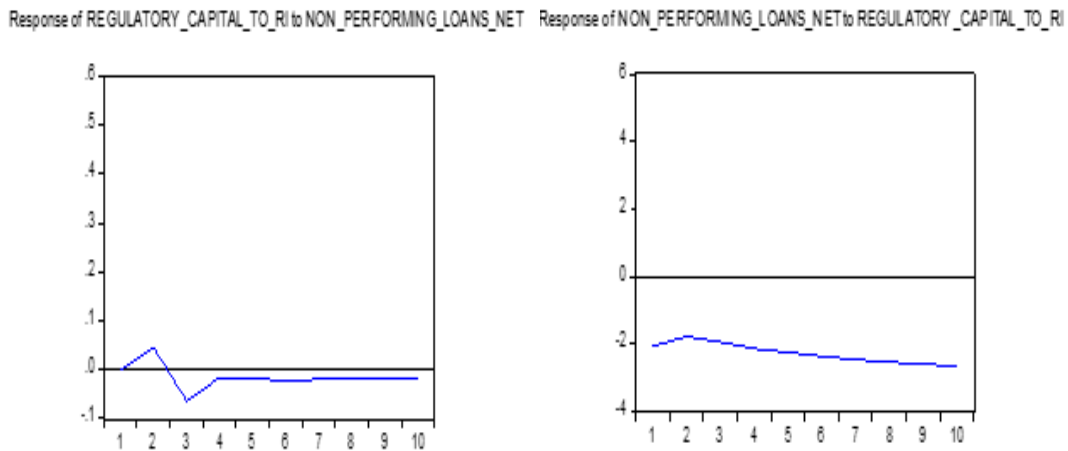
**Table 1.** Vector autoregression results

	<b>Coefficient</b>	<b>t</b>	<b>p</b>
<b>FS – lag 1</b>	-0.140165	-2.41061	0.03841
<b>FS – lag 2</b>	-0.118885	-1.14547	0.03179
<b>NPL – lag 1</b>	0.005316	0.13492	0.03940
<b>NPL – lag 2</b>	0.002474	0.15538	0.01592

*Source: Author's calculations*

Impulse response function refers to the reaction of observed variables on assumed external shocks. This research has for subject impulse response function of vector autoregression in order to analyze dynamic effect of the system when model received impulse. Since VAR model includes two variables, this impulse response function also observes reactions of these two variables. The following figure displays those functions.

**Figure 2.** The impulse response function of banking sector financial stability and non-performing loans



*Source: Author's calculations*

At the figure 2, the left is the impulse response of banking sector financial stability measured by banking sector capital adequacy on changes in non-performing loans. As it can be seen on above figure when the impulse is non-performing loans response of capital adequacy is positive only in first two quarters and then becomes negative. This results was expected since it takes time to financial stability reacts on deterioration of banks credit portfolios. At the right site

of figure is the impulse response of non-performing loans on changes in financial stability (increase of capital adequacy ratio). Negative impact is noticeable, especially as time passes. This result is logical since stricter regulatory polices forces banks to ensure better quality of their credit portfolios. Also, results of Ordinary Least Square regresssion presented in following table show that increase in non-performing loans predicts poorer banking sector financial stability.

**Table 2.** Ordinary Least Square regression results

	<b>Coefficient</b>	<b>t</b>	<b>p</b>
<b>Constant</b>	5.377290	3.90154	0.09626
$\Delta NPL_t$	-0.001642	-0.10443	0.01572
<b>R<sup>2</sup></b>	0.750811		
<b>Adjusted R<sup>2</sup></b>	0.730469		

*Source: Author's calculations*

Granger causality test represent a technique that determine whether one time series is useful in forecasting another. Namely, by application of this test it's possible to determine whether there is causality relationship between observed variables. Results of Granger causality Wald test demonstrated that non-performing loans Granger-cause banking sector financial stability in Bosnia and Herzegovina.

**Table 3.** Granger causality Wald test results

<b>Dependent variable</b>	<b>Independent variable</b>	$\chi^2$	<b>df</b>	<b>p</b>
<b>FS</b>	<b>NPL</b>	41.753	2	0.000

*Source: Author's calculations*

However, from above presented Granger causality results it can be concluded that when the cause variable is non-performing loans, the p value of this test is 0.000 what is less than critical value 0.05. Thus, null hypothesis can be rejected. This means that banking sector financial stability have Granger causation with non-performing loans.

## 5. Conclusion

Long run connection between non-performing loans and banking sector financial stability is of the greatest importance since it indicates on important aspect that could lead to problems not only in banking, but also in entire financial sector. Thus, efficient credit risk management is extremely important for each bank in order to prevail non-performing loans occurrence. On this way, banks are protecting their assets, reserves and capital. This is extremely important since a huge number of non-performing loans write-offs lead to reduction in reserves and capital that could cause technical insolvency of the bank. Banks with high non-performing loans ratio are weak and potentially could fall into liquidity problems. If we look at the problem from the perspective of banking sector, presence of a several banks with same problem potentially could lead to banking sector financial stability deterioration. All this lead to conclusion that non-performing loans are main source of systematic risk and that, as such, may threaten the financial stability of the entire banking sector.

Therefore, this causation should be under the continuous supervision by the regulatory authorities which are responsible for the financial stability maintenance. Namely, above demonstrated long run connection between non-performing loans and banking sector financial stability is of a huge importance since it point to important segment that could cause problems in entire financial system since banks are main part of Bosnia and Herzegovina financial sector. Although there is a new draft of banking law, this study indicates on problem of inadequate regulation regarding problem of non-performing loans. Currently present way of solving the non-performing loans problem is inefficient which includes long judicial processes and aggravated collection of collateral. Thus, it's necessary to create adequate legal institutions for non-performing loans redemption, restructuring and managing.

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# THE INFLUENCE OF CREDIT RISK ON THE INTEREST RATES OF MICROCREDIT ORGANISATIONS IN BOSNIA AND HERZEGOVINA

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## **Abstract**

Interest rates are seen to be a business aspect of microcredit organisations in Bosnia and Herzegovina that attract special attention. The main reason for it is that the microcredit interest rates are significantly higher than the banking ones. While forming interest rates microcredit organisations pay special attention on credit risk. Inability of loan repayment of credit users is considered to be credit risk of microcredit organisations in Bosnia and Herzegovina. A specific way of quantification of credit risk is prescribed by the regulator of management of microcredit organisations in Bosnia and Herzegovina. This way of regulation of quantification of credit risk is directly related to forming of interest rates of microcredits in Bosnia and Herzegovina.

Therefore the management of credit risk of microcredit organisations in Bosnia and Herzegovina is the key function of the remarkable importance for forming of interest rates on microcredits in Bosnia and Herzegovina. According to the previous facts the main goal of the activity is to estimate the efficiency of the function of credit risk management of microcredit organisations in Bosnia and Herzegovina. The indicators of success of credit risk management are: microcredit repayment rate in Bosnia and Herzegovina and costs of reservations for credit loss. Those indicators are directly connected to forming of interest rate on microcredits in Bosnia and Herzegovina. In order to accomplish the main goal of this paper there have been a primal research conducted. The subject of the research was the group of microcredit users (315 of them) that had some difficulties in loan repayment in 2015. For processing and interpretation of research results the next statistical methods were used: analysis of variance, Chi-squared test, one-way and two-way testing of statistic differences of arithmetic midst of samples. It was also proved that the competences of employees who are involved in immediate work with customers were equated in whole country and risen on a higher level since the development of staff competences is considered to be a preventive measure for credit risk reduction. The main reasons for microcredit loan repayment difficulties have been identified and their statistical significance has been confirmed. The main implication of the research is reflected in ability of suggesting changes of legislative rules which are the bases to quantifying credit risk of microcredit organisations in Bosnia and Herzegovina.

**Keywords:** *credit risk, interest rates, microcredit*

**JEL classification:** G21

## **1. INTRODUCTION**

The function of credit risk management in microcredit organisations (MCO) is key management function which influences the competitiveness of MCO on financial market, expressed through the formation of interest rates on microcredit. On the other hand, regulations regulator of business are prescribed upper limit the percentage of micro-credit that may have difficulties in repayment, as well as the percentage of write-offs. In a case of breaking these limits the regulator may revoke MCO the license. Based on the above mentioned it's been defined a subject of a research. These are variables that influence credit risk of MCO. These are: the approved micro-credit, a loan officer who deals with the proposed micro-credit for approval, municipality operations, president of credit 'Board, the authority in approving (department for approval, the immediate superior). Based on the above, it's been defined overall objective of work, assess the performance of functions of credit risk management MCO. In accordance with pre-defined subject and overall aim of the research, central research hypothesis is: MCOs have significantly improved the function of credit risk management. It's been proved using additional statistical hypothesis determining the statistical significance of the influential variables on the credit risk of the MCO. The findings that are result of the study show that controls operations of the MCO, the Banking Agency of the Federation Bosnia and Herzegovina and the Republic Srpska, may consider changing decisions that define the criteria for the provision of credit losses MCO. These criteria are now strict, and their changing MCO would receive space to reduce interest rates on microcredit.

## **2. OVERVIEW OF PREVIOUS RESEARCHES**

There are a large number of research papers on the topic of credit risk. However, most of these researches are related to credit risk in the banking sector. Therefore, we conclude that the recent domestic and foreign literature felt the lack of research papers in the field of credit risk management of financial institutions is more recent, which include the MCO. Based on our information, in Bosnia and Herzegovina has not been done any research on the subject, assessment of the performance management functions for credit risk management MCO. The fact gives the additional importance to this research, especially if it's known that MCOs operate in Bosnia-Herzegovina for 20 years. For this period it is possible to get quality time series data to be based on scientific research methodology set based quality functions of credit risk management MCO<sup>1</sup>. Based on a research conducted in Croatia (Bohacek, Sarlija, Bencic, 2003, pp. 565-580) it's been defined the use of a new credit scoring model for determining the creditworthiness of small entrepreneurs. The quality assessment of creditworthiness reduces credit risk. The study had two objectives: create credit scoring model that shows the important variables in loans for small entrepreneurs and compare decisions made by credit scoring models with the decisions made by judgmental credit referents for concrete financial institutions. As this study was a savings and credit union, it is relevant to consider, because the reasons for the establishment and operations of savings and loan associations is similar to the MCO. Also, the focus of activities of MCOs are small businesses, as is the case with the Savings and Loans Associations. For the formation of credit scoring models for savings and credit unions were used variables grouped into 7 groups: entrepreneurial idea, growth plan the company, marketing plan, characteristics of entrepreneurs, enterprise characteristics, the characteristics of the loan program and the characteristics of the relationship of enterprises and financial institutions. Of those seven groups

for making credit scoring models have proved to be significant following groups: entrepreneurial idea (vision), growth plan the company (stake), the marketing plan (advertising), characteristics of entrepreneurs (occupation, age), the characteristics of the enterprise (business) credit program characteristics (interest payments). It is important to point out the following legalities arised from the above research. For small businesses it is important to have a clear vision of the work that they want to deal with. The chances that the company is well-planned growth with an increase in the percentage of re-invested profits. The chances are higher that the company is well if there are activities like: tourism, catering, car service and training in driving school. The chances are higher that the company is well if the owner is a farmer by profession or veterinarian, in relation to the companies in which the owners are of other professions. The chances are higher that the company is good if you have chosen a personal sale or presentation as a way advertising your products. The chances are higher that the company is well in the case of quarterly interest payments in relation to the semi-annual repayment mode. Credit scoring model for small businesses created for the selected savings and credit cooperative, which includes the previous mentioned variables, successfully evaluated good from the bad users, compared to the subjective method of assessment of creditworthiness by the credit officer.

The following significant research these themes, it has also been carried out in Croatia (Jojic, Katavic, 2013, pp.73-84). The main objective of the above study was to determine the deficiencies of existing models of credit risk for micro and small entrepreneurs, and propose a new conceptual model for risk assessment of credit to micro and small entrepreneurs beginners. It was, among other micro and small entrepreneurs target population MCO in Bosnia and Herzegovina. Based on the results of that research the authors have proposed a model that would help in assessing credit risk for entrepreneurs beginners. The research confirmed the hypothesis that the introduction of a new model of credit risk, which would be based on the assessment of the creditworthiness of the entrepreneur, reduce the risk of bad loans extended to small businesses. The model is in the form of a pyramid from the lowest level to the top includes the following:

- Skornig method and system of assessment of collateral. The study confirmed that the emphasis in the new model of credit risk should stick to the assessment of the creditworthiness of the entrepreneur, and pay particular attention to: education entrepreneurs, entrepreneurs regular settlement of liabilities to banks, the analysis team of people with whom the entrepreneur enters the project and the connection between the entrepreneur and his team with the persons in commercial banks. The function of the valuation of real estate and movable property should be built by independent evaluating companies.
- Minimum standards of lending. Define criteria that include financial indicators, rating, collateral and exposure to activities of client companies.
- Pricing and register of debtors and guarantors. A comprehensive register would clear many issues faced by commercial banks, and they refer to their client's actual indebtedness. This section provides that a transparent price policy is in function of the client's creditworthiness. Education. Improving cooperation between banks and entrepreneurs can be achieved through continuous training of entrepreneurs.
- Transparency. Transparent relationship with the client means indication of any charges (eg. Indicate the importance of the exchange rate).
- The individual approach to the client. The universal approach is not applicable to entrepreneur beginners, because they are different in every way. They request individual

access to a bank and strict separation of sales and service of loan approval. The function of credit risk management must be strictly separated from the sales functions of the Bank to avoid a potentially dangerous link between responsible persons from these structures.

- Control. The control is the final element of the model. The special emphasis of the control should be placed on the connection between entrepreneurs and responsible persons from the bank.

Studies conducted on the businesses of the Federation of Bosnia and Herzegovina BiH (Bosnjak, 2012, pp.157-167) have been identified and analyzed the most important reasons for classifying loan applications outside the scope of the Bank of acceptable risk. In addition to expected negative classifications, such as the lack of own capital and unacceptability of the offered collateral, the uncertainty about the documents submitted by the loan applicant, this limitation is present in all segments or groups of reasons-so called, lack of credit culture, very important reasons unacceptable classifications that should be given due consideration.

The research conducted in Croatia (Ivicic, Cerovac, 2009, pp. 385-413) has resulted in modeling credit risk non-financial businesses subjects the probability of change of credit rating and predicting the probability of default of loan burdens in the period of one year, based on a company's financial statement. Based on the above research it has been revealed that the credit rating is dynamic category and is not a final state. Importantly, the resulting rule is that in the period of slower economic growth probability of a rating change is less than in the period of rapid economic growth. It was also found that the forecasting irregular payment of debts key ratios of equity to total assets, and the ratio of earnings before interest and taxes to total liabilities, which are negatively correlated with the probability of default credit obligations.

Based on analysed studies, we can conclude that in the banking sector credit risk, ie. rating credit worthiness usually carried out various credit scoring models, and based on the financial indicators are calculated based on data from company financial statements. The use of credit scoring models for credit risk management in MCO is not represented. There are MCOs that are trying to introduce credit scoring models, but they are still in the testing phase. Also, MCOs can not rely on the assessment of creditworthiness by financial indicators of business operations of its client. The reason for this is a small percentage of documenting business activities of MCO clients.

### **3. THEORETICAL BASIS**

The operations of financial institutions throughout history, we conclude that one of the key causes of the financial crisis and the bankruptcy of financial institutions is credit risk. Financial institutions successfully operating in a period of time, record high annual growth rates, often disregarding the creditworthiness of customers. After that it comes to a client over-indebtedness, as to financial institutions maintain growth rates, offer new services to customers who are already indebted. At one point it comes to inability of repayment of debt. That can lead to bankruptcy of financial institutions. The key reason for that is the neglect of the functions of risk management. The conclusions arising from the recent financial crisis in favor of that is due to more liberal regulation of banking operations missed construction quality functions of risk management in financial institutions. Why is important credit risk? The credit risk management directly influences the growth or reduction of the loan portfolio. Poor management of credit risk leads to financial losses, which increases the cost of credit in the financial market. On the other hand, repeated credit losses lead to the bankruptcy of financial institutions. Credit risk is the risk of

incomplete payment of promised cash flows from loans and securities of financial institutions (Saunders, Cornet, 2006, pp.527). Credit risk is the risk that the creditworthiness of the client (customer or counterparty), which can affect the change in value of financial assets of creditors (companies or banks). Also, credit risk can be defined as the risk that the payment of the approved loan and accrued interest being called into question (DJukic, Bjelica, Ristic, 2003, pp.186). Approval of the loan the borrower will be late in paying or who did not fully repay the loan resulting in losses for the creditors, on the other hand, deny the borrower who is potentially a good result in lower earnings for creditors (Hancoc, 1999, p.10). Credit risk as such represents the main risk for the bank because credit operations are basic banking operations (Barjaktarovic, 2009, pp.8). There are various methods of credit risk management, depending on the financial institution. The emergence of credit derivatives is one of the newest participants in the financial market. The development of credit derivatives markets is a response to the growing importance of credit risk management and each of the participants in this market has different motives for the application of credit derivatives (Spasojevic, 2012, pp.104-132). One of the methods of credit risk management is a diversification of the portfolio. To ensure the diversification of the portfolio, within the portfolio should establish limits on the credit risk that is tied to specific clients (or client groups with related ownership structure), business and geographic areas. The diversified portfolio, which includes a wider client base in various industries and geographic certain other areas, has a better chance to withstand adverse economic trends than is the case with a portfolio concentrated on specific activities or geographic areas (Dragosavac, 2013, p. 279). Lately, for managers of financial institutions, credit analysis is a key tool for assessing the creditworthiness of the borrower. Credit analysis determines the willingness and ability of the client to the timely payment of interest and principal. Credit analysis determines the character of the client. The stability of residence, occupation, family status (married / marry, single), previous savings history, credit history (or paying bills) is often used to assess the character. A loan officer must determine whether the client has sufficient income. Special amortization loan (ie. Payment of principal) must be reasonable compared to the income and the age of the client. Officer for loans must also take into account the monthly expenses of the client, family responsibilities and marital stability are also important (Saunders, Cornet, 2006, pp.550). From the point of discussion topics in the work it is important to separately mention credit analysis for loans to small entrepreneurs. Entrepreneurial loans are usually more complex because of the financial institutions are often required to take the credit risk of individual business whose cash flow requires considerable analysis, often with insufficient accounting data available to a clerk for loans. Formwork for this analysis is also often small, given that the amounts of principal usually small. This low profitability has prompted many financial institutions to create scoring model for entrepreneurial loans. These models are often combined with behavioral analysis business owner (Saunders, Cornet, 2006, pp.552). For the assessment of the creditworthiness of the banks often use credit scoring systems or credit scoring models.

The system of credit scoring is a mathematical model based on the observed characteristics of candidates for a loan is calculated result which is the probability that a candidate will not make the payment (Saunders, Cornet, 2006, pp.551). Credit scoring is a process of determining how much it is likely to default with their repayments (Hand, Henley, 1997).

Why approaches to defining credit scoring model?

Large companies have time-defined financial statements, on the basis of which it is possible to perform the assessment of creditworthiness. When it comes to small businesses, they have no obligation to produce regular financial reports, that also if the posts are under no obligation to revise. It is therefore concluded that in defining the scoring model for small businesses does not require delivery of financial reports, but the characteristics of scoring seek among the personal characteristics of the owner and the general information on the activities of the company (Bohacek, et.al, 2003).

For the formation of the scoring model are important following information: monthly income of the borrower, debt, financial assets, employment, owning a house / apartment, the previous behavior in the payment of the loan, if there was any delay in payment of obligations (Mester, 1997). It is also known approach to internal measurements rating, which assumes that the financial institution itself chooses the way to measure the rating of its clients, provided that it is approved by supervisors (Backer, Bovell, 2005, p.196).

On the basis of this approach MCO can make their own criteria for accepting credit analysis, customer and approval micro-credits. Based on the review of the theoretical aspects of credit risk management function, we conclude that the MCO key credit analysis, which can be used in combination with certain elements of the considered credit scoring model defined in the previous paragraphs. The above combination is possible on the basis of the wide experience of microcredit officers in Bosnia & Herzegovina in the assessment of personal characteristics of the owner's business activities. The MCO clients are beginners who don't have registered business, young entrepreneurs whose companies are not older than two years. Also, even if there are documented clients' business activities that don't show the real picture. The actual condition of its business activities only owners know, the entrepreneurs. Also, the establishment of any lien, as an element in the credit scoring model, or payment of property insurance client, an insurmountable problem, because often cost necessary for that exceed the amount outstanding of micro-credit. Information needed for credit risk management MCOs are obtained in a very specific way. Loan officers in the field find information about the entrepreneur as a person and about his business activities. Information obtained from the potential client MCO are generally given from the personal records of the owners who are not registered nor registered with the relevant institutions. These information loan officers compare with the actual situation in the market related to the activity. In this way is done an assessment of the accuracy of data that give potential clients MCO. Given the trends in indicators of credit risk MCO, in the period of their business, from the 1996th to 2016th, we can conclude that the mentioned methodology, although in certain periods contested, yielded good results for credit risk management MCO. The twenty years of the business sector and improve the index portfolio at risk, in the post-crisis period, are evidence that MCOs have the capacity to assess business opportunities and income generation rating and assessment of their property. Therefore, there is a unique way of access to credit risk management in MCO. It involves combining elements mentioned in consideration of credit scoring models, which can be applied to the MCO and specific findings that were obtained through MCOs in the previous period. For example, both can be combined, individual approach and assessment of the creditworthiness of the owner (mentioned in the discussed credit scoring models), confirmed to be correct in the case of MCO. On these principles in the future should be based the development of credit scoring models of MCO. Other models such as the diversification of the portfolio are not recommended because of the small market, and credit derivatives have not even developed in the domestic financial market.

## 4. METHODOLOGY OF THE STUDY

Primary research was conducted in January-February 2016 period. The sample consisted of clients who in 2015 had difficulties with the repayment of their micro-credits. The aforementioned study found influence of variables of the portfolios within the risk of the MCO in 2015. Variables, whose influence was researched, are defined by minimum standards of micro crediting, which is a basic tool for credit risk management in the MCO<sup>ii</sup>. For processing the resulting data the following statistical methods were used: testing of statistical significance between arithmetic means of samples, testing variability within and between samples, testing the statistical significance of deviation of the observed frequencies from the theoretical (frequencies which can be expected under a certain hypothesis) and testing of statistical significance of frequency deviation of two or more independent samples, in comparison to the observed properties to which the samples were compared. Analysis of the most important results of conducted study is presented below.

## 5. RESULTS AND DISCUSSION

### 5.1. Descriptive statistics of the sample

The sample consists of microcredit beneficiaries whose demands for microcredit were cultivated by different loan officers. Agents from the sample have recorded 1283 delays in payment instalments of microcredit beneficiaries longer than 15 days. This pattern consists of the microcredit beneficiaries who during the year were late more than 15 days with paying the instalment of their micro-credit and in multiple months during the year, meaning they were repeated. Repeating information for the application of certain statistical methods is not significant for us, so we extracted from the sample twice or more reoccurring repeat users of micro-credit in several of the months in 2015. By some statistical methods, such as the Chi-square test, the frequency of occurrence of the event is the basis for analysis, so that for method we used the original sample containing the repetitions. Table 1 shows the descriptive statistics of the sample.

Table 1. Descriptive statistics of the sample users of the micro-credit who have difficulty paying off the micro-credit, according to the variable of the micro-credit initial amount approved

The initially approved amounts of micro-credits which have difficulty being repaid (KM)	
Mean	3.914,20
Standard Error	148,39
Median	4.000,00
Mode	5.000,00
Standard Deviation	2.633,73
Sample Variance	6.936.517,61
Kurtosis	4,17
Skewness	1,47
Range	19.300,00
Minimum	700,00
Maximum	20.000,00

Sum	1.232.974,00
Count	315,00
Largest(1)	20.000,00
Smallest(1)	700,00
Confidence Level (95,0%)	291,97

*Source: processing of data from a sample of research by the author*

Obvious from the table 1 indicates that all of the micro-credits, regardless of the initial approved amount are present in the sample; i.e. Min. amount approved micro-credit which has difficulty with repayment is 700 KM and the max. is 20.000 KM. Range as a measure of dispersion is 19.300 KM. Mean of the initially approved micro-credits with difficulties in repayment is 3.914,20 KM. However, we cannot take this value as the representative one of the mentioned sample, because the value of the standard deviation is 2.633,73 KM, so the average deviation of the individual results deviates from the mean by as much as 67%. It is an extremely great deviation of individual results from the mean, so that the mean value of 3.914,20 KM cannot be representative of the set.

Therefore, as a measure of representativeness we discussed the ranked average values, ex, mode and median.

The amount of the dominant value is 5.000 KM (71 micro-credits have been approved in the initial amount of 5.000 KM). The median is 4.000 KM and actually means that 50% of approved micro-credits are users whose initial loan amount is 4.000 KM and less (183 micro-credits are approved in the initial amount less than 4.000 KM), while 50% of the approved micro-credit users whose initial amount ranges from 4.000 KM to 20.000 KM. Given that the range of initially approved micro-credits from 4.000 KM to 20.000 KM is significantly higher than the range of up to 4.000 KM, we conclude that the approved micro-credits with initial allocated amount up to 4.000 KM important for further analysis and proposed activities for the monitoring of micro-credit with difficulties in repayment. Therefore, Micro Credit Organization activities and measures to prevent difficulties in repayment should specifically be prescribed for loans with initial allocated amount up to 4.000 KM.

## **5.2. Testing the statistical significance of the difference of arithmetic means of groups of users of micro credits (grouped by the credit officer and place of residence), depending on the variable quality of the portfolio-approved initial amount of the micro credit.**

For specified testing, observed were the users of one micro credit organizational unit, staffed with two credit officers. We note that there is no difference in the place from which micro credit beneficiaries come to either of the credit officers, because they belong to a small spatial unit, the municipality, in which the same rules of business and life hold for all users of micro credits. Therefore, we in this part will test only statistically significant difference of means of the micro credit users (according to the approved initial amount of the micro credit) in respect of two credit officers working in the specified organizational unit. We set the null hypothesis that there is no statistically significant difference in arithmetic means of groups of users of micro-credits between two credit officers (CO) who processed requests for micro-credits, and depending on the initial amount of the approved micro-credit:  $H_0: \mu_{CO1} = \mu_{CO2}$  and  $H_1: \mu_{CO1} \neq \mu_{CO2}$ .



Table 2 t-test user group of micro-credits by credit officer in the organizational unit, depending on the initial amount of micro credit approved (KM)

t-Test: Two-Sample Assuming Equal Variances		
	CO1	CO2
Mean	4.230,63	3.871,37
Variance	6.001.866,69	5.580.470,32
Observations	80,00	76,00
Pooled Variance	5.796.641,18	
Hypothesized Mean Difference	0,00	
df	154,00	
t Stat	0,93	
P(T<=t) one-tail	0,18	
t Critical one-tail	1,65	
P(T<=t) two-tail	0,35	
t Critical two-tail	1,98	

Source: processing of data from a sample of research by the author

Based on the data in Table 2 ( $P(T \leq t) \text{ two-tail} = 0.35 > 0.05$ ), simply recognizes  $H_0$ , and we conclude that among groups of users of micro credits in the organizational unit by credit officer which processed with the request for the micro credit shows no statistically significant difference comparison to the initially approved amount of micro credit. This means that no matter that the mean of the micro credits which have difficulty with repayment at credit agent1 higher than the mean of the micro credit with credit agent 2, the micro credits of credit agent 1 are no more risky than the micro credits of credit agent 2. From this follows the conclusion that the competence of employees in Micro Credit Organizations uniform, which is the basis for the quality management of credit risk.

### 5.3. Analysis of variance depending on the initial amount of the approved micro credit by credit agent processed request for micro credit.

Defined is the dependent variable: initially approved amount of the micro credits which have difficulties in repayment, and analyzed were the influence factors on the dependent variable: the loan officer who processed the application for the micro credit which later came into difficulties with repayments. So on the basis of which credit agent processed the request for the micro credit were formed five groups of data of dependent variable. By single factor analysis of variance, or just simple analysis we answered the question: whether there is a statistically significant difference between arithmetic means of groups of the amounts of micro credits initially approved which have difficulties in repayment, depending on which credit agent performed the processing of the micro credit, that is. Whether the credit agent which processes the request for the micro credit and proposed the amount for approval, has an impact on the later occurrence of difficulties in repayment of the micro credit? The question can be formulated in this way as well: do different initially approved micro credits depending which credit agent has processed the request for the micro credit bears influence later on difficulty of the micro credit repayment?

Pursuant to the questions we set the null hypothesis: there is no statistically significant difference in groups (depending on the credit agent who worked on the request for the micro credit) initially approved amounts of micro credits which have difficulty in repayment.

Table 3. Single factor-dependent variable analysis: the amount of the initially approved micro credit, groups of results depending on which credit agent processed the request for the micro credit.

Anova: Single Factor						
SUMMARY						
Groups	Count	Sum	Average	Variance		
CO1	76	294.224	3.871,37	5.580.470,32		
CO2	80	338.450	4.230,63	6.001.866,69		
CO3	82	337.800	4.119,51	10.563.565,19		
CO4	33	123.500	3.742,42	4.823.143,94		
CO5	44	139.000	3.159,09	5.528.520,08		
ANOVA						
Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	37.668.038,38	4	9.417.009,59	1,364	0,246	2,401
Within Groups	2.140.398.492,62	310	6.904.511,27			
Total	2.178.066.531,00	314				

Source: processing of data from a sample of research by the author

From Table 3 it's shown that the sum of squared deviations between groups is greater than the sum of squared deviations within the group, and also the average squares are in the same comparison. However, the F ratio is less than Fcrit, and we conclude on this basis that the variability between groups is not statistically significantly higher than the variability within the group. Also,  $p=0.246 > 0.05$ , from which we conclude that there is no statistically significant difference between groups of data initially approved amounts of micro credits which have difficulty in repayment, from the dependence as to which credit agent processed the request. Therefore, we accept the null hypothesis set. In our case, we conclude that the initial amounts of micro credits approved do not influence the occurrence of difficulties in repayment of micro credits. Therefore, we can conclude that users of micro credits which took micro credits belong to the same population, that is: The differences that have occurred in terms of the amount of the micro credits initially approved and have difficulties in repayment are of accidental character, and not the caused external influences. This is an important conclusion, especially because analyzed users of micro credits come from backgrounds that differ in economic, road, agricultural development and economic and demographic potential. From the point of observation of the microcredit sector, we received a very important argument, which in fact confirms the purpose of micro crediting, which is that municipalities with less economic and demographic potential do not produce greater difficulties in the repayment of micro credits. Specifically in the case of Bosnia and Herzegovina, on the basis of the above considerations, the regulator of business of Micro Credit Organizations, there is no argument that from the standpoint of credit risk limits credit operations in Bosnia and Herzegovina.

#### **5.4. The complex analysis of variance-independent variables: the replacement micro credit and the micro credit approved in special or regular procedure**

Complex analysis of variance can test three null hypotheses, two about so-called main effects and one on the interaction of independent variables. Then the sum of squared deviations between groups of data (value of the dependent variable), i.e., mean square (variance) consists of three

parts; variations between the groups that are the result of action of the first independent variable, the variation between groups that are the result of actions other independent variables, and the interaction of independent variables (Petz, Kolesaric, Ivanec, 2012, pp.243). We first tested the effect of independent variables: the replacement micro credit and micro credit of approved in the special or regular procedure. The dependent variables are the micro credit amounts initially approved which have difficulty being repaid. In theory, the replacement credit loan is considered to be risky, because the user in one way is refinancing his debt. It is also known that financial institutions have special risk departments which grant loans that fall into the category of high-risk, as opposed to loans that are considered less risky and they are approved in the regular procedure.

We tested these three null hypotheses:

H<sub>0</sub> (1): no statistically significant difference in the average values of the amount initially approved micro-credits which have difficulties with repayment (dependent variable) between approval procedures, special or regular procedures.

H<sub>0</sub> (2): no statistically significant difference in the average values of the amount initially approved micro-credits which have difficulties with repayment (dependent variable) between the two types of approved micro-credits, replacement and approved after the repayment of debt (not replacement).

H<sub>0</sub> (3): there is no interaction between the independent variables (approval procedure and type approved micro-credit).

Table 4. The complex analysis of variance-independent variables: micro-credit approval procedure and type of approved micro-credi

Anova: Two-Factor With Replication						
SUMMARY	Replacement-MC-Yes	Replacement-MC -No	Total			
<i>Approval procedure- regular</i>						
Count	36	36	72			
Sum	185.800,00	122.574,00	308.374,00			
Average	5.161,11	3.404,83	4.282,97			
Variance	12.174.301,59	4.888.521,00	9.193.239,44			
<i>Approval procedure - special</i>						
Count	36	36	72			
Sum	192.100,00	131.100,00	323.200,00			
Average	5.336,11	3.641,67	4.488,89			
Variance	6.168.658,73	7.346.500,00	7.390.297,34			
<i>Total</i>						
Count	72	72				
Sum	377.900,00	253.674,00				
Average	5.248,61	3.523,25				
Variance	9.050.068,47	6.045.568,39				
ANOVA						
<i>Source of Variation</i>	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>P-value</i>	<i>F crit</i>
Sample	1.526.460,25	1	1.526.460,25	0,20	0,66	3,91
Columns	107.167.354,69	1	107.167.354,69	14,02	0,00	3,91
Interaction	34.410,25	1	34.410,25	0,00	0,95	3,91
Within	1.070.229.346,11	140	7.644.495,33			

Total	1.178.957.571,31	143				
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*Source: processing of data from a sample of research by the author*

Unlike a simple analysis of variance, where we account in addition to the variability that occurs within groups (Within) also the variability between groups (Between Groups), with complex analysis of variance the variability between groups is actually divided into three parts. These are: variability that is a result of the first independent variable (Sample), variability which is the result of the second independent variable (Columns) and the interaction of independent variables (Interaction). Based on the data in Table 4 we conclude that variability caused by the first independent variable is not greater than the variability within the group. Also, since the  $p=0.66>0.05$  we accept the null hypothesis  $H_0$  (1) that there is no statistically significant difference in the average values of the micro credit amounts initially approved which have difficulties being repaid (dependent variable) between approval procedures, special or regular procedures. Also, we conclude that variability caused by the second independent variables is greater than the variability within the group. Also, since the  $p=0.00<0.05$  we reject the null hypothesis  $H_0$  (2) that there is no statistically significant difference between the two types of approved micro credits, replacement and approved after the repayment of debt (they are not replacement). Finally we conclude that the variability formed by the interaction of independent variables is not greater than the variability within the group. Also, since the  $p=0.95>0.05$  accept the null hypothesis  $H_0$  (3), that there is no interaction between the independent variables (evaluation procedure and type approved micro credit).

Based on this, we conclude:

- The approval procedure has no effect on the micro credit amounts approved which will have difficulties in repayment.
- Type of micro-credit (replacement or not replacement) has an impact on the amounts approved micro-credits which will have difficulties with repayment. Based on descriptive statistics of the dependent variable we see that the average amount initially approved micro credit as a replacement is 5.248,61 KM, and approved micro credit which is not replacement is 3.523,25 KM. Testing has found that this difference is statistically significant. On this basis, we conclude that micro credits approved as replacement have poorer repayment compared to micro credits not approved as a replacement. This is the key implication of the research. MCF management should in accordance with the above implication adopt an action plan to improve the collection of micro credits approved as a replacement because the replacement micro credits are defined as key causes of the credit risk of the MCO.
- There is no interaction of approval procedures and type of approved micro credits depending on the average amount of initially approved micro credits which have difficulties in repayment.

### **5.5. The complex analysis of variance-independent variables: the president and the purpose of the micro-credits (micro credits for business and micro credits for other purposes residential and consumer)**

We tested the influence of independent variables: the president and the purpose of the micro credit. The dependent variables are the micro credit amounts initially approved which have difficulty with repayment.

We tested the mentioned three null hypotheses:

H<sub>0</sub> (1): no statistically significant difference in the average values of the micro credit amounts initially approved which have difficulties with repayment (dependent variable) regardless of who is president of commission board.

H<sub>0</sub> (2): no statistically significant difference in the average values of the micro credit amounts initially approved which have difficulties with repayment (dependent variable) based on the purpose of the approved micro credit, (for business and other purposes).

H<sub>0</sub> (3): there is no interaction between independent variables (president of commission board and micro credit for business and micro-credits for other purposes: residential and consumer).

Table 5. The complex analysis of variance-independent variables: the president of commission board and the purpose of the micro credit (micro credit for business and for other purposes: residential and consumer)

Anova: Two-Factor With Replication						
SUMMARY	Business	Other purpose-residential and consumer	Total			
<i>President of commission board 1</i>						
Count	15	15	30			
Sum	65.000,00	53.700,00	118.700,00			
Average	4.333,33	3.580,00	3.956,67			
Variance	4.523.809,52	6.460.285,71	5.449.436,78			
<i>President of commission board 2</i>						
Count	15	15	30			
Sum	70.200,00	47.900,00	118.100,00			
Average	4.680,00	3.193,33	3.936,67			
Variance	4.866.000,00	4.973.523,81	5.321.712,64			
<i>President of commission board 3</i>						
Count	15	15	30			
Sum	61.700,00	47.000,00	108.700,00			
Average	4.113,33	3.133,33	3.623,33			
Variance	2.354.095,24	3.736.666,67	3.188.747,13			
<i>Total</i>						
Count	45	45				
Sum	196.900,00	148.600,00				
Average	4.375,56	3.302,22				
Variance	3.792.343,43	4.867.040,40				
ANOVA						
<i>Source of Variation</i>	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>P-value</i>	<i>F crit</i>
Sample	2.096.888,89	2	1.048.444,44	0,23	0,79	3,11
Columns	25.921.000,00	1	25.921.000,00	5,78	0,02	3,95
Interaction	2.114.666,67	2	1.057.333,33	0,24	0,79	3,11
Within	376.801.333,33	84	4.485.730,16			
Total	406.933.888,89	89				

Source: processing of data from a sample of research by the author

Based on data from Table 5. We conclude that variability caused by the first independent variable is not greater than the variability within the group. Also, since the  $p=0.79 > 0.05$  we accept the null hypothesis  $H_0$  (1) that there is no statistically significant difference in the average values of the amount initially approved micro credits which have difficulties with repayment (dependent variable) in based on who the president of the credit board is. Also, we conclude that variability caused by other independent variables is greater than the variability within the group. Also, since the  $p =0.02 < 0.05$  reject the null hypothesis  $H_0$  (2) that there is no statistically significant difference between the approved micro credits depending on the purpose of micro credits - micro-credits for businesses or for other purposes. Finally we conclude that variability which is formed by the interaction of independent variables is not greater than the variability within the group. Also, since the  $p =0.79 > 0.05$  we accept the null hypothesis  $H_0$  (3), that there is no interaction between the independent variables (the president of the commission board and the purpose of the micro credit).

Based on this, we conclude:

- President of the Commission Board has no influence on the amount of approved micro credit which will have difficulty in repayment.
- Propose of the micro credit (business or other purposes) has an impact on the amounts of micro credit approved which have difficulties with repayment. Based on descriptive statistics of the dependent variable we see that the average amount of initially approved micro credit for businesses is 4.375,56 KM, and approved micro credit for other purposes amount is at least 3.302,22 KM. Testing has found that this difference is statistically significant. On this basis, we conclude that micro credits approved for businesses and startup firms have a worse repayment compared to micro credits that are approved for other purposes. This is the key implications of the research. This once again confirmed the theoretical foundations that the entrepreneurial loans for beginners and young entrepreneurs to consider are very complex in determining credit worthiness. Therefore, management of MCO needs to in accordance to the implication mentioned adopt an action plan to improve collection of micro credits approved for business and insist on continuous improvement internal capacity (intellectual and technological) in the assessment of creditworthiness.
- There is no interaction of the President of the credit board with the purpose of the micro credit compared to the average micro credit amounts initially approved which has difficulties in repayment.

## **5.6. Results of research on the causes that lead to difficulty in repayment user microcredits**

Patterns that lead to difficulties in repayment of micro credits, we shared the causes before and after approval micro credits. Investigated the causes are of qualitative character, and are suitable for processing statistical testing methods: Chi-square test<sup>iii</sup>. Using the Chi-square test by setting the null hypothesis<sup>iv</sup>: there is no statistically significant difference between the observed frequencies of variables (variables that affect the credit risk before approving micro credit we drew from the minimum standards of micro crediting) and randomly distributed responses, we investigated the impact of these variables on the occurrence of difficulties in repayment of micro credits. The testing was conducted at a significance level of 95%, i.e. 0,05. This test is another way of determining the quality of credit risk management functions MCO in preventive phase (before approval of micro credit).

Table 6. The observed and theoretical frequencies of variables for minimum standards of micro crediting, probability of integration between variables and the Chi-square value.

	Variables of minimum standards of micro-crediting <sup>v</sup>					p	The value of the chi-square
	V1	V2	V3	V4	V5		
Observer frequencies	17	11	11	32	9		
Theoretical frequencies	16	16	16	16	16	0,000178713	
Theoretical frequencies for the assessment of normality of the distribution(%)- 5 categories	3,59	23,84	45,14	23,84	3,59		
Absolute amounts of theoretical frequencies for the assessment of normality of the distribution	2,872	19,072	36,112	19,072	2,872	2,45026E-23	22,25

Source: processing of data from a sample of research by the author

Based on the results shown in Table 6 it's evident that the  $p < 0.05$  (calculated for both modes of the null hypothesis), so based on that, we reject the null hypothesis. This means that there is a statistically significant difference between the observed frequencies of variables minimum standards of micro crediting than the expected frequencies, i.e., the distribution of observed variables significantly deviates from the normal distribution. This in fact means that the research proved that the credit risk of MCO is not influenced by random factors, but precisely defined variables to credit risk. The same result is gotten when the chi-square value of 22.25 is compared with the critical value of 9.45 (Petz, Kolesaric, Ivanec, 2012, Table H, pp. 655). Since the critical value is lower, we reject the null hypothesis. Preventive action MCO at the correct assessment of credit abilities of the client and continuous action on finding new variables that will be introduced into the minimum standards of micro crediting are the key directions of development and control of credit risk management of MCO.

Despite the action taken to prevent MCO credit risk, there are clients who have difficulty in repayment of micro-credits. The function of credit risk management when difficulties arise is based on surveying of reasons why a client has difficulties in repayment<sup>vi</sup>. Investigated is the dependence credit agent as the person responsible for the quality of the portfolio and causes of difficulties in repayment of micro-credit, so they tested the null hypothesis: there is no statistically significant difference between the observed and theoretical frequency of samples of difficulty in repayment depending on the credit agent as a person responsible for the quality of the portfolio.

Table 7. The observed and theoretical frequencies of sampled difficulties in repayment of micro-credits, unlikely connection between variables, contingency coefficient and statistical significance of the coefficient of contingency

Credit officer	Cause of difficulty of repayment		p	The value of the chi-square
	L	B		
CO 1	60	9		
CO 2	16	26		

	CO 3	44	30		
	CO 4	20	23		
	CO 5	31	5	1,40137E-08	42,3650692

*Source: processing of data from a sample of research by the author*

Based on the data in Table 7. it's evident that  $p < 0.05$  and we reject the null hypothesis. This means that the reasons that lead to difficulties in repayment are not the result of chance. They are primarily the result of changes which arise with the client and in the environment and in the period of repayment micro credit. Therefore, the continuous task function of credit risk management MCO is to analyze the changes that occur in the environment, and the impact on credit risk. Based on these findings suggest changes primarily minimum standards of micro crediting, in order to preventively avoid credit losses.

## 6. CONCLUSION

Based on the results of the conducted study we conclude that MCO successfully carry out the function of credit risk management. MCO do not use in practice common methods of credit risk, such as credit scoring models and financial statements of clients. They have developed a unique methodology for managing credit risk, based on individual approach to each client. Because of this they focus on continuous improvement of internal capacity (intellectual and technological). Credit risk management of MCO is carried out in two stages: prior approval (minimum standard of micro crediting) and after approval (determining factors that lead to difficulties in the repayment as input for the improvement of preventive action). This methodology MCO maintains a high level of collection of receivables. This model of credit risk management is generally applicable to all parts of the world in which they operate. Therefore, it is totally unjustified due to fear of losing capital caused by credit losses, to impose strict rules to MCO, primarily through the provision of credit losses, as is the case in BiH. This limits the expansion of business activities of the MCO, which is not desirable in the areas in which they operate. Based on these arguments the regulators of MCOs in Bosnia and Herzegovina, the Federal Banking Agency and Republic of Srpska, should consider proposals for the liberalization of regulations which defines the parameters of credit risk, since the amounts of provisions for credit losses to the allowable percent of write-offs of micro-credits and allowed portfolio at risk.

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<sup>1</sup> By legal acts the Federal Banking Agency and RS (FBA and ABRS) which supervise the work of MCOs have defined by regulations to require MCOs to calculate loan loss provisions, which must be computed in the same price (interest rate) of micro-credit. These regulations are contained in the „Odluci o visini i nacinu formiranja i odrzavanju rezervi za pokrice kreditnih gubitaka MKO ("Sluzbene novine Federacije BiH ", broj :27/07 i "Службени Гласник Републике Српске број 03/07)"“. Key provisions contained in the for-mentioned decision, concerning credit risk are defined in Article 2 and Article 3 of the for mentioned decision. The improved quality of the credit risk management of the MCO, confirmed by the results of the research, is the main argument for the proposals on the liberalization of these regulations. An example for that is found in the regulatory scripture of neighboring countries „ Odluka o mikrokreditnim finansijskim institucijama“ („Sluzbeni list RCG“, br.52/00, 47/01 i 32/02), a article 15.

<sup>1</sup> Minimum standards of micro-crediting are used for the prevention of credit risk of MCO. They are set more stringent, in order to eliminate clients who would probably delayed the settlement of their obligations, thereby reducing credit risk MKO (see p. 5 of the work). Variables defined by minimum standards micro lending are: amount of approved micro-credit, loan/credit officer, municipality of work, types of credit products, approval in the special procedures or the regular procedure, the replacement micro-credit, credit Board President, the reasons why the demand for micro-credit is considered by a special procedure.

<sup>1</sup> Chi-square test is a very practical test, which can especially be used when we want to determine whether some obtained (observed) frequency deviate from the frequency that we expected under a given hypothesis. Because with the chi-square test we examine whether there is a correlation between two variables, it is a similar account of correlation. However, account correlation shows us the degree of correlation between two variables, while our chi-square test shows probability of connection (Petz, et.al, 2012, pp.189).

<sup>1</sup>The null hypothesis is set in the following forms: distribution of observed frequencies of variables of minimum standards of micro-crediting significantly deviates from the normal distribution, has the same meaning as the given null hypothesis.

<sup>1</sup> The investigation of the variables of minimum standards of micro-crediting: V1 Negative credit history client on active loans, V2 Number of credits shown in the CRC report on current assignments, V3- Request for refinancing (for replacement loan) filed soon after raising awareness of micro-credit. V4- Negative credit history of clients in loan repayments V5- Amount of instalments shown in the CRC report on current obligations, loan amount, the use of two loans and the amount of installments.

<sup>1</sup> Investigated the causes of difficulties in repayment we divided the causes which belong to the difficulties in the business client (B) and a group consisting causes personal nature (L). To group L belong: client wage is delayed, suspended seasonal business where he was employed, the client left the country, serious illness client attain another loan / micro-credit to pay off consumer / housing loans, etc. Group B includes: customers do not pay on time / difficult collection of receivables, business activity is extinguished, natural conditions, etc..

# DATA ENVELOPMENT ANALYSIS OF EFFICIENCY OF NON-LIFE INSURERS IN BOSNIA AND HERZEGOVINA

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## Abstract

This study attempts to understand the efficiency of non-life insurance companies in Bosnia and Herzegovina (BH). We are particularly interested in the time period between 2009 and 2012, which is often referred to the financial crisis period in BH. Although there are 25 insurance companies in BH, we only include 14 of them that operate as non-life insurance business. Input variables that are used are premium (X1), capital (X2), and number of employees (X3). Output variables are claims paid (Y1), profit/loss (Y2), revenue (Y3), and market share (Y4).

Our study indicates that there are significant differences in minimum values of relative efficiency when the two Data Envelopment Analysis (DEA) models – BCC and CCR – are applied. The highest average relative efficiency is achieved in 2012. We conclude that the financial crisis negatively influenced the efficiency of non-life insurance companies in BH. The BCC model provides more efficient units than the CCR model does in all years of analysis. In the period between 2009 and 2011 there are 11 relatively efficient units. The maximum number of relatively efficient units is obtained in 2012 (12). The CCR model provides a smaller number of relatively efficient units. The smallest number is obtained in 2011 (7), while the highest is obtained in 2012 (10).

We use inefficiency coefficients to rank inefficient non-life insurance companies, and we use frequency of reference to rank efficient non-life insurance companies. We conclude that the most efficient insurance companies are Euroherc osiguranje d.d. and ASA osiguranje d.d. The BH Insurance Agency may use our findings to improve its existing ranking methodology.

**Key words:** *Data Envelopment Analysis, frequency of reference, non-life insurance, efficiency*

# CAPITAL MARKET AND ECONOMIC GROWTH IN TRANSITION COUNTRIES: EVIDENCE FROM SOUTH EAST EUROPE

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## **Abstract**

Influence of capital market on economic growth has been proven to be positive by majority empirical studies up to now. Throughout these studies, only secondary capital market indicators were used, while neglecting primary market activities.

This empirical research uses PCSE model to test the significance of three capital market indicators on economic growth in SEE region, for the period of 10 years, from 2003-2012. The sample includes six countries from SEE region and was extended with eight countries from Central and Eastern Europe in order to stabilize the model. Country dummy variable was used to distinguish between two regions. Data for panel regression was taken from GFDR, WDI (both from World Bank database) and one variable from UNECE.

Results show that only market capitalization indicator is found to be significant, which is contrary to preliminary expectations. It was hard to expect secondary market activities to spur growth in transition countries, where primary issues almost do not exist. However, this result could be explained through indirect effect that capital market had on economic growth in terms of increased liquidity injections from foreign portfolio investments during transition period.

Endogeneity and reverse causality were tested by LSDVC regression, and no significant reverse relationship was detected.

The main conclusion of this study is that more qualitative research has to be done in order to discover the main limitations to capital market development in transition countries with more emphasis on primary issues, what could be of better use for policy makers.

**Keywords:** *capital market, economic growth, PCSE regression, transition countries, SEE Europe*

JEL classification: G00, O16

## **1. INTRODUCTION**

Most of the empirical findings have discovered positive relationship between finance and economic growth. Also, both sub segments of financial markets (banking sector and capital market) have shown positive impact on growth, when examined separately. Furthermore, some studies found out that economies with more developed capital markets perform better than those with less developed capital market (bank centric systems). It is of big importance for this paper to

put more emphasis on capital market, since financial theories, empirical findings and historical trends prove that too strong banking sector creates unstable financial and economic system.

Most of papers that investigate the relationship between capital market and economic growth concentrate on empirical research. Very little attention has been paid to the essence of capital markets and in depth reasons how and why capital markets influence growth, and reasons that could limit primary capital markets development.

The essence of capital market is to channel free capital funds in one economy into real sector projects that would spur economic growth. However, researchers in their empirical works use secondary capital market ratios (market capitalization as percentage of GDP, securities trade as percentage of GDP, and securities trade as percentage of market capitalization) in order to measure development of capital market as a whole. Even if secondary capital market in developed countries partially reflects overall development of capital market, it could not be stated for transition countries. The reason is that capital markets in those countries evolved overnight, through the process of large scale privatization, unlike capital markets in developed countries, where secondary and primary segments were developing simultaneously and naturally over the history. Thus, secondary capital market in transition countries is not even close reflection of what is going on in the primary market. So, having good secondary capital market ratios, without having new issues of securities, could not spur economic growth, even if empirics suggest positive and significant relation.

## **2. LITERATURE REVIEW**

Theory and recent empirical research show that financial system plays an important part in the growth of economy. Solow growth model (Solow, 1956) suggests main growth factors to be human and physical capital. It is a dynamic economic model that shows how economy changes and grows through the time by increasing level of production per worker, which is stimulated by increase of savings, investments, technological advancements and organizational improvements. Special contribution of Solow model is the importance of savings, which enter official flows (through financial intermediaries) and find a way to investors who have ideas and are capable to invest in new projects, which will in turn increase level of production and economic growth.

As suggested by Beck (2006), developed financial market stimulates economic growth through following factors:

- it helps mobilizing and pooling savings from investors,
- it efficiently allocates resources to the most productive uses (higher quality of information about companies and prospective development projects in economy,
- financial markets participants efficiently monitor investments through corporate governance mechanisms,
- it eases exchange of goods by providing payment services,
- it helps risk diversification.

All of these factors must be supported by macroeconomic stability, good legal system and free flow of information (Beck, 2006).

When distinguishing between importance of banking sector and capital markets, capital structure theories made great contribution. Stiglitz (1969) criticized capital structure irrelevance theory by Modigliani and Miller and came up with the conclusion that higher debt leverage decreases the value of the company, due to increased bankruptcy risk. Market-based system is important because of few shortcomings in a bank-based structure. Firstly, in the absence of a

market-based system, bank intermediaries with great influence on a firm may use their power to extract more from future profits of the firm. In turn, firms' ability to invest in innovative and profitable ventures is reduced. Secondly, the market-based approach is believed to more effectively exert corporate governance through identification, isolation and bankruptcy of distressed firms. Lastly, market-based systems are able to provide more tailor made risk management tools as the economy matures and the methods to raise capital increases (Levine, 2004).

Also, analysis of historical economic trends show that banks, through speculative behavior, have been causes for most of financial and economic crises (Minsky, 1992).

This all goes in favor of need for stronger capital market development generally.

Even though theoretical backgrounds suggest positive role of capital markets in the growth of economy, empirical research in past decades gave different and contradicting results.

Schumpeter (1911) made the first theory and suggested positive relation between finance and growth. The first serious empirical research was done by Goldsmith (1969). He tested and found positive relationship between financial sector (measured by total assets of all financial intermediaries) and growth for 35 countries, during the period from 1860-1963. He also showed that non bank intermediaries are growing as economy develops. Goldsmith partially proved causal relationship, where growth has positive influence on financial development. One of the most comprehensive researches was done by King and Levine (1993), when they found positive relationship between all four variables (all were related to banking sector) and growth. Other important works (Greenwood and Jovanovic, 1990; Berthelemy and Varoudakis, 1996; Arcand et al., 2011; Rousseau and Wachtel, 1998; Levine, Loayza and Beck, 2000) found positive and significant relationship between finance and growth, while Calderon and Liu (2003) found that growth influences financial development (causality).

After some time, researchers started investigating separate effects of banking sector and capital markets on economic growth. It was possible only when capital markets were developed enough and when quality of data allowed such an analysis. One of the first works in influence of capital market on growth was done by Atje and Jovanovic (1989) where they found positive relationship between capital market and growth, while, at the same time, significant influence of banking sector on growth was not found.

Levine (1991) and Bencivenga, Smith and Starr (1996) show that stock markets can influence growth through liquidity increase, and similar work by Obstfeld (1994) show that risk diversification over globally integrated stock markets is additional channel through which stock markets can stimulate growth. Similarly, positive relationship has been found by Atje and Jovanovic (1993), Singh (1997) and Levine and Zervos (1998).

One of the most important findings, from the aspect of this paper, have been presented by Demirguc-Kunt and Levine (1996a). They claim that economies with more developed stock markets have better developed overall financial system. More developed markets are more liquid, less volatile, more globally integrated, have more developed institutions with strong transparency laws, have international accounting standards and free capital flows compared to smaller markets.

Rousseau and Sylla (1999) get results which show that stock markets played key role in the growth of American economy during 19th century, since it attracted significant foreign capital. Durham (2002) found out that positive influence of capital market development depends on inclusion of more developed countries in regression model, which limits the role of less developed countries.

On the other side, some research papers did not find significant relation between finance and growth. Robinson (1952) proposed that finance follow real sector development, what

suggests existence of reverse causality in this relationship. Lucas (1988) claims that role of finance in economic growth is overemphasized, while Stiglitz (1989) and Mayer (1989) did not find significant relationship at all. Filer, Hanousek and Campos (2003) conclude that weak connection exists between stock markets and growth, especially in less developed countries, and that stock market activities cause currency appreciation. They argue that efficient alternative channels of finance exist in the countries with less developed capital markets.

### 3. DATA SOURCES

Availability, reliability and consistency of data were one of the criteria in choosing variables to be included in the model. Optimizing and minimizing the number of different sources was the main guidance in the process of data collection. The source of data for all three independent variables is GFDR (Global Financial Development Report dataset), World Bank Group. All other variables (dependent and control variables) are taken from WDI database (World Development Indicators), which is from World Bank Group, as well. The only data that is not from World Bank source is data for FDIST (Foreign Direct Investment Stock), which is taken from ENECE database.

The comparability of data was important criteria. All variables are expressed in percentages, while FDIST is the only variable expressed in nominal monetary values (EUR).

### 4. MODEL SPECIFICATION AND DESCRIPTIVE STATISTICS

This empirical research will be based on model presented by Mohtadi and Agarwal (2004), and will include countries from the region of South East Europe (SEE), six countries (Croatia, Serbia, Montenegro, Macedonia, Romania and Bulgaria), and Central and Eastern Europe (CEE), eight countries (Czech Republic, Slovakia, Slovenia, Poland, Hungary, Latvia, Estonia and Lithuania), during the period from 2003-2012 (10 years).

The reason for extending the sample to CEE region is the narrow data set for SEE that could threaten the model. With use of dummy variable (DummySEE), we will distinguish between these two country groups (SEE and CEE).

The aim of this research is to find relation between capital market indicators and economic growth in the SEE region, and measure its significance. The study is based on neoclassical theoretical model of economic growth that explains sources of growth:

$$g = f(L, K, T)$$

This means that labour (L), capital (K) and technological improvement (T) are key growth factors. This model has been later extended with other financial and economic variables (ie. Demircuc-Kunt & Levine, 1995; Filler et al., 1999).

The model could be specified as follows:

$$GROWTH_{pc_{it}} = \alpha + \beta CAPMKT_{it} + \gamma X_{it} + \varepsilon_{it}$$

$GROWTH_{pc_{it}}$  represents economic growth (dependent) variable for country  $i$  and year  $t$ . It is measured as yearly percentage growth of real GDP per capita.  $CAPMKT_{it}$  is general capital market indicator (independent variable, which will be represented by three different indicators in

the regression).  $X_{ij}$  represents the set of control variables that will control the model for country specific characteristics, while  $\varepsilon_{it}$  denotes random error.

The model with all specified variables will be as follows:

$$GROWTHpc_{ij} = \beta_0 + \beta_1 CAPMKT_{ij} + \beta_2 GDPpc_{ij} + \beta_3 FDIST_{ij} + \beta_4 Open_{ij} + \beta_5 GOV_{ij} + \beta_6 INVEST_{ij} + \beta_7 Inflat_{ij} + \beta_8 DummyCR_t + \beta_9 DummySEE_i + \sum_{i=1}^{14} \beta CountryD_i + \varepsilon_{ij}$$

Independent variable ( $\beta_1 CAPMKT_{ij}$ ) indicates capital market development, and will be proxied by three different indicators (each used in three separate regressions):

- MCR – share of market capitalization in GDP
- STR – share of stock exchange turnover in GDP
- TR – share of stock exchange turnover in market capitalization.

These three variables have been used in most up to date empirical research in the field of capital market-growth relationship (Levine and Zervos, 1996; Beck and Levine, 2002) and in this research all of them are expected to have positive effect on growth. The significance of this effect is questionable due to lack of new shares issues in SEE region. According to the theory, capital market can influence growth through direct injection of capital into real sector in order to spur investments and economic activities.

**MCR** (share of market capitalization in GDP) measures the size of capital market and could be one of the weakest of three indicators when we talk about region of interest. Namely, this indicator in transition economies could fluctuate a lot, since there are no many new share issues, and value of market capitalization is influenced almost solely by stock price index, which fluctuate a lot due to shallow and illiquid market. This variable much better fits and explains more developed markets, with more frequent primary issues.

**STR** (share of stock exchange turnover in GDP ) indicates the level of market liquidity. Being that GDP is denominator of the indicator, it is possible that variation of the indicator is mainly influenced by shares index fluctuation (Beck and Levine, 2002).

**TR** (share of stock exchange turnover in market capitalization) also represents exchange liquidity indicator, but with different denominator (market capitalization, while GDP was denominator in STR) which is corelated with nominator - turnover.

In order to control for joint effects of all other variables that are not variables of interest (independent variables), we decided to choose following control variables:

Control variables in stated model are:

- INVEST, gross fixed capital formations,
- FDIST, accumulated value of foreign direct investments as percentage of GDP,
- Open, openness of economy: (import+export)/GDP,
- GOV, government spending as a percentage of GDP,
- Inflat, yearly inflation rate (CPI – Consumer Price Index),
- DummyCR, dummy variable for the effect of world economic crisis,
- DummySEE, dummy variable for SEE countries,
- Country<sup>D<sub>i</sub></sup>, dummy variable for countries.

All of them were used in previous research models and have positive impact on economic growth.

According to theoretical background of economic growth, labor is one of the most important factors. There are few possible indicators that could represent human capital, such as average number of years that workers spend in school, or secondary school enrolment rate. Due to problems with data sources, as well as problem with the second variable (long lagged effect and weak variation through time), the effect of labor will be represented by **GDPpc** (real GDP per capita). Besides labor effect, this variable contains significant differences in technological development among countries (Silajdzic and Mehic, 2015) as well, and is expected to have positive effect on growth.

Besides labor factor, key variable for economic growth is the accumulation of physical capital (Solow, 1956), and could be well represented by investment volumes within country (**INVEST** - gross fixed capital formation). This variable is expected to have positive impact on growth.

Control variable OPEN represents the level of openness for economy and is calculated as share of exports and imports in GDP. Most of researches had confirmed positive impact of openness on growth (Bonfiglioli 2005, Edison et al. 2002, Levine 2001).

FDIST (FDI stock<sup>8</sup> – total gross accumulated value of direct foreign investments in production sector as a percentage of GDP) has been researched by many scholars, and has given ambiguous results. Some prove positive impact on growth (De Mello 1999; Alfaro et al. 2004; Fortanier 2007), while some find negative impact (Saltz 1992., Carkovic and Levine 2002.), most probably due to quality and availability of data, or due to choice of theoretical base (Silajdzic and Mehic, 2015). Therefore, it is hard to predict the sign of FDIST parameter.

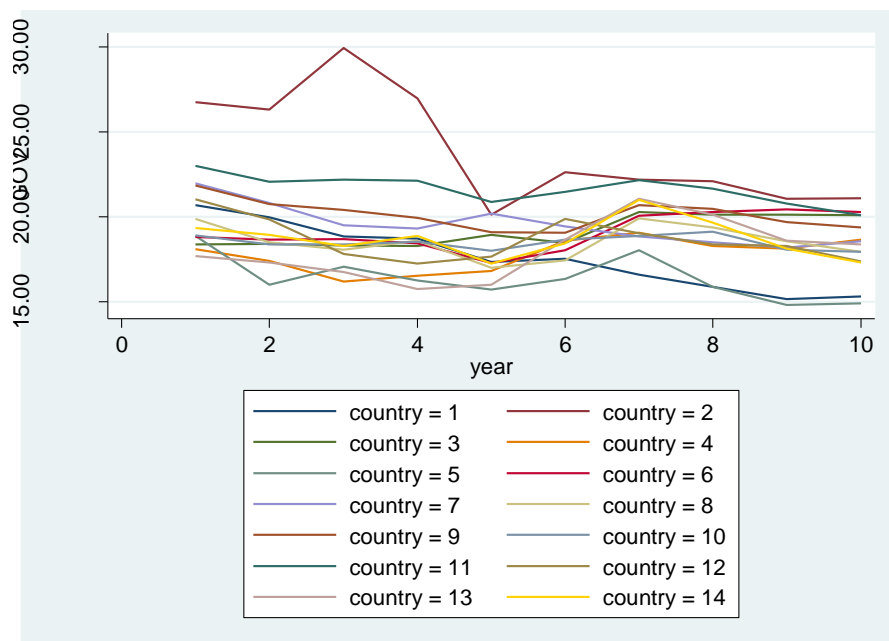
Variable GOV measures the size of government (value of government spending in relation to GDP). There has been dispute among researches and research results are different. Some studies find negative sign (Baro, 1991; Folster and Heckerson, 2001) and some of them positive (Kelly, 1997). Theory suggests that government spending has positive impact on growth, but until certain level of spending, after which it produces “crowding out” effect and makes negative impact. We should be careful in explaining these results, especially if we know that government sector plays an important role in SEE economies (Picture 1).

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<sup>8</sup> FDI stock is better than yearly inflow of foreign direct investments since it includes long term technological effects related to the level of foreign capital (Campos and Kinoshita, 2002).



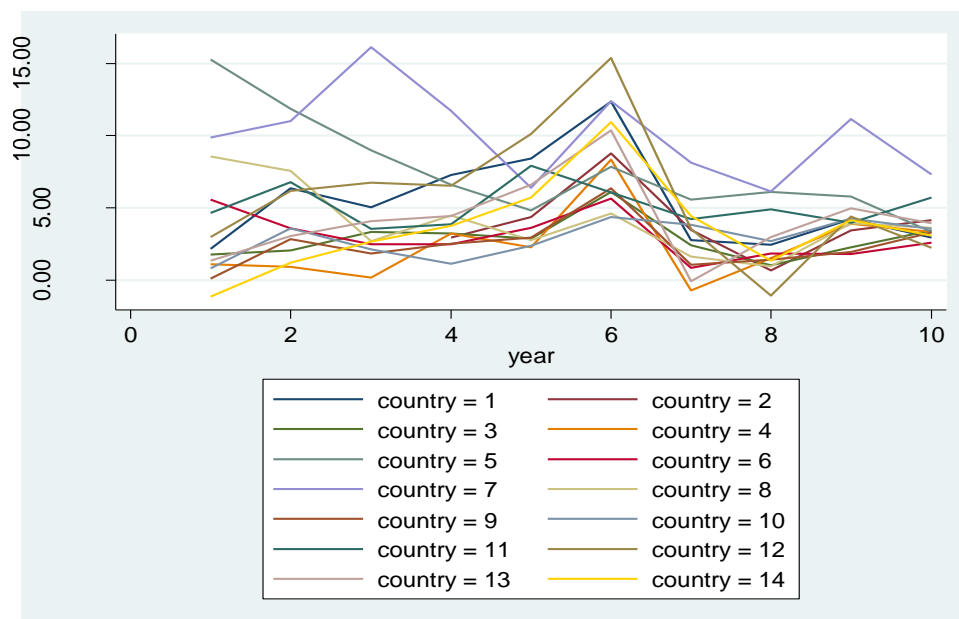
**Picture 1. Government spending share in GDP** (14 countries from the sample, 2003-2012)



Source: WDI database, Word Bank, Smal Stata 12.0 graph

Inflation (**Inflat**) is the variable that could have positive impact if it has low rate, and negative if the rate is high, causing economic instability. Data analysis indicate that inflation rates for SEE countries in given period were above normal rate, so it could be expected that inflation has negative impact on growth. There are also few possible causes of inflation. From one side, it can come due to higher demand and overheating of economy where supply can't answer demand in short term, while, from the other side, it can come due to sudden prices shocks (agriculture products, oil, etc.). Therefore, we should be cautious in forecasting these impacts. Being that sample of SEE countries with available data is small, the sample has been extended to the region of Central and Eastern Europe (transition countries only, in order to have comparability with SEE transition countries). This is the reason of introducing another dummy variable (DummySEE), which will distinguish between these two regions. We expect to have negative sign with significant impact for this variable, since SEE countries, on average, had lower rates of growth compared to CEE countries, when we control for other variables from the model.

**Picture 2.** Inflation rate trends for sample countries (2003-2012)



Source: WDI database, Word Bank, Smal Stata 12.0 graph

#### 4.1. Expectations and hypothesis:

According to results from previous research studies, we expect that more developed capital markets in SEE region contribute to economic growth. Therefore, the sign of  $\beta_1$  coefficient, which measures the impact of capital market development on economic growth, is expected to be positive. It is possible that these indicators (STR, MCR and TR) do not have significant impact on growth, due to reason that capital markets in SEE region do not have developed primary markets, which could significantly spur the growth.

#### 4.2. Descriptive statistics

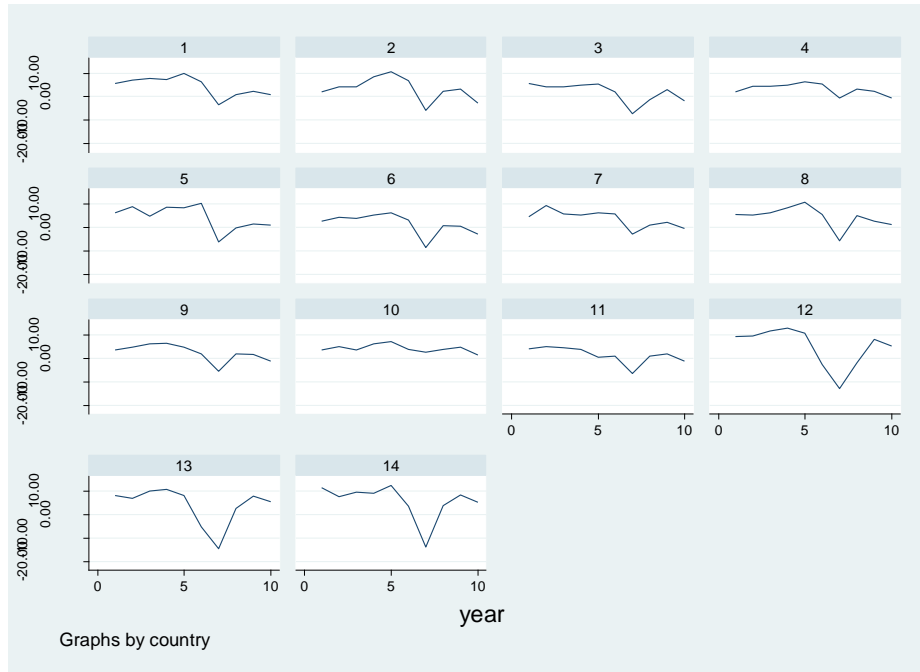
Tables 1. and 2. provide descriptive statistics for collected data and for all variables. From Table 1. we are able to see significant variations among countries for most variables in the model.

**Table 1.** Descriptive statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
GROWTH <sub>pc</sub>	140	3.578767	5.009272	-14.55986	12.93336
MCR	137	23.49606	18.08394	3.728726	93.16766
STR	137	5.100746	6.458015	.0276831	30.19559
TR	137	21.33997	24.89662	.353824	117.0277
Open	140	110.2848	29.3928	61.15341	179.8954
GOV	140	19.11433	2.253616	14.80935	29.94059
FDIST	140	3968.25	2478.145	201	11110
INVEST	140	14.17234	14.2349	-38.90257	38.40438
Inflat	137	4.533131	3.323928	-1.145753	16.11998

For example, the mean of dependent variable (GROWTH<sub>pc</sub>) is 3,6%, while the variation for the same variable was even more than the mean (5%). During the observed period, in years 2008 and 2009, there was a significant shock for dependent variable, due to big economic crisis (Picture 3.). Since this negative impact was not caused by any included independent variable, we included a dummy variable (DummyCR) for this crisis shock, and we expect negative sign therefore.

**Picture 3.** GDP per capita trends for sample countries (2003-2012) with emphasis on the crisis shock in 2008 and 2009



Source: WDI database, Word Bank, Smal Stata 12.0 graph

Other variables behave similarly and show significant variations, except for OPEN and GOV, which have relative low standard deviations. All three independent variables vary significantly between countries, which indicate that capital markets in transition region were not developed at the same pace.

Table 2. presents correlation matrix. Results are satisfactory in terms of existence of only one high correlation, namely between TR and STR variables (it was expected since the nominator for both variables is same – securities trade turnover). However, this is not an issue since these two independent variables never enter regression jointly.

**Table 2.** Correlation matrix

	GROWTHpc	MCR	STR	TR	Open	GOV	FDIST	INVEST	Inflat
GROWTHpc	1.0000								
MCR	0.0189	1.0000							
STR	-0.0050	0.2727	1.0000						
TR	0.0001	0.0478	0.9076	1.0000					
Open	0.0403	-0.1097	0.2188	0.2071	1.0000				
GOV	-0.2006	0.2926	0.3235	0.3545	0.0762	1.0000			
FDIST	-0.3071	0.1447	0.3183	0.2326	0.6686	0.0007	1.0000		
INVEST	0.4779	0.2848	-0.2714	-0.3424	-0.3199	-0.2293	-	1.0000	
Inflat	0.1759	-0.0469	-0.0334	-0.0287	-0.1350	-0.0605	0.3816	-	1.0000
							0.2267		

## 5. METHODOLOGY

Being that research is based on data with longitudinal nature (panel analysis), we first start with fixed effects (FE) model. This model is equivalent to OLS model with using dummy variable for each country separately (LSDV model). The following step continues with random effect (RE) model, and results for MCR variable (FE and RE) are summarized in the Table 3.

**Table 3.** FE and RE model regression results, MCR variable

GROWTHpc	Fixed effects	Random effects
MCR	.0650449 *** (.0245611)	.0409811** (.0181824)
Open	.0605147 *** (.0212573)	.0454577*** (.0143847)
GOV	.0970277 (.1998871)	-.2661821* (.1616026)
FDIST	-.0018878 *** (.0002522)	-.0006296*** (.0001894)
INVEST	.2432645 *** (.0234538)	.2236747*** (.0275587)
Inflat	.201784 ** (.0861102)	.2956793*** (.0841472)
DummyCR	-4.000977 *** (.5987498)	-4.184882*** (.669793)
GDPpc	.0012635 *** (.0003881)	-.0003913*** (.0001105)
DummySEE		-7.419921*** (1.069285)

Note: standard errors are given in brackets; all regressions include constant and dummy variable for countries (not included in report); \*represents significance at the 10% level, \*\* represents significance at the 5% level, \*\*\* represents significance at the 1% level

Both regressions give similar results in terms of significant impact of market capitalization indicator (MCR variable) on growth. However, government spending and GDPpc have negative sign. Hausman test ( $\chi^2 < 0,05\%$ ) suggests use of fixed effects model (Appendix, Table 1).

After running regressions for other two coefficients (STR and TR), we concluded that whole model is unstable, due to changes in signs and significance levels for some variables, after changing the structure and data within the model.

Panel data are prone to problems of error behavior (heteroscedasticity and autocorrelation). Potential problem of heteroscedasticity is confirmed by modified Wald test (Table 4.),

**Table 4.** Test for heteroscedasticity (Wald test) for all three independent variables (MCR, STR and TR)

Modified Wald test for groupwise heteroskedasticity in fixed effect regression model  
H0:  $\sigma(i)^2 = \sigma^2$  for all i

	<i>MCR variable</i>	<i>STR variable</i>	<i>TR variable</i>
chi2 (14)	164.36	44.39	44.95
Prob>chi2	<u>0.0000*</u>	<u>0.0001*</u>	<u>0.0000*</u>

\* *Significancy level at 1% for chi2 indicates the problem of heteroscedasticity*

as well as the problem of autocorrelation, that was confirmed by Lagram-Multiplier (Wooldridge) test (Table 5.). Therefore, results from FE and RE regression are no more valid.

**Table 5.** Lagram-Multiplier test for autocorrelation for all three independent variables (MCR, STR and TR)

Wooldridge test for autocorrelation in panel data  
H0: no first-order autocorrelation

	<i>MCR variable</i>	<i>STR variable</i>	<i>TR variable</i>
F(1, 13)	7.660	10.343	10.624
Prob> F	<u>0.0160*</u>	<u>0.0068*</u>	<u>0.0062*</u>

\* *Significancy lefel of 1% indicates autocorrelation for all three independent variables*

After detecting problem of heteroscedasticity and correlation, we changed the regression model to PCSE (Panel-Corrected Standard Errors) model, which is suitable for “short” panels, such as our (Beck and Katz, 1995). Following this recommendation, we have performed PCSE analysis by using Prais-Winsten regression.

At the end, in finance-growth research, it is important to check for endogeneity and reverse causality, in terms of checking if dependent variable (growth) reversely influences independent variables (capital market development). In case that this relation exists, it could diminish the importance of results of previous regressions.<sup>9</sup> We use LDSV regression with Anderson-Hsiao estimator to test for Granger causality.

## 5. RESULTS

Table 6. shows results of PCSE regression, where we found significant positive effect of market capitalization in GDP on economic growth. All control variables, except government spending, are significant at 1% level, while the sign for all variables is positive, except for FDIST. Dummy variables for SEE countries (DummySEE) and for crisis period (DummyCR), according to expectations, have negative sign with high significance level.

<sup>9</sup> Empirical evidence from numerous studies find causality relation between finance and growth, since development of financial sector is influenced by economic growth (Garcia and Liu, 1999).

**Table 6.** PCSE regression results for all three independent variables (MCR, STR and TR)

<b>GROWTHpc</b>	<b>Regression 1 (MCR)</b>	<b>Regression 2 (STR)</b>	<b>Regression 3 (TR)</b>
<b>MCR</b>	.0584459*** (.0193668)		
<b>STR</b>		.0425213 (.050387)	
<b>TR</b>			.0145736 (.0133451)
<b>Open</b>	.0584459*** (.0164577)	.0496912 *** (.0172516)	.0490879***(.0168352)
<b>GOV</b>	.1684391 (.1585292)	.006732 (.1374289)	- (.1366109)
<b>FDIST</b>	-.*** .0018359(.0001877)	-.*** .0017484 (.0002028)	.0077108 -.001743*** (.0002074)
<b>INVEST</b>	.252085*** (.0201605)	.264341 *** (.0236284)	.2658557*** (.02329)
<b>Inflat</b>	.2354329*** (.0765402)	.2470602 ** (.0967224)	.2478969*** (.0967533)
<b>DummyCR</b>	-4.21595*** (.4755353)	-4.22801 *** (.8890909)	-.*** 4.173844(.8678794)
<b>GDPpc</b>	.001117*** (.0003197)	.0011512 *** (.0004121)	.0011724*** (.0004131)
<b>DummySEE</b>	-.*** 12.38497(3.751067)	-.** 7.526616 (3.200302)	-.** (3.246452) 7.472369

Note: standard errors are given in brackets; all regressions include constant and dummy variable for countries (not included in report); \*represents significance at the 10% level, \*\* represents significance at the 5% level, \*\*\* represents significance at the 1% level

In the second regression, STR (stock turnover in GDP ratio) came up with positive but insignificant impact on growth, while all other variables remained with the same sign and significance levels like in the first regression.

At the end, the last tested coefficient of stock turnover in market capitalization (TR) has shown to be positive but insignificant in terms of its impact on economic growth. All other variables remained unchanged, except GOV (government spending), whose coefficient changed the sign, but remained insignificant.

Endogeneity and causality are most often tested by Granger test. However, literature review (Baltagi, 1995; Siladzic and Mehic, 2015) suggests that “shortness” of data and small sample does not allow Granger test to be applied. Instead, as recommended by Judson and Owen (1999), we use LDSV estimator (Least Square Dummy Variable estimator), whose systematic error is additionally corrected by Anderson-Hsiao estimator.

The results of the test (Table 7.) do not find existence of reverse causality and endogeneity problem, since the level of lagged economic growth ( $GROWTHpc_{t-1}$ ) influence on market capitalization (MCR) does not appear to be significant (0,844). Now, we can interpret previous results with much more accuracy level.

**Table 7.** Endogeneity and reverse causality test for lagged dependent variable  $GROWTH_{pc(t-1)}$  and independent variable MCR (dynamic regression with lagged effect)

	<b>MCR</b>	<b>GROWTH<sub>pc</sub></b>
MCR <sub>(t-1)</sub>	0,638*** (0,062)	0,040 (0,033)
GROWTH <sub>pc</sub> <sub>(t-1)</sub>	-0,034 (0,175)	0,364*** (0,094)

*LSDVC dynamic regression with Anderson-Hsiao IV estimator; Standard errors in brackets, ); \*represents significance at the 10% level, \*\* represents significance at the 5% level, \*\*\* represents significance at the 1% level*

## 6. SUMMARY AND CONCLUSION

The main research goal was to test the significance of positive impact of capital market activities on economic growth in SEE region. Due to data limitations, we have used variables that explain secondary capital markets, in terms of its development, size and liquidity. The data for primary market activities are not available. Therefore, it is hard to expect that these variables give a right picture of capital market development, and it is hard to expect that capital market can spur growth through secondary market activities, knowing that primary market activities were at very low level in SEE region<sup>10</sup>.

While two indicators representing capital market liquidity (STR and TR) showed positive and insignificant impact on economic growth, regression on the other side, confirmed positive and significant impact of market capitalization ratio (representing market size) on economic growth. The main question that should be answered is the possibility of capital market impact through secondary market, since we know that primary issues and direct cash injections into real sector were rare in this region. One of the explanations could be an indirect effect of increased foreign portfolio investments inflows to transition countries during transition period (due to relatively low prices of shares after privatization), that increased money supply and increased general spending and demand, what, in turn, increased economic activities in general.

Regardless of possible direct and indirect effects, this study contributes to debates of previous research studies and policy creation, in terms of finding positive impact of capital market on economic growth. The fact that other two coefficients (STR and TR) did not show significant impact on growth makes this relation weaker, which is in accord with other studies that find weaker impact of capital market on economic growth in less developed countries and stronger impact in more developed countries. SEE countries, with the use of dummy variable (DummySEE) were successfully distinguished from other CEE countries, since SEE countries experienced slower growth, when we control for other variables in the model. The second dummy variable (time dummy - DummyCR), which was used to absorb crisis effect, has shown the existence of structural shock, right after crisis break up.

The choice of control variables was satisfactory. For most of them we have got expected results with high level of significance. Negative and significant effect of FDI on growth was the only unexpected result in the study. However, some previous studies have found similar effects. Since these results go outside economic theory the only cause in this finding we can search in

<sup>10</sup> Eventhough data on primary issues on the country level does not exist in official and publicly available data sources, the list of global initial primary offerings during period from 2012-2015, obtained from World Federation of Exchanges (<http://www.world-exchanges.org/home/index.php/statistics/ipo-database>, accessed on 21.2.2016.), show that six SEE countries from the sample had no single IPO during stated period. Even though not an official data, this could help us make conclusion that primary market activities were at very low level.

data quality. FDIST variable data was the only data taken from UNECE database, while all other were taken from World Bank database.

Limitation factors were short time period for which data are available (since transition time in SEE region does not have long history), as well as extreme external shocks due to financial and economic crisis. Therefore, obtained results should be treated with caution. Besides that, we cannot be sure that control variable GDPpc represents labor effect very well. Labor effect, according to economic theory, is the key growth factor.

Finally, it would be hard to make good further assessment of capital market-growth relationship in SEE region without making in depth and qualitative analysis, which should discover main factors that limit primary market activities. Primary market activities are crucial for economic growth, and transition capital markets were not created naturally through primary issues as they did in developed economies. They came up from the process of privatization, where shares of state companies were just transferred from state to private ownership.

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# MULTINATIONAL INNOVATION, PRODUCT LIFE CYCLES AND INTELLECTUAL PROPERTY RIGHTS PROTECTION: WHICH IS THE BEST PLACE TO INVENT SOMETHING?

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## **Abstract**

This paper looks at the role that Intellectual Property Rights (IPR) protection plays for the decision of multinational corporation (MNC) in locating their R&D. Does stronger IPR attract more innovation? And if so, does it matter more for certain sectors rather than others? With a novel multicountry and multisector database gathering information on the innovation activity of more than 15,000 firms as well as on the destination country's features, we are able to distinguish among production driven, or commercial, R&D - innovation carried out in areas where the firm is present directly or indirectly through a subsidiary - and non-production driven, or external, R&D - research done by external collaborators in countries where the multinational group is not present -. We find that firms tend to locate their commercial innovation in countries with strong IPR, with evidences that the strength of law enforcement affects more innovation in long life cycle industries which rely longer on patents, in opposition to short life cycle technologies for which the obsolescence rate is much faster making them insensitive to IPR protection. Nonetheless, external innovation seems not affected by patent protection suggesting other motives behind its location decision.

A reliable, even not perfect, measure of innovation is patenting activity. Innovation can easily be localized due to information on inventors' addresses which are publicly disclosed in patents record. Many policies may have an impact on the attraction of R&D in a country, IPR protection is one of those.

This paper analyses the effect of IPR in attracting innovation using inventors' addresses to localize R&D. With a newly created dataset containing information on patenting activity of more than 15,000 multinationals undertaking research in 141 countries and 37 sectors in the years from 2004 to 2013. The impact on innovation of IPR protection may be difficult to disentangle from the overall economic development of a country. We interact IPR stringency with sectorial life cycle lengths for each R&D outcome; with this twist we can capture the real effect of IPR as product life cycle length only varies across industries and remains independent from MNCs' sensitivity to overall institutions and development levels of a country, which rather affect patents protection level.

Once this correspondence has been established we focus our attention on non-production driven R&D which classifies as that research undertaken in places where the MNC does not have any

subsidiary or production activity. Typically it takes the form of collaboration with foreign scientists or non-domestic firms. Its counterpart is production driven R&D which takes place in the home country or in any other location where the corporation has a subsidiary along with production activities. Whether the aim of the multinational is to collaborate with local firms or scientists and then just go back home, hiding a technology seeking motif for conducting R&D, or to interweave with the local environment in view of a new subsidiary creation or an already existing local company acquisition there, external R&D is particularly relevant as it constitutes, for the destination country, a means for accessing skilled knowledge and, eventually, also attract future production activities of the MNC.

**Keywords:** *Innovation, Intellectual Property Rights, Product Life Cycle, Government Policy, Technological Change.*

**JEL classification:** D22, F23, L50, O30, O32, O38.

# STATE OF EDUCATION IN SEE COUNTRIES: HIDDEN CHALLENGES

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## Abstract

Importance of education in country's development process is non-contestable. Since the earliest thinkers, economic theory has been dominated by the thought that the knowledge and education are the crucial pillars of strong economic and social progress. However, contemporary development concept incorporated in principles of Washington consensus which is based on neoliberal free-market ideology ignore this dimension of development in favour of pushing liberalisation of trade and capital flows in the less developed and developing countries. In recent decades, the field of education and importance of human capital in economic processes of growth and development has grown significantly. This would be the main reason of examining the role of education in development process in this paper with special attention on the experiences of South East European (SEE) countries. International evidence shows that the education in these countries despite the transition and integration processes is not a good fit, yet for market and knowledge based economies. Education is widely recognized as a key factor for economic development in the region however the countries of this region are still facing some very important challenges, such as financing, teacher education, curriculum reforms etc.

The main aim of this paper is to investigate the state of education in selected SEE countries by using general research methods of comparative analysis based on the available secondary data from Bank, EUROSTAT, UNESCO and OECD statistics as well as data available from official statistical offices in respective countries. The analysis of education systems will be conducted by using indicators such as: enrolment rates, expenditures on education, wages, unemployment and other. Paper will also provide a review of academic literature that analyses the role of education in process of economic growth and development.

The key results of this work are to emphasize the necessity of enhancing position of education in development policies and analysing the experiences of successful countries. Special emphasize is on greater role of international economic and development institutions in promoting education-based economic development. The findings should be of practical value for policy and decision makers.

**Keywords:** *education, development, growth, investments, knowledge-based economy*  
**JEL classification:** I21, I28,

# **PATTERNS OF GDP GROWTH AND EMPLOYMENT GENERATION IN INDIA: A GENDER SPECIFIC ANALYSIS OF INCLUSIVE GROWTH**

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## **INTRODUCTION**

Distribution issues have assumed global significance in recent years. Empirical evidence from larger number of developing and emerging economies indicate that the neo-liberal policies have not been successful in delivering pro-poor, inclusive growth. The governments and policy makers, the worldover are working hard on designing and implementing inclusive growth strategies suiting their own local conditions, making all sections of society equal partners and beneficiaries of the growth process.

In recent decades particularly after launching of neo-liberal reforms programme in 1991, Indian economy too has undergone certain structural changes which do not augur well with inclusive or broad-based growth. It has experienced some bouts of accelerated growth since the mid 1980s before entering a phase of deceleration in the wake global economic slowdown after 2008. Leaving behind the jokingly so-called 'Hindu rate of growth' of 3.5 percent mark during the three decades, from 1950 to 1980, the annual GDP growth hit the 5.6 per cent mark in the 1980s. It accelerated to 6.5 percent in the 1990s, and touched an all time high of 9 percent in the XIth plan before coming down to around 7 percent in recent years.

However, this relatively high rate of growth of Indian economy has been associated with some substantial structural changes, which have not only shifted the hitherto centers of growth but also altered the relative significance of sectors of economic activities. The service sector has emerged the fastest growing and the most dominating sector, followed by the industrial sector. But what has been really disturbing about this structural change is its lopsided nature. The structural shift of GDP in favour of the services sector has not been matched by concomitant changes in employment structure. The share of the agricultural workforce in the total workforce has shown a steady decline in the last three decades but, the proportion of those employed in the agriculture is still large, creating a situation where about 50 percent of the population is contributing around 14 percent to the GDP.

With employment growth lagging behind output growth, sectoral employment elasticities with respect to output as well as the economy wide employment elasticity have come down. But this fall has been more pronounced in the secondary and tertiary sectors, i.e., in the fast growing sectors. As the improved growth since 1991 did not result in a proportionate increase in employment, it is very likely that the growth has helped only those persons, regions or segments of the economy that are already employed or better off.

This is mainly because of the reason that the underlying premises has been to take GDP growth and employment growth interwoven together by assuming that employment is a dependent variable and with GDP growth employment will also grow. However, the relationship between the GDP growth and employment may not be that simple, i.e. growth in GDP need not automatically lead to growth of employment. Much depends upon the growth of GDP by origin and the factor-intensity of the production techniques. The National Sample Survey Organisation's

report on employment and unemployment in India, 2011-12, indicated that 13.9 million more people were employed in 2011-12 than in 2009-10. Jobs are a very limiting way, however, of looking at the employment situation in India, given that self-employment and casual labour continue to account for 80 percent of employment. Also for the first time, the overall employment in the farm sector, which accounts for about a quarter of GDP growth, fell from 50 per cent to 49 per cent, while manufacturing and services made up for 24 per cent and 27 per cent of the workforce, respectively.

While employment and unemployment are aggregates, growth may also affect the composition of unemployment. Moreover, the myth of “Feminization of work” has led to unemployment and underemployment of women in India. Female unemployment is increasing at a faster rate than that of men. India has 397 million workers out of which 123.9 million are women out of which almost 96% women workers are in unorganized sector. An NSSO survey based on Census 2001 and 2011 shows that total female employment actually declined at an annual rate of 1.72 percent between 2004-05 and 2009-10, while male employment showed a slight increase. Clearly, it is significant and potentially very disturbing result especially given that women’s work participation are quite low in India compared to most other parts of developing worlds. 2000s were a decade of unprecedented rapid GDP growth for Indian economy. In this decade the number of women aged 15 years or more increased by 86.5 million. But only, 8.9% of women out of them joined the labour force and only 7.5% were gainfully employed. This relative lack of increase in number of working women in a period of major economic expansion is not just unusual it is also hard to explain in terms of standard economic approaches.

The economy has also witnessed a structural change in labour participation wherein the share of women in the labour force and labour participation rate of women has been declining for the last couple of decades. While, 2000s was a decade of unprecedented rapid growth for Indian economy, but only 8.9 % of eligible women joined the labour force. Moreover, between 2004-05 and 2011-12 rural women joining the labour force and getting jobs dipped by 18%, while the figure for men grew by 7 percent. This so called ‘de-feminization’ of labour force or crowding out of female labour force possibly in the face of stagnant agriculture and global economic slowdown, has serious implications for the feminist agenda of ‘engendering development’ and the larger objective of inclusive growth.

The basic purpose of this study is to examine the gender biased violence (against women) of growth in India in terms of its impact on women employment and labour participation rate of women. The specific objectives of the study are:

- (i) To analyse the nature of GDP growth and employment generation in India.
- (ii) To examine the impact of GDP growth on employment.
- (iii) To study inter sectoral gender disparities in employment and wages and causes thereof.
- (iv) To study determinants of women employment and factors responsible for low women participation in employment in India.
- (v) To suggest strategies to increase women participation in organized sector.
- (vi) To evaluate the impact of policy changes on labour force participation of women.

Specifically, the study sets out to examine the status of the following sets of hypotheses.

**Hypothesis I:** GDP growth in India has been gender- neutral in employment generation.

**Hypothesis I (a):** GDP growth in India has been gender- neutral across the three broad sectors of economic activities.

**Hypothesis II:** There has been de-feminisation of labour force in India.

**Hypothesis II (a):** The de-feminisation of labour force in India has been consistent across the three economic sectors and rural- urban sectors.

**Hypothesis III:** The high growth in the organised segments of the secondary and services sectors has been gender- neutral in terms of employment generation.

**Hypothesis IV:** There has been feminization of low paid jobs and de-feminisation of high paid jobs in India.

**Hypothesis V:** There has been informalisation of women employment across the three broad sectors of economic activities.



## **CONSTRUCTION OF THE MOTORWAY ON THE CORRIDOR VC: THE PUBLIC-PRIVATE PARTNERSHIP MODEL**

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### **Abstract**

JP Autoceste FBiH is the carrier and the implementer of a very complex and important project of construction of the international motorway Corridor Vc, which connects Eastern and Central Europe with the Mediterranean coast. Length of Corridor Vc through Bosnia and Herzegovina is approximately 317 km, of which 272 km passes through the FBiH.

So far 92 km of motorway has been fully built and is currently in use. A total of 850 million KM of credit funds has been spent in so far built part of the motorway, while the remaining cca 180 km of Corridor Vc passing through FBiH need another 4.5 billion KM of investment.

Traditional financing models for the construction of the motorway which include loans, grants and increase of the fuel levy will entirely be exhausted by 2021. The current debt potential of Autoceste FBiH from the additional fuel levy amounts to 1.2 billion KM; so FBiH is in need of new financing models for the construction of the remaining part of the motorway. New financing models actually mean attracting the private capital through the system of public-private partnership. Public-private partnership – PPP in the construction of the motorway means financing the construction from the private capital through concession.

There are two main drivers of PPP; one is that public sector enjoys the benefits of including the private partner such as qualified personnel and efficiency of work which public sector is unable to deliver. Another driver is the structure of PPP project where public sector doesn't incur debt. In order to be able to construct part of the Corridor Vc through PPP system despite the poor financial indicators of the project, it is very important to utilize all available instruments which will make the project profitable and feasible for the private partner. The main benefit of PPP is the value added through better construction, operation and maintenance and risk-sharing.

Public Sector Comparator is used by a government to make decisions by testing whether an investment proposal offers value for money for public sector. It estimates the hypothetical risk-adjusted cost if a project were to be financed, owned and implemented by government.

We have forecasted Autoceste FBiH's expected cash flow and analysed NPV's profiles of all unconstructed sections of motorway. We find that sections most suitable for PPP financing structure are: Karuse – Ozimica, Ozimica – Poprikuse, Poprikuse – Nemila and Tarcin – Ovcari, with total length of 68 km and construction cost of 1.8 billion KM. Private partner would bear risks associated with construction and financing. Maintenance cost would remain at JP Autoceste FBiH. The proposed model of financing would ensure the continuation of motorway on Corridor Vc construction also after the government's borrowing capacity from international financial institutions has been exhausted.

**Key words:** Motorway, Corridor Vc, public-private partnership, concession

## 1. INTRODUCTION

JP Autoceste FBiH is the carrier and the implementer of a very complex and important project of construction of the international motorway Corridor Vc, which connects Eastern and Central Europe with the Mediterranean coast. Length of Corridor Vc through Bosnia and Herzegovina is approximately 317 km, of which 272 km passes through the FBiH, which is under the authority of JP Autoceste FBiH. Next to the construction of Corridor Vc, plan is to construct motorway on the route Orasje – Tuzla – Zepce where it will connect to the Corridor, and also to construct a new network of express roads that will ensure that the entire territory of BiH is well connected and has access to the Corridor.

The main goal of JP Autoceste is to construct Corridor Vc with a mission of interconnecting Bosnia and Herzegovina with neighbouring countries and ensuring potential for economic development for better integration of BiH with European economic and social structures.

**Corridor Vc in BiH consists of four main sections (called Lots) :**

- Lot 1: Svilaj on The Sava River - Doboj South;
- Lot 2: Doboj South - Sarajevo South;
- Lot 3: Sarajevo South - Mostar North;
- Lot 4: Mostar North - Bijaca on the southern border with Croatia.

So far within the project activities 92 km of the motorway are constructed, referring to the subsections Zenica South – Sarajevo South and Medjugorje – Bijaca. These subsections were funded from the credit lines of European Investment Bank (EIB), EBRD (European Bank for Reconstruction and Development (EBRD), except for the route Josanica – Kakanj which was funded from the budget of FBiH. Totally 850 million BAM was invested, but for the remaining part of the Corridor it is necessary to invest another 4.5 billion BAM.

Project generates revenues from fuel tax, road toll, and from the use of road land, which is generally directed to servicing the accumulated debt and operation and management costs.

Generated project revenues are not sufficient to service any additional debts for the purpose of continuation of construction, therefore it is necessary to consider all other available financing models.

Toll road revenues are still on a very low level. It has been determined by traffic projection analysis that only subsection Zenica – Sarajevo generates enough revenues to cover its O&M costs, while the other subsections are not generating enough revenues even for these costs. Furthermore none of these subsections is profitable enough to service its financing.

Similar result is reached when analysing unconstructed sections of the motorway. Analysis was based on investment profitability from the perspective of the investor, where returns on investments are negative individually, so in financial sense project revenues cannot compensate for the project costs that include financing costs. However, economically positive result is reached by observing the construction project as a whole, and by analysing its effect on BH economy.

From the above it is clear that traditional financing models from loans, grants and increase in fuel tax won't be available to finance the remaining part of the motorway for several reasons:

- Incurring new debts in the sufficient amount will not be possible after 2020 due to the current debt which will intensively start repaying in this period. Hence, financing of the motorway kilometres would solely depend on the depreciation of the existing loans, meaning that in average only 3 km would be built annually,
- it is unrealistic to plan construction of the new kilometres with further increase of the fuel tax , and
- it is unrealistic to further postpone the final construction of the Corridor Vc through FBiH.

BiH needs new financing models for the construction of the remaining part of the motorway in the total amount of 4.5 billion KM, whereas its debt potential with additional revenue from the fuel tax amounts to 1.2 billion KM. New financing models actually mean attracting the private capital through the system of public-private partnership. But, how to structure a project of public – private partnership for the continuation of the motorway construction?

## **2. PUBLIC-PRIVATE PARTNERSHIP MODEL**

The investments of public interest (public investment) are an important factor in the creation of GDP and welfare. The value of the social product and the achieved level of well-being affect not only the act of investing, but also its quality, which is primarily identified by the efficiency and effectiveness of the implementation of public investment.

In applying the principles of efficiency and effectiveness model assessment has a special role, i.e. the assessment of the ways of realization of an investment. The private sector applies analytical procedure of assessing whether it is more profitable to undertake the investment independently and to bear all or almost all of the risks arising from the investment, or is it more profitable to buy services from third parties (private partners) . This principle, which is known as “make or buy” decision, it is useful to apply in the public sector (Commission for PPP, 2013).

Public-private partnership is a partnership between the public and private sector which aims to deliver services traditionally provided by the public sector (European Commission, 2003). PPP is never an imperative by itself. It is preliminary a procedure in which by an in-depth analysis of the underlying project it is being determined which model of delivery of an public service delivers better value for money (VfM) to the tax-payers. The process of calculating the VfM is quantitative analytical method that reveals is it for taxpayers more useful to apply the traditional investment model in which the public sector invests and takes mostly all the risks of the public investment, or is it better to pay the service to private sector by transferring (allocating) the most risk to it, in which case it is a public-private partnership (PPP) (Marenjak, 2012). So basically the idea of maximizing the value for public money is in transferring the original risk of public investments to the private partner. In doing so, affordability means added value for the public sector and the long-term savings for taxpayers. This approach is socially justified and economically rational.

Generic factors driving value for money are (HM Treasury, 2006): (1) the optimum allocation of risk between the various parties, (2) focusing on the whole life costs, (3) integrated planning and design of the facilities-related services, (4) output specification approach, (5) rigorously executed transfer of risks, (6) sufficient flexibility to ensure that changes of the original requirements can be accommodated during the life of the project, (6) ensuring sufficient incentives within the procurement, (7) term of the contract should be determined over the period in which it is reasonable to predict the requirements of the services being procured, (8) adequate skills and expertise with the public and private sectors and (9) managing the scale and complexity of the procurement, so that procurement costs are not disproportionate to the underlying project.

Project or service can be considered a public-private partnership when the risks of construction, and the risks of demand or availability, is transferred to the private sector. This is the definition applied by the European Union, in which public contracts are separated from activities outside the budget, primarily for accounting purposes. When it comes to PPP - in addition to responsibility for the successful performance of the construction - the private partner bears the responsibility in case of falling demand for the service in the market (demand risk), as well as in the case that service is not performed to the agreed level, i.e. availability risk (Damjanovic, Pavlovic-Krizanic, Peteri, 2010).

Public-private partnership – PPP model applied to the construction of the motorway means financing of the construction from the private capital through concession. However, a term 'concession' should not be entirely equated with the term of 'PPP' as they differ in several key characteristics.

Concession is a project where concessionaire acquires a long-term right to exploit a certain public good assuming all necessary investments and management of the good, whereas the country remains it's full and rightful owner. Concessionaire collects revenues of the project from the final consumer, and pays to the government a certain concession fee. So, in the case of a concession, the concessionaire bares the whole investment risk (Bank, 2016).

In a public-private partnership model, a private partner also obtains a long-term right to exploit a certain public good, but this model is usually applied to the greenfield projects such as construction of the national motorway. A key characteristic that differs PPP from a concession is

the risk distribution between private partner and the government, where private partner usually collects its revenues from the fee paid from the government instead from the final users (Bank, 2016).

PPP assumes contractual relationship between private company and a public sector, where a private partner provides a public service or implementation of a project of public significance, with the assumption of significant financial, technical and operational project risk. In some types of PPP, service cost is bared solely by its end users, while in others private sector makes capital investments based on its contract with the government, where project cost is bared partially or fully by the government. Government contribution in the projects of public good and infrastructure and come in the form of capital subvention or a grant in order to make the project economically justified. Government contribution can also come in the form of revenue subvention in the certain amount and a certain period of time. In any case, these partnerships include distribution of risk between the partners, meaning that optimal risk allocation is the leading value generator in such models of procuring public services.

There are two main drivers of public-private partnership. One is that public sector enjoys all the benefits of including a private company such as expertise of personnel and efficiency of work which public sector can hardly reach. The other one is that PPP is structured in such a way that public sector doesn't have to incur additional debt (Gulija, 2004).

Financing costs will be higher for the private partner, due to the high price of private capital, but however those can be significantly alleviated by private partner's efficiency, savings on the overall project approach or better risk allocation. But when the project is unprofitable, larger contribution of the public sector is required in the form of additional bank guarantees ensured for the private partner.

In order to be able to build part of the Corridor Vc through PPP system despite the bad financial indicators of the project, it is very important to use all available instruments in order for the private partner to assess the project profitable and feasible. Assumption is that the private partner will partially invest his own capital, while for the rest he will need a bank loan. In order to ensure for the private partner to get this loan at reasonable conditions, he will have to provide additional bank guarantees. If we take into account the unprofitability of the project, need for high return rate follows as logical conclusion. Private partner will not give own guarantee to the bank for an unprofitable project, so he needs to ensure guarantee of other kind. Guarantee given from the state will not be an option in this case, as according to the Law on concessions of Bosnia and Herzegovina, our country doesn't assume giving state guarantees for unprofitable projects, so another type of guarantee such as back-stop guarantee from EBRD or MIGA are a possibility at certain conditions.

To be able to harvest the benefits of current investments, where we are able to take loans at very good conditions in the future, it is very important to strategically choose those motorway sections that we wish to build on our own and those we plan to give to the private partner in PPP system. Logical move would be to approach with construction of the easiest sections, because this way we would achieve longest constructed routes in short period of time, and this would create the effect of very efficient work progress. However following such logic, by 2018 we would deplete

all the available inexpensive loans, while the rest of the sections left to be built would be extremely unattractive for any financing model, let alone for the potential private partner.

From the optimisation of investments in the period 2016 – 2020 follows that in this period another 90 kilometres are going to be built, financially this means investment of 1.85 billion KM, so actions and measures to ensure needed funds from international financial institutions are to be taken. The additional revenue from the fuel tax in amount of 0.10 pf/l creates debt potential of 1.2 billion KM, while the rest of the needed funds will be ensured from the own funds of JP Autoceste by depreciation of current debt, and from grant funds which haven't been used as much so far.

Project with these characteristics, demands peculiar structuring of PPP system which will alleviate negative financial characteristics of the project, and ensure the best possible financing conditions for the private partner. Key to successfully finding a private partner for PPP lays in the choice of those Corridor sections which together create positive financial image of the project. Each of the sections that will be offered to the private partner needs to be analysed in detail to reach realistic investment parameters that will show to the private partner that he can reach a level of revenues in the project that can service the debt and ensure return on invested capital.

The authors of the article have actively worked on the analysis of the remaining sections of the motorway to choose those sections that will be built in the coming investment cycle and those that should be built in the PPP system. We paid additional attention to choose the hardest and most unattractive sections for the second cycle of investments. The leading idea was to find a way to redistribute the risk, and to lower the cost the investment itself from one side, and from the other side to lower the price of capital. Lowering of the investment price can be reached in several ways: by redesigning the sections to make them more costly efficient, by making technical optimizations during construction (this assumes phase construction, for example: constructing one tunnel pipe at first), by state subventions, or by investments of JP Autoceste FBiH.

Lower capital price can be reached if state would invest part of the capital, and the other part private partner. This is unrealistic to expect in our case, so we will have to focus on other way to reach lower capital price where private partner invests most of the needed funds but with back stop guarantees ensured by some of the international financial institutions, and with funds from these institutions with very reasonable financing conditions.

The analysis implies that in second investment cycle 2016 – 2020 following sections would be built: Nemila - Donja Gracanica, Donja Gracanica – Pecuj, Pecuj – Klopce, Ovcari – Konjic, Konjic – Prenj, Tunnel Prenj, Mostar South – Buna, Buna – Pocitelj and Pocitelj – Zvirovici. Sections that should be built in the PPP system are: Karuse – Ozimica, Ozimica – Poprikuse, Poprikuse – Nemila, and Tarcin – Ovcari.

Sections that still don't have financial construction are: Prenj – Mostar North and Mostar North – Mostar South. These sections could be built by funds of EXIM banks with grace period until 2026 when JP Autoceste again become potent to pay off the debt.

Financial analysis of PPP was done on the example of three sections (Karuse – Medakovo, Medakovo – Ozimica and Ozimica – Poprikuse) of the overall length 38 km by IFC (2015). Financial feasibility of the part of the Corridor was done with certain assumptions and in multiple scenarios. Assumption was that the concession period will last 25 years (3.5 years construction and 21.5 years exploitation). Section Karuse – Medakovo – Ozimica is the most profitable of all unconstructed sections in FBiH. IFC study as a result gives the amount of availability payment which would be expected by the concessionaire from the public sector in order to reach his targeted return on invested capital. Availability payment is the payment from the grantor to the concessionaire when project revenues, toll revenues, are insufficient to cover up the costs of financing and operations.

In the basic scenario where revenues and costs of those sections are taken into account (when there are no revenues from other sections that are not part of the study) availability payment would be 1.95 billion KM nominally for the entire period, which means 88 million KM on average throughout 21.5 years of exploitation. This means 835 million KM in the units of present value at discount rate of 7%.

Construction costs would be 739 million KM, other costs of the concessionaire would be 103 million KM, expected toll revenue would be 1.06 billion KM, and availability payment should amount to 1.95 billion KM as mentioned before, all figures expressed nominally. Considering that the present value of the availability payment is 835 million KM, if FBiH is to pay the availability payment in total and up front, this would mean that according to this analysis FBiH would pay 835 million KM to construct three sections whose construction costs actually amount to 739 million KM. Obviously the suggested financial setting is not favourable for the grantor, i.e. the FBiH.

From the above, it is clear that while structuring a PPP project for the construction of the motorway in FBiH, it is necessary to use also other mechanisms that would make the project acceptable and profitable for both partners.

### **3. MODEL ON THE CORRIDOR Vc**

Planned concession period is 30 years, from 2020 to 2049. Most attractive sections for the PPP according to the analysis are: Karuse – Ozimica, Ozimica – Poprikuse, Poprikuse – Nemila, and Tarcin – Ovcari, of overall length of 68.42 km, and of the total investment value of 1.8 billion KM.

In order to find optimal financing model, and to offer acceptable IRRs to the private partner, detailed analysis of JP Autoceste and private partner's cash flow for the unconstructed sections was made, and following conclusions were reached.

1. In order to follow the construction dynamics of the Corridor Vc, by which the entire motorway should be constructed by 2024, it is necessary to work in parallel on the construction of the sections planned by 2020, and on the preparation of the sections planned for the period 2020 – 2049. If planned dynamics is to be followed, JP Autoceste will reach toll road revenue in the amount of 67.6 million KM annually by 2020.

2. Fuel tax revenues will be directed towards servicing the debt in the future period but also during PPP.

2.1. Expected investment of the private partner amounts to 1.8 billion KM. Expected toll road revenues in the period 2020 – 2049 are 4.76 billion KM. Construction would take 5 years, and management 25 years. Private partner would invest 30% of own funds, and the rest of 70% would be financed from the loan. Expected IRR of the private partner would be 15%, while loan cost should be 3.6% (50% of the loan would be from IFIs, and 50% from commercial banks). Pondered capital cost amounts to 7%. Private partner would take loans for the period of 12 years with grace period of 4-5 years. According to the cash flow projections, project will generate income in sufficient amount to service its debt. Private partner would generate most of its return on invested capital in the period 2027 – 2036, the total amount of generated dividend would be 300 million KM.

3. To bring the investment closer and more profitable to the private partner, next to the insurance of back stop guarantees from EBRD, JP Autoceste will invest additional 30 million KM into the project in the form of land preparation and will give in the entire revenue from the motorway to the private partner for the purpose of debt return. This way the country will not have to pay the private partner availability payment.

4. Base year when JP Autoceste will be able to give in the entire toll road revenue to the private partner is 2025, when the company will again generate positive cash flow and will be able to service its debt.

5. PPP system in our case will also assume that even after toll road revenue is given in to the private partner, O&M costs will still remain the duty of JP Autoceste, in the sector of operations and management, and those will be financed from the fuel tax revenues. Next to this solutions, there is also an open possibility of partially privatising JP Autoceste, where these costs would be bared by the concessionaire due to better efficiency. In this case, negative cash flow would be covered by taking loans from commercial banks or by emission of bonds.

6. According to our assessments, private partner should have 10% of the margin in the construction works, which would even increase after optimisation of the route. Expected revenues from the entire built motorway in the period 2016 – 2050 amounts to 6.91 billion KM. Maintenance costs are 0.11 million/km to 0.31 million/km at the end of the period.

#### **4. CONCLUSION**

Even though construction of the motorway is a strategic interest, purely from the financial point of view it is an unprofitable investment, but with multiplying positive effect on the entire economy of the country. Suggested financing model from this article ensures continuation of the



Corridor construction even after debt capacity of JP Autoceste is exhausted. In the conditions of low financing costs that are present as the consequence of global economic crisis, it is unquestionable that all available financing sources should be exhausted. When these possibilities are entirely exhausted considering the economic growth and level of indebtedness of FBiH, the suggested financing model of PPP ensures continuation of one of the most important projects in our country.

Unlike financial setups in other infrastructure PPP projects where grantor ensures and guarantees to the concessionaire an availability payment, in the suggested PPP model the entire toll road revenue of Corridor Vc in FBiH would be directed to the concessionaire, which would be enough to service the incurred debt of the concessionaire and to reach desired profitability. Operation and management costs of so far built part of the motorway would remain the responsibility of JP Autoceste. After partial repayment of the loans, Autoceste would with new loans with substantial grace period be able to round up the entire investment in the Corridor Vc in FBiH by building the Tunnel Prenj – Mostar North and Mostar North – Mostar South even in the period before 2025.

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# INTRA-COMPANY EXCHANGES AND REVENUE GROWTH IN MULTINATIONALS: THE CASE OF TONDACH COMPANY

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## **Abstract**

Multinational companies have rapidly grown after 1980's all over the world thanks to both growing regional integration and also positive externalities of firm-level economies of scale. Intra-company exchanges provide a critical leverage for the revenue growth in multinationals in this process. These developments are also observable in Balkan region specifically after 2000's. The article aims to analyze over the period of 2004-2008 whether there is a linkage between intra-company exchange and the revenue growth in the case of Tondach Group. The evidence of the research suggests that intra-company exchange has a positive and significant effect on the total revenue growth of the Tondach Group companies. This outcome has several important implications on the business strategies of similar multinationals and EU integration process of some countries.

**Keywords:** *multinational company, intra-company exchange, integration, intra-firm trad, foreign direct investment*

**JEL classification:** F23, F21, F14

# EMPIRICAL ANALYSIS OF EXTERNAL DEBT OF BOSNIA AND HERZEGOVINA – VAR APPROACH

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## Abstract

Many countries in the world have for decades struggled with the problem of high debt. Bosnia and Herzegovina (BiH) is no exception. In the period from 2004 through 2014 the country's external debt increased by over 100% and this increase was accompanied by the worsening of the majority of macroeconomic indicators and the weakening of the country's fiscal position. Since external debt-related resources have largely been invested in financing public spending rather than modernizing the economy, promoting exports and strengthening the country's competitiveness, the pronounced growth of external debt poses a major threat to the fiscal sustainability of BiH. By using the VAR methodology (Vector Autoregression Model) this paper attempts to pinpoint the main reason behind the growth of external debt. Is it a result of the fall of the country's economic activity, the rise in government spending or foreign trade deficit? The years examined were from 2004 through 2015. Data which were analyzed were organized on a quarterly basis and the series included 47 time units. The VAR model was developed using five variables: external debt, government revenues, government expenditure and export and import of goods and services. Government revenues and government expenditure are two variables which have the greatest influence on the debt level flow. If not accompanied by growth in gross domestic product (GDP) and revenue growth, the rise in government expenditure leads to increased borrowing, whereas increase in government revenues that happens as a result of stepped up economic activity and GDP reduces external debt. Higher growth of external debt vis-à-vis exports leads to problems in relation to servicing liabilities under external debt since exports represent a major source of revenue used to repay debt. Whenever where the export growth rate exceeds the external debt growth rate, debt servicing capability is improved.

The survey was conducted in the Eviews statistical software package. The source of information is the official website of the Central Bank of BiH. The stationarity of the series was examined before the evaluation of the VAR model. ADF unit root tests for the evaluation of stationarity concluded that the examined series were non-stationary and that their first differences were stationary, i.e. that the variables integrated were of the same order. The results of the Granger causality test showed the existence of a causal relationship between export and government revenues, i.e. the ability of the export variable to forecast the dynamics of the government revenues variable. Furthermore, the government expenditure variable can forecast the government revenues variable and export can forecast import. Variance decomposition showed which variables are the most important for explaining the variability of external debt of BiH. The government revenues variable is of crucial importance for explaining variations of the external debt variable, and second to it in importance is the import variable. This proves the main research hypothesis, namely that the principal reason for the growth of external debt lies in the excessive

growth of government spending, i.e. insufficient growth of government revenues and foreign trade deficit, that is, a large increase in imports.

**Key words:** *external debt, VAR model, Bosnia and Hercegovina, cause of debt, fiscal sustainability*

**JEL Classification:** H63, C40, C32

## 1. Introduction

The problem of debt and growing indebtedness has been a pressing issue for the world economy for some time now. Many countries in the world have been struggling with high indebtedness for decades already and it is precisely in times of emerging crisis that this problem becomes particularly pronounced, the last economic crisis of 2009 being no exception. In many countries the onset of crisis further increased the need for borrowing and BiH followed suit. In the period from 2004 through 2014 the external debt of BiH increased by over 100% and it was at the same time accompanied by a decline in the majority of macroeconomic indicators<sup>11</sup>. Pronounced growth of BiH external debt was recorded in the period after the 2009 economic crisis. The growing level of debt has not resulted in positive macroeconomic developments which would strengthen the country's fiscal position and make public finances sustainable. In BiH government spending has for a longer period of time grown at a faster rate than revenues and the growth of public debt far exceeds GDP growth. Interest rates top GDP growth rates and their increase is possible in the coming period. The foregoing indicates that fiscal policy must retrace the path of sustainability by reducing and rationalizing government spending, but also by increasing the efficiency of the tax system which will ensure revenue growth. The growth of debt has not ensured a more significant increase in export activities which would trigger a substantial decrease in the current account deficit. Over the past few years foreign direct investments have been extremely low and have displayed a downward tendency since 2011. They hardly ever exceeded external debt servicing liabilities. High external debt growth rates would be warranted had they had an impact on the growth of economic activities. Since external debt - related resources were for the most part employed to finance public spending rather than to modernize the economy, promote exports and strengthen the country's competitiveness, the unfavorable external debt-to-GDP ratio poses a major threat to fiscal sustainability of BiH. The country's high budget deficits, which have been the main macroeconomic trait for several years, are high for this level of external debt and government revenues and expenditure do not correspond. Should public debt, i.e. external debt which is the subject of this analysis, continue to grow, every year<sup>12</sup> we will be witnessing a rise in debt servicing liabilities, and should government expenditure remain high and government revenues insufficient, repayment problems will arise.

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<sup>11</sup> At the end of 2004 the external debt of BiH was BAM 4,032 million, and on 31 December 2014 BAM 8,218 million. At the end of 2007, public debt amounted to BAM 8,826 mil, and in 2014 BAM 11,516 mil, which approximately marks a 30% increase. In 2008, the total public debt was reduced compared to the year before and totaled BAM 7,401 mil, thus increasing the debt level by over 55%.

<sup>12</sup> BAM 227 mil and BAM 769 mil of BiH external debt was serviced in 2004 and 2014 respectively, whereas according to forecasts of the BiH Ministry of Finance and Treasury this amount in 2018 will reach BAM 1,065 mil. (*Source:* Information report on the state of BiH government debt as at 31 December 2014, Sarajevo, May 2015, p. 13)

In the next period these two fiscal variables should be in equilibrium i.e. cointegrated. These positions and facts, which intuitively suggest that the current fiscal policy of BiH is not sustainable in the long-term, provide the basis for the hypothesis of this research which is, „Years-long growth of external debt of BiH has largely been caused by the growth of non-rational government spending and foreign-trade deficit, which brought about a major ebbing of fiscal sustainability that could be put at serious risk in the coming period“.

The consistency of these claims will be put to test in an empirical analysis using cointegration tests and the VAR model which are applied in the dynamic analysis of time series.

To prevent the growing level of debt from causing more serious problems, rational use of loans and their investment in development components becomes imperative. New loans must be used for investments and not for budget support as in most cases to date.

The growth of public debt should, as a must, ensure the growth of GDP, exports, competitiveness of economy, employment and the standard of living, as stepped up economic activities would thus lead to revenue growth which would be used for regular debt servicing.

## 2. Data for analysis and methodology

Considering that the aim of this research is to examine the relationship and movement dynamics of macroeconomic variables that have a major impact on the state of external debt, models used to analyse time series will be used in this paper. The analyses in question are those used in the VAR methodology and cointegration analysis. VAR models belong to a group of dynamic models of the set of time series and represent a generalization of dynamic models on the basis of a single equation. VAR models are also used in the Granger causality analysis and innovation analysis (Bahovec, Erjavec, 2009, p. 339).

The innovation analysis, a group term for the Impulse Response Function (IRF) analysis and the Decomposition of Variance (DVC) analysis, will be carried out as part of the VAR analysis.

A *VAR model* will be used to test the hypothesis and establish the most important factor of BiH external debt. The Sims' VAR model (Sims, 1980), which has no restrictions on model parameters and in which all variables are equally represented, i.e. there is no breakdown into endogenous and exogenous variables, will be used. The time period to be analyzed is from 2004 to 2015. Data to be used in the analysis are organized on a quarterly basis and the series will include 47 time units. Owing to major problems with statistical data in BiH, data for selected variables exist only from the said period, although the analysis would be much better if a bigger data time series existed.

The VAR model will be built using the following variables: ***external debt, government revenues, government expenditure and export and import of goods and services.***

**Government revenues and government expenditure** are two variables with the greatest influence on the debt level flow. The growth of government expenditure that is not accompanied by GDP and revenue growth leads to increased borrowing, whereas the growth of government revenues that comes a result of increased economic activity and GDP lessens external debt.

**Export and import of goods and services** are macroeconomic variables closely correlated with external debt. Higher growth of external debt vis-à-vis exports causes problems in servicing external debt liabilities, since export represents a major source of revenue generation which is used to repay debt. If the export growth rate tops the external debt growth rate, the debt servicing capacity improves.

The Granger causality test will be used to determine the correct order of variables in factorization. The impulse response function will be used to show the reaction of external debt to

changes of key variables by two standard deviations in the short and long-run. Variance decomposition will show which variables have the greatest significance in explaining the variability of external debt of BiH.

The research was conducted in the *Eviews* statistical software package. The source of information is the official site of the Central Bank of BiH.

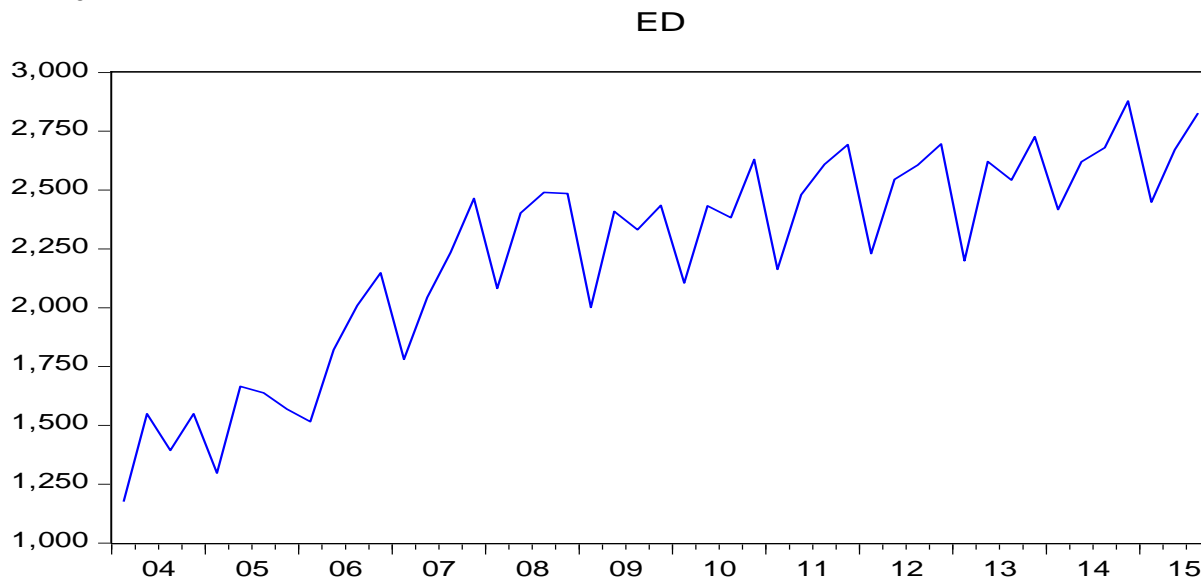
The results obtained using the VAR model analysis will serve as the basis for understanding and examining the interdependence in the set of selected economic variables and for proving the hypothesis.

Cointegration tests in the first place mean the change of stationarity of time series. The Augmented Dickey Fuller (ADF) test is most frequently used to analyze stationarity and it will be used in this research paper also.<sup>13</sup>

There is an array of cointegration tests. The *Eviews* program, which will be used to provide software support to this research, uses the Johansen test, the Philips-Onharis test, but here the Johansen procedure will be used to examine, based on cointegration parameters, if and what kind of correlation exists between government revenues and government expenditure as two very important fiscal variables. Unless they are cointegrated, fiscal policy is not viable.

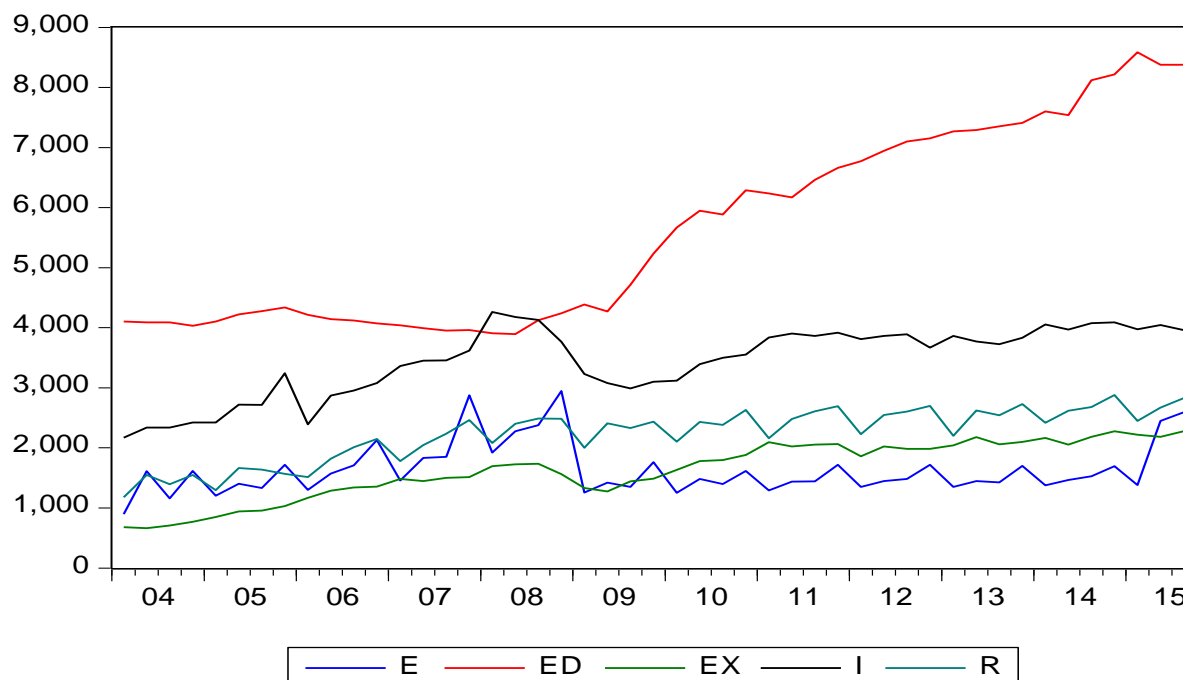
The model has 5 variables. The variables are denoted as follows: *Ed* – external debt; *R* – government revenues; *E* – government expenditure; *I* – import & *Ex* – export.

**Chart 1: A time series of the external debt (ED) variable, (q1 2004-q3 2015), in BAM million**



**Chart 2: A time series of ED (external debt), R (government revenues), E (government expenditure), I (import) and EX (export) variables, (q1 2004-q3 2015), in BAM million**

<sup>13</sup> According to Gujarati, a time series is stationary if its variance does not change over time, and the value of covariance between two members of the time series is only the function of time difference, i.e. the distance between them, and not of the moment in time for which the covariance is calculated.



Charts 1 and 2 indicate constant growth of external debt. This growth is not accompanied by the matching growth of exports and government revenues which would be used for unimpeded servicing of all debt-related liabilities due. In most years all this was accompanied by a rise in imports and government expenditure.

### 3. Stationarity

Prior to assessing the VAR model, it is necessary to test the stationarity of series. The concept of stationarity is very important for the analysis of time series. If a time series is not stationary, the VAR model results will not be consistent. A time series is stationary if the level of manifestation does not change with time, if no strictly periodic variations are present in the series, and if the variance of the series is not time-dependent. Assessment of the stationarity of time series is carried out at the beginning of the times series analysis because any inclusion of non-stationary time series in the econometric model may mislead to the conclusion on correlation between the variables. The Augmented Dickey-Fuller test is most frequently used to analyze stationarity, and it will be used in this research also. The decision is made by comparing the test statistic and critical values of the Dickey-Fuller distribution. Variables in levels are analyzed first and if the series is not stationary the stationarity of the series of the first differences is differentiated and examined. Furthermore, if the series of the first differences is not stationary, the procedure is repeated until the series is differentiated enough times to become stationary (Bahovec, Erjavec, 2009, p. 262-274).

ADF test hypotheses are the following:

$$\begin{aligned}
 H_0 : \gamma &= 0 && (\text{Process } Y_t \text{ is non-stationary}) \\
 H_1 : \gamma &< 0 && (\text{Process } Y_t \text{ is stationary})
 \end{aligned}$$

If the process were stationary, a tendency of the series to periodically „return“ to zero would transpire, which is not the case in the chart above.

The test's null hypothesis postulates that the process is non-stationary while the alternative hypothesis claims the process to be stationary.

**Table 1: Unit root tests for *ED* (external debt), *R* (government revenue), *E* (government expenditure), *I* (import) and *EX* (export) variables.**

Null Hypothesis: Unit root (individual unit root process)				
Series: E, ED, EX, I, R				
Exogenous variables: Individual effects				
Automatic selection of maximum lags				
Automatic lag length selection based on SIC: 0 to 4				
Total number of observations: 222				
Cross-sections included: 5				
Method		Statistic		Prob.**
ADF - Fisher Chi-square		11.3756		0.3290
ADF - Choi Z-stat		0.03339		0.5133
** Probabilities for Fisher tests are computed using an asymptotic Chi				
-square distribution. All other tests assume asymptotic normality.				
Intermediate ADF test results UNTITLED				
Series	Prob.	Lag	Max Lag	Obs
E	0.1980	4	9	42
ED	0.9965	0	9	46
EX	0.5111	0	9	46
I	0.2036	0	9	46
R	0.1649	4	9	42

*Note: The number of lags in the model has been established based on the Schwarz Information Criterion*

The first part of the table gives the value of the ADF test statistic of 11,3756. The outcome of the test is to accept the null hypothesis on non-stationarity. After that, a unit root test was carried out to analyze variables in the first differences.

**Table 2: Unit root tests for *ED* (external debt), *R* (government revenues), *E* (government expenditure), *I* (import) and *EX* (export) variables in first differences.**

Null Hypothesis: Unit root (individual unit root process)				
Series: E, ED, EX, I, R				
Exogenous variables: Individual effects				
Automatic selection of maximum lags				
Automatic lag length selection based on SIC: 0 to 3				



Total number of observations: 174			
Cross-sections included: 4 (1 dropped)			
Method		Statistic	Prob.**
ADF - Fisher Chi-square		66.2053	0.0000
ADF - Choi Z-stat		-6.01044	0.0000
** Probabilities for Fisher tests are computed using an asymptotic Chi			
-square distribution. All other tests assume asymptotic normality.			
Intermediate ADF test results D(UNTITLED)			
Series	Prob.	Lag	Max Lag
D(E)	0.2913	3	9
D(ED)	0.0000	0	9
D(EX)		Dropped from Test	
D(I)	0.0000	0	9
D(R)	0.0273	3	9

Based on unit root tests it can be inferred that the examined series are non-stationary and that their first differences are stationary, i.e. the variables are integrated of the same order, which is marked as I(1).

#### 4. Granger causality

The Granger causality refers to the ability of one variable to “forecast” the movement of another variable,  $x_t$  Granger-causes  $y_t$  if  $y_t$  can be more precisely (accurately) described using the previous values of  $x_t$  (Bahovec, Erjavec, 2009, p.352). Nobel prize winner Granger starts from the premise that the future cannot cause the present or the past. The most famous causality test is the Granger test (Granger, 1969). The Granger test statistics is defined as the  $F$ -test, by comparing the residual sum of squares of an unrestricted model (alternative hypothesis) and a model without lags of the tested variable (null hypothesis). If the computed value of the  $F$ -statistic is less than the critical value on the selected level of significance, then the null hypothesis is not rejected, and it is thereby suggested that  $X_t$  does not cause  $Y_t$ . Conversely, the null hypothesis is rejected and the existence of causality is accepted if the value of the  $F$ -statistic is higher than the critical value.

**Table 3: Granger causality**

Pairwise Granger Causality Tests			
Sample: 2004Q1 2015Q3			
Lags: 2			
Null Hypothesis:	Obs	F-Statistic	Prob.
ED does not Granger Cause E	45	0.22457	0.7999
E does not Granger Cause ED		0.92765	0.4038

EX does not Granger Cause E	45	0.79573	0.4583
E does not Granger Cause EX		2.32305	0.1111
I does not Granger Cause E	45	0.81432	0.4502
E does not Granger Cause I		0.29011	0.7497
R does not Granger Cause E	45	0.14903	0.8620
E does not Granger Cause R		4.58875	0.0161
EX does not Granger Cause ED	45	0.40211	0.6716
ED does not Granger Cause EX		1.39056	0.2607
I does not Granger Cause ED	45	0.58168	0.5636
ED does not Granger Cause I		0.55745	0.5770
R does not Granger Cause ED	45	3.58823	0.0369
ED does not Granger Cause R		1.15458	0.3255
I does not Granger Cause EX	45	2.47445	0.0970
EX does not Granger Cause I		4.40239	0.0187
R does not Granger Cause EX	45	0.01822	0.9820
EX does not Granger Cause R		7.24095	0.0021
R does not Granger Cause I	45	1.57570	0.2194
I does not Granger Cause R		2.61618	0.0855

\*at the 5% significance level

The results of the Granger causality test have shown the existence of causal relationship between export and government revenues, i.e. the ability of the export variable to forecast the dynamics of the government revenues variable. Likewise, the government expenditure variable causes the government revenues variable and export causes import.

## 5. Cointegration

The concept of cointegration is a newer concept that was developed by Granger and Engles at the end of 80's. Cointegrated variables are non-stationary variables between which exist common trend on long term i.e. they have similar dynamics over time (Bahovec, Erjavec, 2009, p. 327). Mathematically this is expressed as follows:

Let  $X_t$  and  $Y_t$  be non-stationary and let  $Y_t$  be a linear function of  $X_t$ , i.e.  $Y_t$  can be presented as:<sup>14</sup>

$$Y_t = \alpha + \beta X_t + \varepsilon_t.$$

If this proposition is correct, deviations between  $Y_t$  and linear function  $(\alpha + \beta X_t)$

$$\varepsilon_t = Y_t - (\alpha + \beta X_t)$$

<sup>14</sup> (Bahovec, Erjavec, 2009, p. 327)

should make up a stationary process, i.e. the difference between the dynamics of  $X_t$  and  $Y_t$  should be restricted. In that case,  $X_t$  and  $Y_t$  will have similar long-term dynamics. The manifestations that meet the said characteristic are said to be cointegrated of order (1,1) and it is written CI (1,1). The condition for cointegration is that both manifestations contain the trend, i.e. that they are integrated of the same order of integration (Bahovec, Erjavec, 2009, p.327).

To determine the number of cointegration relations this paper uses the Johansen procedure according to which determining the matrix rank is required. This procedure is extremely popular and forms part of statistical packages used in the VAR model analysis (Bahovec, Erjavec, 2009, p.376-381).

Therefore, if the rank of the  $\Pi$  matrix is equal to the number of variables in the model, the vector process  $Z_t$  is stationary. If the rank of the  $\Pi$  matrix =  $r$ , where  $r$  is less than the number of variables in the model,  $Z_t$  is a non-stationary vector and there exist  $r$  cointegration relations. Then the  $\Pi$  matrix can be expressed as:

$$\Pi = \alpha\beta'$$

where  $\alpha$  and  $\beta$  are matrices of order  $n \times r$ . The  $\beta$  matrix is called cointegration matrix whose columns contain parameters of corresponding long-run equations. The  $\alpha$  matrix is the matrix of the speed of error correction whose elements are interpreted as the speed of adjustment of variables to the state of equilibrium. Relations between cointegration and the matrix rank can be the following:

- If the  $\Pi$  matrix is a null matrix, then variables are not cointegrated.
- When the  $\Pi$  matrix is a singular matrix whose rank  $r$  is less than the number of variables  $n$ , there exists  $r$  cointegration relations between the variables.
- The  $\Pi$  matrix is a regular matrix and the rank  $r$  is equal to the number of variables  $n$  from which it can be deduced that vector components are stationary.

Two tests are used to determine the number of cointegration vectors:

- The trace test-  $\lambda_{\text{trace}}$  test and
- The maximum eigenvalue test-  $\lambda_{\text{max}}$  test.

Distribution of the test statistic, and thereby of the critical value of  $\lambda_{\text{trace}}$  i  $\lambda_{\text{max}}$  tests, depends on the specification of deterministic components in the VEC model. For that reason, before determining the number of cointegration vectors it is necessary to determine the deterministic components in the VEC model. Models minimizing the value of information criteria are taken into account, they are compared and the decision is taken based on the characteristics of compared models.

Hypotheses of the trace test are the following:

$$H_0 : \lambda_{r+1} = \lambda_{r+2} = \dots = \lambda_n = 0 \quad (\text{Number of cointegration relations} \leq r)$$

$$H_1 : \lambda_{r+1} \neq 0 \quad (\text{Number of cointegration relations} \neq r)$$

Hypotheses of the maximum eigenvalue test are the following:

$H_0$  : Number of cointegration relations =  $r$

$H_1$  : Number of cointegration relations =  $r + 1$

Test value  $\lambda_{\max} = \lambda_{\max(r)} - T \ln(1 - \lambda_{r+1})$ ,  $r=0,1,2,\dots,(n-2), (n-1)$ ,

$T$  - number of observation according to proceeded test,  $r$  - the estimated number of cointegrated vectors, a  $\lambda_{r+1}$  - eigenvalue matrix  $\Pi$ .

In both tests the testing is carried out until the null hypothesis is rejected. When the null hypothesis is rejected for the first time, it is concluded that the number of cointegration vectors equals  $r$ . We said at the beginning that sustainable fiscal policy can be achieved only if government revenues and government expenditure are balanced, so a cointegration analysis will be done using these two variables (period q1 2004-q3 2015)

Therefore, in the next period these two fiscal variables should be in equilibrium, i.e. they should be cointegrated. These positions and facts, which intuitively suggest that the current fiscal policy of BiH is not sustainable in the long-term, provide the basis for the hypothesis of this research.

**Table 4: Johansen cointegration approach**

Lags interval (in first differences): 1 to 1				
Unrestricted Cointegration Rank Test (Trace)				
Hypothesized		Trace	0.05	
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
None	0.222802	14.48542	18.39771	0.1620
At most 1	0.067455	3.142725	3.841466	0.0763
Trace test indicates no cointegration at the 0.05 level				
* denotes rejection of the hypothesis at the 0.05 level				
**MacKinnon-Haug-Michelis (1999) p-values				
Hypothesized		Max-Eigen	0.05	
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
None	0.222802	11.34270	17.14769	0.2856
At most 1	0.067455	3.142725	3.841466	0.0763
Max-eigenvalue test indicates no cointegration at the 0.05 level				
* denotes rejection of the hypothesis at the 0.05 level				
**MacKinnon-Haug-Michelis (1999) p-values				
Unrestricted Cointegrating Coefficients (normalized by b'S11*b=I):				
E	R			
-0.001946	0.007509			
0.003982	-0.002311			
Unrestricted Adjustment Coefficients (alpha):				

D(E)	-66.28276	-94.44810		
D(R)	-90.69304	-16.87671		
1 Cointegrating Equation(s):		Log likelihood	-617.6841	
Normalized cointegrating coefficients (standard error in parentheses)				
E	R			
1.000000	-3.859609			
	(0.87012)			
Adjustment coefficients (standard error in parentheses)				
D(E)	0.128955			
	(0.11817)			
D(R)	0.176446			
	(0.05581)			

**Table 5: Detemining the number of cointegration vectors (*Trace Test*)**

Number of cointegration vectors	Eigenvalue	Test statistic	Critical value (0,05)	Probability
<b>0</b>	0.222802	14.48542	18.39771	0.1620
<b>1</b>	0.067455	3.142725*	3.841466	0.0763

Source: Author's calculation

\*denotes rejection of the null hypothesis at the 5% significance level

**Table 6: Detemining the number of cointegration vectors (*Maximum Eigenvalue Test*)**

Number of cointegration vectors	Eigenvalue	Test statistic	Critical value (0,05)	Probability
0	0.624875	11.34270	17.14769	0.2856
1	0.090614	3.142725*	3.841466	0.0763

Source: Author's calculation

\* denotes rejection of the null hypothesis at the 5% significance level

The trace test and the maximum eigenvalue test point to the conclusion that the number of cointegration vectors equals zero, which is in conformity with assumptions of the model. Namely, in case of analysis of two variables the maximum number of cointegration relationships is equal to one (Bahovec, Erjavec, 2009). The estimated cointegration equation, i.e. long-run equation is:

$$E=3,859X.R+1$$

The cointegration equation points to the conclusion that no long-run equilibrium between government revenues and government expenditure exists.

## 6. VAR analysis

Although VAR models are applied in the testing of general economic assumptions, the main objective of VAR models is to analyze the dynamics of a group of manifestations, whereas estimates of model parameters are not, *per se*, so important. The innovation analysis, which includes analysis of the impulse response function and variance decomposition, is used for that purpose (Bahovec, Erjavec, 2009, p. 339-350).

**The impulse response function** is used as a “dynamic” response of every endogenous variable to a unit „shock“ in variables of the system, more precisely the  $i$ -te variable in the innovation process at the  $t$  ( $e_{it}$ ) moment. It shows the impact of a unit increase, the shock of one endogenous variable on other variables of the VAR model. The same information, differently presented, is provided by variance decomposition. **Variance decomposition** shows partitioning the variance (covariance) of the forecast error of a variable into components attributed to all variables in the system (including the variable itself).

Based on these results it is possible to analyze not only the impact of individual „shocks“ in the variables on other variables in the model, but also the relative share each variable has in „explaining“ the variation of a specific variable in the next periods.

**Table 7: Stability of the VAR model**

Vector Autoregression Estimates					
Included observations: 45 after adjustments					
Standard errors in ( ) & t-statistics in [ ]					
	ED	R	E	I	EX
ED(-1)	0.744852	-0.039342	-0.052246	-0.204989	-0.067652
	(0.16725)	(0.20521)	(0.44840)	(0.25294)	(0.11137)
	[ 4.45344]	[-0.19172]	[-0.11652]	[-0.81043]	[-0.60744]
ED(-2)	0.212484	-0.039237	-0.018240	0.146499	0.066928
	(0.16948)	(0.20794)	(0.45437)	(0.25631)	(0.11286)
	[ 1.25372]	[-0.18869]	[-0.04014]	[ 0.57157]	[ 0.59304]
R(-1)	0.498848	0.225350	-0.342574	0.032225	-0.006220
	(0.18446)	(0.22633)	(0.49454)	(0.27897)	(0.12283)
1	[ 2.70431]	[ 0.99569]	[-0.69271]	[ 0.11551]	[-0.05064]
R(-2)	0.330955	-0.052633	-0.248479	0.042249	0.148341
	(0.18267)	(0.22412)	(0.48972)	(0.27625)	(0.12163)
	[ 1.81181]	[-0.23484]	[-0.50739]	[ 0.15294]	[ 1.21956]
E(-1)	-0.219900	-0.295026	0.230437	0.061892	-0.001113
	(0.08733)	(0.10715)	(0.23413)	(0.13207)	(0.05815)
	[-2.51798]	[-2.75337]	[ 0.98421]	[ 0.46862]	[-0.01914]
E(-2)	-0.257376	0.078577	0.144744	0.055926	-0.100851
	(0.13009)	(0.15961)	(0.34876)	(0.19673)	(0.08662)
	[-1.97847]	[ 0.49230]	[ 0.41502]	[ 0.28427]	[-1.16425]
I(-1)	0.058120	0.077579	0.206280	0.285063	0.000394
	(0.13647)	(0.16744)	(0.36587)	(0.20638)	(0.09087)

	[ 0.42589]	[ 0.46333]	[ 0.56381]	[ 1.38124]	[ 0.00433]
I(-2)	0.193807	0.032976	0.223672	0.005630	-0.054279
	(0.13642)	(0.16738)	(0.36573)	(0.20630)	(0.09084)
	[ 1.42070]	[ 0.19702]	[ 0.61158]	[ 0.02729]	[-0.59753]
EX(-1)	-0.333054	0.323602	0.726382	1.067679	0.878919
	(0.28802)	(0.35339)	(0.77217)	(0.43558)	(0.19179)
	<u>[-1.15635]</u>	[ 0.91572]	[ 0.94070]	[ 2.45117]	[ 4.58274]
EX(-2)	-0.378148	0.440612	-0.386188	-0.231210	0.017914
	(0.34317)	(0.42105)	(0.92003)	(0.51898)	(0.22851)
	<u>[-1.10192]</u>	[ 1.04646]	[-0.41976]	[-0.44551]	[ 0.07839]
C	-429.7096	1047.460	702.6965	1096.396	250.7951
	(336.401)	(412.744)	(901.878)	(508.744)	(224.004)
	[-1.27737]	[ 2.53780]	[ 0.77915]	[ 2.15510]	[ 1.11960]
R-squared	0.993183	0.844070	0.315465	0.861415	0.960692
Adj. R-squared	0.991178	0.798208	0.114131	0.820655	0.949131
Sum sq. resids	772166.1	1162405.	5549980.	1766014.	342379.5
S.E. equation	150.7009	184.9010	404.0231	227.9070	100.3493
F-statistic	495.3566	18.40466	1.566875	21.13369	83.09663
Log likelihood	-283.2338	-292.4374	-327.6117	-301.8476	-264.9350
Akaike AIC	13.07706	13.48611	15.04941	13.90434	12.26378
Schwarz SC	13.51869	13.92773	15.49104	14.34597	12.70541
Mean dependent	5683.778	2266.067	1656.133	3499.978	1678.556
S.D. dependent	1604.479	411.6116	429.2611	538.1616	444.9259
Determinant resid covariance (dof adj.)		2.25E+22			
Determinant resid covariance		5.54E+21			
Log likelihood		-1445.744			
Akaike information criterion		66.69974			
Schwarz criterion		68.90788			

The analysis of the stability of the VAR model has been examined by using the roots of the characteristic AR polynomial, and the results of the analysis have shown that all roots have modulus greater than one.

The results gained through variance decomposition show the significance specific variables have in explaining the external debt variability.

**Table 8: Variance decomposition**

		Variance Decomposition of R:					
Period		S.E.	ED	R	E	I	EX
1		184.9010	4.013751	95.98625	0.000000	0.000000	0.000000
2		212.1102	3.999075	74.36246	17.63690	2.466275	1.535294
3		223.9576	3.589137	67.61588	16.49440	4.849782	7.450800
4		238.4003	3.175055	60.47724	16.10342	5.253447	14.99084

5		249.4960	2.904860	55.47093	16.33413	5.274951	20.01513
6		259.3505	2.726190	51.48040	17.36076	5.021966	23.41069
7		267.5634	2.632179	48.41709	18.85319	4.738895	25.35864
8		274.6891	2.603685	45.95534	20.54484	4.496572	26.39956
9		280.8129	2.618518	43.97708	22.21532	4.316130	26.87295
10		286.0674	2.660518	42.37694	23.75140	4.188010	27.02313
Variance Decomposition of E:							
Period		S.E.	ED	R	E	I	EX
1		404.0231	1.458140	40.08852	58.45334	0.000000	0.000000
2		424.6593	1.622227	36.47167	56.26486	3.711312	1.929932
3		454.7082	2.541890	32.05750	55.30834	7.456479	2.635794
4		468.4471	2.786793	30.72987	54.04377	8.521243	3.918325
5		475.2767	2.975669	30.00931	53.50301	8.898651	4.613357
6		478.7792	3.060631	29.67074	53.07881	9.021606	5.168215
7		480.4960	3.112432	29.49344	52.82206	9.061548	5.510521
8		481.3648	3.139406	29.40254	52.66134	9.065493	5.731217
9		481.8176	3.154909	29.35287	52.56720	9.058982	5.866034
10		482.0725	3.163985	29.32385	52.51173	9.051515	5.948924
Variance Decomposition of I:							
Period		S.E.	ED	R	E	I	EX
1		227.9070	0.066477	0.262593	7.356924	92.31401	0.000000
2		277.3962	0.574266	3.807374	5.962679	79.88392	9.771766
3		308.4967	0.711381	5.601391	6.016979	70.83756	16.83269
4		330.7325	0.686151	6.168039	5.254198	64.14771	23.74390
5		345.4591	0.635715	6.123852	5.035980	60.00304	28.20141
6		356.6787	0.608075	5.960944	5.698504	56.69637	31.03611
7		365.7988	0.634107	5.748647	7.039092	53.99955	32.57860
8		373.8498	0.711927	5.533305	8.764931	51.70678	33.28305
9		381.0321	0.823051	5.335007	10.59362	49.77755	33.47077
10		387.4274	0.951309	5.162060	12.35257	48.16133	33.37273
Variance Decomposition of EX:							
Period		S.E.	ED	R	E	I	EX
1		100.3493	1.758993	6.758125	0.712975	25.26652	65.50338
2		132.9057	1.012703	6.474915	0.747957	25.57462	66.18980
3		156.9748	1.397649	5.987961	6.045826	21.53368	65.03488
4		174.7005	1.946153	5.198494	12.38956	18.07890	62.38690
5		190.9905	2.677741	4.508875	19.08078	15.22220	58.51040
6		205.6473	3.370333	3.928823	25.11064	13.13072	54.45948
7		218.9417	4.001544	3.476697	30.21790	11.59951	50.70435
8		230.8104	4.549674	3.129883	34.39191	10.47964	47.44889
9		241.3164	5.020860	2.863312	37.75747	9.646973	44.71138
10		250.5521	5.423739	2.656346	40.46577	9.015137	42.43901
Cholesky Ordering: ED R E I EX							

\*Ordering of variables in the Cholesky factorization is ED, R, E, I i EX



The Cholesky decomposition and the forecast horizon  $te=10$  were used. The results of the analysis from Table 8 show that the R (government revenues) variable carries the greatest importance when it comes to explaining the variation of the ED (external debt) variable. It explains 95.98% of the forecast error variation of external debt in the first quarter, after which that percentage is reduced to 42.38% at the end of the tenth quarter. After that, the I (import) variable explains 92.34% of the forecast error variation of external debt in the first quarter, after which that percentage is reduced to 48.16% at the end of the tenth quarter. The foregoing proves the main research hypothesis which says that the excessive growth of government spending, i.e. insufficient growth of government revenues and foreign trade exchange deficit, that is, enormous import growth, are the main reasons for the growth of external debt.

On the basis of estimated parameters of the VAR model, cumulative reactions of variables to shocks (impulses) of all variables of one standard deviation have been computed.

**Table 9: Impulse response function**

Response of R:					
Period	ED	R	E	I	EX
1	37.04371	181.1523	0.000000	0.000000	0.000000
2	20.66343	-25.29984	-89.07848	33.31059	26.28194
3	-0.995152	21.39808	-18.38821	36.37184	55.19383
4	2.080320	21.39947	-29.65172	23.52177	69.15849
5	1.921420	12.55524	-31.86506	17.25642	62.76201
6	5.048199	9.870055	-38.85360	9.713133	57.33753
7	7.118498	5.896983	-42.65812	3.830583	49.06766
8	8.955777	3.650119	-44.77614	-0.515782	42.01501
9	10.01339	1.819911	-44.90157	-3.267019	35.65595
10	10.60038	0.685487	-43.80382	-4.870057	30.38680
Response of E:					
Period	ED	R	E	I	EX
1	-48.78720	255.8092	308.8950	0.000000	0.000000
2	-23.35081	18.24824	77.77765	81.80961	58.99450
3	-48.27162	22.59555	113.5331	93.40325	44.37796
4	-29.32255	33.94870	65.11391	57.29103	56.11348
5	-24.62243	18.78761	47.55818	37.43980	42.69123
6	-17.15208	15.05619	28.55624	24.06672	37.76318
7	-13.03848	8.904922	16.77398	15.51751	29.58749
8	-9.408008	5.985462	8.306466	9.212005	23.60987
9	-7.048540	3.599000	3.338237	4.942292	18.38405
10	-5.370545	2.160314	0.485316	2.214412	14.38901
Response of I:					
Period	ED	R	E	I	EX
1	-5.876157	11.67883	61.81669	218.9734	0.000000
2	-20.18319	52.85194	27.69292	116.2765	86.71356
3	-15.33402	49.00136	33.73679	77.11460	92.19799

4	-8.574178	37.62965	4.569280	52.45046	99.76127
5	-2.852428	23.69560	-16.21078	37.96751	87.65903
6	3.862108	16.58822	-35.20768	22.80612	76.34085
7	8.654478	10.42573	-46.57573	11.27630	64.10122
8	12.10473	6.430888	-53.20966	3.342930	54.07951
9	14.13986	3.479689	-55.94832	-1.577289	45.57520
10	15.26316	1.611511	-56.22106	-4.515729	38.70106

Response of EX:

Period	ED	R	E	I	EX
1	13.30903	26.08720	-8.473282	50.44140	81.21687
2	1.323962	21.52168	-7.766739	44.42016	71.38308
3	12.86516	18.21464	-36.84614	28.08285	65.82986
4	15.79796	10.54025	-47.87037	14.54644	54.91230
5	19.56524	7.623936	-56.38121	5.909961	47.98338
6	21.17951	4.100261	-60.49237	0.656716	41.08891
7	22.19950	2.244971	-62.17391	-2.681921	35.69327
8	22.48574	0.908200	-61.94078	-4.751839	31.18151
9	22.36202	0.116414	-60.54568	-5.909036	27.55705
10	21.93168	-0.383772	-58.44143	-6.449412	24.58894

Cholesky Ordering: ED R E I EX

*Impact of unit shocks in E, ED I, EX variables on R variable*

The second column in the previous table presents the impact of a unit „shock“ in the R variable on R. The shock of one standard deviation in R (is 181.1523 units) or 181% . After one period (period 2 in the table) R is -25.29% (units) below average level, i.e. 25% decrease. After 10 quarters (period 10 in the table), R is only 0.685487% above average level.

*Impact of unit shocks in R, ED, I, EX variables on E variable*

The third column presents the impact of a unit „shock“ in the E variable on E. The shock of one standard deviation in E (is 308.8950 units) or 308.89% . After one period (period 2 in the table) E is 77% (units) above average level, i.e. 77% increase. After 10 quarters (period 10 in the table), E is 0.48531% above average level.

*Impact of unit shocks in E, ED, R, EX variables on I variable*

The fourth column presents the impact of a unit „shock“ in the I variable on I. The shock of one standard deviation in I (is 218.973 units) or around 219% . After one period (period 2 in the table) I is 116.2765% (units) above average level, i.e. 116% increase. After 10 quarters (period 10 in the table), I is 4.515729% below average level.

*Impact of unit shocks in R, E, I, EX variables on EX variable*

The fifth column presents the impact of a unit „shock“ in the EX variable on EX. The shock of one standard deviation in EX (is 81.21687 units) or 81%. After one period (period 2 in the table) EX is 71% (units) above average level, i.e. increase of 71%. After 10 quarters EX is around 25% above average level.

## Conclusion

The aim of this research was to examine, using the VAR methodology and cointegration analysis, the correlation between and the dynamics of movement of macroeconomic variables that have a key influence on the flow of external debt.

Prior to evaluating the VAR model the stationarity of series was examined. Evaluation of the stationarity of time series was carried out at the start of the time series analysis because any inclusion of non-stationary time series in an econometric model may lead to the wrong conclusion on the correlation between the variables. The ADF test statistic was 11.375 and the outcome of the test was acceptance of the null hypothesis of non-stationarity. Thereafter, a unit root test was carried out to analyze the variables in the first differences. Based on the unit root tests we can conclude that the observed series are non-stationary, and that their first differences are stationary, i.e. that variables are integrated of the same order, which is marked as I (1).

The results of the Granger causality test have shown the existence of causal relationship between export and government revenues, i.e. the ability of the export variable to forecast the dynamics of the government revenues variable. Also, the government expenditure variable can forecast the government revenues variable, and export can forecast import.

Cointegration parameters were used to examine if and what kind of correlation exists between government revenues and government expenditure as two fiscal variable whose long-term equilibrium conditions fiscal sustainability of BiH, because unless they are cointegrated, fiscal policy is not viable. These positions and facts, which intuitively suggest that the current fiscal policy of BiH is not sustainable in the long-term, provide the basis for the hypothesis of this research.

The trace test and the maximum eigenvalue test point to the conclusion that the number of cointegration vectors equals zero. The cointegration equation indicates that no long-run equilibrium between government revenues and government expenditure exists and that the current fiscal policy is not sustainable.

Variance decomposition showed which variables are crucial for explaining the variability of external debt of BiH. The Cholesky decomposition and the forecast horizon  $te=10$  were used. The results of the analysis showed that the ED (external debt) variable explains 100% of its forecast error in the coming period ( $t=1$ ), and after 10 quarters that impact is 38.09%. After 10 quarters the impact of R (government revenues) on the ED variable is around 20%, and of E (government expenditure) is around 59%. The R (government revenue) variable is the most important variable for explaining the variation of the ED (external debt) variable. It explains 95.98 % of the forecast error variation of external debt in the first quarter, after which that percentage is reduced to 42.38% at the end of the tenth quarter. After that, the I (import) variable explains 92.34% of the forecast error variation of external debt in the first quarter, after which that percentage is reduced to 48.16% at the end of the tenth quarter.

The foregoing has proven the main research hypothesis which says that the principal reason for the growth of external debt lies in the excessive growth of government spending, i.e. insufficient growth of government revenues and foreign trade deficit, that is, a large increase in imports.

On the basis of estimated parameters of the VAR model, cumulative reactions of variables to shocks (impulses) of all variables of one standard deviation have been computed.

The shock of one standard deviation in ED (is 150.7009 units) or 150.71% because the „unit“ is %. After one period (period 2 in the table) ED is 136.6832% (units) above average level, i.e. 136.68% increase. After 10 quarters (period 10 in the table), ED is 133.57% above average level.

The shock of one standard deviation in R (is 181.1523 units) or 181%. After one period (period 2 in the table) R is -25.29% (units) below average level, i.e. 25% decrease. After 10 quarters (period 10 in the table), R is only 0.685487% above average level.

The third column presents the impact of a unit „shock“ in the E variable on E. The shock of one standard deviation in E (is 308.8950 units) or 308.89%. After one period (period 2 in the table) E is 77% (units) above average level, i.e. 77% increase. After 10 quarters (period 10 in the table), E is 0.48531% above average level.

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# NONLIFE INSURANCE IN SMALL TRANSITIONAL ECONOMIES – CASE OF BOSNIA AND HERZEGOVINA

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## **Abstract**

Nonlife insurance industry in Bosnia and Herzegovina is highly underdeveloped. There are many reasons for this statement and majority lie in the overall low level of development of the country. Among others, should be given: poor living standards, unemployment, financial illiteracy, lack of awareness about the needs and importance of insurance, political instability, economic uncertainty, illiquidity, underdeveloped financial markets...

The share of nonlife insurance industry in the total GDP is insignificant, nonlife premium per capita is far lower than the EU average, the share of the insurance industry in the overall financial sector is extremely low, while the participation of compulsory insurance is very high.

In the region, Montenegro and Macedonia have lower premium than Bosnia and Herzegovina, and, as for the premium per capita for nonlife insurance, lower than in Bosnia and Herzegovina, is only in Macedonia.

For the development of nonlife insurance industry it is essential to ensure macroeconomic and political stability, economic growth and development that will increase the country's competitiveness, attract foreign investment and increase the standard of living of the population. The perspective is also reflected in education and raising awareness about the need and importance of insurance, the introduction of additional compulsory insurance, the necessary reforms of pension and health systems.

Bosnia and Herzegovina can not be further developed without the actual application and the daily implementation of modern forms of nonlife insurance.

**Keywords:** nonlife insurance, education, awareness, competitiveness

**JEL classification:**G22

## 1. Introduction

Nonlife insurance industry is a very important economic activity providing risk protection, providing safety and security of the capital. The formation of a harmful event is completely unpredictable. In just a few minutes can be lost everything created through years.

Nonlife insurance helps a man live without fear and uncertainty. In case of catastrophic risks, nonlife insurance takes a special role in mitigating the negative effects and that is what makes nonlife insurance an indispensable partner to the country.

The development of nonlife insurance industry in transition countries is different in each one of them, which is directly related to the level of economic development of the country. The article will be based on the example of Bosnia and Herzegovina and comparisons with neighboring countries.

The insurance market in Bosnia and Herzegovina is underdeveloped, in the jurisdiction of the entities which further complicates development. It is coordinated by Insurance Agency in Bosnia and Herzegovina, in the application of different rules, different accounting. Progress in making a step towards single market has been provided by establishment of a subsidiary - legal regulations that have enabled companies work in one entity to another. Poor macroeconomic indicators, insufficient foreign investment, political uncertainty, lack of liquidity, losses, unemployment, low wages of employees, low technological development create an unfavorable business environment.

Competition at HHI (Herfindahl-Hirschman Index) concentration index for nonlife insurance in BiH shows a high level of competition. In Bosnia and Herzegovina today operates a total of 27 insurance companies and one reinsurance company, which is a large number for such a small market. In nonlife insurance market in Bosnia and Herzegovina, the most represented is compulsory insurance - motor insurance, where there is unfair competition, taking over the insured, lowering premiums and other illegal activities.

Importance of insurance in Bosnia and Herzegovina is at very low level, it is considered expensive, that no risk would happen, and that is an unnecessary expense. Floods and landslides that have hit Bosnia and Herzegovina in May 2014. and inflicted enormous damage, did not changed attitude nor raise awareness of citizens, businesses nor state of the importance and need of insurance. These natural disasters have shown how little property in Bosnia and Herzegovina was insured, how little is known about the possibilities of protection of property and individuals and how low awareness of the need and importance of insurance is for legal entities, individuals and the country itself.

The aim of this paper is to point that insurance should be seen as an investment and not an expense because insurance protects and does not threaten the business in the case of damage. This is a contribution to increase knowledge in nonlife insurance industry in Bosnia and Herzegovina, its significance for the country, for economic growth and development, increase confidence in insurance companies, increasing awareness of legal entities, individuals and country of the need and importance of insurance. There is the need to increase the number of compulsory insurance and do the necessary reforms of the pension and health insurance, to

indicate that the perspective of nonlife insurance industry exists. Nonlife insurance market in Bosnia and Herzegovina is underdeveloped. At this point, all indicators will be presented in the text below.

## **2. Nonlife insurance**

Nonlife insurance covers a multitude of risks as opposed to the life insurance with only one risk - the death. Nonlife insurance includes many types of insurance and have different types of damage such as bodily injury, property damage.

In nonlife insurance formation of a harmful event is completely unpredictable. Nonlife insurance is considered riskier than life insurance, there is no savings component and it does not make the investment yield for the insured.

While life and nonlife insurance premiums are known - that is not the case with the sum insured. It is impossible to predicted liabilities, time and amount of liabilities in nonlife insurance. In life insurance, the insured sum is pre-determined and fixed while in nonlife insurance depends on the resulting damage, the insured sum and the insured value of things. Even the number of risks is unknown because in case of partial damage the contract remains active and valid for a concluded period of time. Nonlife insurance contract in most cases is the contract of indemnity where the insurer, in the case of an insured event, pays insurance compensation. Those are property insurance contracts. There are also car insurance, liability insurance, disability insurance...

As far as the period of insurance, life insurance is a long-period insurance, while nonlife insurance contract is signed usually for period of one year. It is uncertain whether and when and how big risk would happen. Depending on the number and intensity of insured event the premium may not cover damages - it may not be sufficient, which means that in nonlife insurance appropriate provisions for damages is highly important.

According to the mode of occurrence can be voluntary and obligatory insurance. Although insurance is generally voluntary, however, when the country estimates that the risk is big and important to society, it can prescribe some aspects of compulsory insurance such as compulsory motor vehicle liability insurance, accident insurance of passengers in public transport, then there are many mandatory insurance to third parties by persons of certain professions such as doctors, notaries, contractors etc.

The division into groups may be: personal insurance, motor hull insurance, cargo insurance, property insurance, liability insurance and financial insurance. Further, nonlife insurance is widely divided into species that are prescribed by law such as: accident insurance, health insurance, road vehicles, aircraft, vessels, goods in transport, property insurance against fire and natural forces, security of other property damage, liability insurance for motor vehicles, aircraft, vessels, insurance of general civil liability insurance, credit insurance, guarantee, various financial losses, legal expenses and insurance help.

### **2.1. Indicators of nonlife insurance in Bosnia and Herzegovina**

In Bosnia and Herzegovina premium of nonlife insurance and total premium has constant growth through years but not enough to keep us satisfied. In 2015, nonlife insurance premiums amounted to 465,091,845 KM which is 17,459,013 KM more than last year, so it has been the growth of 3,90%. The growth has been lower than last year by 0,83% and 0,50% higher than the average growth of 3,40 % for the last five years. Premiums by types of insurance for a period of five years is shown in the following table.

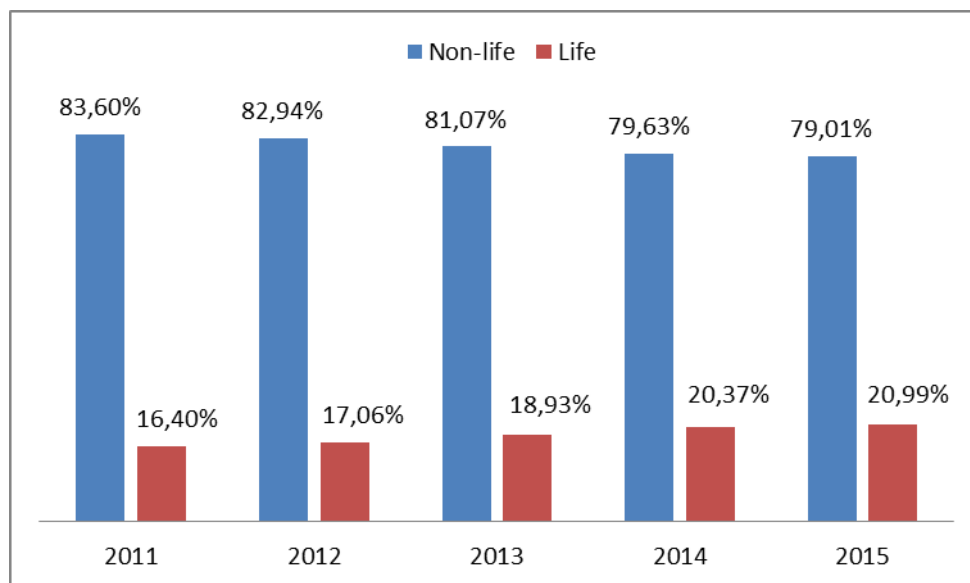
Overview of premiums by type of insurance in Bosnia and Herzegovina in KM for period of 2011 - 2015

	2011	2012	2013	2014	2015
Nonlife	408.052.463	418.931.749	427.256.461	447.632.832	465.091.845
Life	80.059.376	86.160.966	99.775.089	114.478.035	123.533.426
Total	488.111.839	505.092.715	527.031.550	562.110.867	588.625.271

Source: Insurance Agency in Bosnia and Herzegovina; Insurance Supervision Agency of the Federation of Bosnia and Herzegovina; Insurance Agency of the Republic of Srpska

In Bosnia and Herzegovina participation of nonlife insurance premium in total premium is very high and for 2015 has been 79,01%, which is one of the indicators of underdevelopment of the insurance industry. Yet from the following chart for the reference period from 2011 to 2015 it is evident that the participation of nonlife insurance premiums in total premium has a slight but steady decline which is good.

The participation of premium in total premium of Bosnia and Herzegovina from the 2011 to 2015



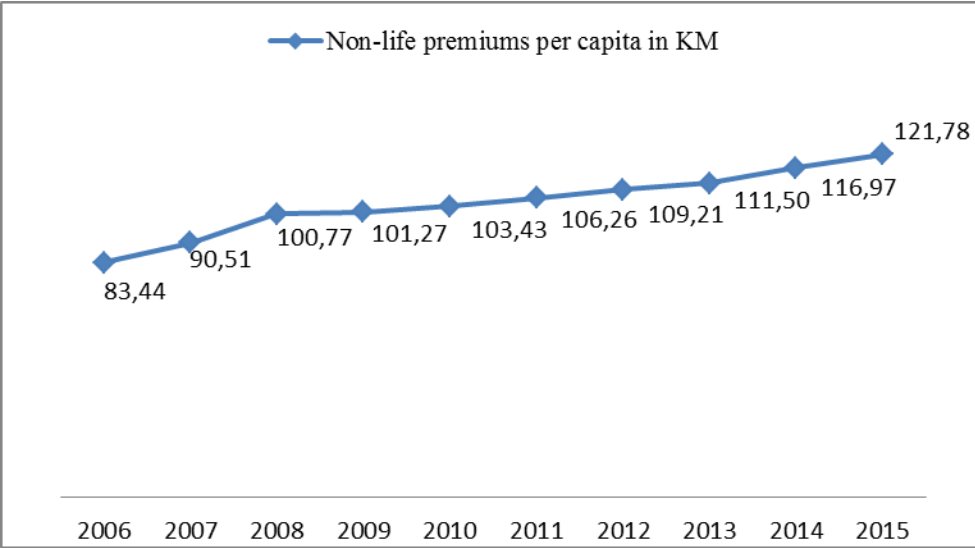
Source: Interpretation of authors reportedly Insurance Agency in Bosnia and Herzegovina, the Agency for Insurance Supervision of the Federation of Bosnia and Herzegovina; Insurance Agency of the Republic of Srpska

For the year 2015 in Bosnia and Herzegovina premium per capita for nonlife insurance amounted to 121,78 KM or 62,75 €, the participation of nonlife premiums in GDP is 1,65%. Premiums per capita and participation of nonlife insurance premiums of Bosnia and Herzegovina



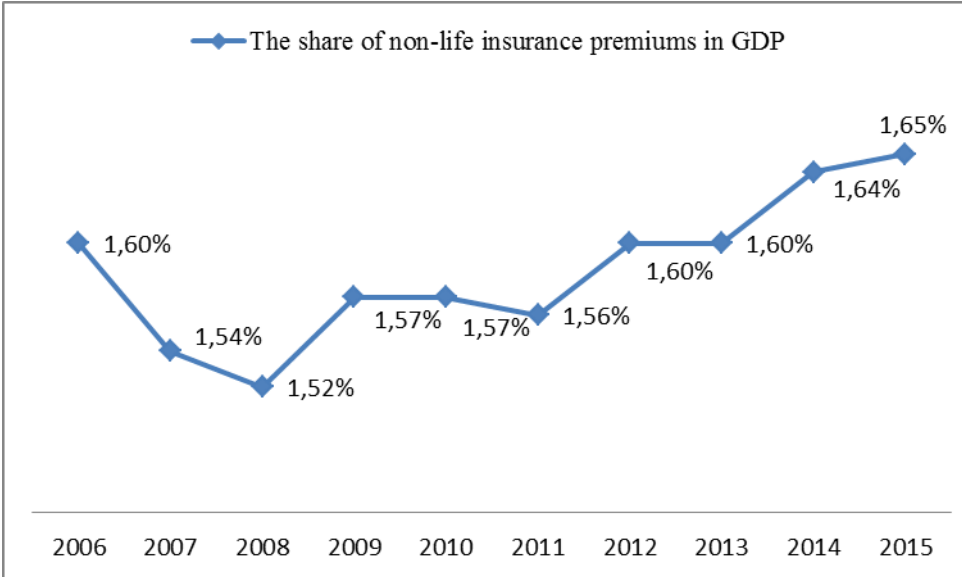
in GDP in the observed period of ten years have the highest amount or percentage in 2015, as can be seen from the chart below.

Nonlife premiums per capita in Bosnia and Herzegovina from 2006 to 2015



Source: Interpretation of authors reportedly Insurance Agency in Bosnia and Herzegovina, the Agency for Insurance Supervision of the Federation of Bosnia and Herzegovina; Insurance Agency of the Republic of Srpska, the Agency for Statistics of Bosnia and Herzegovina

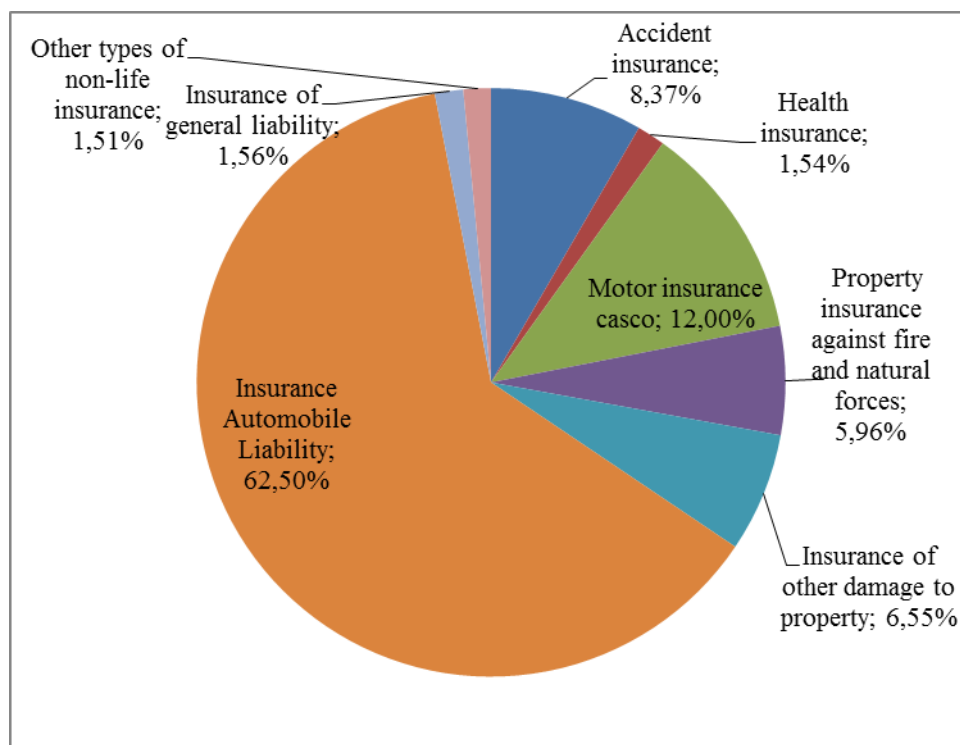
The participation of nonlife insurance premiums of Bosnia and Herzegovina in the GDP from 2006 to 2015



Source: Interpretation of authors reportedly Insurance Agency in Bosnia and Herzegovina, the Agency for Statistics of Bosnia and Herzegovina

In the group of nonlife insurance the most represented is motor insurance with 74,50%, the property insurance participation is only 12,51% where the property insurance against fire and natural forces is 5,96%, other property insurance 6,55%, suggesting that very few assets are insured. Graphic is shown below.

Participation of nonlife insurance premium in nonlife insurance in Bosnia and Herzegovina in 2015



Note: under other types of non-life insurance 1.51% are covered by species that individually have a share of less than 1% in non-life insurance premiums

Source: Interpretation of authors reportedly Insurance Agency in Bosnia and Herzegovina

## 2.2. Summary of comparative indicators of countries in the region and Bosnia and Herzegovina

Compared to countries in the region, Slovenia has the highest premium throughout the reference period and for 2015. amounted to € 1.409.435.410. Croatia is in second place in the region with the premium of € 758.253.486, third is Serbia with the premium of nonlife insurance in the amount of € 506.153.622, Bosnia and Herzegovina with a premium of € 237.797.684 is the fourth in the region, followed by Macedonia with the amount of € 116.548.550 and last is Montenegro with a premium in the amount of 64.008.015 €. Nonlife insurance premiums by countries of the region from 2011 - 2015 is shown below.

Nonlife insurance premiums in the region and the country of Bosnia and Herzegovina in EUR from 2011 to 2015

	2011	2012	2013	2014	2015
Bosnia and Herzegovina	208.633.911	214.196.402	218.452.760	228.871.033	237.797.684
Montenegro	55.734.843	57.447.618	61.898.403	59.860.966	64.008.015
Croatia	890.422.048	871.558.668	855.923.221	772.987.851	758.253.486
Macedonia	102.613.918	104.316.878	105.087.065	109.665.753	116.548.550
Slovenia	1.454.086.486	1.457.098.598	1.424.543.079	1.402.194.503	1.409.435.410
Serbia	452.225.602	436.238.565	435.931.050	441.473.888	506.153.622

Source: Insurance Agency in Bosnia and Herzegovina; Supervision Agency of Montenegro; HANFA; Agency for Supervision of osigryvanje (ACO); Slovenian Insurance Association; National Bank of Serbia

In 2015 Slovenia has the highest premium per capita for nonlife insurance, € 636.92, followed by Croatia with € 180.00, then Montenegro, Serbia, Bosnia and Herzegovina and Macedonia with the lowest per capita 56,37 €. The participation of nonlife insurance premium in GDP in the countries of the region ranges from 1,28% in Macedonia to 3,57% in Slovenia. Bosnia and Herzegovina with a participation of 1.65% is in fourth place among the countries of the region in 2015. The table is given below.

The share of nonlife insurance premiums in GDP and nonlife insurance premiums per capita in EUR for Bosnia and Herzegovina and the region from 2011 to 2015

	2011		2012		2013		2014		2015	
	Share% prem. to GDP	Per-capita	Share% prem. to GDP	Per-capita	Share% prem. to GDP	Per-capita	Share% prem. to GDP	Per-capita	Share% Prem. to GDP	Per-Capita
Bosnia and Herzegovina	1,56	54,33	1,60	55,84	1,60	57,01	1,64	59,80	1,65	62,27
Montenegro	1,72	89,14	1,82	92,65	1,86	99,83	1,75	96,24	1,78	103,17
Croatia	1,97	202,25	2,12	204,09	1,98	201,11	1,80	182,00	1,73	180,00
Macedonia	1,39	49,81	1,39	50,58	1,29	50,88	1,28	53,09	1,28	56,37
Slovenia	3,94	709,24	4,04	708,88	3,94	691,94	3,76	680,32	3,57	636,92
Serbia	1,40	61,90	1,45	60,50	1,40	60,90	1,40	61,60	1,52	71,51

Source: Interpretation of authors reportedly Insurance Agency in Bosnia and Herzegovina, the Agency for Supervision of Montenegro, HANFA, the Agency for Supervision of osigryvanje (ACO), Slovenian Insurance Association, the National Bank of Serbia

### 2.3. Nonlife insurance in the world and in Bosnia and Herzegovina

The participation of nonlife insurance premiums in total premium gives us information about the level of development of the country. If the participation of nonlife insurance premiums in total premiums is low – the country is more developed and vice versa. In the world the ratio is approximately 60:40 in favor of life insurance.

Nonlife insurance premium in Bosnia and Herzegovina, in comparison to the countries of Europe and the EU, is far below them. In 2014, nonlife insurance premium in Bosnia and Herzegovina amounted to 229 million €, in Austria 10.400 million, in Spain even 28.285 million. Thus, nonlife insurance premium in BiH for 2014 makes 2,20% of the premium nonlife insurance Austria, Czech Republic 7,49%, Polish 3,73% Spain 0,81% Sweden 2,56%, 1,33% of the country from EU (average).

Bosnia and Herzegovina among these countries has the biggest participation of nonlife insurance premiums in total premiums for the period from 2011 to 2014. So, in 2014, the participation of nonlife insurance premiums in total premium in Bosnia and Herzegovina is approximately 80%, Austria 60%, Czech Republic 53%, Spain 52%, Poland 47%, EU 39% and Sweden 30%.

When we look at countries in the region from 2011 to 2014, participation of Bosnia and Herzegovina in total premium in the region is in rise of 6,60% in 2011 to 7,59% in 2014. In addition to Bosnia and Herzegovina growth trend has Macedonia but with less participation than Bosnia and Herzegovina.

Among the countries in the region share premium of nonlife insurance in total premium in 2015 is ranged from 66,36% to 86,78%. The largest share is in Macedonia with 86,78%, followed by Montenegro 83,20%, 79,01% for Bosnia and Herzegovina, Serbia 76,07%, 71,35% Slovenia and Croatia with the smallest share of 66,36%.

Premium per capita for nonlife insurance in 2014 in BiH is approximately 60 €, 159 € in Poland, 809 € in EU countries, in Austria 1223 €, while the share of GDP in 2014 ranges from 1,47% in Poland, in BiH 1,64%, EU 3,03%, in Austria 3,15%.

When it comes to the region, the highest premium per capita for nonlife insurance in 2014 has Slovenia 680,32 €, followed by Croatia with 182 €, then Montenegro, Serbia, Bosnia and Herzegovina and Macedonia with the lowest per capita 53.09 €. The share of nonlife insurance premium in GDP in the countries of the region ranges from 1,28% in Macedonia to 3,76% in Slovenia. Bosnia and Herzegovina with a share of 1,64% takes fourth place among the countries of the region in 2014.

## **2.4. Macroeconomic indicators in Bosnia and Herzegovina**

Macroeconomic indicators for 2015 show that the economy of Bosnia and Herzegovina is recovering and that there has been a modest increase in nominal and real GDP growth of industrial production, increased exports and decreased imports, reduced unemployment and increased employment. As for consumer prices, and the debt of the government sector in 2015 recorded a decrease in prices and increase in debt. The following specific data for 2015, according to the report of the Agency for Statistics of Bosnia and Herzegovina and Central Bank of Bosnia and Herzegovina.

Nominal GDP amounted to 28.148 million and it is the highest amount in the last ten years. In comparison to 2014 increased by 3,26% while real growth was 2,8%. GDP per capita was 7.371,00 KM. As far as the consumer price index in 2015 compared to 2014 was recorded the average price drop or deflation of 1%.

The number of unemployed in 2015 was 537.568 and decreased by 9,566 or 1,75% compared to 2014 while the number of employed increased by 14.171, or 2.02%, which amounts to 715.425. The average net salary amounted to 830 KM, and remained at the same level as last year.

The volume of trade in 2015 amounted to 24.839 million, a decrease in 2014 for 42 million, or 0,17%. Export of goods in 2015 amounted to 8,987 million are higher than exports last year for 3,51%, while imports decreased by 2,14% which reduced the deficit of foreign trade balance for 8.67% compared to 2014. Higher exports in 2015, while lower import had a positive effect on the export-import ratio, which in 2015 amounted to 56.7%, which is the largest coverage in the last ten years. The share of exports in the volume of trade has increased compared to 2014 and amounted to 36.18%, while in 2014 was 34.89%.

The external debt of the government sector in 2015 reached the amount of 8.691 million KM, which makes 30,88% of GDP and the highest amount in the period 2006 – 2015. Debt increased by 473 million or 5,76% compared to 2014. If we look at 2006 and 2015 debt has doubled or more precisely, increased by 4,620 million which is an increase of 113,49%. The movement indicators of 2011- 2015 are given in the following table.

#### Macroeconomic indicators in Bosnia and Herzegovina from the 2011 to 2015

Indices	2011	2012	2013	2014	2015
Nominal GDP (in millions KM)	26.210	26.193	26.743	27.259	28.148
GDP per capita (in KM)	6.825	6.828	6.979	7.123	7.371
Nominal GDP (growth rate in%)	3,41	-0,06	2,10	1,93	3,26
Real GDP (growth rate in%)	0,91	-0,93	2,39	1,05	2,80
Industrial production-growth rate%	7,10	-5,20	6,40	0,20	3,10
Consumer price index (%)	3,70	2,10	-0,10	-0,90	-1,00
Population (estimate in thousands)	3.840	3.836	3.832	3.827	3.819
The number of unemployed	536.728	550.255	553.481	547.134	537.568
Number of employees	691.036	686.852	690.088	701.254	715.425
The average net salary (in KM)	816	826	827	830	830
The volume of trade in millions KM	23.748	23.111	23.550	24.881	24.839
Exports of goods in millions KM	8.222	7.858	8.380	8.682	8.987
Imports in millions KM	15.526	15.253	15.170	16.199	15.852
The foreign trade balance in KM million	-7.304	-7.395	-6.790	-7.517	-6.865
Export-import ratio (%)	53,00	51,50	55,20	53,60	56,70
The external debt of the government sector (In millions KM)	6.661	7.155	7.409	8.218	8.691
External debt (as a percentage of the GDP)	25,41	27,32	27,70	30,15	30,88

Source: Agency for Statistics of Bosnia and Herzegovina (BiH), "Gross domestic product for BiH 2005-2013, revised data", July 2015 and "Gross domestic product for BiH 2014 Production approach, First results", July 2015; Federal Office of Statistics; Republic Institute for Statistics; Central Bank of Bosnia and Herzegovina

### 3. Nonlife insurance perspectives in Bosnia and Herzegovina

Presented indicators show that the nonlife insurance industry in Bosnia and Herzegovina is underdeveloped. However, it is precisely this underdevelopment of nonlife insurance industry indicates that there is room for growth and development. Underdeveloped and underserved market provides many opportunities for growth and development.

Nonlife insurance industry perspectives are also reflected in:

- Economic development as the development of the insurance industry

- Education and awareness of the needs of insurance
- Increasing the number of compulsory nonlife insurance
- The reforms of the pension and health systems

### **3.1. Economic development as the engine of growth of the insurance industry**

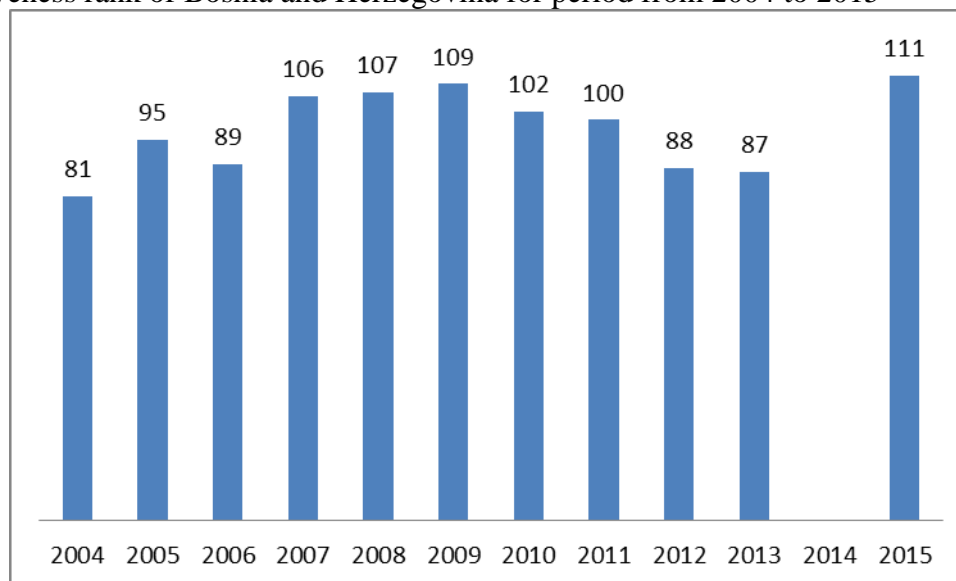
The economic development of the country is a requirement or engine of growth of the insurance industry. The development of nonlife insurance industry is limited by the economic situation in the country. The consequences of war, poor living standards, poverty, unemployment, political turmoil, a struggle for power rather than fight for economic progress and development and a better tomorrow, crime, corruption, all these are characteristics of Bosnia and Herzegovina, which made it impossible to have neither a progress in the development of countries nor the insurance industry. If a country is less developed there is less demand for insurance products. The level of development of a country is reflected in its competitiveness. The rating of competitiveness is very important for every country. Competitiveness Index includes data from internationally recognized institutions (IMF, World Bank, United Nations, various organizations for science and culture, the World Health Organization and the annual survey report of the World Economic Forum), and includes a wide range of determinants of productivity of a country at the micro and macro level. To assess the competitiveness takes a large number of indicators. Some of them are institutions, infrastructure, higher education and vocational training and labor market efficiency.

Bosnia and Herzegovina, in the latest list of the competitiveness for 2015/2016, located at 111. place with a score of 3,7. This is the worst ranking in the last twelve years.

For poor competitiveness of Bosnia and Herzegovina has affected: black economy, corruption, political instability, inefficiency of state institutions, high rates of taxes.

Competitiveness rank is important for investors to invest in individual countries and therefore Bosnia and Herzegovina must work to eliminate all weaknesses and creating the conditions for greater competitiveness, which will create the conditions for investment. The growth of the insurance market is directly related to the inflow of foreign investments. Foreigners pay much attention to insure their property so that all foreign projects must be insured during construction and later at exploitation. With the arrival of foreign investments will increase nonlife insurance premium.

### Competitiveness rank of Bosnia and Herzegovina for period from 2004 to 2015



Source: Interpretation of the authors on the basis of the report of the Federal Institute for Development Programming Bosnia and Herzegovina

Compared to neighboring countries, Bosnia and Herzegovina is the worst ranked country. The best ranked is Slovenia in 59th place, next is Macedonia at the 60th position and it achieved the best results in the region. Montenegro made a regress for three ranks from last year, while Croatia and Serbia maintained the ranking of the previous year.

### Rank of Bosnia and Herzegovina and neighboring countries according to the total number of ranked countries of the 2004 to 2015

	The total number of countries	Bosnia and Herzegovina	Montenegro	Croatia	Macedonia	Slovenia	Serbia
2004	104	81	89	61	84	33	89
2005	117	95	80	62	85	32	80
2006	125	89	87	51	80	33	87
2007	131	106	-	57	94	39	-
2008	134	107	65	61	89	42	85
2009	133	109	62	72	84	37	93
2010	139	102	49	77	79	45	96
2011	142	100	60	76	79	57	95
2012	144	88	72	81	80	56	95
2013	148	87	67	75	73	62	101
2014	144	-	67	77	63	70	94
2015	140	111	70	77	60	59	94

Source: Bosnia and Herzegovina, the Federation of Bosnia and Herzegovina, the Federal Institute for Development Programming

### 3.2. Education and raising awareness of the needs of insurance

Education and knowledge are essential requirements to be met so that insurance industry goes to growth and development. Financial literacy is the need of every human being

and should be included in the system of school education. And the recommendations of the OECD principles are that people should be related to financial education in the earliest stages of life, particularly emphasizing the need of saving for old age.

Work must be done to educate the population, raising awareness of the importance and need of insurance, the importance of safety and security because the security, in the Maslow hierarchy of human needs, takes the second place, just behind the physiological needs. Insurance meets this need.

### **3.3. Increasing the number of compulsory nonlife insurance**

The country should introduce more compulsory insurance, while awareness of the importance of insurance is at a low level, such as: mandatory insurance of workers, insurance of public assets, property and corporate facilities under construction.

Insurance of buildings under construction should be mandatory for all. Facilities under construction are of great value and that high-value capital should be protected. Foreign investors are giving greater importance to protection of capital so insurance of buildings under construction is required when it comes to foreign investment. Foreign investors apply the rules of FIDIC (Federation Internationale des Ingenieurs Conseils) - International Federation of Association of Consulting Engineers.

It is better for the country that the more assets are insured so the consequences of catastrophic risk could be shared with insurance companies. The state should encourage insurance subsidies of certain industries eg. Agriculture because many inhabitants of Bosnia and Herzegovina engaged in agriculture.

Estimates show that in Bosnia and Herzegovina even approximately 95% of arable land is not insured.

### **3.4. Reform of pension and health insurance**

The pension system in Bosnia and Herzegovina is the responsibility of the entities, there are the two pension funds, different laws, different methods of calculation and contribution rates.

Pay-as-you-go system based on the principle of intergenerational solidarity where employees finance current retirees. But the problem is high unemployment, non-payment of contributions by employers, unfavorable demographic structure (longer life, for longer retirement), so that this method does not provide sufficient funds, the pensions are paid from the loan. Pensions in Bosnia and Herzegovina are among the lowest in Europe and do not provide sufficient funds for life.

The average pension for the year 2015 in the Federation amounted to 368,33 KM, which is 44,38% of the average net salary in Bosnia and Herzegovina and the Republic of Srpska 325,47 KM, which is 39,21% of the average net salary of Bosnia and Herzegovina. For the year 2015 should have been provided 2.713.263.812 KM for pensions at the state level, the Federation

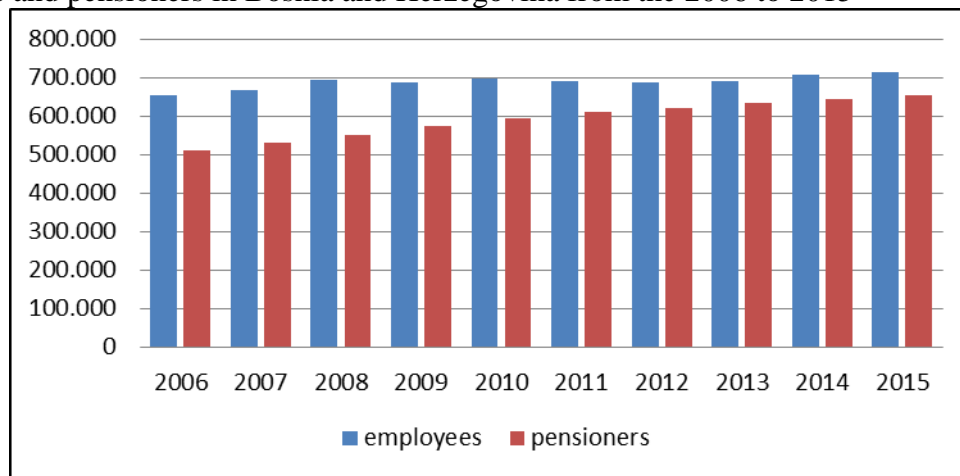


1.741.918.391 KM and 971,345,421 KM for the RS or for the month of December 2015 for the payment of pensions at the state level took 228.478.192 KM. At the end of 2015, demand for retirement reported by more than 15.000 citizens for what will be the additional funds necessary for the payment of pensions, more than 6 million KM for month.

This system may work well in the case of a large number of young population and high employment on one side and a small number of older people and a smaller number of pensioners on the other side.

According to data from the Federal Institute for Pension and Disability Insurance Fund and the Pension and Disability Insurance of the Republic of Srpska retirees per day 31.12.2015. has been 654.257 (Federation 402,044 and the RS 252.213 pensioners). The total number of employees in Bosnia and Herzegovina on date of 31.12.2015. has been 715.425. The illustration of employees and pensioners from 2006 - 2015 is shown in the following chart.

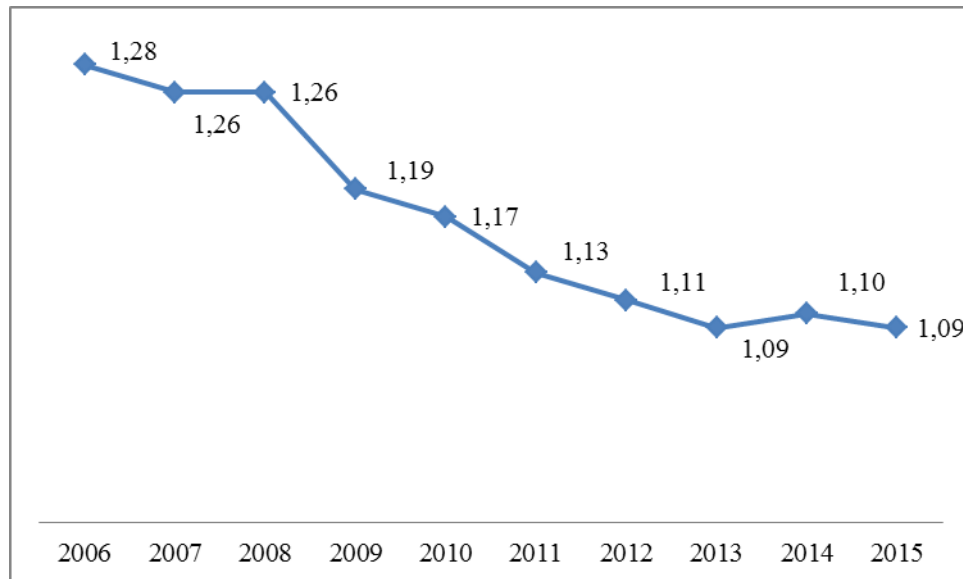
Employees and pensioners in Bosnia and Herzegovina from the 2006 to 2015



Source: Interpretation of the authors on the basis of the report: Agency for Statistics of Bosnia and Herzegovina, the Federal Institute for Pension and Disability Insurance Fund for Pension and Disability Insurance of the Republic of Srpska

The attitude of employed - pensioner is disastrous. In the Republic of Srpska every fifth citizen is a pensioner, and in the Federation every sixth. In Bosnia and Herzegovina the ratio is 1.09: 1 and can be seen in the following graph.

## The attitude of the employees and pensioners in Bosnia and Herzegovina from 2006 to 2015



Source: Interpretation of the authors on the basis of the report: Agency for Statistics of Bosnia and Herzegovina, the Federal Institute for Pension and Disability Insurance Fund for Pension and Disability Insurance of the Republic of Serbian

In order for this system to work it is considered necessary to have 3,5 or more employees per (one) pensioner. Optimal ratio to Bismarck is seven employees per (one) pensioner. Therefore, the necessary reforms will lead to long-term sustainability of pension system and adequate income pensioners.

The existing system as it is now is unsustainable and can still smolder and maintain the increase in the contribution that are already high; increased control, enforcement and sanctions for those who avoid paying contributions and transfers from the budget. Enhanced control and enforcement of claims would lead to bankruptcy of many legal entities and would increase the number of unemployed.

The reform should move in the direction of improving the system of intergenerational solidarity, there should be three pillars:

1. The system of intergenerational solidarity as a compulsory system,
2. Individual capitalized savings - required, as a complement to the system of intergenerational Solidarity
3. Additionally pension insurance.

The reforms will lead to the development of financial markets and development of capital, and to the development of the overall economy. Investments would be significant in the development of infrastructure that is in our country still underdeveloped but highly important and is an indicator of competitiveness.

With increasing awareness of every individual all three pillars of pension insurance will be charged and provide a decent life in old age. It will be a different pension systems, public and

private, compulsory and voluntary, which will operate in parallel and provide a better life in old age which is the goal.

### **3.5. Health care reform in Bosnia and Herzegovina**

In the health system, health services do not cover an entire population. The system in the Republic of Srpska is centralized and in Federation is decentralized which is the reason that all patients do not have the same access to health services. Medical institutions are left on their own, are drowning in debt, many examinations are waiting for years. Our clinics are old, the years of underinvestment, poor installation, damp, dilapidated medical equipment. A growing number of nosocomial infections due to unhygienic conditions shows that the situation is alarming and that the reform is necessary and inevitable and it can not wait.

Quality health care should have all citizens regardless of the amount of income that they have. Therefore, we should seek for the best solution at the moment the key is integration. The private sector is strong support for the state, has modern equipment and is able to apply modern methods of treatment. On the other hand, the public sector has a lot of unused space in community health centers and clinics so it would be good to make it available to private. The public and private health care are supplemented, and the use of people and equipment would be more rational and efficient.

Involving the private sector in the field of Health in the system of compulsory insurance and their integration is necessary in order to obtain the highest quality health care for citizens. The integration of private and public health would solve the waiting lists problem. The integration of these two sectors is a chance for Bosnia and Herzegovina to have better health care for their citizens.

There should be agreed and defined the real cost of health services that private companies can accomplish at the expense of insurance that certainly must be lower than the market. Equipment in the private sector is newer and more modern, that is one of the reasons for integration, for it to be used and accessible to citizens. The citizens somehow have more confidence in the private sector, the data show that more and more resort to payment services in the private sector although they have free health care in the public sector. The reason for that are the more sophisticated methods and equipment, faster service and friendly staff, dedication to patient.

Private and public health should be integrated, patient – citizen should decide where to go, one must have the ability to choose and make a decision himself. Public health today can not be provided services the same day no matter how it looked necessary and urgent, it must be scheduled. In Bosnia and Herzegovina market voluntary health insurance is poorly developed, and one of the reasons is the fact the public and private health sector are not equal, are not integrated. Voluntary health insurance provides a package of services to the desired level. The most popular are the basic packages that allow policyholders to go to a doctor on the same day, without having to wait.

The integration of private and public health will increase the availability of resources, which will lead to more rational and cost-effective use of medical equipment capacities and

human resources, higher quality and better redistribution of service delivery, higher quality and market competitiveness of health services and improving the functioning of the health system of the country.

### **3.6. Results of the study - survey**

In order to complete the research and to obtain complete information on the perspectives of industry of nonlife insurance, the research - surveys was conducted via e-mail on a sample of insurance companies operating in Bosnia and Herzegovina (Hurko, 2016.).

The survey was sent in addition to the insurance companies and the entity agencies and the Agency on the state level – total of 28 survey respondents. In the survey 16 legal entities took place or 57,14%. The Federation there is only one legal entity which has not responded to the call for interview, while unfortunately the RS in the survey was involved only two companies. We received a total of 29 responses.

Respondents should respond with:

- 1 - I completely agree
- 2 - Tend to agree
- 3 - I can not decide
- 4 - Tend to disagree
- 5 - Strongly disagree

Survey

1. Nonlife insurance industry has good prospects for development in BiH.
2. Development of the standard of living and economic development of the country conditional on the development of nonlife insurance industry.
3. Development of nonlife insurance industry has a positive effect on the development of the real and financial sector.
4. Increase knowledge of security and the development of awareness of the executive and legislative powers to public property will be provided.
5. The number of compulsory nonlife insurance should be increased.
6. Provision of political and economic stability in Bosnia and Herzegovina will come to an influx of foreign investment that will strengthen the nonlife insurance industry.
7. Industry of nonlife insurance is a very important partner country in the prevention and alleviation of the consequences of natural disasters.
8. The inevitable reform pension and health insurance funds will unload and contribute to economic and political development of the country.
9. Entry into the EU will lead to faster development and perspectives of nonlife insurance
10. The introduction of new products is crucial for the development of nonlife insurance industry

## Survey Results

questions	Reply											
	1		2		3		4		5		All	
	I completely agree		Tend to agree		I can not decide		Tend to disagree		Strongly disagree			
	broj	%	broj	%	broj	%	broj	%	broj	%	broj	%
1	22	75,86	7	24,14	0	0,00	0	0,00	0	0,00	29	100,00
2	17	58,62	12	41,38	0	0,00	0	0,00	0	0,00	29	100,00
3	13	44,82	7	24,14	7	24,14	1	3,45	1	3,45	29	100,00
4	14	48,28	11	37,93	4	13,79	0	0,00	0	0,00	29	100,00
5	13	44,83	9	31,03	2	6,90	4	13,79	1	3,45	29	100,00
6	14	48,27	11	37,93	2	6,90	2	6,90	0	0,00	29	100,00
7	19	65,52	6	20,69	3	10,34	0	0,00	1	3,45	29	100,00
8	9	31,03	11	37,93	6	20,69	2	6,90	1	3,45	29	100,00
9	9	31,03	14	48,28	4	13,79	1	3,45	1	3,45	29	100,00
10	10	34,48	12	41,38	3	10,34	3	10,34	1	3,45	29	100,00

Source: Interpretation of the author according to the survey

## Confirmation statements through survey

Questions	confirmation			Indecision	Rejection			All
	1	2	1+2		3	4	5	
1	75,86	24,14	100,00	0,00	0,00	0,00	0,00	100,00
2	58,62	41,38	100,00	0,00	0,00	0,00	0,00	100,00
3	44,82	24,14	68,96	24,14	3,45	3,45	6,90	100,00
4	48,28	37,93	86,21	13,79	0,00	0,00	0,00	100,00
5	44,83	31,03	75,86	6,90	13,79	3,45	17,24	100,00
6	48,27	37,93	86,20	6,90	6,90	0,00	6,90	100,00
7	65,52	20,69	86,21	10,34	0,00	3,45	3,45	100,00
8	31,03	37,93	68,96	20,69	6,90	3,45	10,35	100,00
9	31,03	48,28	79,31	13,79	3,45	3,45	6,90	100,00
10	34,48	41,38	75,86	10,34	10,34	3,45	13,79	100,00

Source: Interpretation of authors based on research by the survey

The survey results confirmed the assertion that there is a perspective of nonlife insurance industry in Bosnia and Herzegovina, in the coming years is expected to accelerate growth and development.

## 4. Conclusion

All this shows that the nonlife insurance industry in Bosnia and Herzegovina is underdeveloped but has prospects for development. This was confirmed by the survey, which was conducted on a sample of all insurance companies and agencies in Bosnia and Herzegovina.

Providing political and economic stability in Bosnia and Herzegovina will come to an influx of foreign investment that will strengthen the nonlife insurance industry. Increasing

knowledge of security and the development of awareness of the executive and legislative powers to public property will be provided. Furthermore, the entry into the EU will lead to faster development and perspective industry of non-life insurance.

The inevitable reform of the pension and health insurance funds will unload and contribute to economic and political development of the country.

Non-life insurance industry is very important for Bosnia and Herzegovina because our country can not develop without the actual application and the daily implementation of modern forms of nonlife insurance, because we believe that development time for nonlife insurance industry is coming and with it economic development, economic efficiency and greater competitiveness, raising awareness and greater financial literacy that will ensure a higher standard and better life.

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# THE IMPACT OF CORRUPTION ON FOREIGN DIRECT INVESTMENTS IN TRANSITION COUNTRIES

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## Abstract

The paper investigates the link between corruption and foreign direct investment flows to the Central and Eastern European countries. Previous research has presumed that corruption directly enters the cost function of multinationals, suggesting a negative relationship between corruption and FDI. Using a dataset of bilateral flows of foreign direct investment, we study the determinants of FDI from European Union (EU-27), to Central and Eastern European ones. Using an econometric model based on cross-section data analysis, this paper finds that both gravity factors and non-gravity, or transition-specific, factors can explain, to a large extent, the size of FDI flows into transition economies. Our main research result is the negative and statistically significant effect of corruption on foreign direct investment. This result is encouraging in the sense that efforts towards raising the quality of institutions may help transition countries to receive more FDI.

**Keywords:** *foreign direct investment, corruption, transition countries, gravity model*

**JEL classification:** F21; F23

# EVALUATING TOURISM EFFICIENCY OF NUTs II AREA ADRIATIC/IONIAN AND DANUBE REGION USING DATA ENVELOPMENT ANALYSIS

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## **Abstract**

This paper describes the application of the Data Envelopment Analysis (DEA) for evaluation of tourism performance of 44 NUTs (Nomenclature of Territorial Units for Statistics) II area Adriatic-Ionian and Danube Region for the 2010 – 2014 period. DEA is a non-parametric linear programming method of efficiency measure to assess a production frontier. Efficiency score of each tourist destination is evaluated against this frontier. The efficiency of an area is evaluated and compared to performance of other areas. Performance of areas has been evaluated by assessing their efficiency scores. Three types of input data (number of persons employed, number of bed-places, nights spent) and two types of output data (gross domestic product, nights spent) have been used in the DEA method for benchmarking tourism performance. For each inefficient unit, DEA identifies the sources and level of inefficiency for each input and output data. On the basis of the three inputs and two outputs referred to above, it appears that NUTs II areas within EU member states demonstrate better results compared to others. The EU Strategy for the Danube Region was introduced in 2011 (for the 2014 – 2019 period). On the other hand, in 2014 the European Commission adopted the macro-regional strategy titled Adriatic and Ionian Region (EUSAIR) for the period 2015 – 2020. Sustainable tourism represents one of the four pillars of both strategies. In addition, the paper suggests the use of DEA results as guidelines for future activities and necessary improvements by policy-makers in the field of tourism.

**Keywords:** *tourism, efficiency, Data Envelopment Analysis, NUTs regions, Adriatic-Ionian Region, Danube Region*

**JEL classification:** C01, G14, C55



# **WORK ABILITY, EDUCATION AND MOTIVATION: DETERMINANTS OF WORK PERFORMANCE OF TEACHERS**

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## **Abstract**

In modern conditions of intense competition inherent in modern markets, every organization is exposed to constant demands to improve their performances both at the level of the organization as a whole and at the level of parts of the organization, but also of each work place. The performance of organizations, groups and individuals within the organization are determined by a number of factors that managers typically viewed from the perspectives of the possibility of influencing these factors. In fact, at all organization levels performances are determined on the one hand by objective factors, those that organizational management cannot influence, and on the other side by the subjective nature of the factors to which the company management's can control. Among these last mentioned (subjective determinants of performances) of particular interest are subjective factors that are important not only for the organization but also for individuals in these organizations, and society as a whole. The ability to work, education level and motivation of employees are determinants of operational performance (productivity of labor) that generate benefits at the individual, team, organizational and finally at the level of society and their preservation, development and enhancement is important for society as a whole, individuals and organizations - to profit, and non-profit.

Given the above, this paper will present the results of examination of the situation of working ability, motivation and education of teachers working in primary and secondary schools in the FB&H, as well as between these determinants of the effects of teachers' work, measured by the methods of univariate and multivariate analysis - correlation and linear regression. The data that will be used in the analysis were collected in 2014 by interviewing teachers working in primary and secondary schools FB&H, using appropriate questionnaire for measuring work ability, motivation and work efficiency. The aim of the research is to identify which of these factors achieves the highest correlation with work performance of teachers, and thus make suggestions

for improving the operational performance of teachers through measures aimed at the preservation and / or enhancement of-entry determinants.

**Keywords:** *working performance, teachers, work ability, education, motivation*

**JEL classification:** J24, M12, M5

# COUNTERFEIT LUXURY MARKET IN BOSNIA AND HERZEGOVINA

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## Abstract

This paper analyses counterfeit market of luxury goods, its potential and image among consumers. With broad literature review in the area of luxury consumption, luxury market and increasing potential of counterfeit luxury products, authors have outlined the importance of this phenomenon. Using the current data world-wide it is evident that luxury industry is growing, but the counterfeit products are becoming even more substantial, thus influencing world economy and harming the brand.

Research is designed to better understand the attitudes of Bosnian consumers towards counterfeit luxury goods in order to contribute to the explanation if consumers purchase counterfeit luxury goods in order to visually redefine their status in the social community, by signaling their power and wealth. Furthermore, counterfeit is one of the oldest crimes in the business world, however, this industry is rapidly growing globally. Dilemma is why consumers are not concerned with the ethics while purchasing counterfeit products.

Authors used sample of 200 respondents, mainly Generation Y which is the most subject to purchase counterfeit goods, in order to better understand their attitudes and dilemmas when purchasing counterfeit luxury products. Two research questions were proposed, and using descriptive statistics they were elaborated. Results show that consumers in BH are not buying counterfeit luxury goods merely in order to redefine their social status, and even while doing so, they do perceive the counterfeit consumption as unethical.

Research has limitations in the used methodology; hence the reached outcomes are somewhat unexpected. Authors propose in further study to use wider and larger sample.

**Keywords:** *counterfeit luxury products, luxury market, symbolic consumption, ethical consumption*

**JEL classification:** M3

## 1. Introduction

The concept of 'luxury' has existed for a long period of time and has been aspired by many for ages (Ghosh and Varshney, 2008). The word luxury is derived from the Latin word *luxuria*, which means excess, extravagance, exclusivity and delicacy (Dubois and Paternault, 1995). History of luxury consumption dates back to as early as Ancient Egypt, and is as such concerned with the trade of jewellery, precious metals, and finely painted pottery (Sung *et al*, 2015; Berry, 1994).

However, due to the industrial production that occurred in the nineteenth century, England and France are called home to the very first forms of luxury brand; silverware, china, and glassware stem their origin in these two countries (Sung *et al*, 2015; Nueno and Quelch, 1998). Given the advancement in technology and mass production, as well as the expansion of the middle class, luxury products became widely available (Sung *et al*, 2015; Atwal and Williams, 2009; Truong, McColl and Kitchen, 2009). The Asian continent is currently the world's largest Western luxury brands market; moreover, the Japanese account for over 40 percent of the worldwide sales for majority luxury brands (Chadha and Husband, 2006).

The growing cult of the luxury brand has undoubtedly given birth to a multibillion-dollar counterfeit industry that builds its ever-increasing success on the basis of the success of genuine luxury brands (Chadha and Husband, 2006). As reported by the International Chamber of Commerce (ICC), the projected value of global trade in counterfeit and pirated goods for 2015 was \$1.77 trillion (International Anti-Counterfeiting Coalition 2016). Demand for counterfeit goods, especially luxury-branded ones, has grown immensely since the 1970s, when a large quantity of counterfeit jeans with Levi's trademark and logo were produced in South East Asia and then distributed throughout Western Europe (Mingyuan, 2013). According to 2013 estimations, the multinational owners of certain luxury brands lost 10 percent of their top-line revenue to counterfeit goods producers (Mingyuan, 2013; National Bureau of Asian Research, 2013).

## 2. Literature review

### 2.1. The Concept of Conspicuous Consumption

Luxury brands are associated with uniqueness, which implies a premium quality and/or a visually appealing design with exclusivity, which might again imply expensiveness and/or rarity (Hudders and Pandelaere, 2011). The perceived uniqueness stems its origin in the fact that many luxury brands have strong cultural roots, and as such enjoy a long history that stretches across multiple generations (Husic-Mehmedovic and Agic, 2015). In the popular sense of the word, luxury is perceived as something which is not necessity, but is rather related to self-indulgence in pleasure (Hudders and Pandelaere, 2011). As noted by Mingyuan (2013), luxury brands enable consumers to satisfy both psychological and functional needs; however, it is the psychological benefits that are the crucial factor in distinguishing luxury products from non-luxury products.

Even though luxury was once reserved for the 'lucky-few', it has recently encountered a mass-consumption, thereby no longer being meant for the select group of elite customers with a strong buying power. The well-known rarity principle explains that luxury products are perceived by consumers as rare products, and when massively produced, they gradually lose their luxury character (Dubois and Paternault, 1995; Nueno and Quelch, 1998; Silverstein and Fiske, 2003).

Research suggests that consumers tend to express and enhance their identity and brand personality by purchasing and consuming goods that they perceive as being luxury (Sung *et al.*, 2015). This revelation brings the researchers to the next big question: are luxury goods perceived as luxury because of their delicacy, exquisite craftsmanship, scarcity, or a very high price one has to pay in order to own the particular good? Or does the ever-increasingly popular science discipline semiotics play the key role in consumers' feeling of attachment to a specific luxury brand? When people relate to each other, they tend to use numerous symbols, which represent an entity which stands for another entity (Sung *et al.*, 2015; Dittmar, 1992). Put simply, people tend to unconsciously assign meaning to people and/or things that surround them. The branch of science which is concerned with the communication properties of signs and nature of the meaning that is embodied in signs is called semiotics and these signs can take forms of words, sounds, gestures, images, and objects (Sung *et al.*, 2015). Accordingly, research suggests that material objects such as luxury goods may serve to define not only consumers themselves, but also their relationships with the people who surround them and constitute their social environment (Sung *et al.*, 2015). Hence, for some consumers, luxury brands are more important than the intrinsic functions and the performance of the certain products (Mingyuan, 2013).

Consumers might also purchase luxury goods in order to improve their self-fulfilment or self-esteem, in order to acquire personally symbolic benefits of the purchased luxury goods (Mingyuan, 2013). In relation to this, Wang and Griskevicius (2014) believe that people seek luxury products because they can signal important information to people who surround them, such as communicating a person's wealth or the level of prestige. This tendency to purchase and exhibit expensive products is known as conspicuous consumption (Wang and Griskevicius, 2014).

Moreover, functional theories of attitudes suggest that attitudes serve several psychological functions, such as helping people organize and structure their environment (knowledge function), attain rewards and consequently, avoid punishments (utilitarian function), and maintain self-esteem (ego defence function), as noted by Wilcox, Min Kim and Sen (2009). Therefore, attitudes which serve a social-adjustive function (i.e., social-adjustive attitudes) motivate consumers to gain social approval (Wilcox, Min Kim and Sen, 2009). Conversely, attitudes serving a value-expressive function (i.e., value-expressive attitudes) help people communicate their cultural beliefs, attitudes and values to members of their social environment (Wilcox, Min Kim and Sen, 2009). Hence, social-adjustive consumers tend to convey a high social status more than value-adjustive consumers.

## 2.2. The Global Overview of the Luxury Goods Market

The luxury market has been growing rapidly since the early 1990s, with an estimated annual growing rate of 10-15 percent, thereby earning a status of one of the fastest growing industries in the world (Sung *et al.*, 2015). The rapid expansion of the luxury goods market was influenced by several factors, them being (1) economic factors, (2) the increase in working women purchasing power, (3) reduction in production costs, and (4) different socio-cultural factors, as noted by Sung *et al.* (2015). Luxury products are traditionally grouped into four product categories, (1) fashion, (2) perfumes/cosmetics, (3) wines/spirits, and (4) watches/jewellery; however, the fashion industry by far accounts for the largest percentage of sales of luxury goods (Sung *et al.*, 2015; Fionda and Moore, 2009). As noted by Husic-Mehmedovic and Agic (2015), luxury is mostly associated with fashion, because fashion products are never really *made*, but rather crafted, which places craftsmanship as one of the key characteristics of luxury brand, along with the brand

strength, differentiation, innovativeness, exclusivity, precision, premium pricing and superior quality. Nowadays, the global luxury goods market is experiencing a significant downfall, due to economic downturns that took place (Hassan, Husic-Mehmedovic and Duverge, 2015). In spite of global changes in the world economy, the luxury goods market has sustained constant growth (Hassan, Husic-Mehmedovic and Duverge, 2015). However, growth in the personal luxury goods markets, which represent jewellery, watches, leather goods, fashion and perfumes, slowed to 1-2% from 3% in 2014, and is now worth €253 bn (Kollewe 2015). Back in 2011, 2012 and 2013, the personal luxury goods market grew by 13%, 5% and 6% respectively (Kollewe 2015). Consequently, many luxury goods houses were forced to terminate their business operations, such as Alexander McQueen, Stella McCartney and Lanvin, who closed their stores less than 18 months after their grand openings in Moscow (Hassan, Husic-Mehmedovic and Duverge, 2015). Additionally, local European and American consumers increasingly prefer to shop at discount outlets, which now represent 10% of the total luxury goods sales, with its revenue doubling during the past three years to €26 bn (Kollewe 2015), which is one of the reasons for the shift in luxury shopping behavior. Today's global luxury goods market exceeds €1 tn, and the US remains the world's largest luxury goods market at €79 bn – New York City alone outweighed the entire Japanese market (Kollewe 2015).

Asia is nowadays experiencing a rather interesting phenomenon, known as the cult of the luxury brand. Japan begun trading with Europe and Britain, and the trade involved jewellery and other luxury goods, while China, on the other hand, was living its own version of the Belle Époque in the hedonistic 1920s and 1930s - men wore exquisite French suits and Swiss wrist watches, and women enjoyed wearing haute couture (Chadha and Husband, 2006). However, the Second World War threw Japan on its knees, and the purchasing power of the Japanese decreased significantly, whilst the communist China specified the clearly laid-out dressing codes, and all expensive items were confiscated (Chadha and Husband, 2006). Finally, recently independent India proudly wore *khadi*, a hand-made cotton sloth which was a symbol of the freedom movement, and hence, there was very little space for imported luxury products (Chadha and Husband, 2006). Later, many Asian countries strictly obeyed protectionist policies which limited trade and punished import of luxury goods with rather hefty taxes. However, Japan experienced a significant rise in the designer front: in the 1970s and early 1980s, Kenzo Takada, Kansai Yamamoto, Issey Miyake, Yohji Yamamoto, and Rei Kawakubo were a daring bunch of designers who became very famous in the international scene, as well (Chadha and Husband, 2006). On the other hand, Japan's economic rise in the 1970s has led to a significant increase in a purchasing power of the Japanese, which created a large, enthusiastic customer base (Chadha and Husband, 2006). In the 1980s and 1990s, Japanese ever-increasing tourist-shoppers' groups led to European famous luxury houses opening their shops in Japan (Chadha and Husband, 2006). Consequently, in response to a very large demand from Japanese tourists visiting Europe, Gucci decided to open its first store in Tokyo in 1972, and in 1978, Louis Vuitton joined (Chadha and Husband, 2006; Dubois and Duquesne, 1993). Hong Kong encountered its own growth in the 1980s and 1990s, and thus created a customer base for luxury products (Chadha and Husband, 2006).

It is important to stress that the visual representation of branded products is what truly matters in today's Asia, whereas luxury villas with multiple bedrooms and swimming pools, for instance, and/or as luxurious trips to exotic destinations are not equally important in creating or fine-tuning a desired social status. As noted by Husic-Mehmedovic and Agic (2015), products sensitive to social influence as a display of wealth are the ones that are the most visible. One cannot help but wonder why are millions of Asians in a rush to buy extremely expensive designer

bags, shoes, clothes, or jewellery? The answer lies in the wind of major political, social, and economic changes that have irreversibly transformed Asia. Nowadays, Hong Kong stands for the best-selection luxury goods place in Asia, thereby attracting a large number of tourists-shoppers, while Taiwan and South Korea's luxury markets experienced their own growth, as well, after the governments in these countries loosened import duties and controls (Chadha and Husband, 2006). Today, Chinese consumers account for 31% of global luxury sales, followed by US consumers at 24% and European consumers at 18% (Kollewe, 2015).

### 2.3. Counterfeit Luxury Goods Market

Counterfeit goods, commonly known as *counterfeits* serve customers who have a great desire to own luxury goods but are unable or rather unwilling to pay for the genuine luxury product (Young, Nunes and Dreze, 2010; Grossman and Shapiro, 1988). Counterfeiting is one of the oldest crimes in history, dating as far back as 27 BC, when a wine merchant in Gaul counterfeited trademarks on wine amphorae, thereby selling inexpensive local wine as expensive Roman wine (Wilcox, Min Kim and Sen, 2009).

The counterfeiting phenomenon is experiencing an immense growth in Asian countries, i.e. China, Indonesia, Japan, and the Philippines (Mingyuan, 2013). The counterfeiting trade in Turkey, for instance, has reached \$3 bn worth, which makes Turkey the second largest counterfeit goods market (Mingyuan, 2013). Moreover, Asian counterfeit manufacturers export tremendous quantities – and the US is the number one importer of counterfeit luxury goods, followed by Japan (Chadha and Husband, 2006). Interestingly, South Korea is famous for its high quality counterfeit goods production. Furthermore, South Korea is the largest exporter of the counterfeits to Japan, which is truly significant, given that even the Japanese quality-obsessed consumers are satisfied with Korean goods. Moreover, South Korea produces the largest volume of Louis Vuitton counterfeits in the world (Mingyuan, 2013).

As noted by Mingyuan (2013), a range of factors were identified which are closely related with the counterfeits' consumption, and those encompass (1) product attributes, which are considered to be the most important determinant of counterfeits' consumption, (2) demographic variables, (3) personal and social factors, such as novelty seeking, collectivism and integrity, (4) ethical and/or legal concerns, (5) consumers' perception about the quality of the products, and (6) price awareness. In addition, recent studies suggest that some consumers shop for counterfeits in order to have fun and to make a statement against the mainstream, given that notions of fun and rebellion are closely related to "cool consumption" (Francis *et al*, 2015; Hebdige and Potter, 2008). One group that is especially likely to engage in "cool consumption", in order to confer the cool status to their identity is Generation Y, whose members are those born between 1983 and 2000 (Francis *et al*, 2015; Pountain and Robins, 2000; Nancarrow *et al*, 2002). Gen Y is considered to be a highly materialistic generation, who is prone to using consumption as a means of acquiring status, cool and sense of rebellion. There is a vast number of definitions of cool, involving being opposed to mainstream norms and values and something good or something great to own (Francis *et al*, 2015; Poynor, 2000; Ferguson, 2011). As far as Gen Y is concerned, consumption is primarily about fun, rebellion and acting slightly bad, but not completely negative (Francis *et al*, 2015; Pappas, 2000; Southgate, 2003; Hebdige and Potter, 2008; Read *et al*, 2012).

As Patrizio Bertelli, the CEO of Prada stated, "being counterfeited is certainly a symptom of success", which implies that, if Prada luxury goods weren't copied or counterfeited, it would mean that Prada and Miu Miu labels weren't desirable (Chadha and Husband, 2006). There is a saying in luxury goods industry circles that the one thing a brand manager fears more than fakes

is not seeing his brand being faked (Chadha and Husband, 2006). Thus, counterfeiting might even be considered as flattering, given that the entire global counterfeits market has emerged, in order to provide customers from all over the world with the most outstanding replicas of world's most desirable luxury products.

Many researchers suggest that inferior imitations can irreversibly harm the perceived quality and exclusiveness of the genuine brands (Mingyuan, 2013; Hieke, 2010). However, another group of researchers believes that exposure to counterfeit goods does not necessarily have to be harmful to the genuine brand. On the contrary, they believe that counterfeits might even increase the awareness and the demand for genuine products through the 'bandwagon effect', implying that the mass consumption of counterfeits can enhance the genuine brand's reputation (Mingyuan, 2013; Nia and Zaichkowsky, 2000). Research conducted by Nia and Zaichkowsky (2000) indicated that respondents with a strong positive image of genuine luxury goods tended to perceive counterfeits as inferior, whereas those with a more positive image of counterfeits did not think of counterfeit goods as inferior. This implies that, in general, counterfeit luxury goods may not devalue the sense of ownership of luxury goods, and they should not be an obstacle for genuine luxury goods houses in marketing the physical and psychological advantages of their products (Nia and Zaichkowsky, 2000).

### 3. Methodology

In order to better understand the attitudes of consumers in Bosnia and Herzegovina, mainly Generation Y, towards counterfeit luxury goods, two research questions are defined:

**RQ1:** Consumers in Bosnia and Herzegovina purchase counterfeit luxury goods in order to redefine their social status.

**RQ2:** Consumers in Bosnia and Herzegovina perceive counterfeit luxury goods consumption as ethical.

In order to analyze those research questions, a research was conducted among 200 respondents. Online questionnaire was used as a main method of data collection. This setting was chosen in regard to extensive Internet presence of Generation Y and high response rate as one of the main features of online questionnaires. Respondents were provided with complete response anonymity. The survey was conducted in 2015.

The research instrument encompassed four main sections. The first main section tested respondents' subjective norm and price consciousness, the section two asked respondents to specify their favorite genuine luxury brand(s), and then measured respondents' perception of that brand(s) (Mingyuan, 2013). Section three measured attitudes of the respondents towards counterfeited luxury products, and caught a glimpse of perceived behavioral control, and intentions to purchase and use counterfeited goods (Mingyuan, 2013). Finally, the fourth section of the questionnaire was designed to collect basic demographic and behavioral information, involving age, gender, occupation, nationality, income, and ownership or non-ownership of the counterfeited goods (Mingyuan, 2013). The main research variables were measured by using a seven-point Likert scale. After analysing the results of the survey, a reliability analysis was carried out by computing Cronbach's Alpha. Given that all the items used in this research were adopted from previously established scales, Cronbach's Alpha scores were expected to be above 0.70. The table below represents the alpha scores obtained through this research for each scale,



involving (1) brand loyalty, (2) perceived quality, (3) brand awareness, (4) price consciousness, (5) attitudes towards counterfeit luxury-brand goods, (6) subjective norm, (7) perceived behavioral control, and (8) consumption of counterfeit luxury-branded goods.

Table 1: Cronbach's Alpha of Measurement Scale Items

Scale measure	No. of items	Cronbach's alpha
<b>Brand loyalty</b>	<b>3</b>	<b>0.850</b>
<b>Perceived quality</b>	<b>2</b>	<b>0.688</b>
<b>Brand awareness</b>	<b>5</b>	<b>0.911</b>
<b>Price consciousness</b>	<b>7</b>	<b>0.865</b>
<b>Attitudes towards counterfeit luxury goods</b>	<b>10</b>	<b>0.821</b>
<b>Subjective norm</b>	<b>8</b>	<b>0.893</b>
<b>Perceived behavioural control</b>	<b>5</b>	<b>0.852</b>
<b>Consumption of counterfeit luxury goods</b>	<b>4</b>	<b>0.931</b>

Hence, as shown in the table above, the Cronbach's Alpha scores for eight variables observed in this research were good, which implies there has been an internal consistency in the survey.

Table 2: Respondents' Demographics

	<b>N (percentage)</b>	<b>Counterfeit ownership</b>		
		<b>Yes (n=59; 29,5%)</b>	<b>No (n=132; 66%)</b>	<b>Prefer not to say (n=9; 4,5%)</b>
<b>Gender</b>				
Male	<b>49 (24,5%)</b>	<b>13 (22,03%)</b>	<b>33 (25%)</b>	<b>3</b>
Female	<b>151 (75,5%)</b>	<b>46 (77,96%)</b>	<b>105 (79,54%)</b>	<b>6</b>
<b>Age</b>				
18-25	<b>55 (27,5%)</b>	<b>7 (11,86%)</b>	<b>48 (36,36%)</b>	<b>2</b>
26-35	<b>53 (26,5%)</b>	<b>18 (30,50%)</b>	<b>35 (26,51%)</b>	<b>2</b>
36-45	<b>47 (23,5%)</b>	<b>8 (13,55%)</b>	<b>39 (29,54%)</b>	<b>3</b>
46-55	<b>45 (22,5)</b>	<b>17 (28,81%)</b>	<b>28 (21,21%)</b>	<b>2</b>
<b>Monthly income (BAM)<sup>15</sup></b>				
Below 1000 BAM	<b>41 (20,5%)</b>	<b>18 (30,50%)</b>	<b>19 (14,39%)</b>	<b>4</b>
1000 - 1500 BAM	<b>20 (10%)</b>	<b>6 (10,16%)</b>	<b>10 (7,57%)</b>	<b>4</b>
1500 - 2000 BAM	<b>3 (1,5%)</b>	<b>1 (1,69%)</b>	<b>1 (0,75%)</b>	<b>1</b>
Above 2000 BAM	<b>2 (1%)</b>	<b>1 (1,69%)</b>	<b>1 (0,75%)</b>	<b>0</b>

The table above shows the basic demographic information about the respondents, with regard to ownership of the counterfeited products. Among 200 respondents who took part in this survey, 49 (24,5%) are males and 151 (75,5%) are females. Additionally, majority of the

<sup>15</sup> BAM = Bosnian Convertible Mark (1.00 BAM = 0.569372 USD)

respondents (27,5%) are between 18 and 25 years old, followed by the 26-35 age group, which encompasses 26,5% of the respondents, the 36-45 age group, which accounts for 23,5%, and finally, the smallest age group of respondents involving total 45 respondents (22,5%). Moreover, among the respondents who are employed, the majority (20,5%) have a monthly income of below 1000 BAM, whereas 10% reported that their monthly income is anywhere between 1000 and 1500 BAM; 1, 5% stated that their monthly income is between 1500 and 2000 BAM, and finally, mere 2 respondents (1%) noted that their monthly income exceeds 2000 BAM.

#### 4. Analysis and Discussion

As far as counterfeit goods ownership is concerned, 59 respondents (29,5%) stated that they own a certain counterfeit luxury-branded product. Of those 59 respondents, 13 (22%) are men, and 46 (77%) are women, which indicates that Bosnian female consumers are more prone to owning a counterfeit luxury-branded good. Of those whose monthly income is below 1000 BAM, 18 (30,50%) own a counterfeited good, and 19 (14,39%) do not. Moreover, of those whose monthly income is between 1000 and 1500 BAM, 6 (10,16%) own a counterfeited good, whereas 10 (7,57%) do not. Additionally, among 3 respondents whose monthly income ranges between 1500 and 2000 BAM, 1 respondent owns a counterfeit luxury-branded product, and the other does not. Finally, given that only two respondents stated that their monthly income exceeds 2000 BAM, only 1 of them owns a counterfeit, whereas the other one does not. These information reveal a rather interesting trend – the higher the monthly income of Bosnian consumers, the lesser their need for owning a counterfeited product.

Furthermore, the most owned counterfeited luxury goods are (1) sunglasses (31,5%), (2) purses (25,5%), (3) clothes (20%). In addition, the majority of respondents (43,37%) strongly disagreed with the statement *I rarely purchase new fashion trends if I am not sure my friends will like it*. The next statement, *It is of extreme importance to me that my friends like the brands that I purchase*, received somewhat different answers – the majority of the respondents (33,61%) strongly disagreed and the mere 0,84% strongly agreed. Hence, these data show that Bosnian consumers are not overly concerned with how the others perceive them, and are they going to be accepted by a certain social group. As far as ethical and moral concern go, 103 respondents (52%) stated that they strongly disagree with the following statement: *Counterfeited luxury-branded products are not illegal*; whereas 10,5% strongly agreed. Furthermore, 56,82 % of respondents strongly disagree with the statement: *Counterfeited luxury-branded products do not harm the intellectual property of genuine luxury brand manufacturers*.

Two research questions that are being analyzed in this paper are as following:

**RQ1:** Consumers in Bosnia and Herzegovina purchase counterfeit luxury goods in order to redefine their social status.

**RQ2:** Consumers in Bosnia and Herzegovina perceive counterfeit luxury goods consumption as ethical.

As far as the first research question is concerned, the data presented in the text above show that the majority of respondents (43,37%) strongly disagree with the statements which are related to consumption of the latest fashion styles in order to belong to a certain social group. The critical value in analyzing this research question is 25%, that is, if less than 25% of the respondents stated that they strongly disagree with the posed statement, the research question would be confirmed. Therefore, we did not confirm RQ1.

This was a rather interesting revelation, especially given the need for one to be socially accepted and to feel as if he or she belongs to a certain group of people. The research showed that the majority of the respondents do not purchase new fashion trends only if they are sure that their friends will like it. In addition, the research data revealed that Bosnian consumers do not think it is important for their friends to like the brands they purchase. Hence, one may conclude that the majority of the respondents are not concerned with creating nor redefining their status within social community with visually exhibiting possession of the luxury goods.

As far as the second research question is concerned, the research data indicated that 52% of the respondents strongly disagreed with the statement related to no ethical or legal concerns in counterfeit luxury goods consumption. These data reveal that Bosnian consumers are somewhat aware of the fact that manufacture and purchase of counterfeited luxury products is illegal, and perhaps even more importantly, unethical. The critical value in testing this research question is 20%, that is, if merely 20% of the participants of the survey stated that they disagreed with the aforementioned statements, the research question about consumers' belief in BH that counterfeits' consumption is ethical would be confirmed. Hence, in accordance with the results of the survey, the RQ2 is not confirmed.

## 5. Conclusion

As noted several times in this paper, counterfeiting is an ever-increasing phenomenon which is being researched by many marketing experts, and yet, not much data is available to truly understand the reasoning behind the growing consumption of such goods, especially in Asian countries. As far as Bosnian consumers are concerned, it was rather interesting to find out that the majority of the respondents who took part in this survey are aware of the ethical and legal concern behind the manufacture and consumption of counterfeited luxury-branded products. Moreover, majority of the respondents stating that they do not own a counterfeited product was an even more interesting revelation of this research. Furthermore, this research showed that the consumers with higher monthly income are less subject to owning a counterfeit luxury good.

Several limitations to this paper are dilemmas identified in the research process using the online survey, and the methodology used to analyze responses. Moreover, using a broader sample, or exclusively Generation Y might revile more significant findings.

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# CATEGORY CAPTAINS IN BOSNIA AND HERZEGOVINA

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## **Abstract**

Category Management is a result of pure logic as well as a system which is very simple and could almost function all on its own. Merchandise needs to be ordered regularly according to its demand and stocked in a way that is the most profitable for the retailer. In order to organize thousands of SKUs, hundreds of stores in the chain and to achieve the set business strategy, enormous effort has to be engaged both by manufacturer and retailer, and all has to be beneficial for the final customer.

Just one of the many strategies used in category management is category captain, or someone who advises the retailer on the best way to price, display and promote products of the captain (manufacturer) itself, but also those of various competitors who sell their products in the retail chain. This strategy is the main focus of this paper, as well as the exploratory research done on the topic of usage of this particular strategy in the market of Bosnia and Herzegovina. The main objectives of the research were to find out the level of awareness on this strategy as well as to confirm whether it is used at the market in question.

Interviews with experts in the retail and international FMCG manufacturers were conducted and the conclusion is that category captainship is very useful and beneficial for all parties involved and category managing has led to profit increase. On a more specified note, category captainship is applied in Bosnia and Herzegovina on a very rudimentary scale, and the market is not ready for broader justification of this concept. Nevertheless, international companies are insisting on the managing the category, therefore it is expected that this practice will significantly improve over the short period of time. Main limitations of this research was its exploratory nature. For further development of the topic, authors suggest quantitative approach, including larger number of respondents, specifically domestic companies, and research among consumer for insight in the benefits of category management for them.

**Keywords:** category management, category captain, retailers in Bosnia and Herzegovina, FMCG sector

**JEL classification:** M3

## **Introduction**

The trend in retail is the increasing power and sophistication of the retailer. Many retailers have grown into giants in their own right. Whereas traditional retailers may have relied on the manufacturer for information and expertise, contemporary retailers are often in a position to dictate marketing policy to the manufacture (Zenor, 1994). Category management involves the allocation of resources within sets of complementary and/or competing brands to maximize planned outcomes (e.g., Basuroy, Mantrala, and Walters 2001; Morgan, Kaleka, and Gooner 2007) and involves the analysis of category-level data, setting goals for category performance, and the formulation and execution of plans to maximize category-level results (e.g., Desrochers, Gundlach, and Foer 2003; Dupre and Gruen 2004). The question is, should retailers, suppliers and buyers benefit if they designate a “category captain” supplier to manage the category (including rivals’ brands) for them (e.g., Aastrup, Grant, and Bjerre 2007; Gooner, Morgan and Perreault, 2011).

Scout and Hawkins (2011) defined a category captain as someone who advises the retailer on the best way to price, display and promote products of the captain (manufacturer) itself, but also those of various competitors who sell their products in the retail chain. This strategy is the main focus of this paper, as well as the exploratory research done on the topic of usage of this particular strategy in the market of Bosnia and Herzegovina. The main objectives of this research were to find out the level of awareness on this strategy as well as to confirm whether it is used at the market in question.

## **Literature review**

### **2.1. Who is Category Captain?**

Karolefski and Heller (2006) explained that in the early 1990s when category management first started to expand, retailers had their share of issues regarding each category. Manufacturers saw this as an opportunity to push their products and insure their market places. They started each on their own to create plans for the categories, with focus on their products, bringing the retailer to the position where he had to listen to someone because he himself had no time to spend on each category in great detail. After some time, the brilliance of this idea finally came to light. Why wouldn’t the manufacturers arrange the category? They had the knowledge regarding the customers, their preferences, different subgroups, market and so on. “The rule is: category first, brand second” (Karolefski and Heller, 2006).

Category management association (2016) explains how first category captainship took place, and the effect which its success had on the industry. Brian Harris, who is credited with coining the phrase category management, arranged the first industry-sponsored category captainship pilot at the US retailer called Giant. The pilot was carried out in 1994, and category captains used in the trial were Coca-Cola and Procter & Gamble. In the categories in which captainship was introduced, Giant reclaimed market share that had been taken by the Wal-Mart in previous years. What retailers eventually decided upon was to choose one manufacturer to become the category captain, the trusted partner. It was expected from the manufacturer to work on behalf of the retailer and insure that the category is profitable and overall successful. When it is said “category captain”, it sounds like that is a job position, a person in charge of the category, but what it is actually is a whole team within a company/manufacturer which as Kurtulus (2008) states, deals with recommendations about which brands to stock, where to locate each brand on

the shelf, how to display them, how much space to allocate to each brand, which new brands to include (and which old brands to exclude), and how to price products in each category.

Madaan (2009) explains that the expertise which manufacturer has in merchandise assortment, branding, pricing, promotion, market trends etc. combined with the knowledge which retailer has regarding consumer data enable the manufacturer to play the role of the category captain. Done correctly, the process is about the category with individual brands supporting the achievement of the category objectives (Karolefski and Heller, 2006). They are team of analysts, space management, merchandising and category management experts dedicated to support retail partners in the maximization of the category. Their goal is to provide an objective view of the category and bring insights to the retailers that they may have otherwise overlooked. This is provided by using both qualitative and quantitative data to develop insights, trends, observations and analysis to grow the category.

Over the past years, McKee Foods has built thousands of planograms<sup>16</sup> to help retailers to maximize their sales and optimize their product mix in the category, provided quantitative data-based category analysis to help retailers understand how their category is performing both internally and compared to the rest of the market, provided retailer-specific analysis to objectively show category performance, worked with one chain to develop an Every Day Low Cost (EDLC) model that led to an overall 12% increase in year-over-year sales, shared industry trends with partner retailers to help them develop category strategies, developed targeted marketing programs to drive category sales and bring new customers into the category. The supplier's category management team provides retailers with near-future insights into the baked sweet goods category, such as the growth of demand for Hispanic-oriented products, the potential growth opportunities for domestic brands from acculturated Hispanic customers, the importance of variety and uniqueness and the importance and growth of millennial consumers. Meanwhile, McKee's shopper marketing objectives help retailers increase total category sales by targeting customers based on shopping patterns, past purchases, affinities and day part solutions. This type of sophistication earned McKee a 2015 Category Captains award.

## **2.2. Role of the Category Captain**

Category captain is manufacturer's representative who works at retailer's end in order to implement the concept of category management. The role itself is not something that is strictly defined, since it mostly depends on the contract between the manufacturer and retailer, but the best way to look at it, as Madaan (2009) explains, is to be aware of the two separate, but interconnected relationships with which category captain deals. First one is the manufacturer-retailer relationship and the second one is retailer-customer. For example, Kurtulus (2008) explains it through the example of planograms. Every category captain, no matter the contract makes the planogram for the store, and while preparing the planogram, he has to think about the customers: what would they like to see, what will be easier for them...but also it has to think about the manufacturers: what is the contract between that manufacturer and retailer, will they be willing to pay the price of that position.. This is classical example of these two relationships intertwining.

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<sup>16</sup>A visual plan showing the physical allocation of product display space within a product grouping used for standardizing merchandise presentation. (AMA, 2015)



As mentioned above, planograms are something done by the category captains, except this, Madaan (2009) lists these functions as well: proposing pricing, lowering the intensity of the competition between the retailers.

When we talk about category captain proposing the pricing of the products in his category, we have to mention that traditionally manufacturers provide their retailers with information about suggested prices and promotions for their products. As Levy and Weitz (2010) explain, this is due to the competitive market in which manufacturers want to keep the prices of their products stable, and not have cases where the overall price of the product as well as the product reputation in customer's eyes falls as a result of the bidding wars and price gaps between the retailers. Now, with category captain, we have one more expert on the market and the category offering his insight into the topic of pricing.

Madaan (2009) also mentions that using category captains helps lowering the intensity of competition between retailers and thus provides stability to the category marketplace. This can be done by one manufacturer who is functioning as a category captain for more retailers as well as group of category captains working together in order to control the category market in the most effective way. If the vast majority of retailers offered the same/similar products within same/similar pricing range it would avoid conflict situations and wastage of resources to fight competition. This does not mean that a retailer who decides to be a category leader needs to limit his category because of the competition, but it does mean that this would help him differentiate himself in this kind of category market.

It would not be fair to present the role of the category captain without dedicating a paragraph to the planograms. They are in the end, as Karolefski (2003) says the first and primary role of category captain. Planograms are the reason why the category captains were introduced in the first place. What is important, but not stressed enough is that the category does not mean substitute products, they are complement products as well and one category captain is in charge of creating planogram for all these SKUs. This means that captain's knowledge of the category market can greatly affect the sales in the category through the creation of the right planogram. Kurtulus (2003) explains the importance of this process through a great example: Carrefour, who is one of Europe's largest retailer's has engaged Colgate to manage its oral care category. Following Colgate's recommendations, Carrefour rearranged its merchandise displays, placing toothbrushes above toothpastes instead of next to each other, as it were previously. After making this simple change, the retailer reported sales increases ranging from 6% to 16% in this category.

### **2.3. Constraints and Benefits for Retailers**

As Gooner, et al. (2011) stated, retailers face difficult decisions involving how much time, effort, and other resources will they allocate to category management in each of the categories they sell and how to deal with category management resource shortfalls. Do category captains help? Do they take out of the retailer's already full plate, or they just present a potential catastrophe? The retailer has to trade off the value gained against costs which could occur with introducing the category captains. In the further text, the constraints and the benefits of this category management strategy for the retailer will be presented.

Fears which most retailers meet while considering this strategy is that the captain will be using this as an opportunity to push his products as well as creating problems with the rest of the manufacturers. Gooner, et al. (2011) explain that the category captain is no more likely to act opportunistically and actually provokes less—not more—damaging push-back response from other manufacturers. However, this does raise some obvious concerns, since as Carameli (2004)

observes, "Intuitively, the category captain relationship is like the fox guarding the henhouse... After all, the manufacturer is concerned primarily with its own brands and has a vested interest in seeing competing products fail... there is a fundamental difference between the interest of the manufacturer and those of the retailer it serves." In a typical arrangement, the retailer shares all relevant information, such as sales data, pricing, turnover and shelf placement of the brands with the category captain (Kurtulus, 2008). The category captain then analyzes category dynamics and trends and submits a detailed plan to the retailer. This is where the potential cost for the retailer can appear, and the moment which fears the retailer. Manufacturer now has the retailer's trust, information and space needed to push his product and weaken the category, or what one could call a potential catastrophe. This could be seen as the reason against the whole idea of the category captain, but it is actually a problem with an easy solution. What retailer needs to do is to take his time while choosing the category captain. When captain is decided upon, he needs to carefully review recommendations from captain and not to be blinded by the conclusions and opinions which are presented to him. Next step is to ensure that all competitors in that category (including, their own private-label house brands as well) are treated fairly. In all these steps, retailer can find great help in category validators, who are as previously explained in the text, manufacturers within the same category, which are not chosen to be category captain, but create a board of trustees who are in retailer's corner and monitor captain's decisions. Kurtulus (2008) adds that, some retailers try to keep flexibility by limiting captain's contracts to 1-2 years and by switching captains occasionally.

Another way to fight the problems which could be introduced together with this strategy is to have not one, but more category captains who could work together. Although it sounds as a solution to many previously mentioned problems, practice has proven it to be otherwise. Maybe the best explanation was provided by the Subramanian et al. (2009), who analyzed a setting where two manufacturers supply to a single retailer, and the retailer may engage one or both manufacturers to provide retail service. Even in the absence of competition for category captaincy, they found that the category captain may still provide a service that enhances demand for all brands within the selected category. Moreover, when there is competition for category captaincy, their study shows that not only does the category captain provide a higher level of service, but also the service is less biased towards its own brand. Therefore, the retailer may prefer the category captain arrangement over engaging both manufacturers jointly to provide service, but still proves that competition between the manufacturers for the place of the captain does make it all even better. Authors believe that this study may help explain why, despite concerns about the lack of category captain objectivity, this practice of relying on only one manufacturer has flourished.

Captain's deep knowledge of their categories can also yield higher sales. In order to bring this closer to us, Kurtulus (2008) provides us with following examples of Carrefour and Safeway rises in sales, which happened as a result of introducing category captains and following their lead. Carrefour, one of Europe's largest retailers, decided to engage Colgate to manage its oral care category and following Colgate's recommendations, rearranged its merchandise displays, placing toothbrushes above toothpastes instead of next to each other, like it was displayed until then. After making this simple change, the retailer reported sales increases in this category ranging from 6% to 16%. The other example is Safeway. They engaged Ross to be its captain for infant formula, baby care category. Ross' analysis determined that products in this category were under-merchandised; they contributed 34% of the dollar volume in the baby care category but received only 11% of the shelf space. After revising both the pricing and shelf space positioning

based on recommendations which they received by Ross, Safeway recorded sales growth of 9.2%.

However, there are potential downsides too. If category captain attempts to exclude competitors, they can violate antitrust laws. A number of cases, Professor Kurtulus (2008) notes, are under investigation, but one in particular changed the way in which this problem was looked at. In a suit brought by Conwood, the second largest maker of smokeless tobacco products, court levied a \$1.05 billion judgment against U.S. Tobacco. The court agreed with Conwood's claim that U.S. Tobacco had abused its position as category captain to exclude competition and provide an unfair advantage for its own brands. Retailers who, Kurtulus (2008) says, are generally not included in antitrust claims against their category captains can reduce the possibility of anticompetitive behavior by carefully reviewing captains' recommendations. But many small retailers, lacking the expertise to analyze recommendations, follow their captains blindly. Also it is important to mention, Kurtulus (2008) says, that anticompetitive behavior can take many forms. For example, simply placing a competitor's product in a less favorable location (above or below eye level can create a big advantage for a category captain.

Then, how do retailers optimize the advantages of category captainship without losing control? As explained above, it is all in keeping the control over it and making sure that fair play is constantly present. We can see that if well thought of, this could be great move for the retailer, but in order for it to be a great move retailer needs to take his time and do it the right way as well as constantly be involved in the process.

#### **2.4. Constraints and Benefits for Manufacturers**

In the case study of Wrigley, company producing chewing gums has invested more than \$7 million over the past decade in U.S.-based research and executed nearly 20 independent studies about in-store shopper dynamics (Progressive Grocer, 2011). In 2011, the company developed a new department that focuses solely on shopper insights. This partnership with the shopper team enables category management to bring insights and opportunities to life at retail. All of these information are collected and analyzed in order to sell not only their products, but their competitor products as well. Does this make sense if their main interest is to be profitable and their competitors have the same interest as well? How does the retailer and his interests fit into this story? This difference of interests has led researchers and industry analysts to question the rationale for using category captains and doubt its prospects. Still, Kurtulus (2008) states that it has emerged as the dominant strategy of category management for many retailers in the Europe as well as in the U.S., and has started making its way in emerging markets, such as Brazil and India. In further text, most common questions regarding category captainship and manufacturer's interest in it are posed and answered.

First question that is posed when thinking about this topic is: *What is in it for the manufacturer?* He is not allowed to push his products anymore, he will deal with some products which he does not produce himself, but are part of the category (example toothpaste and dental floss) and finally he is taking care of the costs regarding monitoring the category and making it profitable. Why? If you think about it, he is indirectly affecting his own success. Madaan (2009) puts it this way: If the category is successful, his market is increased as well. If the chain in which your product is sold is considered among buyers as the category leader, there is automatically bigger chance for your product to be sold, no matter which market share you hold, even the 5% is large if your market is large. On the other hand even 90% of market share could be insufficient if the category in which product is sold is not interesting for the buyers, making it as well irrelevant

and burden for the retailer. Anheuser-Busch is 2015 winner of a category captain award for beer/malt category, organized by the Convenience Store News. Best known for its fine American-style lagers, Budweiser and Bud Light, the company's beers lead numerous beer segments and combined hold 46.4 % share of the U.S. beer market. Budweiser and Bud Light Lime Lime-A-Rita were named Brands of the Year for the Beer and the Spirits, Malt Beverages and Wine categories. Durtschi (2015) provides us with the information of how this captain increased sales for the whole category and achieved the award for it. A-B advised its retailers to be innovators in merchandising and directly impact shoppers at the point-of-sale. Retailers were advised to merchandise shelves to create single price points on each shelf and then utilize a clear point-of-purchase sign, such as 2 for \$2, 2 for \$3, 2 for \$4, or 2 for \$5. The original price of a single product would be 10-15% more when purchased alone, which entices most consumers to purchase more. To achieve maximum benefits, the messaging needs to be clear and consistent. Each shelf should follow the same pricing, with parallel signs on each shelf. Implementing "2-for" price points can deliver up to a 10% increase in sales. Additionally, other benefits include reduced complexity, increased co-purchases, balanced promotions, and the ability to mix and match. Consistent "2-for" messaging also allows retailers to target the diverse behaviors of each type of shopper and positively impact beer sales. To assess the effectiveness of its "2-for" recommendation, Anheuser-Busch analyzed the efficacy in 30 convenience stores across one market with positive results. The participating stores who followed these recommendations recorded: Total beer dollar sales increase up 7.6%, out-of-stocks were reduced, flavored malt beverage segment showed a 21% improvement and Premium-plus segment showed a 13.2% gain.

Another also very interesting and logical question is: *How much authority does the category captain has, and what is the role of other manufacturers in all of this?* As it is explained by Karolefski and Heller (2006), the company which is believed to have resources and commitment to grow the category becomes the category captain, and takes the part of the responsibilities toward the retailer and other manufacturers as well. The category captain has to be well acquainted with the basic strategies which retailer uses, the goal which it wishes to achieve and to work in that direction. When we talk about the responsibilities which it has toward other manufacturers, they are secondary in regards to the responsibilities toward the retailer. The products chosen to be in the category, as well as any other decision have to primarily make the category as successful as it can be. Category captain cannot do any harm to any manufacturer. In order to make sure that the category captain is doing his job properly, the retailer has three, four manufacturers competing in the same category, who are monitoring the work of the category captain. They are as Chiplunkar (2011) states, called category validators or advisors. If the captain is doing a good job, the advisors just add something that they believe could help or was maybe a small oversight in the process.

Another part of the answer to this question is more in regards to the actual benefits and costs of the authority which captain has. Subramanian, Raju, Dhar and Wang (2010) concluded that category captainship benefits the retailer and the category captain, but disadvantages the remaining non-captain manufacturers. In their opinion, the non-captain manufacturer can only benefit from a restricted form of category captainship where the category captain is only given the authority to determine his own product's retail price. In contrast to this view, Kurtulus and Toktay (2011) believe that even with full pricing authority, there exist conditions where the non-captain manufacturers benefit from category captainship. One of these conditions is when the opportunity cost of shelf space is taken into account. As Kurtulus and Toktay (2011) explain, shelf space is scarce resource, which is becoming more and more valuable with each increase of the number of SKU and categories in the retail shops. Shelf-space scarcity creates not only

competition between the manufacturers, but competition between categories as well. This means that more profitable category has more shelf space thus manufacturers from that category have more shelf space. If we take opportunity cost of shelf space into account, like Kurtulus and Toktay (2011) encourage us to do, than we conclude that the increase in the profitability of the category from introducing category captainship can result in increase in the category shelf space and can create value for the non-captain manufacturers.

Even though increase in category shelf space could be interpreted as potential increase in revenues, there is mostly no other source of increase of this kind nor decrease of manufacturer expenses. Carameli (2004) notes that while a category captain devotes considerable resources to perform its role, it typically does not receive any direct compensation from the retailer. Rather, manufacturers are annually benchmarked based on their performance and top performers are recognized through industry awards.

## **Research**

The aim of this research is to offer an insight into the usage of category captain at the retail market in Bosnia and Herzegovina, and overall knowledge about this strategy. Major manufacturers/retailers were consulted in the form of interviews in order to get better insight into this issue. Hence this paper has its explorative nature, which is defined by AMA (2015) as a research design in which the major emphasis is on gaining ideas and insights, and is particularly helpful in breaking broad, vague problem statements into smaller, more precise sub-problem statements.

Semi-structured in-depth interviews were conducted with category management experts. An interview itself consisted of eight fixed and several additional questions through which detailed and thorough information about interviewee's opinion on the topic was gathered. The main requirement was that the person chosen to be an interviewee is an expert in category management, someone constantly involved in this topic. Moreover, experts were chosen from the biggest international FMCG companies present at BH market and leading regional retailers. The interviews were conducted over a period of one month and each interview lasted approximately 30- 60 minutes.

## **Discussion**

As it was previously stated in the text, the interview was comprised out of 8 fixed questions and the liberty of the interviewer to add some questions if it feels that it could improve the research. However, what is more important to mention is that these questions were divided into four groups. These groups represent the main research problems and the results will be presented based on them.

First group of questions was regarding the category captainship in general. All of the interviewees were familiar with the topic, and believed that this strategy can lead to improvement of sales and future benefit to all parties involved. One of the interviewees (E.S.) even explained to me that in our region terms category captain and category leader are considered to be synonyms, which is not the correct use of terms, since manufacturer could be a market/category leader but not a category captain for that retailer in particular, or any other for that matter.

The second group of questions dealt more with this strategy in BH. To what extent it is present and how it is manifested? Interviewees from manufacturers had similar conclusions:

- Our market is not ready for the full implementation of this strategy, it is used, but in small scales. For example: manufacturer has noticed that one of their products has low sales, however it was not only their brand with low sales, all of the products from that group were. What they did is, they prepared intensive marketing research and came up with the solution. The solution was offered to the retailers and some of them accepted the changes which were suggested by the manufacturer.
- International companies are the ones who are trying to create the connection between the retailers and manufacturers. They possess the experience and the know-hows which could improve the retailing and merchandising in our country. Interviewees strongly believe that we should allow big international companies to lead us, and create a line of new experts in this field, only problem is that by many international companies we are considered to be a small market for, so most of the work is done externally, and for the whole region, not each country for itself.
- In order to enhance the category captainship in our market, manufacturers and retailers have to start working together. The need to realize that they have common goal and that the easiest way to achieve it is together.

Most of the conclusions written above are shared with the representative of the retailers. They have also confirmed that the level of collaboration between the two sides is very low and the reason for that is mistrust. E.g. manufacturers are aiming to achieve deals with store managers, even though the retailer's person in charge declined the offer. Result of this mistrust is the system which this retailer has developed. As interviewees clarified, in their stores manufacturer only stocks the products. Everything else, from pricing, marketing, sales management is done by the retailer's employees. Account managers, or sales improvers are in constant contact with retailer's category departments and they are of great importance for the manufacturers, since every additional person who takes care of the category, makes manufacturers' job easier. However the only liberty which sales improver has is to suggest to the retailer which positions on the shelf would be appropriate for him, and what he believes would be good for his product(s), they are not allowed to discuss other brands nor the category as a whole. Retailers offer them sales data and this is important due to the fact that this is the only way how manufacturers can approach to the real data. Manufacturers usually have incomplete or insufficient data, e.g. manufacturer sells 500 of products to retailer. For him, these are sold products, but what he does not know that 10 of these products were damaged in transport, 20 of them were stolen, which leads us to the real number of sold products being 470.

The last group of questions was focused on the future, and how to motivate companies to implement this strategy, how to educate future workers who might be suitable for these positions and so on. Manufacturer representatives strongly believe that the greatest motivation to everyone involved should be higher sales, which could be achieved only with collaboration. One interviewee (O.B.) said: "Retailers are ought to find partners in their suppliers, because for them categories are problematic. They have to think about where to put a product, how to determine the price, what to include in their offering...and that is just the job required for one category, with many more waiting to have the same work done. What category captain, meaning supplier, can do here is to help the retailer to improve the category, follow the world trends in the industry and lead the category in the right direction." Furthermore the representatives of the retailers believes that there is a great potential for this strategy and that the manufacturers should take the lead on it. As explained, the retailer sees itself as a middle man between the manufacturer and the end-

customer. This leads to the conclusion that in the retailers' mind, manufacturer needs to seriously investigate this strategy, invests in it, but first and foremost remove all the obstacles which could potentially endanger their partnership. Mistrust between suppliers/manufacturers and the retailers has to be addressed first.

As for the future of the category captains, one of the questions was in direction of personal characteristics that captain should possess. All respondents have agreed on this issue. There is no doubt that category management is very specific. There are no two categories of the same kind, which means that every category is specific and therefore needs to be dealt with on its own. This is the main reason why they believe that in this case practice makes perfect. Category management, as they put it, is not something that can be learnt in theory, you have to learn the process step by step while working in the system with a lot of dedication and willingness to learn and improve yourself. To conclude, they see category captains as the best ones among them, someone who lives and breathes category management. In addition to this, they strongly believe that the best place to learn and improve yourself in order to become an expert is in international companies which possess the know-how needed.

### **Conclusion**

Category captainship appears to be very useful and beneficial for all parties involved, as has been agreed upon by all interviewed and previously mentioned experts in the field as well as all experts globally – and for good reason, in the numerous examples stated in the text, category managing has led to great increases in profit. On a more specified note, Bosnia and Herzegovina seems to apply this strategic managing of categories only on a very small scale and does not appear to be ready for a broader application. The only ones attempting to change that are the international companies already experienced in the matters of category captains, and the only way we might advance in the mentioned field is by using that experience and know-how which international companies possess and through cooperation of manufacturers and retailers.

Main limitations of this research were insufficient primary data on the topic, as well as the small number of interviews included in the research. This being said, using a greater number of interviews and focusing more on domestic companies as well could provide greater insight.

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# **,SOCIAL AND FINANCIAL EFFICIENCY OF MICROFINANCE INSTITUTIONS IN BOSNIA: A DATA ENVELOPMENT ANALYSIS APPLICATION**

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## **Abstract**

**Aim:** Microfinance institutions (MFIs) because of their social and for-profit nature are becoming institutions of special interest in the financial world. It is important to mention that Microfinancial institutions from B&H are among the most successful ones in the world so this study will contribute both in practical and theoretical manner. Main aim of this paper is to analyze levels of efficiency of MFIs in B&H and to show whether there is a space to make some improvements. Additional aims of this research are to show differences in efficiency between large and small MFIs, those located in FB&H and RS and to determine efficiency trends in the observed period.

**Methodology and data:** In this paper we try to measure the MFIs efficiency in relation to financial and social outputs by applying data envelopment analysis. Unfortunately there are very limited number of studies in the area of MFIs efficiency especially when it is case of applying DEA method. In majority of studies analysis were done using Ratio analysis. This fact is the main motivation for writing this paper. Data used are collected from the reports published by the Banking agencies of FB&H and RS, Association of Microfinance institutions in B&H and from official websites of MFIs.

**Results:** This paper finds low level of financial and social efficiency. This means that MFIs are significantly wasting their resources and not producing satisfying levels of outputs. Also paper finds that MFIs located in FB&H have higher level of efficiency in comparison to those located in RS.

**Keywords:** *DEA, Microfinance institutions, Microcredit, Efficiency, Bosnia and Herzegovina*

**JEL classification:** C14, G29, L31

# THE ANALYSIS OF RELATIONSHIPS BETWEEN ENVIRONMENTAL TURBULENCE, INNOVATION AND FIRMS' PERFORMANCE

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## **Abstract**

Because customers need and expectations continually evolve over time, delivering improved product and services requires ongoing responsiveness to market needs and innovation efforts. This study draws on dynamic capability view to develop a conceptual framework to clarify the nature of the effect of firm's product and process innovation and environmental turbulence on business performance.

The purpose of this study is to examine the relationship between firm's innovation and business performances as well as to analyse the impact of environmental turbulence on innovation and firm's performance. Structural equation modelling was employed to examine the proposed model. The results show that both product and process innovation appear to be linked to firms' performance. Also, environmental turbulence is positively and significantly related to product and process innovation. Furthermore, results indicate that the relationship between turbulence and business performance is negative, but insignificant.

The study provides some advances in the field of innovation by offering empirical analysis that confirm the importance of product and process innovation for business performance. These findings revealed the importance of environmental turbulences in enhancing innovation in firms. In other words, rapid technology advances and changes in customers' expectations increase the need for firms to continuously adapt, improve, and innovate. At the other side, innovation represents the most effective means to deal with the turbulence in external environments.

**Keywords:** *innovation, firms' performance, technological turbulence, SEM, transition economy*

**JEL classification:** D81

## **Introduction**

Modern business environment is characterized with constant changes and dynamic turbulence (Menguc & Auh 2006). Given the global competition and constant business pressures in modern

business environments, innovation is crucial to a firm's competitive advantage and business performance (Chen et al. 2009). Because customers need and expectations continually evolve over time, delivering improved product and services requires ongoing responsiveness to market needs and innovation efforts. Bearing this in mind, our study draws on dynamic capability view to develop a conceptual framework to clarify the nature of the effect of firm's product and process innovation and environmental turbulence on business performance.

The purpose of this study is to examine the relationship between firm's innovation and business performances as well as to analyse the impact of environmental turbulence on innovation and firm's performance. Thus, the objective of this research is to analyze the causal relations between these constructs considering the following research questions at the firm level:

RQ1: How does product innovation affect firm's business performance? RQ2:

How does process innovation affect firm's business performance?

RQ3: How does environmental turbulence affect firm's business performance? RQ4:

How does environmental turbulence affect product innovation?

RQ5: How does environmental turbulence affect process innovation?

## **Literature Review**

### **Product and Process Innovation**

Product innovations involve the introduction of new products that the organization produces, sells or gives away (Knight, 1967). Degree of the product innovation is determined by its newness to the firm that developed the product or to the industry that the firm operates in and to the world (Goktan & Miles 2011). Process innovation refers to performing a work activity in a new, innovative way (Papinniemi, 1999). Goktan & Miles, 2011 define the process as a specific, structured ordering of work activities designed to produce specific outputs.

### **Environmental Turbulence**

Environmental turbulence refers to the rate and unpredictability of changes in a firm's external environment (Tsai & Yang, 2014; Danneels & Sethi, 2011). Tsai & Yang (2014) state that technological and market changes in an environment may generate opportunities for and constraints on innovation. Also, competitive intensity is the important environmental issue for the firms' business (Tsai et al. 2008). Thus, environmental turbulence refers to:

1. Market turbulence - rate of change in customer preferences for products and services (Tsai & Yang, 2013).
2. Technological turbulence - rate of technological change (Huang & Tsai 2014).
3. Competitive intensity - the degree of competition in an industry (Tsai & Yang, 2013).

### **Theoretical Model and Hypotheses**

The dynamic capability view (DCV) suggests that a firm can achieve superior performance if it possesses capabilities to integrate, build, and renew internal and external resources and knowledge (Yu et al. 2013). One of the most recognized dynamic capabilities in the modern business is innovativeness. Innovative firms welcome new ideas, value change, encourage risk-taking, and stimulate novel approaches to addressing market needs (Augusto & Coelho, 2009).

This type of firms are more capable of developing new products. Also, managers at such firms tend to devise new ways of resolving business problems (Tsai & Yang, 2014). Because highly innovative firms value change, they are more likely to continually improve their operations, production methods, and product development processes (Tsai & Yang, 2014). As a results of their improvement, these firms may achieve higher performance by enhancing their operational efficiency and effectiveness. Thus, this study presents the following hypothesis:

*H1a. Product innovation is positively related to firm's business performance. H1b.*

*Process innovation is positively related to firm's business performance.*

While most researchers recommend moderate role of environmental turbulence between innovation and business performance (Tsai & Yang, 2013), Hamad (2016) suggests a direct causal relation between environmental turbulence and firms' business performance. Her results show a significant impact of environmental turbulence on nonfinancial business performance. Hence, we suggest hypothesis:

*H2: Environmental turbulence is positively related to firm's business performance.*

Also, there are some scholars who suggest direct impact of environmental turbulence on innovation. So, Huang & Tsai (2014) showed in their study that technological turbulence affects new product performance through product innovativeness and that market intensity has a direct effect on new product performance. Hence, we suggest following hypothesis:

*H3a: Environmental turbulence is positively related to firm's product innovation. H3b:*

*Environmental turbulence is positively related to firm's process innovation.*

## **Methodology**

### **Sample**

Empirical analysis of this study is based on primary data collected through a survey conducted among firms in B&H. The sample included firms from micro to large and from all industries defined by NACE. The questionnaire consisted of measurement indicators for the product innovation, process innovation, environmental turbulence and business performance as well as firms' demographics. LimeSurvey software is used for data collection. A total of 444 valid questionnaires were analyzed.

### **Measures**

Twenty-two indicators were developed based on the literature review. These indicators presented product innovation, process innovation, three dimensions of environmental turbulence and business performance using seven-point Likert scale ranging from 1 – strongly disagree to 7 – strongly agree. Items are adopted from those authors who used wording that was easier to translate, taking into account the definition of the construct that should be presented by the indicator.

**Product innovation (PROD) and process innovation (PROC).** The measurement model for PROD and PROC were created using indicators proposed by Ellonen, Blomqvist, & Puumalainen (2008). Both of the first-order reflective measurement models consisted of 4 indicators.

**Environmental turbulence (ET).** This second order reflective measurement model is adopted from Kmieciak, Michna, & Meczynska (2012) and it consisted of 10 items.

**Firms' business performance (BP).** This first-order reflective measurement model is adopted from Chen & Huang (2009) and it consisted of 4 items.

## Results and Discussion

We conducted a confirmatory factor analysis (CFA) to estimate the measurement properties of constructs in LISREL 8.8. Table 1 reveals the results of CFAs. Table 2 shows goodness of fit indices for measurement models. The measurement models provided a good fit to the data with all GOF indices above/below threshold. We used CR and AVE measures to confirm the convergent validity and the discriminant validity of the scales.

Table 1

Results of reliability and validity tests for measurement models

	<i>Dimensions</i>	<i>CR</i>	<i>AVE</i>	<i>α</i>			
<b>ET</b>	<b>Market turbulence (MT)</b>	0,758	0,525		<b>0,725</b>		
	<b>Technological turbulence (TT)</b>	0,846	0,647	0,810	0,539	<b>0,805</b>	
<b>PROD</b>	<b>Competition intensity (CT)</b>	0,783	0,476		0,412	0,309	<b>0,690</b>
	<b>Product innovation (PROD)</b>	0,899	0,700	0,874			
<b>PROC</b>	<b>Process innovation (PROC)</b>	0,832	0,559	0,811			
<b>BP</b>	<b>Firm's business performance (BP)</b>	0,889	0,671	0,885			

Source: Authors' illustration

Table 2

CFA results for measurement models

<i>Measures</i>	<i>Items</i>	$\chi^2/df$	<i>RMSEA</i>	<i>SRMR</i>	<i>CFI</i>	<i>NFI</i>
Environmental turbulence (ET)	10	2.57	0.0596	0.0503	0.979	0.966
Product innovation (PROD)	4	3.30	0.721	0.0107	0.998	0.997
Process innovation (PROC)	4	2.59	0.060	0.0188	0.996	0.994
Firm's business performance (BP)	4	2.49	0.058	0.0155	0.997	0.996

Source: Authors' illustration

After confirming that reliability and validity of measurement models is achieved, structural model proposed in this study is analyzed by using Structural Equation Modeling (SEM) technique and maximum likelihood (ML) estimation method. Results are reported in the Table 3.

Table 3.

Hypothesis testing and GOF indices for conceptual structural model

<i>Hypotheses</i>	<i>Unstandardized estimates</i>	<i>Standardized estimates</i>	<i>t – value</i>	<i>Result</i>
<b>H1a: PROD → BP</b>	0.250	0.273***	4.187	Accepted
<b>H1b: PROC → BP</b>	0.484	0.349***	4.971	Accepted
<b>H2: ET → BP</b>	-0.158	-0.101	-1.601	Rejected

<i>H3a: ET → PROD</i>	0.677	0.398***	5.856	Accepted
<i>H3b: ET → PROC</i>	0.455	0.414***	5.761	Accepted

\*\*\* $p < 0.01$ ; \*\* $p < 0.05$ ; \* $p < 0.1$

Source: Authors' illustration

We checked model overall fit using GOF indices. Then, hypothesis are tested and results are analyzed and discussed in the light of the theoretical foundation. The model demonstrates an acceptable fit. All indices are at acceptable levels and above/below threshold values (Hair et al., 2010).

Hypothesis testing revealed acceptance of four hypothesis while one is rejected. The results indicate positive and significant relation between PROD and BP (H1a:  $\beta=0.250$ ,  $t=4.187$ ,  $p < 0.01$ ) and PROC and BP (H1b:  $\beta=0.484$ ,  $t=4.971$ ,  $p < 0.01$ ). This suggests that product and process innovation positively influence company's business performance. Also, the results support the hypothesis about positive relations between ET and PROD (H3a:  $\beta=0.677$ ,  $t=5.856$ ,  $p < 0.01$ ) and ET and PROC (H3b:  $\beta=0.455$ ,  $t=5.761$ ,  $p < 0.01$ ). Regarding hypothesis 2, the results show that there is negative insignificant relationship between ET and BP. Our findings provide empirical support for the proposed structural model about causal relations between PROD, PROC, ET and BP.

## Conclusion

This study developed and tested a conceptual model for the joint effects of product innovation, process innovation and environmental turbulence on firm's business performance as well as relation between environmental turbulence and product and process innovation. The results of SEM analysis were consistent with four out of five hypotheses. Product and process innovation are justifiable constructs in predicting business performance. At the other side, environmental turbulence predicts both types of innovation.

By developing and testing the structural model, a detailed understanding has been developed illustrating how environmental turbulence, i.e. market and technological turbulence as well as competitive intensity may directly or indirectly influence these outcome variables.

The primary lack of this research is the heterogeneity of the sample. Future studies could analyze and compare the proposed model across multiple sectors and industries.

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# **PANEL ANALYSIS OF RELATIONSHIP BETWEEN FINANCIAL DEVELOPMENT AND ECONOMIC GROWTH**

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## **Abstract**

The aim of this paper is to provide empirical evidence on the relationship between financial development and economic growth and to examine whether there are differences in the size of the impact of financial development on economic growth in countries with different income levels. Furthermore, the impact of additional determinants of economic growth is analyzed. Research problem is lack of empirical evidence on the relationship between financial development and economic growth when financial development is measured by proxy variables on banks and stock markets; low treatment of potential endogeneity problem as well as lack of empirical evidence on the differences in the size of the impact of financial development on economic growth in countries with different income levels. Balanced panel data for 94 countries during the period between 1992 and 2011 are used in this analysis. Five-year averaged data are used to reduce the impact of business cycles and measurement errors. Six models are estimated by using panel fixed and random effects models. However, the analysis indicates that distribution of error terms deviates from normal; the assumption of homoscedasticity is rejected and the presence of endogenous regressor is reported. Therefore, in order to overcome these issues, the dynamic one-step system GMM estimator is used to estimate models. The obtained results indicate that banking sector and stock market development have statistically significant positive impact on economic growth. It has been shown that the impact of banking sector development strongly contributes to economic growth compared to stock market development. Besides, the results show that education has no statistically significant impact on economic growth while inflation, government spending and trade openness have a negative impact. The sixth model indicates that on average financial development strongly impacts economic growth in high and middle-income countries compared to low-income countries, and that the strongest impact is obtained for high-income countries. The results of this paper may motivate policy makers to foster the financial development since it contributes to economic growth. Since financial development contributes to



economic growth in countries with different income levels, there is a need to foster its development in low-income countries as well.

**Keywords:** *economic growth, financial development, generalized method of moments, panel analysis*

**JEL classification:** C23, G22, E44

## 1. Introduction

The relationship between financial development and economic growth has been the subject of many empirical studies in recent years. Inoubli and Khallouli (2011) point out that the role of financial development as a stimulator of economic growth was recognized in 1912. The first author to deal with this issue is Schumpeter (1912). This paper emphasizes the role of banks in stimulating economic growth. It is pointed out that lending, as the main function of banks, is the main economic growth driving factor. Schumpeter (1912) as well as studies published later dealing with the relationship between financial development and economic growth are merely concerned with banks. However, studies on the relationship between other financial institutions and economic growth are few and are weak.

Economic growth is defined as an increase in the capacity of an economy to produce goods and services and the improvement in life conditions, compared from one period of time to another (Plosser et al. 1979). Levine (1999) defines financial development as: the policies, factors, and the institutions that lead to the efficient intermediation and effective financial markets. Financial development occurs when financial instruments, markets and intermediaries ameliorate – though do not necessarily eliminate – the effects of information, enforcement, and transactions costs and therefore do a correspondingly better job at providing financial functions (Levine 2005).

The role of financial intermediaries is to prevent the asymmetry of information between lender and borrower, to reduce transaction costs, to monitor managers and provide financial resources in an uncertain economic environment (Dudian and Popa 2013). If financial intermediaries fail to fulfill aforementioned roles, moral hazard, non-performing loans and inefficient allocation of resources are likely to occur.

The aim of this paper is to empirically test the relationship between financial development and economic growth and to examine whether there are differences in the size of the impact of financial development on economic growth in countries with different income levels. Two research questions are defined as follows: research question 1: whether financial development stimulates economic growth and research question 2: whether there are differences in the size of the impact of financial development on economic growth in countries with different income levels. In addition, the impact of additional determinants of economic growth is analyzed.

This paper fills the gap in up-to-date literature in at least four ways. The empirical part uses panel data regression models to analyze the relationship between life insurance and economic growth that provide more reliable picture of this relationship comparing to up-to-date studies due to: (i) testing the existence of endogenous regressors, (ii) using the system dynamic panel estimator that is considered appropriate if autocorrelation, heteroscedasticity or endogeneity problems are present, (iii) controlling the influence of additional determinants of economic growth and (iv)

analyzing differences in the size of the impact of financial development on economic growth in countries with different income levels.

The analysis includes 94 countries (Appendix 1) during the period between 1992 and 2011. Balanced panel data are used. Panel models are estimated using static fixed (FE) and random (RE) effects estimators and dynamic one-stage system GMM estimator. Economic, statistical and econometric criteria are also analyzed (Jovicic 2010).

The paper is organized as follows: *Literature review* section summarizes the results of up-to-date empirical researches. The theoretical part provides theoretical overview of the relationship between financial development and economic growth. *Methodology, data and model specification* provides the explanation of variables, methodology and estimated models. Software Stata 12 and 13 are used to estimate models. *Results of research* part presents descriptive statistics, results of six estimated models together with the test of economic, statistical and econometric criteria. The paper ends with concluding remarks and references.

## **2. Literature review**

The relationship between financial development and economic growth in the case of African and OECD countries is analyzed by Yu and Hassan (2007). 177 countries are observed in the period between 1960 and 2005. They use five-year averaged panel data in order to reduce the impact of business cycles. The dependent variable is GDP growth (proxy variable of economic growth). Financial development proxies are used as independent variables. Those are: domestic credit provided by the banking sector as a percentage of GDP, domestic credit to the private sector as a percentage of GDP, M3 as a percentage of GDP, domestic savings as a percentage of GDP and trade openness. The results obtained by fixed effects model indicate positive relationship between financial development and economic growth in OECD countries. However, negative relationship is reported for African countries.

Rachdi and Mbarek (2011) empirically analyze the relationship between financial development and economic growth for 6 OECD and 4 MENA countries in the period 1990-2006. They use GMM model for panel data and VAR (vector autoregression). The dependent variable is real GDP per capita. Independent variables (proxies of financial development) are: domestic credit to the private sector as a percentage of GDP and the share of liquid liabilities in GDP. Control variables are: inflation and government spending. VAR model results indicate there is a long-term relationship between financial development and economic growth for both groups of countries. Results of GMM suggest positive relationship between economic growth and financial development.

Inoubli and Khallouli (2011) analyze the relationship between economic growth and financial development in the case of 6 MENA countries in the period 1981-2008. The dependent variable is real GDP per capita. Control variables are: the share of government spending in GDP, inflation and trade openness. Independent variables are: domestic credit to the private sector as a percentage of GDP, the share of liquid liabilities in GDP and deposits/total assets. Results indicate that financial development has a significant positive impact on economic growth. This effect occurs after the country achieves a certain level of financial development.

The impact of financial development on economic growth in the transition countries is analyzed by Djalilov and Piesse (2011). 27 countries are analyzed in the period 1992-2008. The dependent variable is the change in real GDP per capita. The independent variables are: EBRD financial development index, banking reform, the liberalization of interest rates, stock market and non-bank financial institutions development. Political instability is used as the dummy variable. OLS and two-stage OLS results indicate that the EBRD index has a negative impact on economic growth and other variables related to banking institutions have insignificant impact. Variables related to non-banking institutions have a positive impact on economic growth.

The analysis conducted in AL-Malkawi and Abdullah (2011) aims to explore the relationship between financial development and economic growth in the case of MENA countries in the period 1985-2005. 13 countries are analyzed using panel random and fixed effects models. The dependent variable is GDP per capita. Independent variables are: M2/GDP, domestic credit to the private sector as a percentage of GDP. Control variables are: inflation, trade openness, government spending and the initial income. Results indicate there is a positive relationship between financial development and economic growth.

Yilmazkuday (2011) examines the impact of: inflation, education, government spending, trade openness and income per capita on the relationship between financial development and economic growth. Five-year average panel data are used in order to reduce the impact of business cycles. 84 countries are analyzed in the period 1965-2004. The dependent variable is the growth of real GDP per capita. Proxy variables of financial development ( $M3/GDP$ ,  $(M3-M1)/GDP$ ) are used as independent. Two Stage Least Squares estimator indicates that high inflation and government spending eliminate the positive impact of financial development on economic growth.

The role of financial development (measured by credit to the private sector as a percentage of GDP,  $M3/GDP$  and financial system asset/GDP) in stimulating economic growth (measured by GDP per capita) is analyzed in Khadraoui and Smida (2012). Five-year average panel data are used for 70 countries in the period 1970-2009 to reduce the impact of business cycles. Control variables are: inflation, trade openness, government spending, education, civil freedom and political stability. The results obtained by the FE and GMM estimator indicate there is a positive relationship between financial development and economic growth.

The aim of Dudian and Popa (2013) is to empirically examine the relationship between financial development and economic growth. 8 countries are analyzed during the period 1996-2011. The dependent variable is the growth of real GDP. Independent variables are: credit to the private sector as a percentage of GDP, the difference between positive and negative interest rates and non-performing loans. Results obtained by the FE and RE models indicate that the increase in non-performing loans and interest rates negatively impact economic growth, while growth in credit to the private sector as a percentage of GDP has positive impact on economic growth.

Ariç (2014) analyzes the relationship between financial development and economic growth. 27 countries are observed in the period 2004-2012. The dependent variable is the growth rate of GDP per capita. Independent variables are: credit to the private sector as a percentage of GDP, the market capitalization of companies listed on the stock exchange and  $M2/GDP$ . The results obtained by the FE models indicate that all independent variables have a positive impact on economic growth.

Aforementioned papers report the positive impact of financial development on economic growth. However, results differ by observed countries/regions. It is also important to emphasize that Beck and Levine (2004) report positive impact of economic growth on financial development. Therefore, model specification problem (simultaneity bias) is likely to occur when analyzing the relationship between financial development and economic growth. In order to resolve this problem, Djalilov and Piesse (2011) and Yilmazkuday (2011) suggest two-stage OLS estimator. However, Beck and Levine (2004) argue that two-stage OLS does not solve the problem of endogenous regressors and suggest the use of one-stage system GMM estimators. This procedure is used in this paper.

Since the aforementioned papers do not pay close attention to the role of stock markets in promoting economic growth, the authors decided to analyze its role in this paper. In addition, the impact of financial development on economic growth is analyzed when financial proxy variables are both proxies of banks and stock markets. Therefore, this paper fills gaps in (Yu and Hassan 2007; Djalilov and Piesse 2011; AL-Malkawi and Abdullah 2011; Yilmazkuday 2011; Dudian and Popa 2013 and Arıç 2014) by: (i) testing the existence of endogenous regressor and (ii) resolving this problem by using panel system GMM estimator.

### **3. Theoretical overview of the relationship between financial development and economic growth**

Arıç (2014) suggests that financial development measured by domestic credit provided by the banking sector as a percentage of GDP and stock market proxy variable is an important determinant of economic growth. The reason is that when financial institutions estimate the rise in economy they lend more loans. Therefore real sector uses growth opportunities.

In order to show the impact of financial development on savings and investment decisions and hence on economic growth, Levine (2005) focuses on five broad functions provided by the financial system in emerging to ease information, enforcement, and transactions costs. In particular, financial systems: (i) Produce information ex ante about possible investments and allocate capital, (ii) Monitor investments and exert corporate governance after providing finance, (iii) Facilitate the trading, diversification, and management of risk, (iv) Mobilize and pool savings and (v) Ease the exchange of goods and services. The explanation of these functions is given below.

- (i) Before making investment decisions there are large costs associated with evaluating firms, managers, and market conditions. Individual savers may not have the ability to collect, process, and produce information on possible investments. High information costs may keep capital from flowing to its highest value use since savers will be reluctant to invest in activities about which there is little reliable information. Taking into account that investors have good information about firms, managers, and market conditions, many models assume that capital flows toward the most profitable firms. Therefore, financial intermediaries may reduce the costs of acquiring and processing information and thereby improve resource allocation. Without intermediaries, large fixed cost associated with evaluating firms, managers, and economic conditions would be faced by each investor (Levine 2005).

- (ii) Corporate governance is considered central for understanding economic growth in general and the role of financial factors in particular. Savings and allocation decisions are influenced by the degree to which the providers of capital to a firm can effectively monitor and influence how firms use that capital. The efficiency with which firms allocate resources will be improved proportionally to the efficiency by which shareholders monitor firms and induce managers to maximize firm value. In addition, savers will be more willing to finance production and innovation. Mobilization of savings from disparate agents may be impeded and also capital kept from flowing to profitable investments in the absence of financial arrangements that enhance corporate governance. Therefore, firm performance with potentially large ramifications on national growth rates is directly influenced by the effectiveness of corporate governance mechanisms (Levine 2005).
- (iii) Financial contracts, markets and intermediaries may arise to ease the trading, hedging, and pooling of risk with implications for resource allocation and growth thanks to information they dispose. Financial systems are believed to mitigate the risks associated with individual projects, firms, industries, regions, countries, etc. Banks, mutual funds, and securities markets all provide vehicles for trading, pooling, and diversifying risk. The financial system's ability to provide risk diversification services can affect long-run economic growth by altering resource allocation and savings rates (Levine 2005).
- (iv) Levine (2005) emphasizes that mobilizing savings involves (a) overcoming the transaction costs associated with collecting savings from different individuals and (b) overcoming the informational asymmetries associated with making savers feel comfortable in relinquishing control of their savings. In light of the transaction and information costs associated with mobilizing savings from many agents, numerous financial arrangements may arise to mitigate these frictions and facilitate pooling. Levine (2005) also emphasizes those financial systems that are more effective at pooling the savings of individuals can affect economic development by increasing savings, exploiting economies of scale, and overcoming investment indivisibilities.
- (v) Financial institutions reduce uncertainty, accelerate the economic cycle and reduce the impact of the crisis on the macro and micro level. Purchase, disposal and sale of products and services are eased thanks to the financial institutions, especially insurance companies.

#### **4. Methodology, data and model specification**

The analysis conducted in this paper uses panel data. Panel data have several advantages over cross-sectional or time-series data: more accurate inference of model parameters, greater capacity for capturing the complexity of human behavior, controlling the impact of omitted variables, uncovering dynamic relationships, generating more accurate predictions for individual outcomes by pooling the data, providing micro foundations for aggregate data analysis, simplifying computation and statistical inference (Baltagi 2008).

##### *Methodology*

The difference between panel data regression models and time series or cross-section regression models is the inclusion of individual effects. Individual effects aim to analyze the difference between the observed units that are constants in time (Baltagi 2008). OLS estimator provides biased and inconsistent estimates in the case of panel data. This is why there is a need to use FE or RE models. The general form of the panel data regression model is as follows (Baltagi 2008):

$$y_{it} = \beta x_{it} + z_i + u_{it} \quad (1)$$

with  $i$  denoting households, individuals, firms, countries, etc. and  $t$  denoting time.  $y$  is dependent variable.  $x$  are independent variables,  $\beta$  is vector of estimated parameters.  $z_i$  is individual effect.  $u_{it}$  is error term.

Furthermore, models estimated by FE and RE are tested for endogenous regressor. In order to conduct this, omitted variable version of the Hausman test for endogeneity of regressors together with regressing financial development as a function of economic growth is conducted. The obtained results indicate the presence of endogenous regressor. In addition, Levine (1997) reports that economic growth contributes to financial development. In order to resolve this problem, system GMM panel data estimator suggested by: Rachdi and Mbarek (2011); Inoubli and Khallouli (2011) and Khadraoui and Smida (2012) is used in this paper.

Holtz-Eakin et al. (1990), Arrellano and Bond (1991) and Arrellano and Bover (1995) have developed a GMM estimator for panel data. The general form of dynamic panel data model is as follows (Arrellano and Bover 1995):

$$y_{it} = \alpha y_{it-1} + \beta x_{it} + z_i + u_{it} \quad (2)$$

with  $i$  denoting households, individuals, firms, countries, etc. and  $t$  denoting time.  $y$  is dependent variable.  $x$  are independent variables that do not include lagged value of dependent variable,  $\beta$  is vector of estimated parameters.  $\alpha$  is parameter with lagged dependent variable.  $z_i$  is individual effect.  $u_{it}$  is error term. Dynamic one-step system GMM estimator assumes that error term is random, independent and homoscedastic.

The basis for (2) is model (1). Baltagi (2008) emphasizes that (2) may be expressed in vector form as:

$$y_i = W_i \eta + u_i \quad (3)$$

where  $u_i$  are random errors equal to (Baltagi 2008):

$$u_i = \mu_i l_T + v_i \quad (4)$$

$y_i = (y_{i1}, \dots, y_{iT})'$ ,  $\eta' = (\beta', \gamma')$ ,  $W_i = [X_i, l_T Z_i]$ ,  $X_i = (x_{i1}, \dots, x_{iT})'$  and  $l_T$  is a vector of dimension  $T$ . Lagged dependent variable is added on the right side of equation (1). Arellano and Bover (1995) estimator is obtained by GLS transformation over  $\eta$  in model (3). The procedure is explained in Baltagi (2008).

#### *Data and model specification*

This paper, compared to up-to-date literature, is focused on the interaction of the impact of banks and stock market on economic growth. The paper also analyzes whether there are differences in the size of the impact of financial development on economic growth in countries with different income levels. 94 countries are observed during the period between 1992 and 2011. Balanced panel data are collected from the databases: World Development Indicators, Financial Structure

Database and national statistical offices. After collecting the data, few countries have up to 5% of missing values. This is resolved by using Expectation Maximization technique in software SPSS.

Beck and Levine (2004); Leita0 (2010); AL-Malkawi and Abdullah (2011) and Yilmazkuday (2011) suggest the following model of the relationship between financial development and economic growth that is also used in this paper:

$$y_{it} - y_{it-1} = \alpha y_{it-1} + \beta' x_{it} + \gamma_i + \varepsilon_{it} \quad (5)$$

where  $y$  is natural logarithm of real GDP per capita,  $X$  is the vector of independent variables (financial development proxy variables and control variables) that does not include lagged dependent variable,  $\gamma_i$  is individual effect and  $\varepsilon_{it}$  error term.

Papers in *Literature review* section serve as a basis for selecting variables in this paper. Appendix 2 summarizes definition of variables, the source of data and expected sign of the impact on economic growth. Six models are estimated. Model 1 analyzes whether domestic credit to the private sector as a percentage of GDP (*Bank*) and turnover ratio (*Stock market*) contribute to economic growth. *Bank* does not measure the role of bank in decreasing transaction costs and is not perfect measure of financial development. However, Levine (2005) gives advantage to *Bank* over other variables since it isolates credit issued to the private sector and therefore excludes credit issued to governments, government agencies, and public enterprises. Also, it excludes credits issued by central banks.

Stock market development is measured by turnover ratio (traded shares as a percentage of total shares on stock market). *Stock market* indicates the size of the stock market. Levine (1997) emphasizes that more liquid stock markets foster long-term investment and consequently improve the allocation of capital and economic growth. Logarithm of both variables is used in models.

Furthermore, the impact of additional determinants of economic growth is analyzed. In addition to proxy variables of financial development, model 2 includes logarithm of total enrollment in secondary education, regardless of age, expressed as a percentage of the population of official secondary education age (*Education*). It is expected that education has positive impact on the relationship between financial development and economic growth. Model 3 analyzes the impact of government spending. It is expected that logarithm of government spending as a share of GDP (*Government*) negatively impacts the productivity of private investment and thereby decreases the strength of the relationship between financial development and economic growth.

Model 4 analyzes whether *Inflation* impacts the aforementioned relationship. Negative impact of inflation is expected. Model 5 estimates whether trade openness impacts the relationship between financial development and economic growth. Proxy variables of trade openness are logarithms of:  $(export + import)/GDP$  and *Trade index* (export + import of observed year/ export + import in 2000). Model 6 analyzes whether there are differences in the size of the impact of financial development on economic growth in countries with different income levels.

The dependent variable in all six models is the average growth rate of real GDP per capita (*RGDPc*) calculated as:  $\frac{\ln(RGDPc \text{ (last year in the period)}) - \ln(RGDPc \text{ (first year in the period)})}{\text{number of years}}$ . Yu and

Hassan (2007); Djalilov and Piesse (2011); Yilmazkuday (2011); Dudian and Popa (2013) and Arıç (2014) indicate that this variable is an adequate proxy of economic growth.

The adequacy of banks and stock market proxy is confirmed by Levine (1997, 2005). Authors: Rachdi and Mbarek (2011); Inoubli and Khallouli (2011); AL-Malkawi and Abdullah (2011) and Yilmazkuday (2011) indicate the adequacy of control variables. FE and RE together with dynamic one-step system GMM estimator are used to estimate models.

## 5. Results of the research

Model 1 (the basic model in this paper) uses the average growth rate of real GDP per capita (*RGDPc*) as dependent variable. Independent variables are *Bank* and *Stock market*. Initially, model was estimated by using FE and RE. Based on Hausman statistics ( $p=0.088$ ) null hypothesis can't be rejected at 5% level of significance. Therefore, RE is considered appropriate.

Table 1 gives the results of model 1 obtained by RE. Economic, statistical and econometric criteria are also evaluated. The obtained parameter with *Stock market* is in accordance with Levine (2005) and indicates that the increase in turnover ratio contributes to economic growth (at 1% level of significance). Therefore, the economic criterion is fulfilled. However, parameter with *Bank* is not statistically significant (at 5% level of significance) which deviates from empirical results presented in *Literature review* section. It is expected that model specification leads to this result.

Statistical criteria are initially analyzed by using chi2 test. p value below 0.05 indicates that variance explained by the model differs from zero and there is at least one statistically significant parameter with independent variables. Coefficient of determination indicates that financial development explains 20.7% of total variability of *RGDPc* during the observed period (table 1). In addition, econometric criteria are tested. Shapiro-Wilk and Jarque-Bera tests are used to estimate the distribution of residuals. Test statistics indicates that distribution of residuals differs from normal ( $p<0.05$ ). Variance inflation factor (VIF) indicates there is no problem of multicollinearity. Likelihood-ratio test is used to analyze the presence of heteroscedasticity. The obtained results ( $p<0.05$ ) indicate the heteroskedasticity of residuals.

Table 1: Results of models (1) - (6), FE and RE estimators  
(dependent variable *RGDPc*)

	(1) RE	(2) FE	(3) RE	(4) FE	(5) RE	(6) RE
<i>Bank</i>	0.719 (0.856)	3.475 (2.895)	1.779 (0.880)**	7.959 (2.731)*	0.552 (0.864)	1.981 (1.015)**
<i>Stock market</i>	5.774 (0.957)*	5.150 (1.643)**	6.111 (0.942)*	8.303 (1.606)*	5.908 (0.965)*	5.745 (0.949)*
<i>Education</i>		-1.547 (0.354)*				
<i>Government</i>			-3.191 (0.804)*			
<i>Inflation</i>				-4.050 (0.674)*		
<i>(Export+import) /GDP</i>					-0.323 (0.491)	
<i>Trade index</i>					2.698 (1.741)	
<i>High income</i>						0.729 (0.458)



<i>Middle income</i>						-0.132 (0.510)
<i>Constant</i>	-7.346 (2.007)*	-10.267 (5.998)***	-5.969 (1.999)*	-17.642 (5.491)*	-12.030 (3.940)*	-9.958 (2.182)*
<i>chi2/F</i>	37.50	13.39	54.72	19.44	40.47	49.77
<i>chi2/F (p value)</i>	0.000	0.000	0.000	0.000	0.000	0.000
<i>Hausman spec. test</i>	4.86	22.95	4.05	25.23	5.50	
<i>Hau. spec. test (p)</i>	0.088	0.000	0.256	0.000	0.240	
<i>Coefficient of det.</i>	0.207	0.156	0.307	0.173	0.205	0.295
<i>Number of observ.</i>	376	376	376	376	376	376
<i>Number of groups</i>	94	94	94	94	94	94

Source: Authors

\*, \*\*, \*\*\* significance at 99%, 95% and 90% respectively. Standard errors in parentheses.

Woolridge test is used for autocorrelation.  $p > 0.05$  indicates no presence of autocorrelation. Unit-root test indicates that unit-root is not present in any of time-variant variables. Harris–Tzavalis is used to decide on the unit-root. Close attention is paid to the test of endogeneity. Omitted variable version of the Hausman test for endogeneity of regressors together with regressing financial development as a function of economic growth is conducted. Dependent variables are *Bank* and *Stock market*. Table 2 summarizes obtained results:

Table 2: Testing endogeneity

	(1) RE	(2) FE
<i>RGDPc</i>	0.003 (0.001)**	0.008 (0.002)*
<i>chi2/F</i>	4.95	14.14
<i>chi2/F (p value)</i>	0.026	0.000
<i>Hausman test for endogeneity of regressors (p value)</i>	0.000	0.000

Source: Authors

\*,\*\* significance at 99% and 95% respectively. (1) dependent variable *Bank*, (2) dependent variable *Stock market*. Standard errors in parentheses.

Parameters with economic growth are statistically significant in both models as well as Hausman test statistics. These results indicate the presence of endogenous regressor. Since the distribution of residuals deviates from normal and heteroscedasticity problem is present, the results presented in Table 1 are not consistent and unbiased. This is why models are estimated again using dynamic one-stage system GMM estimator. Table 3 summarizes the obtained results:

Table 3: Results of models (1) - (6), GMM  
(dependent variable *RGDPc*)

	(1)	(2)	(3)	(4)	(5)	(6)
<i>RGDPc</i>	-0.137 (0.077)***	-0.156 (0.078)**	-0.199 (0.074)*	-0.166 (0.071)**	-0.114 (0.093)***	-0.277 (0.112)**
<i>L1</i>	12.144 (3.765)*	12.727 (3.791)*	16.037 (3.864)*	9.521 (3.646)*	11.949 (3.815)*	8.825 (3.984)**
<i>Bank</i>	9.302 (2.463)*	9.352 (2.454)*	8.745 (2.376)*	12.342 (2.405)*	9.141 (2.547)*	9.172 (2.404)*
<i>Stock market</i>		0.883 (0.648)				
<i>Education</i>			-8.897 (2.916)*			
<i>Government</i>				-3.191 (0.804)*		
<i>Inflation</i>					0.798 (2.963)	
<i>(Export+import)/GDP</i>					-0.300 (2.848)	
<i>Trade index</i>						23.945
<i>High income</i>						

						(9.434)**
<i>Middle income</i>						7.330 (3.120)**
<i>Constant</i>	-32.887 (7.589)*	-34.675 (7.715)*	-28.680 (7.393)*	-25.119 (7.444)*	-33.271 (10.605)*	-31.890 (7.728)*
<i>chi2</i>	25.48	27.24	37.28	58.90	24.47	33.30
<i>chi2 (p value)</i>	0.000	0.000	0.000	0.000	0.000	0.000
<i>Number of observ.</i>	282	282	282	282	282	282
<i>Number of groups</i>	94	94	94	94	94	94

Source: Authors

\*,\*\*,\*\*\* significance at 99% , 95% and 90% respectively. Standard errors in parentheses.

GMM estimator indicates that the parameter with *Bank* is statistically significant contrary to the result presented in Table 1. Therefore, model 1 indicates that both independent variables have a statistically significant positive impact on economic growth (at 1% level of significance). It is important to emphasize that *Bank* has stronger impact on economic growth comparing to *Stock market*. Statistically significant coefficient with lagged dependent variable indicates the need for using dynamic models. The obtained results are in accordance with: AL-Malkawi and Abdullah (2011); Rachdi and Mbarek (2011); Khadraoui and Smida (2011) and Dudian and Popa (2013).

Model 2 tests whether *Education* impacts economic growth and the relationship between financial development and economic growth. FE estimator indicates statistically significant positive impact of *Stock market* (table 1). However, parameter with *Bank* is not statistically significant and parameter with *Education* is negative which is opposite to Levine (2005). Furthermore, statistical and econometric criteria are tested. Statistical criteria are fulfilled. However, the assumption of normality of residuals, homoscedasticity and exogeneity of regressors is rejected. Therefore model 2 is estimated using GMM estimator.

The obtained results (Table 3) indicate that *Education* does not have a statistically significant impact on economic growth. However, the inclusion of this variable increases the value of parameters with financial development. This is why the inclusion of *Education* is proved to contribute to the relationship between financial development and economic growth. The obtained results are in accordance with Khadraoui and Smida (2011).

Model 3 tests whether *Government* impacts economic growth and the relationship between financial development and economic growth. RE estimator indicates a statistically significant positive impact of financial development (both variables – table 1). Parameter with *Government* is significant and negative which is accordance with Levine (2005). Furthermore, statistical and econometric criteria are tested. Statistical criteria are fulfilled. However, the assumption of normality of residuals, homoscedasticity and exogeneity of regressors is rejected. Therefore model 3 is estimated by using GMM estimator.

Results (Table 3) indicate that *Government* has statistically significant negative impact on economic growth (at 1% level of significance). The inclusion of this variable increases the value of parameter with *Bank* and decreases value of parameter with *Stock market*. Therefore, *Government* negatively impacts economic growth and the relationship between *Stock market* and economic growth. The obtained results are in accordance with: AL-Malkawi and Abdullah (2011); Rachdi and Mbarek (2011); Khadraoui and Smida (2011) and Yilmazkuday (2011).

Model 4 includes *Inflation* and aims to control whether this variable impacts economic growth and the relationship between financial development and economic growth. Table 1 indicates that FE provides statistically significant positive impact of financial development on economic growth while parameter with *Inflation* is significant and negative (at 1% level of significance) which is accordance with Levine (2005). However, the assumption of normality of residuals, homoscedasticity and exogeneity of regressors is rejected. Therefore model 4 is estimated by using GMM estimator.

Table 3 indicates that *Inflation* has statistically significant negative impact on economic growth (at 1% level of significance). The inclusion of this variable increases the value of parameter with *Stock market* and decreases value of parameter with *Bank*. Therefore, *Inflation* negatively impacts economic growth and the relationship between *Bank* and economic growth. The obtained results are in accordance with: AL-Malkawi and Abdullah (2011); Rachdi and Mbarek (2011); Khadraoui and Smida (2011); Inoubli and Khallouli (2011) and Yilmazkuday (2011).

Model 5 estimated by RE indicates there is statistically significant positive impact of *Stock market* on economic growth when trade openness proxy variables are included. However, the impact of *Bank* is not statistically significant (at 5% level of significance) as well as parameters with proxy variables of trade openness. The assumption of normality of residuals, homoscedasticity and exogeneity of regressors is rejected. So then model 5 is estimated by using GMM estimator.

Results (Table 3) indicate that trade openness does not have a statistically significant impact of economic growth. The inclusion of this variable decreases coefficient with both proxy variables of financial development comparing to model 1. Therefore, it can be concluded that trade openness negatively impacts the relationship between financial development and economic growth. The obtained results are in accordance with AL-Malkawi and Abdullah (2011).

The aim of model 6 is to explore whether there are differences in the size of the impact of financial development on economic growth in countries with different income levels. RE estimator indicates that parameters with proxy variables of financial development are statistically significant and positive. However, the assumption of normality of residuals, homoscedasticity and exogeneity of regressors is rejected. Therefore model 6 is estimated by using GMM estimator.

Parameters with proxy variables of financial development are statistically significant and positive but lower comparing to model 1. Furthermore, the obtained results (Table 3) indicate that financial development strongly contributes to economic growth in high- and middle-income comparing to low-income countries. In addition, results indicate that the strongest impact is obtained for high-income countries.

## **6. Conclusion**

The analysis conducted in this paper uses a balanced panel data for 94 countries in the period 1992-2011. The five-year averaged panel data are used to reduce the impact of business cycles. Six models are estimated. All models are initially estimated by FE and RE. Robustness check indicates that the assumption of normality of residuals, homoscedasticity and exogeneity of regressors is rejected. Therefore models are estimated by using dynamic one-step system GMM.

Model 1 analyzes whether financial development approximated by Bank and Stock market contributes to economic growth (approximated by average growth rate of real GDP per capita). The obtained results indicate that Bank and Stock market have a statistically significant positive impact on economic growth. However, parameters with these variables indicate that Bank strongly contributes to economic growth comparing to Stock market. The obtained results are in accordance with Schumpeter (1912). Since model 1 reports positive relationship between financial development and economic growth, positive answer may be given to the research question 1.

In order to analyze the relationship between financial development and economic growth, additional determinants of economic growth are also taken into account. Model 2 controls the impact of Education. Results indicate that Education does not have statistically significant positive impact on economic growth. However, the inclusion of this variable leads to the increase in parameters with proxy variables of financial development (comparing to model 1). Therefore, Education contributes to the relationship between financial development and economic growth. Model 3 controls for the impact of Government. The obtained results indicate that Government negatively impacts economic growth and the relationship between Stock market and economic growth. Model 4 analyzes whether *Inflation* impacts the relationship between financial development and economic growth. It is reported that *Inflation* negatively impacts economic growth and the relationship between *Bank* and economic growth. Model 5 indicates that trade openness negatively impacts the relationship between financial development and economic growth. However, proxy variables of trade openness do not have statistically significant impact on economic growth. Model 6 explores whether there are differences in the size of the impact of financial development on economic growth in countries with different income levels. Parameters with proxy variables of financial development are statistically significant and positive but lower compared to model 1. Furthermore, the obtained results indicate that financial development strongly contributes to economic growth in high- and middle-income comparing to low-income countries. In addition, results indicate that the strongest impact is obtained for high-income countries. Taking into account results of model 6, the answer may be given to the research question 2 and therefore the aim of this research is met. As a policy implication it should be emphasized that the results of this paper may motivate policy makers to foster the financial development since it contributes to economic growth. Since financial development contributes to economic growth in countries with different income levels, there is a need to foster its development in low-income countries as well.

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## Appendix 1 – Observed countries

Argentina	Ghana	Netherlands
Armenia	Greece	Norway
Australia	Guyana	Nepal
Austria	Hong Kong SAR, China	New Zealand
Belgium	Hungary	Pakistan
Bangladesh	Indonesia	Panama
Bulgaria	India	Peru
Bahrain	Ireland	Philippines
Bolivia	Iran, Islamic Rep.	Poland
Brazil	Iceland	Portugal
Barbados	Italy	Paraguay
Botswana	Jamaica	Romania
Canada	Jordan	Russian Federation
Switzerland	Japan	Saudi Arabia
China	Kazakhstan	Singapore
Cote d'Ivoire	Kenya	El Salvador
Congo, Rep.	Kyrgyz Republic	Slovak Republic
Colombia	Korea, Rep.	Sweden
Costa Rica	Kuwait	Swaziland
Cyprus	Sri Lanka	Thailand
Czech Republic	Lesotho	Trinidad and Tobago
Germany	Lithuania	Tunisia
Denmark	Luxembourg	Turkey
Ecuador	Latvia	Tanzania
Egypt	Morocco	Ukraine
Spain	Mexico	Uruguay
Estonia	Malta	United States
Finland	Mongolia	South Africa
Fiji	Mauritius	Zambia
France	Malaysia	Zimbabwe
United Kingdom	Nigeria	
Georgia	Nicaragua	

## Appendix 2 – Variables used in analysis

<i>Variable</i>	<i>Definition</i>	<i>Source</i>	<i>Expected sign of impact</i>
<i>RGDPc (real GDP per capita)</i>	$\frac{\ln(\text{RGDPc (last year)}) - \ln(\text{RGDPc (first year)})}{\text{number of years}}$	<i>The World Bank (WDI), National statistical offices</i>	
<i>Bank</i>	$\frac{\text{Domestic credit to the private sector}}{\text{GDP}}$	<i>Financial Structure Database, National statistical offices</i>	+
<i>Stock market</i>	$\frac{\text{Traded shares}}{\text{Total shares on stock market}}$	<i>Financial Structure Database, National statistical offices</i>	+
<i>Education</i>	<i>Percentage of the population of official secondary education</i>	<i>The World Bank (WDI), National statistical offices</i>	+
<i>Government</i>	$\frac{\text{Government spending}}{\text{GDP}}$	<i>The World Bank (WDI), National statistical offices</i>	-
<i>Inflation</i>	<i>GDP deflator</i>	<i>The World Bank (WDI), National statistical offices</i>	-
<i>(Export+import)/GDP</i>	$\frac{\text{Total value of export and import}}{\text{GDP}}$	<i>The World Bank (WDI), National statistical offices</i>	NS
<i>Trade index</i>	$\frac{\text{Total value of export and import (observed year)}}{\text{Total value of export and import (2000)}}$	<i>The World Bank (WDI), National statistical offices</i>	NS
<i>High income</i>	<i>Dummy variable (2011.)</i>	<i>Authors calculations, The World Bank (WDI)</i>	
<i>Middle income</i>	<i>Dummy variable (2011.)</i>		
<i>Low income</i>	<i>Dummy variable (2011.)</i>		

+, -, NS positive impact, negative impact, impact that is not significant (respectively).

# MARKET ORIENTATION, INNOVATION AND FIRM PERFORMANCE – AN ANALYSIS OF ALBANIAN FIRMS

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## **Abstract**

The purpose of this paper is to analyse the concept of market orientation as an outer source of innovation for organizations in the context of Albania. The main elements of the construct of market orientation are: intelligence generation, intelligence dissemination and responsiveness. Market orientation is seen as a strategic posture and an external source of innovation for the organization. Innovation is represented by two constructs regarding administrative innovation and technical innovation. The paper analyses further the path market orientation – innovation- performance. Literature regarding such topic in Albania is bare and country contextual implications are analysed and interpreted. We use a sample of 99 companies and try to maintain a 50/50 ratio between small sized and above medium sized companies, also the same ratio regarding the distribution by sector: production and services. The dataset includes data from companies operating in different industries. Relationships and the impact of market orientation on innovation and performance is tested empirically through structural equation modelling techniques (SEM). The analysis confirms prior theoretical and empirical research findings in developed economies, however some contextual interpretations arise. Despite a small sample size, all constructs are reliable and the impact of market orientation on innovation, innovation on performance, and market orientation and performance is considerable and positive. Size had a positive relationship on innovation, however statistically inconsiderable (close to 0). One contextual finding statistically relevant was that sector had a significant and negative relationship with innovation, meaning that production companies have less innovation than service companies. The main issue of the study raises when it comes to overall model fit indices. Despite good constructs reliability and factor loadings all measures that are reliant on sample size perform not satisfactory. The implications of this study are considerable in academia and on managerial purposes. In academia, considering that there is no research on the topic of us being aware of in Albania.

Nevertheless, we identify the need for deeper and wider research on the topic especially with bigger sample sizes, industry specified and across industries to grasp more about market reality. In managerial account its relevance relies in the distinction of the market orientation constructs and the right division of components within the company and the adequate approach toward intelligence generation, dissemination and reaction on it by responding to market needs and competition with innovative products and services.

**Keywords:** *innovation, market orientation, intelligence generation, intelligence dissemination, performance*

**JEL classification:** O310



# THE NEW EUROPEAN ENVIRONMENT: WILL THE WESTERN BALKAN ENLARGEMENT PROCESS EVER BE THE SAME?

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## **Abstract**

In the twelve years that have passed since the EU Thessaloniki Summit that ensured the European prospects of the Western Balkans, only Croatia has actually joined the Union. The long and difficult accession process has been hard-hit by the deterioration of the environment in which it is being pursued, which has taken its toll on both sides of the enlargement equation. Crucially, in light of the new international environment, the EU's hitherto undisputable role as an "anchor" of stability, as a one-way path to prosperity and as an incentive for reform has begun to lose its credibility and appeal for some of these countries, with potentially destabilising implications for the region.

This paper will explore the new dynamics of enlargement, assess the main challenges to this process and propose possible scenarios for the future of the Western Balkans' EU accession and stability in the region. It will examine the main characteristics of the new environment and will focus on the most crucial factors that have a negative impact on enlargement: these include the crises in the eurozone and Greece, the spillover of these crises into the Balkan economies, the fallout from an escalating and destabilising refugee crisis, a growing "enlargement fatigue" in the EU, a distinct "evaluation fatigue" in the Western Balkans, a stalling of the reform process, a mounting frustration with ever more demanding conditionality, and an overall disenchantment with the EU as the prospects of accession seem more and more remote. Finally, the paper will attempt to draw some conclusions regarding the prospects and future outlook of the enlargement process, given the increasingly unfavourable environment in which it is being pursued.

**Key Words:** *Western Balkans, EU enlargement, eurozone crisis, Greek debt crisis, refugee crisis*

# THE ROLE OF AUDITING QUALITY AS A TOOL OF CORPORATE GOVERNANCE

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## Abstract

The purpose of this research is to investigate the connection between the quality of auditing and corporate governance. This research also needs to prove that standard audit reports enhance the credibility of financial reports of the audited corporations thus facilitating corporate governance. Sometimes, the basic financial reports do not provide enough info to estimate in a pragmatic way the quality of successful governance. That is why the indicators of successful governance that are gained during financial analysis are needed.

The empiric part of research of the factors of auditing quality processes is being done by the method of survey as a questionnaire in order to collect and examine the data, information, attitudes and opinions of the examinees about the topic of research with the usage of sample. For this reason, techniques of direct structural communication are being used—survey sampling. Arguments to prove the theses are carried out using the method of verification. Mathematical—statistical method is used for processing the collected data in those parts requiring quantification. This research was conducted on the territory of FB&H and the samples of research are corporate companies-financial institutions precisely banks. The initial sample for the empirical research of correlation between financial analysis and audit quality corporate companies in the process of business decision-making and management included a list of 15 out of 18 banks in the FB&H.

This research has shown that the financial analysis is an important tool that managers use in the governing and that there is a strong connection between the quality of the audit and corporate governance, which brings to the conclusion that in the future corporate governance will be based on audited financial reports. Taking into account that the audit is the process of checking and assessment of financial reports with the aim of expressing an independent and professional opinion on their validity and objectivity, the audit reports are increasingly used as an indispensable source of reliable information on which various forms of financial analysis operates. Audit as a measure of the credibility and impartiality of the content of financial statements directly affects the quality of the information contained in the financial statements.

**Research limitations/implications-**Applicable legal regulations stipulate that the reports of the financial analysis are drawn up, submitted or made public. Also, applicable legal regulations does not stipulate by which indicators the performance of a corporate society can be measured, it is left to the will of the management to decide. That is why there is inequality in informing all interested users of business reports, and the deprivation of information on all significant aspects of the company's operations.

**Keywords:** *auditing quality*<sup>1</sup>, *audit reports*<sup>2</sup>, *financial statements*<sup>3</sup>, *financial analysis*<sup>4</sup>, *corporate governance*<sup>5</sup>

**JEL classification:** rearsch paper

## 1. Introduction

Corporate companies make business in a dynamic and unpredictable business environment, being exposed to the influence many factors that makes more difficult to its management decision making about business effectiveness and corporate governance. Business effectiveness can be generally defined as a capability to achieve certain goals. To ensure the continuity of profitable business and also the development and survival of the company on the market, it is necessary to have the management of business and management of development. At the same time it is required to tend to a detailed analysis of corporal companies business in order to have a good governance decision making.

Financial analysis in the literature equate with the term analysis of financial statements due to the fact that in the process it uses financial statements of the company and includes limited access classified information. Information from financial statements can pretty much deviate from real and one of the reasons for this can be the application of accounting methods. For example, financial statements can hide bigger or smaller losses or gains. That is why the importance of financial analysis of corporate companies business is increasing. This increase of importance is not only related to the owners but also creditors, public, state and other users of information from the statements. In this contents, there is no doubt that financial analysis has to be done on real and correct financial statements and indexes based on what we got the cognition of effective use of available resources of the company. Only not biased financial statements can be adequate material for financial analysis, otherwise the indicators of financial analysis can be questionable. The auditor estimates the correctness of financial statements. The development of auditors practice in the environment of modern markets and the requests that are being posed in the process of auditing from genesis till today is dramatically changed. Changes in the professional auditing environment in the past decade have caused audit firms to consider how to improve their practices in order to reduce the number of audit failures; improve internal consistency with existing firm and professional policies and procedures regarding generally accepted auditing standards (GAAS) and generally accepted accounting principles (GAAP); and reduce and avoid negative results in the the Public Company Accounting Oversight Board (PCAOB) inspection process (Jean, Karla & Edward, 2010). The expectations from external revision are higher and higher thus there is a need for continues improvement and adaptation to the market to answer successfully to global economic and social changes.

It is very difficult to define the term of quality of auditing that is confirmed by fact that there is no universal definition of it. Although there is a vast body of literature relating to audit quality, there is no single generally accepted definition or measure of audit quality (Alan,

Graeme & Renee, 2014). Characteristic of quality of auditing is mirrored in providing rational reliability in financial statements that is expected from the auditor. Rules and procedures are given in international standards of quality of auditing that need to be followed by auditing companies, professional accountants as well as certified auditors in order to establish continuous process of quality of auditing during the process of revision, financial and auditing statement. However, it is also difficult to define the quality of external revision in proceedings of administering of revision for many reasons since each auditing company defines and establish its own procedures of quality that represent its competitive advantage.

## **2. Revision of Financial Statements of Corporative Companies**

### **2.1. The Term and Dimension of Revision of Financial Statements**

Revision of companies' financial statements is the most significant part of overall revision profession. It encompasses the process of independent analysing and estimate the reality and impartiality of information from financial statements. Revision of financial reports applies to basic annual financial statements (Balance Sheet – Statement on financial position at the end of period, Income Statement – Statement on a comprehensive profit of period, Statement on cash flows during a period, Statement on changes in equity during a period and Records, including a short review of accounting policies and other explanations), but also to all other reports and information that the auditor needs to allow judgement.

At the beginning of accountancy profession, revision was voluntary but today it is required and became legal liability. The Act on Accounting and Revision of Federation of Bosnia and Hercegovina (FB&H), Article 3, defines the revision of financial statements: Revision of financial statements is inspection of financial statements due to allowing judgement if they objectively and truthfully shows the status of property, funds and financial liabilities, operating results, flow of money, change of funds, in accordance with international accounting standards and international standards of financial statements (2009: 1).

The primary goal of financial statements revision is that auditors allow judgement if the financial statements are giving „authentic and fair overview“ of financial condition and business results of the audited company. However, the modern trend of business gives many possibilities in making business out of national boundaries but at the same time requests reliable and good information that describes financial and overall condition of potential business partners. The main source of these information are financial statements, which, if prepared in accordance with International Financial Reporting Standards (IFRS), provides relevant and trustworthy information. The potential investors estimate current condition and perspective of the company based on financial statements in order to make decision about investing. There is a question here if the financial statements are enough to make business decisions or if it is necessary to have the confirmation from independent and adequate experts since the quality of the decision depends on right information.

In the process of determining whether financial statements are reverberation of real and factual condition, the significance of auditing is related to the protection of interests of investors and creating and providing real-valued information for rational decision making. By giving the opinion on financial statements, the auditor indirectly participates in making business decision with the user of information from financial statements. In order to have auditors opinion or judgement based on relevant information, the auditor collects evidences on business activities of the audited company, developments and the person who made financial statements. The

verification of quality of financial statements by auditing company is extremely important for managers of corporate companies since they are participating in creating of financial statements; they are managing and reporting to the owners and investors. Audit quality is not just affected by auditor qualification, the company's internal control system might be another factor that affects audit quality, and the size of the audit firm might also matter (Husam, Rana & Abdulhadi, 2013). Also audit regulators as well as audit professionals have argued that greater audit firm transparency (on, for example, audit policies, processes and methodologies, management and governance, and revenues) can bolster confidence in audit quality (Rogier, Caren, Heidi & Ann, 2012).

Financial statements in which information about historic values are shown are based on the most reliable data. However, these information are related to the past, which makes them weak, since the business decision are made based on future projection of money flow and future income. To make the projection of future business of a corporate company is extremely difficult and demanding job that would not be possible to start without information from financial statements that gives the best source for future projection. Beside relevancy and authenticity, information from financial statements are even more useful if they contain characteristics for improvement such as: comparability, testability, timeliness, intelligibility. Taking into consideration above mentioned we can say that revision gives an added value to the information from financial reports.

## **2.2. The Role of Auditing/Revision of Financial Statements in Management of Corporate Companies**

The role of revision of financial statements in the process of managing of corporate companies is first of all seen in the context of relationship between financial statements of the company and external users of those reports. Financial statements are responsibility of management since the management is preparing financial statements, taking responsibility for their correctness and establishes politics for establishment an efficient internal control but also is responsible for compliance of statements given in financial statements. Information from financial statements that are given by the management have significant value only if they are confirmed by independent auditors. Based on this we can speak about the role of revision of financial statements in the process of management of corporate companies.

The revision of financial statements is directed to examination of reality and objectivity of financial statements in that way ensuring reliability and credibility as well as the significant contribution to the quality of financial statements. Financial statements are considered with high quality if they are composed in accordance with legal regulations, International Accounting Standards (IAS), IFRS, and the principles of professional ethics, and as such are used to making rational and successful business decisions. The role of the audit of the financial statements in the process of corporate governance is reflected in its confirmation of the correctness and relevance of the information contained in the financial reports/statements. The auditor's opinion gives a high assurance of the accuracy of the financial statements but not the absolute accuracy. However, to justify the role of audit in the process of governance it is necessary to consider as a whole accounting, auditing and management.

When we talk about the role of audit in corporate governance, the question is what is the role of the audit in the process of strategic management and whether it may influence the strategic decisions and if it will support strategic decision-making. In the context of determining governance strategies, financial statements are an essential element that provide a number of

financial and non-financial information that are used for testing of environment of the company on the basis of which the bearer of strategic decisions can determine the internal strengths and weaknesses of the company. Since the financial statements are public documents which can be compared with the same or similar financial statements of companies in the region, so this way one can reach a complete picture of the business environment of corporate company. In fact, when implementing strategic decisions, changes occur in the business operations of the company that must be recorded and systematized in the financial reports. The objective of the audit of financial statements is to express an opinion on whether all the business events recorded in accordance with the financial reporting framework. Towards finding answers to the question of the role of the audit in strategic management, the connection between financial statements and audits that are important instruments of control of achieved results, is clearly revealed.

### **3. The Term Quality Audit and Defining Factors of Quality Audit**

Quality control for audits can generally be traced to the level of the audited company and at the level of individual audits. Until now, the question of control of quality audits for both levels is edited in International auditing standard 220 – Quality control for an audit of financial statements, ISA 220, but as of January 2009 in the application of the International standard for quality control is in use at the level of the audited company, while the old standard of 220 renamed and carries the title Quality control of audit of financial statements and is related to the quality of individual audits.

Control activities undertaken during the execution of audit procedures are called quality control. They are being introduced in order to monitor how the established quality control system is actually applied and work in practice. Activities of quality testing taken after the completion of audit procedures represent the quality assurance. Measures of quality control should ensure that audits are conducted, timely, comprehensive, adequately documented. In an effort to strengthen, preserve and improve the quality of audits of financial statements, numerous accounting organizations at the international, regional and even local level have tried to define the term of quality audits.

Audit quality means the ability of audit process to detect and report on the material misstatement of the financial statements and the reduction of information asymmetry between management and shareholders (Sameh M. Reda Reyad, 2013). Auditing is among the services by which the quality can be ensured and thus we can say that audit quality is placed in the quality of the process so that more attempts to improve the audit process generally lead to higher audit quality (Mahmood, Seyed & Marziyeh, 2013). Background of the reform of quality control in the audit lies in the declining confidence in financial reporting and audit results from the corporate breakdowns and errors accountants in many countries. As a result, there is the greater regulation of the profession in many countries in an attempt to restore the confidence of the public and investors in corporate financial reporting. Although the financial failures have not occurred in all countries, they have significantly influenced the international regulatory environment and required a response (Soltani 2009: 445).

The term of quality audit of the financial statements is not easy to define because many users of financial statements interpret the term of audit quality in different ways. Then, due to the specifics of the audit process it is difficult to define the quality of audits. This is supported by numerous attempts to professional accounting associations which sought to determine the quality of audits by open discussion in which, in addition to professional and competent accounting

workers, the opinion on the quality of the audit could utter the public in general. However, despite numerous attempts, it is still not found universally accepted definition of audit quality.

In the absence of a definition of audit quality, an approach to the identification of factors of audit quality started to be used. The European Union for the purposes of audit quality has passed a directive in 2006 in which it is required by the audit firms that perform audit of companies of public interest to publish the so-called year reports on transparency in which it is obliged to publish the following information: the legal structure and ownership, a connection to any network, its structure and arrangements, governance structure, internal quality management system, as well as a statement of management of its efficiency, a policy of continuous professional development and education, financial information such as revenues from audit fees in total revenues, fees for other services, tax and non-audit services, the policy for reward of partners (Zager & Malis, 2014).

PCAOB conducted a discussion with members Standing Advisory Group (SAG) in 2013 on factors of quality audits. The questions were mainly related to the question of which factors of quality of audits and other measures could the members of the audit committee be most helpful in determining the quality of the audit, then processes and policies for improvement of audit quality and investor protection. Then identification of factors related to input information that might indicate the need for new standards. Committee on Financial Reporting Council (FRC) - in 2008, after numerous consultations identified five "drivers" of audit quality: the culture within audit companies, skills and personal qualifications of audit partners and staff, the efficiency of the audit process, the reality and the usefulness of auditor reporting, factors beyond the control of the auditor. Although a lot of effort and work has been invested in an attempt to define the quality of audits of financial statements, there is still no universal definition of audit quality. None of these attempts did not result in an agreement and a final solution, what the quality of the audit is and how to improve it.

### **3.1. Defining of Factors of Audit Quality**

The International Standards on Auditing and Assurance Board (IAASB), which operates within the International Federation of Accountants (IFAC), spent recent years on an extensive reform program, creating a variety of proposals in the audit. A lot of time and effort is invested in defining the quality of auditing and audit quality factors. However, those attempts have not resulted in consensus and the final solution what the quality of the audit is and how to improve it though represent an important step in determining the quality of auditing and improving the auditing profession. The last in a series of attempts is a document Framework for audit quality which is in January 2013 issued by the International board of standards of auditing and assurance. The goal of this document was, among other things, to identify and describe a number of factors that can increase the quality of the audits.

The document is set for a public hearing to determine whether it includes all aspects of audit quality, whether the document determines the responsibility of the audit quality between auditors (audit team and the audit company), the clients (those in charge of governance). The opportunity to present their vision of quality audits and to make suggestions for improving this document is given to the participants in the debate, which resulted in many issues that should be discussed as well as suggestions on how to improve the given document. The International Standards on Auditing and Assurance Board considered and analyzed each of the submitted proposals, and in February 2014 announced enhanced document entitled A Framework for audit quality – Key elements to create an environment for audit quality quality (available on

<https://www.ifac.org/publications-resources/framework-audit-quality-key-elements-create-environment-audit-quality/>). This framework does not contain the power of standards and audit companies should be responsible for defining quality of audits in accordance with auditing standards. The aim of the issuance of this framework is to increase awareness of the important elements that determine the quality of the audit and also the research for continuous increase the quality of audits.

#### **4. The Term and Objectives of Financial Analysis**

Financial analysis as part of the overall analysis of the corporate companies in the broader sense includes analysis of financial and non-financial indicators, that is, in addition to the analysis of the basic financial statements includes the analysis of the business environment and strategy that the company applies. The importance of financial analysis is reflected in the results provided in the form of numerical indicators that facilitate communication within the company and outside it. That is why we say that financial analysis is central to the overall analysis of the company's business operations from which all other analysis start. Financial analysis is a comprehensive research, quantification, description and assessment of the situation and the success of the company based on its financial statements and annual accounts (Stojiljkovic & Krstic, 2000, pp. 12). This is the process of applying different analytical procedures and techniques by which data from the financial statements converted into useful and useable information necessary for business decision making. Starting from the fact that the objects of financial analysis financial reports on the status and success, it can be concluded that the examination of conditions of financial equilibrium of company and the measurement of profitability of invested funds represent general objectives of financial analysis.

The objectives of financial analysis are defined and determined by users of financial analysis in accordance with certain aspects of the analysis. Depending on who the users of financial analysis, we distinguish between internal and external objectives of financial analysis. Internal financial analysis objectives are objectives relating to the assessment of the results achieved in the reporting period and estimates of future results. This analysis is carried out for the needs of the company (governance and management bodies of the company), in order to provide the necessary, timely and complete information for management, administration and future development of company. External goals of financial analysis represent an information request for financial analysis of external users such as lenders, creditors, official statistics, business associations, chambers of commerce and other community organizations.

For the purpose of having relevant indicators from external objectives provided by financial analysis, it is necessary to return to the question of the difference between the value of the company by the estimated external users (investors and creditors), and the market value of the company by the books (book value). These two values of the company differ significantly, mainly due to the following factors: financial reports do not contain information about future business intentions of the company in an environment where it operates, MRS do not allow the recognition of certain events that have an impact on the future ability of the company to generate cash flows and perhaps the most important factor is that in assessing balance sheet positions managers are biased. Due to these factors, actual and book value of the company is different and external users (investors and creditors), most attention focused on the study of the quality of accounting information in order to more realistically assess the future cash flows. In this way, users of information from financial statements through the analysis gives a new dimension to the usage information contained in these reports. That is why we say that the task of financial



analysis is to identify good opportunities of the company that these opportunities could be used in the right way but also the task of financial analysis is to recognize weaknesses so that the company could in time take appropriate corrective action.

## **5. Definition of Corporate Company and Corporate Governance**

### **5.1. The Term Corporate Company and Corporate Governance**

The Corporation is the most advanced form of business organizations and corporations that are used in a market economy. It makes that shape of these companies, which as a capital company is founded by one or more persons, under a joint company, in order to perform certain activities, and whose basic equity (basic capital) is pre-defined and divided into shares of a certain nominal value (Babic, Simic, Sunjic & Puljic, 2008, pp. 31).

The business success of a company/corporation is determined by numerous factors including the manner and form of organization, so that in spite of certain shortcomings, the advantages of corporate companies opt many companies to organize exactly in this legal form. The concept of corporate governance is also an important factor in business success.

Corporate society is governed by the appropriate authorities that are appointed in accordance with legal rules and usually consists of: Assembly of Shareholders, the Supervisory or Management Board and the Management Board or the top management. The concept of corporate governance has been defined in different ways depending on the environment, structural or cultural characteristics as well as the regulatory and legal environment, in which all definitions have a common basis from which they start. Be ethical, be responsible and be profitable, it is imperative for corporation of our time (Stainer & Stainer 1998: 5).

At the international level there are different models of organizing and defining the concept of corporate governance that have been published by various organizations such as the Organization for Economic Cooperation and Development (OECD) that defines corporate governance as "a set of relationships between a company's management, its board, shareholders and other stakeholders (available on <http://www.oecd.org/daf/ca/corporate/governance/principles/>). Seen from the point of view of the banking sector, corporate governance involves the manner in which general manager and senior management manages the operations of banks, which particularly applies to how they (Basle Committee on Banking Supervision, 2006):

- Set of corporate goals,
- Daily management of the bank,
- Fulfill the obligations of responsibility to their shareholders and take into account the interests of other recognized stakeholders,
- Coordinating corporate activities and behavior with the expectation that banks operate in a safe and healthy manner and in accordance with applicable rules and regulations and
- Protect the interests of depositors.

Increasing involvement and commitment of corporate companies' management for good and successful corporate governance came as an answer to the many studies that have found out that the failures at different levels of corporate governance the key reasons for the collapse of some financial institutions and the financial and economic crisis. Due to all of this, importance of

corporate governance at the global level will continue to grow, in terms of finding new tools in response to challenges of modern business of corporate companies.

## **6. Role of Quality of Audit as a Tool of Corporate Governance**

### **6.1. Characteristics of the Current Situation and the Presence of Factors the External Audit in the Audit Companies in the Federation of Bosnia and Herzegovina**

Last years are undoubtedly marked by significant changes in the political, economic and almost all other spheres of life in Bosnia and Herzegovina (B&H). The reforms that are being implemented are radical but significantly limited constitutional arrangements, in terms of legislative and executive powers and those still unfinished in some areas continue to adapt to the pace that B&H is in the process of joining the European Union (EU).

The most important overtaken obstacles that have stood in the way of the development of accounting and auditing profession, and therefore the development and improvement of market, economic and for us an essential investment environment, were reflected in the territorial divisions of accounting and audit space to entity spaces with mismatch and collisions of law; application, in part, inconsistent accounting and auditing standards and shared responsibilities for their adoption, publication and interpretation; uncoordinated, insufficient quality and expensive education, testing, certification and licensing of accountants and auditors, and the absence of a single power, authority, which would work on improving the profession (Tusek, Zager & Ricka, 2006, pp. 412 ).

The adoption of the Law on Accounting and Auditing of Bosnia and Herzegovina (Official paper B&H, 2004, No. 42) audit profession is formally introduced in our economic system. Since the enactment of legislation and the introduction of the audit profession to date, the development of the auditing profession is accompanied by numerous problems and limiting factors resulting from the external environment of society on the one hand, and the organization and operation itself auditing profession on the other. Key problems that accompanied the development of the auditing profession in the world and in our country are the lack of a minimum common methodology of audit companies, unresolved issues of control over the work of auditing companies, the issue of independence of auditors, the lack of licensing audit profession, the phenomenon of unfair competition between audit companies, lack of Institute for revision with powers of such professional organizations existing in the developed countries of the audit profession, the lack of a single tariff for auditing and many other problems.

Numerous studies in the world and neighboring countries have shown that by lack of control over the work of authorized auditors and audit companies, unfortunately, corrupt audit companies are protected. Looking at the ratio of the auditing company and companies in which the audited financial statements have been observed following the most significant problems are typical also for our (B&H) audit profession:

- A relatively small number of clients in relation to the relatively large number of audit companies, therefore unfair competition between individual auditing companies appears and has a particular impact on the amount of fees for audit, which is often so low that it does not allow for covering the costs of the audit company.
- Issuing an report other than positive in developed market economies results in a change of management of the owners of corporate companies, while in our country the most

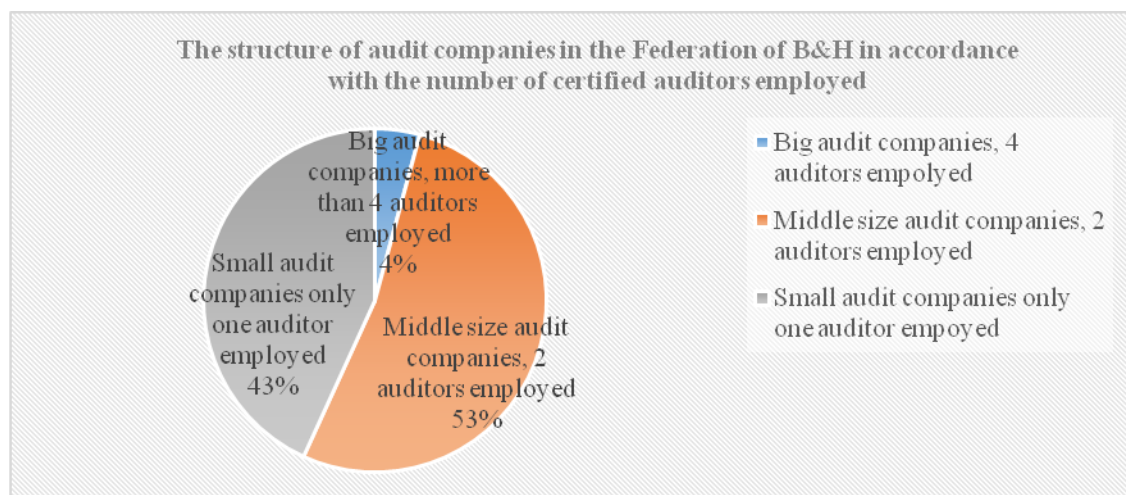
common case is that the management change auditing company, which of course affects the quality of report that is publicly disclosed.

- According to Article 52 of the Law on Accounting and Auditing in the Federation of Bosnia and Herzegovina, Audit Company to perform the audit is being selected. The time limit for the selection of the audit company is relatively short because it does not leave enough time for monitoring and studying business and accounting recording of business events.

The accounting profession and therefore audit in B&H works at the entity level, but in this paper a survey was conducted only on the territory of the FB&H and all observations and results obtained will relate to the functioning of the accounting and auditing profession in the area of the Federation.

Audit companies in the Federation shall be established in accordance with the provisions of the Audit and accounting and other laws relevant to the company of such forms. The main difference in the establishment of audit companies in relation to other companies and which provides Accounting and Audit Act is that the majority of voting rights and a majority shareholding in the audit company must be exclusively in possession of authorized auditors or another audit company as a founder. On the basis of the research and data from the Chamber of Auditors, the structure of audit companies in the Federation is as follows:

**Chart 1.** The Structure of Audit Companies in the Federation of Bosnia And Herzegovina



Source: The research of the author

Based on Chart 1 it can be concluded that FB&H is characterized by medium auditing companies that make up 53% of the total registered 103 audit companies which have employed 2 or at most 3 certified auditors.

Audit Chamber of the FB&H, according to its statute, has the authority and perform a number of tasks in the field of auditing and other professional areas related to the revision with the aim of further improvement and development of the auditing profession at the level of quality recognized by the international institutions for the accounting and auditing profession. Since 2010 when inaugural Assembly Chamber of Auditors of the FB&H was held to date, the Chamber has conducted a number of activities. When determining the price - audit fees the impact of price

competition is of particular importance, apropos the amount of audit fees to audit the quality of services rendered. It is logical that price competition may lead to a decline in audit fees so much so that compensation is not able to cover audit costs. In addition, lower cost of the audit lead to the fall of the quality of service audit because the auditor to get the cost savings audits, can reduce the scope of the audit as it can prevent to detect significant material misstatements. It is therefore of great importance for audit companies is the activities of Chamber in giving proposals of tariffs for audit services since in this way it was trying to minimize unfair competition and improve the quality of work audit companies.

## **6.2. Description Sample and Method of Research of Contribution Correlation of Financial Analysis with the External Audit in Corporate Governance**

This research was conducted in the FB&H and the pattern of research are corporate companies from the territory of the FB&H. The study is specific exactly because of sample selection. In fact, the pattern of corporate society was taken in the case of financial institutions precisely banks since they are considered as most relevant for the researched topic. The initial sample for the empirical study of the role of audit quality as a tool of corporate governance included a list of fifteen out of eighteen banks in the FB&H. For the purposes of this research the data that is not collected by questionnaires, and that were available, were collected from the websites of corporate companies, the Audit Chamber of the FB&H, the Central Bank, the Association of Accountants and Auditors.

A sample of 15 banks is considered sufficient to represent the state of the entire study area of correlation with the financial analysis with the external audit in the process of making business decisions and decisions on lending because the study was conducted in the "largest" banks analyzed by the amount of loans granted with the mandatory use of audit statements as one of the basic documents for the decision on the loan.

The study was conducted with the goal to gather data and conclusions on the basis of which it would be confirmed or rejected the set general and auxiliary hypotheses. Empirical research was conducted by survey method "on-line" and direct surveys in the time period from 15 August 2015 to 25 March 2016. The questions were structured in accordance with the set objectives of the research. In the questionnaire to banks first part of the questionnaire was related to general information about the examinee while with other questions we gather the information, views and opinions on correlation of financial analysis with the quality of external audit as a logical business connections in the corporate governance process. Data collected by questionnaire were analyzed selected mathematics - statistical method - correlation, in order to obtain new knowledge about the researched issues.

## **6.3. Analysis of the Results of the Empirical Research**

"Do not put your faith in what statistics say until you have carefully considered what they do not say." William W. Watt

Correlation is a statistical connection between two or more variables. The set of methods used to measure the degree of intensity of the statistical connections is called the correlation analysis, and standardized indicators of correlation are called coefficients of correlation. If between the two variables the existence of linear statistical connections is assumed, then the strength and direction of the connection is measured by linear correlation coefficient  $r$  ( $-1 \leq r \leq 1$ ). The observed variables are positively correlated if the increase in the one is accompanied by

an increase in the other and vice versa, and they are negatively correlated if the variables do not change in the same direction. Correlation (positive, negative) is stronger when  $r$  is closer to 1. Application of correlation analysis is very broad, and this method can be used in an area wherever there are quantified sizes that follow a certain connection among each other. Variables analyzed by correlation analysis are divided into two categories: the independent variable ( $x$ ) and dependent variable ( $y$ ). Independent variable is a variable which is assumed to cause a change in another variable (the dependent variable) (available on <http://www.znanostblog.com/korelacije/>). The results obtained by using correlation analysis can be presented graphically. The specific form of individual chart gives us a clear indication of what kind of connection it is. One of the forms of graphical presentation of the results in this paper will be scatter diagram. Scatter diagram is primarily used in order to see connection between two variables in a simple visual way. Using this diagram we will try to spot the correlation of financial analysis with audit quality.

### 6.3.1. The Basic Characteristics of the Sample and a Description of the Variables

The study was conducted on a sample of 15 corporate companies, auxiliary and main hypothesis were examined based on the collected data. Results of research of auxiliary hypotheses are complemented by data from other sources, and based on all the results and auxiliary hypotheses conclusion was made about the general hypothesis.

**Table 1:** Description of Variables

Title of Variable	Description of Variables
The Cooperative companies	Financial analysis based on the quality of audit reports / Financial analysis based on business reports of corporate companies

Source: The research of the author

### 6.3.2. Research Results

Auxiliary hypotheses

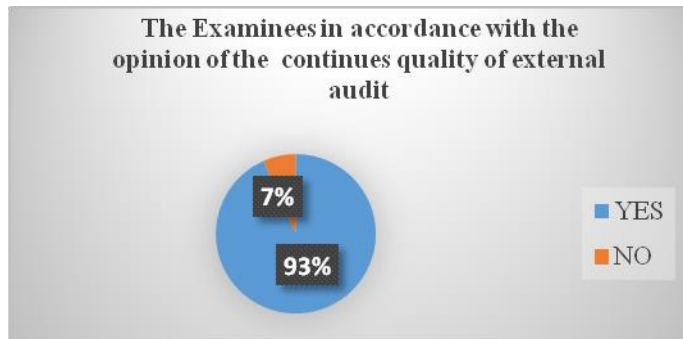
AH1: *With continuous process of the external audit quality and the process of financial analysis the confidence in the content of business statements is increased by users and leads to more efficient management of corporate companies.*

**Table 2:** The Examinees in Accordance with the Opinion of the Continuous Quality of External Audits

With continuous process of the external audit quality and the process of financial analysis the confidence in the content of business statements is increased by users and leads to more efficient management of corporate companies.	Responses (frequency) with YES	Responses (frequency) with NO	Cumulative frequency
	14	1	15

Source: The research of the author

**Chart 2:** The Examinees in Accordance with the Opinion of the Continuous Quality of External Audits



Source: The research of the author

The survey was conducted via an online survey where examinees could give their opinion about the statement: " With continuous process of the external audit quality and the process of financial analysis the confidence in the content of business statements is increased by users and leads to more efficient management of corporate companies." with "YES" or "NO". Table 2 and Chart 2 shows that 93% of respondents answered "yes" in which it can be concluded that 93% of respondents believe that the statement is true. All respondents are with years of experience in financial analysis and based on the experience they know how information from the unaudited financial statements may be irrelevant, so they believe that it is exactly the continuity of the external audit quality is one of the main functions in restoring confidence in the content of business reports.

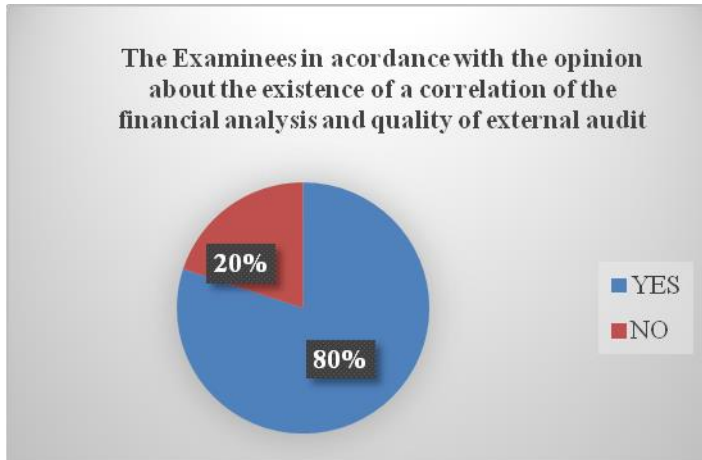
AH2. *The existence of a correlation of the financial analysis with the quality of external audit reduce inequality in the quality of information held by different users (investors, providers of loans, managers, etc).*

**Table 3:** The Examinees in Accordance with the Opinion about the Existence of a Correlation of the Financial Analysis nnd Quality of External Audit

The existence of a correlation of the financial analysis with the quality of external audit reduce inequality in the quality of information held by different users (investors, providers of loans, managers, etc.	Responses (frequency) with YES	Responses (frequency) with NO	Cumulative frequency
	12	3	15

Source: The research of the author

**Chart 3:** The Examinees in Accordance with the Opinion about the Existence of a Correlation of the Financial Analysis and Quality of External Audit



Source: The research of the author

The survey was conducted via an online survey where respondents their opinion about the statement: "The existence of a correlation of the financial analysis with the quality of external audit reduces inequality in the quality of information held by different users (investors, providers of loans, managers, etc.)" could express with "YES "or" NO". The Table 3 and Chart 3 shows that 80% of respondents answered with "YES" from which it can be concluded that 80% of respondents believe that the statement is true.

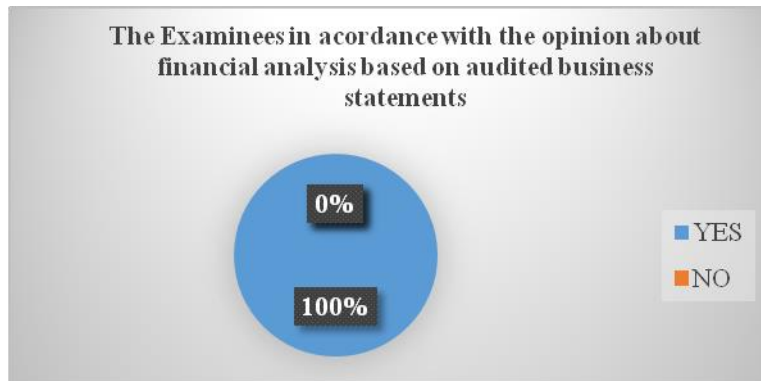
*AH3: The financial analysis is based on the audited business statements gives more reliable indicators from financial analysis based on business statements that have not been audited by an external auditor.*

**Table 4:** The Examinees in Accordance with the Opinion about Financial Analysis based on the Audited Business Statements

The financial analysis is based on the audited business statements gives more reliable indicators from financial analysis based on business statements that have not been audited by an external auditor.	Responses (frequency) with YES	Responses (frequency) with NO	Cumulative frequency
	15	0	15

Source: The research of the author

**Chart 4:** The Examinees in Accordance with the Opinion about Financial Analysis based on the Audited Business Statements



Source: The research of the author

The research was conducted via an online survey where respondents their opinion about the statement "The financial analysis is based on the audited business statements gives more reliable indicators from financial analysis based on business statements that have not been audited by an external auditor "could give with the answers "YES" or "NO". Table 4 and Chart 4 shows that 100% of respondents answered "yes" and it is easily concluded that 100% of respondents believe that the statement is true. According to the Law on Accounting and Auditing all those that are obliged to have the audit are required to submit the audit statement for the previous financial year to the end of the current financial year to the relevant Financial Information Agency (AFIP), where the submission of the annual financial statements is also done. In the FB&H the competent agency is AFIP that was renamed in IFJ's from 01/03/2016. In this way, interested users are able to obtain the audit statements based on written request and make financial analysis on the basis of these reports and get more familiar with the business of potential partners and create relevant information support for business decision making.

#### General hypothesis

*"Correlation of financial analysis with the quality of external audit of corporate companies is a logical business connection that provides a realistic and rational information for the purposes of corporate governance."*

#### Conclusions of auxiliary hypotheses:

The research confirmed all the three auxiliary hypotheses. Most respondents believe that there is a correlation between the financial analysis and the external audit quality. From all three tables and charts can be seen that 93% of respondents believe that with continuous process of the external audit quality and financial analysis the confidence in the contents of the business statements is increased, 80% think that inequality in the quality of information held by different users (investors, providers of credit, managers, etc.) is reduced, and 100% of respondents believe that financial analysis based on the audited business statements gives more reliable indicators of financial analysis based on financial statements that have not been audited.







Furthermore, research has shown that there is a mutual connection of the external audit quality and financial analysis. Hence, the more qualitative the audit is the results of financial analysis more realistic and this reduce the share of wrong decisions in corporative management. It is necessary to perform correlation analysis in addition to the auxiliary hypothesis to make a conclusion about the acceptance or rejection of the general hypotheses.

In the process of research, complex statistical analysis are not used, but to statistically come to a conclusion about the correlation of financial analysis and the external audit quality, more precisely about the connection between the financial analysis and the external audit quality it is necessary to measure the connection between variables with correlation coefficient and for this purpose the Spearman correlation coefficient is used for which the values are set:

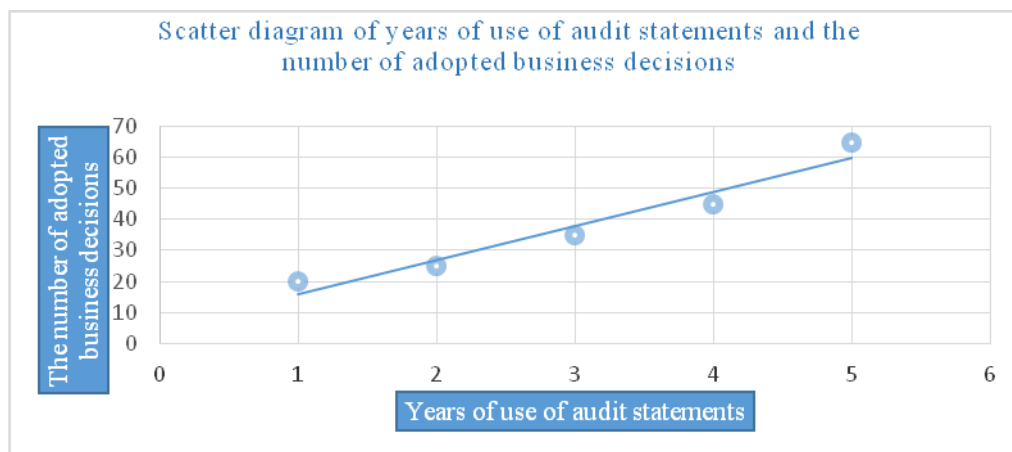
$$r = 0 \quad i \quad r \neq 0$$

Based on the value of the coefficient the direction and intensity of the coefficient can be concluded:

$r = -1$ ;	$r = 1$ ;		functional negative / positive correlation
$-1 < r \leq -0,8$ ;	$0,8 \leq r < 1$		strong negative / positive correlation
$-0,8 < r \leq -0,5$ ;	$0,5 \leq r < 0,8$		medium-strong negative / positive correlation
$r = 0$			no correlation

The analysis was conducted on a sample of 10 corporate companies (most representative banks in the FB&H, ranked by years of using audit statements and the number of business decisions made. To visually observe correlation between financial analysis and audit, scatter diagram is used. An independent variable (X) is audit and the dependent variable (Y) is financial analysis and on the X axis there are the years of use of audit statements and on the Y axis there are the numbers of successful business decisions made.

**Diagram 1.** Years of Using Audit Statements and the Number of Business Decisions Made



Source: The research of the author

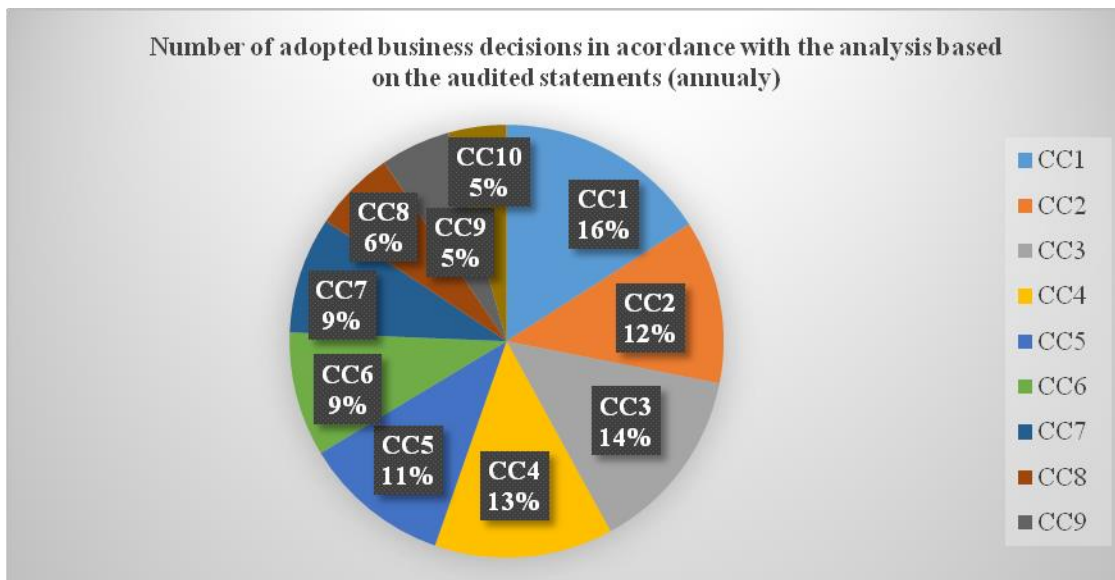
Based on the diagram, it can be concluded that the more years audit statements are used the larger number of good business decisions are made, there is a correlation but it is not complete and perfect.

**Table 5:** Years of Introduction of the Audit Statements in the Practice of Financial Analysis and the Number of Business Decisions based on the Analysis of the Audited Statements

Coorporate companies	Years of introduction of the audit report in the process of financial analysis	Number of adopted business decisions in accordance with the analysis based on the audited statements (annually)
1	5	More than 50
2	4	42
3	4	48
4	4	46
5	3	38
6	3	32
7	3	30
8	2	21
9	2	18
10	1	15

Source: The research of the author

**Chart 5:** The Number of Business Decision Made



Source: The research of the author

**Table 6: Ranking the Values of Variables**

Coorporative companies	Years of the introduction of the audit statement in the practice of financial analysis $X_i$	Business decisions in accordance with the analysis based on the audited statements $Y_i$	RANKED VARIABLES	
			$r(x_i)$	$r(y_i)$
<b>1</b>	1	20	9	9
<b>2</b>	4	42	2	4
<b>3</b>	4	48	3	2
<b>4</b>	4	46	4	3
<b>5</b>	3	38	5	5
<b>6</b>	3	32	6	6
<b>7</b>	3	30	7	7
<b>8</b>	2	21	8	8
<b>9</b>	2	18	10	10
<b>10</b>	5	56	1	1

Source: The research of the author

**Table 7: Calculation of the Difference of Value Ranges**

Coorporative companies	Ranked variablese		$d_i = r(x_i) - r(y_i)$	$d_i^2$
	$r(x_i)$	$r(y_i)$		
<b>1</b>	9	9	0	0
<b>2</b>	2	4	-2	4
<b>3</b>	3	2	1	1
<b>4</b>	4	3	1	1
<b>5</b>	5	5	0	0
<b>6</b>	6	6	0	0
<b>7</b>	7	7	0	0
<b>8</b>	8	8	0	0
<b>9</b>	10	10	0	0
<b>10</b>	1	1	0	0

Source: The research of the author

$$\Sigma = d_i^2 = 6$$

Spearman's coefficient is:

$$r_s = 1 - \frac{6 \sum_{i=0}^n d_i^2}{N^3 - N} = 1 - \frac{6 \times 6}{10^3 - 10} = 0,96$$

From the calculated correlation coefficient it is evident that there is a strong correlation between using of audit reports during number of years in the process of financial analysis upon which business decisions are made with the number of adopted business decisions. The observed variables positively correlated, i.e. correlation is  $r = 0.96$  and indicates a strong positive correlation, the more years the audit reports were used by corporate company in the process of financial analysis the more good business decision were made. The greater use of audit statements is expected in the future as the basic documents for making business decisions. Research has shown that there is a correlation between the financial analysis and the quality of external audit, and that the general hypothesis has been fully accepted and it says: "Correlation of financial analysis with the quality of external audit of corporate companies is a logical business connection that provides a realistic and rational information for the purposes of corporate governance."

Based on the research it can be concluded that there is quality in the performance of the external audit in the FB&H, but it is still not at a satisfactory level that is required in the EU, the path that is chosen by our country. This research may contribute to:

- Development and expansion of the existing literature in the field of financial analysis and the quality of external audit,
- Raising awareness of the importance of high-quality audits for modern business of corporate companies and the role of audit quality as a tool of corporate governance,
- Raising awareness of the importance of the external audit for auditing companies in terms of the benefits that society can have by doing a quality audits.

## 6. Conclusion

Various forms of external and internal analysis, controls and audits are important tools of modern concepts of corporate governance. In fact, corporate management is the process of selection of the best of several possible decisions whose main goal is to raise the quality of the overall business of corporate company and its organizational units. Therefore, in the environment of the constant changes and the impact of various environmental factors, it is clear that business decision-making in the management of corporate companies presents a key role in maximizing business results that cannot be achieved without proper financial analysis based on relevant information.

This research showed that the external audit and financial analysis is an important tool that financial managers use in making business decisions and that there is a strong correlation between financial analysis and external audit, on the basis of which it can be concluded that in the future the financial analysis will be based on audited financial statements. Taking into account that the audit is the process of control and assessment of financial statements with the aim of

expressing an independent and professional opinion on their validity and objectivity, the audit statements are increasingly used as an indispensable source of reliable information on which various forms of financial analysis are being done.

In the practical part of the work meaning in the process of proving the hypothesis, statistics analysis were used where the focus was especially on the quality of information that is processed in analysis. Reliability and comparability of financial information is a prerequisite for minimizing risk in the corporate governance process. It is therefore of great importance that the regulatory authorities from their position affect the quality of financial statements and the quality of external audits. However, starting from the thesis that the quality of external auditing brings back confidence in the financial statements, it was necessary to explore some, for the structure of the researched topics relevant characteristics in order to show that it is not correct to speak about the financial analysis based on the audited reports for analysis itself, but the financial analysis that will provide a realistic and rational information necessary for effective corporate governance. Therefore, on the basis of pre-processed and presented data it can be concluded that the main hypothesis is confirmed and that the correlation of the financial analysis and the external audit quality logical business connection that represents the indispensable source of reliable information about the financial position and business performance as well as the capital value of corporate company.

External audit as a measure of the credibility and impartiality of the content of financial statements directly affects the quality of the information contained in the financial statements. The information required to make business decisions that are collected from independent sources such as the audit statement, undoubtedly eliminate the question of bias of persons who compiled the financial statements. Exactly due to these characteristics audit has become one of the main instruments of communication among various governance activities of corporate companies as well as other internal and external users.

Requirements that are set towards the external auditor are numerous and various that certainly includes the issue of the quality of the process of performing the audit work. Auditing standards constitute the basic framework that determine and elaborate the principles and provide guidance for performing external audit. International standards for quality control audits (ISQC) set the requirements that auditing companies, professional accountants and other financial professionals should apply with the intention of establishing a quality control audit, as well as other related services from the accounting profession.

External audit apropos audit statement has a two-way correlation to the financial analysis. As a measure of credibility and fairness of the financial statements, external audit contributes directly to the quality of financial statements and hence their usefulness in the governance of corporate companies. The basic financial statements as the main and most important agents of accounting information presented to the Management Board, the Supervisory Board and other users sometimes do not give enough information on which to objectively assess the quality of a successful business. Therefore, the essential indicators of business performance of corporate company is needed that is prepared by the procedure of financial analysis and used for decision-making to achieve better overall results of business.

In accordance with the results of the empirical research it can be concluded that it is rightfully to require quality audits at the highest level of technical ability, freedom from prejudice and concern for the integrity and reliability of the audit statements which represents a quality basis for the financial analysis. In addition, it is necessary to carry out continuous education of certified auditors in accordance with prevailing business trends in terms of increasing awareness of the importance of the external audit quality. This is because the independent audit opinion on

the financial statements of corporate companies have an important role in the confirmation of the relevance of information about successful governance of corporate companies.

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# DETERMINANTS OF THE CHOICE OF MIGRATION DESTINATION: EVIDENCE FROM THE WESTERN BALKAN TRANSIT ROUTE

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## **Abstract**

This paper explores motivations of migrants on the Western Balkan route in their destination choices during the recent wave of mass-migration from crisis regions of the Middle East to Western and Northern Europe. The research used the survey method on a convenience sample of migrants who passed through a refugee transit camp in Eastern Croatia. Using empirical, quantitative methodology we gathered insights into reasons for the migrants' departure from their homelands, logistics of their journey, as well as some of their decision parameters for the final destination of their journey. The data was analyzed with the SPSS statistical software package. We discuss potential benefits for the European Union as the chief target of this enormous influx of human capital. The main objective of this paper is to gain a better understanding of migrants' decision making who decided to risk their lives to find a better future in a country whose language and culture they don't know. These findings may be useful to all those who are interested in this huge mass-migration issue overall. In addition, the research results should be of interest at the strategic level of government since the findings could improve their understanding of the relationship between migrants and human traffickers/smugglers.

**Keywords:** *migrant crisis, human capital, destination choice, Western Balkan route*

**JEL classification:** M31



# COMPETITIVENESS OF BOSNIA AND HERZEGOVINA ACCORDING TO PORTER'S THE DIAMOND

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## **Abstract**

Competitiveness has been one of the most analyzed economic terms in the past three decades, while the concept itself has resulted from the evaluation of various theories on this term. In spite of a growing interest of both academic and business community, theoretical explanations of this concept have been complicated.

Michael Porter is a creator of the theory on competitive advantage of nations. This theory has been one of the most quoted theories in international exchange nowadays, strategically connecting aspects of business competitiveness at the level of individual enterprises with the overall environment at the level of various sectors and the economy, thus being used by the World Economic Forum (WEF) as a basis for assessment of competitiveness of nations.

According to this theory, national well being is not inherited but created by strategic choices. Porter's „The Diamond of national advantages“ presents an analysis of business environment of a country taking into consideration four components, as follows: Factor conditions, Demand conditions, Related and support industries and Firm strategy, structure and rivalry. This Diamond model provides a flexible concept enabling all interested parties in a country to consider competitiveness in all its complexity and to have a quality communication about the enhancement of the business environment aiming at improving the competitiveness. Therefore all four components may only be analyzed as a whole.

The purpose of the first step of this research is to analyze the competitive position of Bosnia and Herzegovina within the period 2010-2015 based on the indicators of The Global Competitiveness Report published annually by the World Economic Forum (WEF), then in the second step it is to attempt to create a Porter's diamond of competitiveness for Bosnia and Herzegovina.

Regarding the competitive position of Bosnia and Herzegovina within an international framework, the findings of the research indicate that the results of Bosnia and Herzegovina were getting worse in the period of observation, while within its „national diamond“ it had numerous disadvantages in all four components, and some positive results in only two components.

**Keywords:** *Competitiveness, Porter's The Diamond of national advantages, B&H's The Diamond of national advantages*

**JEL classification:** F53, F63, P29

# **PUBLIC PRIVATE PARTNERSHIP: THE CASE OF BOSNIA AND HERZEGOVINA**

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## **Abstract**

Public Private Partnership (PPP) is a contract between the public and private sector. The goal of PPP is to deliver public goods in fields such as infrastructure, transport, communication, health, education, and social services. It is up to the private sector to provide a public good or service using superbly efficient project management methods, while accepting a big part of the financial, technical and operational risks in the project.

The PPP model started to be widely applied in the early nineties of the last century, mainly in Great Britain, Canada, Australia, the United States, China and India. It was seen as a good model for implementation of big, long lasting infrastructure and other projects, using mainly private investment. Governments consider this model favorable, as it enables implementation of huge projects without spending money from the budget or borrowing, and preferable in comparison to public purchasing.

PPP projects might satisfy the needs of citizens (tax payers) with regards to water, housing or electricity. The UN declared that world poverty will be eradicated by the next generation through application of the PPP model in the area of water supply, electricity, health and education.

This model could be a good solution for countries in the region, and particularly for Bosnia and Herzegovina. The necessary investments in infrastructure, health, education and social projects cannot be financed solely from the budget. Budgets in BiH are limited, as a result of the current economic situation, increasing public debt, constant budget deficits and the International Monetary Fund's pressure.

Researchers from government, business and financial sector, as well as international organizations have shown a high interest to study the PPP model. As far as the research methodology is concerned, a thorough literary review of secondary sources of data was conducted in order to draw the current conclusions and make recommendations for the future. In addition, my own experience in the last 10 years, dealing with this topic, helped me to make an assessment of the current situation in Bosnia and Herzegovina regarding the PPP model, and propose solutions for the implementation of a functional PPP system in order to increase economic growth and provide better services for citizens.

**Keywords:** *public private partnership, infrastructure, public sector, private sector*

**JEL classification:** H42

# THE IMPACT OF FINANCIAL SECTOR DEVELOPMENT ON ECONOMIC GROWTH: SOME EVIDENCE FROM TRANSITION COUNTRIES

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## Abstract

In this paper we empirically examine relationship between financial sector development and economic growth in 17 transition European countries, in the period from 1996 to 2011. We apply dynamic panel model and control for other relevant determinants of economic growth and endogeneity.

Hypothesis analyzed in this paper shows that financial system which have better expenses policies are better and more efficient in analyzing specific investment requirements. In this way better investment projects are selected and it encourages economic growth.

Financial systems which are more liberal concerning entrance of competition contribute to a better financial system in terms of new products, technologies and overall new way of business, and all this has a positive effect on a country s economy.

According to our findings, financial sector development positively and significantly affects economic growth.

**Keywords:** Financial system, Economic growth, Endogenous growth theory, Panel analysis

**JEL classification:** G0, C23, O16, O1, O0

## INTRODUCTION

Research of impact of financial system development on economic growth is very ambitious and interest for research on this subject increases, especially in the last thirty years. However, there is still no final stand on impact of financial system development on economic growth, in theory as well as in practice. (See Aziakpono, 2012; Stolbov, 2012 and Eschebach, 2004) and that is exactly why this subject is the center of attention of more and more scientists.

Most studies created in the period from 90's of the twentieth century were directed to detailed analyses of individual countries. Empiric research was rare, involved a limited number of

countries and did not systematically consider all determinants of economic growth. (Comp. Levine, 2000) Significant contribution to empiric research was given by Demirgüç-Kunt and Levine in 1996 and Beck, Demirgüç-Kunt and Levine in 2000. They enabled identification of channels through which financial development affects growth as well as checking how much the difference in financial structure of financial system (bankcentric versus marketcentric systems) is relevant for growth at all.

Contemplations on connection between financial system and growth through dichotomy of bankcentric and marketcentric systems has its starting point in studies which tried to explain the differences in economic success, of USA and Great Britain on one hand and Germany and Japan on the other, particularly through differences in the ways in which their financial systems are organized. Functional approach stresses that banks and market perform different and mutually complementary services which have positive implications on growth. Therefore, it can be concluded that for economic growth it does not matter if it is based primarily on banks or capital market, but whether it performs its functions successfully. Of course, the availability and total development of financial services is of importance, and not the organization of the financial system.

## PREVIOUS RESEARCH

Due to limited space it is not possible to name all the studies which have researched the connection between finances and economic growth so we will focus on studies which are considered more significant and which are directed towards empiric research and are more recent. Also, the influence of financial structure on economic growth will not be mentioned separately because they are complementary.

Moses Sindani in his study „The Impact of Financial Sector Deepening on Economic Growth in Kenya“ (2013) also confirms that development of financial system encourages economic growth by increase of efficiency and investments.

*Gambacorta*, Yang and Tsatsaronis (2014) researched the impact of financial system development on economic growth. According to them both banks and capital markets increase and affect economic growth, but to a certain level. Above that level increase of crediting and market financing do not affect further economic growth.

Cournède, B., O. Denkand P. Hoeller (2015), indicate that finances are very important for economic growth, but that there can also be too many finances is the main premise from which this research starts. This study researches the period of fifty years based on data of OECD countries to answer the question what is the role of financial sector in economic growth. In the past fifty years, loans from banks and other intermediators for population and companies has grown three times faster than economic activities. In most OECD countries, further expansion will more probably slow down, than increase growth. More loans in private sector slows down the growth in most OECD countries, but more financing through market capital boost economic growth. Loans have stronger influence on growth but those meant for companies and not population is the result of this research.

Boris C. and Oliver D. in their study “*Finance and Economic Growth in OECD and G20 Countries*” from 2015 indicated the role of financial development and its influence on economic growth in former communist countries of Central and Eastern Europe. Countries from the sample which had undeveloped financial system in communism, give interesting findings for connection of financial system and economic growth. Research shows that loans in private sector have positive effect on growth in selected countries. Also, high inflation can annul positive effects on growth in selected countries. Indicators used in this research are loans in private sector, interest *spread*, banking sector business costs, concentration.

Conclusion of this research is that one should be very careful when analyzing and making conclusions because countries from the sample have a relatively weakly developed financial system and thereby weak competition in banking which can finally decrease the effect of financial development on economic growth. The main conclusion is that loans in private sector have a positive and great impact on economic growth. High interest *spreads* have a negative impact on economic growth. The following conclusion is that net interest margin does not influence economic growth but costs do. Also, high concentration of banks leads to weaker growth (due to high interest *spreads*).

Beck, R., G. Georgiadis and R. Straub (2014) consider that loan expansion has a positive impact on production growth per inhabitant up to a certain point. Beyond that threshold impact of finances on growth is no longer statistically significant. They indicated, however, that the estimated nonlinear relation can come from neglecting some other factors which were not considered in literature up to then. Those factors can have a negative impact on growth in mature financial systems, and they include a magnitude of financial cycles, and also include non-intermediary activities of banking business models.

Angeles, L. (2015) in his research indicates that loan expansion is related to faster economic growth and larger appearance of financial crisis – a result which seems to be mutually contradictory. The study shows progress in explaining results by separating private sector loans to company loans and population loans. Empiric analysis indicates that company loans are creditable for positive impact on growth, while the appearance of crisis is mostly caused by population loans. Events in the last ten years, where fast loan expansion lead to crisis and very little to growth, can be comprehended as change in composition of loans placed to the population.

Langfield, S. and M. Pagano (2015), in their research indicate that European financial structure has become very bankcentric (in almost all European countries) – a lot more than in other world economies where capital market is far more developed. This research indicates that increase in the sense of banking system size in relation to capital market is connected to a more systematic risk and has less influence on economic growth, especially during real estate market crisis. In conclusion it discusses a political solution for European perspective in the sense to decrease

„partiality to the banks“, and which includes decreasing regulatory benevolence towards banks, while on the other hand it is necessary to support capital market development.

## DATA SOURCE AND RESEARCH METHODOLOGY

Data necessary for creating the theoretic part of dissertation and theoretical analysis of previous research are gathered within the first phase of research – analysis of secondary scientific sources – primarily of books and articles published in science magazines. During creation of the empiric part of this research the following methodological procedures have been used:

1. Gathering primary scientific data from various sources IMF – WEO database, IMF – IFS database, IMF Financial Survey Database, WB – WDI database, ECB, EBRD – EBRD transition database, Central banks of selected countries
2. Different statistic methods of data processing (descriptive statistic method, correlation and regression analysis, panel-analysis).

For empirical analysis 17 countries of Central, Eastern and Southeastern Europe have been selected. Selected countries are shown in the following table:

Table 1. Selected countries of Central, Eastern and Southeastern Europe

Country code	Country name	Country code	Country name
Albania	ALB_	Italy	ITA_
Austria	AUT_	Macedonia	MAC_
Bosnia and Herzegovina	BiH_	Montenegro	MNE_
Bulgaria	BUL_	Poland	POL_
Croatia	CRO_	Romania	ROM_
Czech Republic	CZK_	Serbia	SER_
Germany	GER_	Slovakia	SVK_
Greece	GRE_	Slovenia	SLO_
Hungary	HUN_		

As it was mentioned in previous part of this dissertation, this research is conducted on 17 selected countries. Research is conducted for period from 1996 to 2011. This raises the question why this period was selected for observation?

Namely, most of the countries from the sample gained independence before the beginning of this research. Sadly, there was a destructive war in the area of former Yugoslavia and the countries which originated from the breakdown of Yugoslavia did not go through the process of economic transformation into market regime in the true sense of the word.

Also, from the beginning year of this research there are available data on development of financial systems of selected countries. Of course, for certain countries some data are missing, but that did not disturb the process of analysis itself and conclusion which can be made. For example, Serbia and Montenegro do not have individual data since they separated only in 2006. In this research data for those two countries are analyzed as common data up to 2006, and from 2006 for each country separately.

In empirical analysis will be analyzed eleven variables which indicate the development of financial system for each country from the sample and all used variables will contain annual data.

This sample of selected countries is interesting in this research because it considers countries with different financial system development level. But above all it is important to stress several historical facts from all selected countries as well, which follows below.

Until the beginning of nineties some of the selected countries did not exist as independent countries. The breakdown of Yugoslavia in 1991 created new countries Slovenia, Croatia and Bosnia and Herzegovina, in 1992 Macedonia gained independence, and from 2006 there was separation between Serbia and Montenegro.

Most of the selected countries entered the European Union or are negotiating entrance. European Union was joined by Czech Republic, Hungary, Poland, Slovakia and Slovenia in 2004, while in 2005 membership in the European Union was gained by Romania and Bulgaria. Croatia enters the EU in 2012. Candidates for entrance in the EU are Macedonia, Serbia and Montenegro.

Furthermore, in the nineties of the last century all those countries went through process of transformation from socialist to capitalist system, that is directed themselves towards market economy. However, it is important to stress that the countries of former Yugoslavia went through war developments and did not truly undergo the process of transformation from planned towards market economy so even today after two decades there are considerations that the former system was in many ways the better one. One of the reasons for such contemplation was conversion (privatization)<sup>17</sup>, but this process is not the subject of this dissertation and will not be specially elaborated.

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<sup>17</sup> Breaking point of market transformation in privatization process. In the mentioned countries it was developing through different models, but it had the same meaning everywhere – it represented a sort of barrier to attempts of maintaining or establishing market monopolies. In Poland was applied the so called mixed privatization model. Long term plan of privatization and capital market control through state investment funds and foreign managers resulted with a consistent privatization process in which especially large companies gradually after reconstruction entered capital markets. Characteristic of Hungarian model of privatization is absence of capital distribution unlike Slovakia and Czech Republic which applied the model of so called voucher-



Stagnation in development was recorded by zero or even negative rates of economic growth for the full 10 years (between 1980 and 1990). State property denied entrepreneurship and private initiative at the time, and without them it was difficult to establish a continued process of innovation and technological changes.

In the beginning the countries experienced a sharp decline of economic growth which was often accompanied by other macroeconomic instabilities such as hyperinflation and currency crisis. The growth which came after the conduction of stabilization processes mostly generated increased consumption which in the situation of opening markets served the growth of import. External lack of competitiveness of transition economies resulted in stagnation of export and led the countries to high trade deficits. Mentioned deficits of trade balance are compensated by growing external debt or inflow of direct foreign investments which only marked the change of ownership structure. In the countries it comes to privatization of state sector, price liberalization, market opening and banking system reform. (Comp. Vukoja, 2008)

Development of capital market was interrupted during socialist government. During nineties in all the countries it comes to revival of financial markets, primarily in stock market. Development of stock market was contributed by transition process. Although stock markets continue to develop, it can be concluded that we are still talking about small markets. (Comp. Bogdan, 2008)

Special significance in privatization process has the privatization of banks. That was also the case in Croatia. Pre-transition period burdened the banks with unfavorable capital structure and large share of risky claims. All this is consequence of selective monetary-credit policy when banks conducted business under political pressures. Main characteristics of banking system in the second half of the 90's are its blockade, illiquidity, bankruptcies in parts of industry, sanation of banks and finally their sale to foreign owners. Along with the mentioned, it was restrictive monetary-credit policy, incomplete policy of public debt as well as undeveloped instruments of secondary market that additionally deepened the crisis in banking system.

Considering that there were reforms in banking system, revival of capital market, market openness and financial openness, it can be concluded that countries of Central and Eastern Europe are developing financially. Development of financial system in observed countries has particular weight because aside from restructuring of banking intermediators, which adjust to market economy, it comes to construction of nonexistent parts of banking system such as capital market and non-banking intermediators. Despite different results in capital market development, banks still dominate the financial systems so financial systems are still bankcentric.

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coupon presentation. In Slovakia it was later replaced by „case by case“ model. In Slovenia was conducted „compromising privatization model“, while Croatian privatization model was developing in stages, through conversion and privatization. In Croatia it starts in 1991 and includes 3.600 companies with total estimated value of app. 20 billion USA \$. (It is necessary to stress that it was not total value of national production capital!) For getting this value it is necessary to add 30-40 million USA \$ of estimated value of the remainings of national production capital.

## RESEARCH RESULTS

We begin by checking which of the independent variable groups are highly correlated. Namely, it cannot be expected that all 11 independent variables, with additional control variables, will be statistically significant, where there is danger that variable prefixes will be wrong as consequence of multicollinearity which is present when there are many independent variables. On the basis of correlation matrix for the selected group of independent variables it is determined which ones have high connection between them. In this research model dynamic panel model was used with help of so called GMM estimator. Analysis is done in the way that test was conducted up to 2008 (to global financial crisis) and for the whole observed period. The reason for that is that we wish to analyze the influence of crisis on subject variables as well. From the above mentioned have been estimated 14 models with different combinations of independent variables and the same 14 models for pre-crisis period. That is total of 24 models.

Table 5.9.A. Estimated dynamic panel models for the whole observed period (system GMM estimator)

GROWTH	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
CONSTANT	-2,0407*	-1,0737	-2,0525*	-2,5327**	-7,3523***	-5,0378**
GROWTH(-1)	0,2255***	0,2897***	0,2303***	0,2137***	0,1343*	0,2154***
CONCENTRATION	0,0276*	0,0404***	0,0287	0,0296**	0,0431***	0,0284*
FBA_TBA	-	-	0,0697***	-	-	-
FBNO_TBNO	-	-	-0,1255***	0,0043	-	-
SOEBANKSHARE	-0,0028	-0,0036	-	-	0,0551*	-0,0007
OVERHEAD	-	0,3986**	-	-	-	-
NETMARGIN	0,8956***	-	0,7519***	0,8474***	0,9383***	0,9349***
MARKCAP	-	-	-	0,01721*	0,0241**	0,0225**
MARKTURN	0,0019**	0,0022**	0,0016*	-	0,0069	0,0018*
TRADSTOCK	-	-0,0111	0,0195	-	-	-
NPLINTOTAL	-0,1297**	-0,1247	-0,1258**	-0,1311**	-0,0687	-0,1034
LISTED	-0,0004*	0,0001	-0,0003	-0,0003*	-0,0003	-0,0003
Control variables						
OPENESS	-	-	-	-	0,0115	-
SAVINGS	-	-	-	-	-	0,1095
RISK	-	-	-	-	0,0525	-

Indicators of model appropriateness						
Number of observations	168	168	168	168	91	168
Number of parameters	7	9	10	8	11	10
AR(1)	0,0018	0,0019	0,0024	0,0019	0,0177	0,0018
AR(2)	0,9394	0,8842	0,8734	0,6042	0,6270	0,3903
Sargan test	0,0285	0,0483	0,0385	0,0251	0,6862	0,0375
Wald test	0,0000	0,0000	0,0000	0,0000	0,0000	0,0000

Source: Author's calculations

All dynamic panel-models are estimated by *GMM*-estimator. All models indicate significant variable with time shift, which is *growth (t-1)* which confirms that dynamic panel-models are justly used in this research.

If we analyse data from table 5.9.A it can be concluded that indicator CONCENTRATION is positive and statistically significantly influences economic growth, but its value is small, meaning that its impact is small. Also such positive and statistically significant connection is shown by indicators OVERHEAD, MARKTURN, TRADSTOCK, MARKCAP. Indicator NPLINTOTAL has statistically significant impact on economic growth but its prefix is negative.

Statistically significant and very strong impact has indicator NETINMARGIN. Indicator LISTED has very small impact and it is of negative prefix and in certain models it is statistically insignificant. Therefore, generally from the table and after analysis it can be concluded that if financial development is measured by indicators of financial market development (LISTED, MARKTURN, TRADSTOCK, MARKCAP), then the connection between financial development and economic growth appears to be statistically insignificant which was realistically expected since in these countries financial markets have not yet been significantly developed.

Table 5.10.B. Estimated dynamic panel models for pre-crisis period (system GMM estimator)

GROWTH	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
CONSTANT	3,2436*	2,9481	0,5731	1,5165	0,3491	1,1619
GROWTH(-1)	0,4124***	0,3575**	0,3386**	0,3636***	0,3457***	0,3601***
CONCENTRATION	-0,16211	-0,0219	-0,0072	0,0043	2,3996	0,0041
FBA_TBA	-	-	-	-	-	-
FBNO_TBNO	-	0,0299	0,0405*	-	-	-
SOEBANKSHARE	-0,0088	-	-	0,0021	0,0032	-0,0001
OVERHEAD	-	-	-	-	-	-

NETMARGIN	0,3909*	0,3276	0,4733**	0,4067*	0,3621*	0,4331
MARKCAP	-	-	0,0119	0,0336**	0,0338**	0,0344*
MARKTURN	0,0015**	0,0018***	0,0016	-	-0,0192*	-0,0223**
TRADSTOCK	-0,0182*	-0,0143	-	-	-	-
NPLINTOTAL	-0,0782	-0,0771	-0,0689	-0,0425	-0,0148	-0,0398
LISTED	-0,0001	-0,0001	-0,0001	-0,0002	-4,6993	-0,0002
Control variables						
OPENESS	-	-	-	-	0,0116	-
SAVINGS	-	-	-	-	-	0,0163
RISK	-	-	-	-0,0372	-0,0196	-0,0303
Indicators of model appropriateness						
Number of observations	108	108	108	62	62	62
Number of parameters	9	9	9	9	11	11
AR(1)	0,0036	0,0033	0,0037	0,0640	0,0659	0,0631
AR(2)	0,4341	0,4774	0,5524	0,1850	0,1863	0,1953
Sargan test	0,4597	0,4775	0,4279	0,2112	0,2215	0,2238
Wald test	0,0000	0,0000	0,0000	0,0000	0,0000	0,0000

Source: Author's calculations

As it was mentioned before we approached straight to panel analysis using dynamic panel model as it was done for the first hypothesis. The same control variables were used as in first hypothesis analysis (OPENESS, SAVINGS, RISK).

If we analyze table 5.10.B, that is the pre-crisis period, it can be noticed there are similar effects or indicators and prefixes as in the observed period. The difference which exist in pre-crisis period is that the impact is somewhat weaker and for some indicators it is halved (for example if we observe indicator NETINMARGIN). Also, there is positive impact of indicator OVERHEAD on economic growth.

Therefore, it can be concluded that in transition countries where there are less developed financial systems and therefore less efficient, they encourage growth more. The mentioned conclusion is utterly surprising but possible explanations can be found in Rajan and Zingales, (2003) and Rajan and Zingales (2007) where it has been confirmed that financial system

development is not suitable to some interest groups for maintaining their position. There was a research published in 2015 (Sahay and others) where it was indicated that the impact of financial system development on economic growth is decreasing the more these financial systems are developed (such as Switzerland and Japan for example).

On the other hand, transition countries which have undeveloped financial systems, or better said which have developing financial systems, encourage economic growth.

What is entirely certain for all countries from the sample is that higher financial efficacy (measured by OVERHEAD and NETINTMARGIN) has a positive effect on economic growth and as it was previously mentioned some of the variables do not have statistical significance or their impact is weak.

This research confirms compatibility with research of Koivu (2002) and Bogdan (2009) that NETINTMARGIN is the most acceptable variable for measuring financial development.

Based on all the presented it can be concluded that second auxiliary hypothesis is acceptable, meaning that more efficient and operative financial systems enable better capital allocation and in this way encourage economic growth.

It is also important to stress here that for analysis and proving of hypothesis were used original data and in the case of logarithming data they do not confirm the connection between financial system development and economic growth.

## CONCLUSION

Banks do not act in a neutral environment, but they are a part of financial and social system of the country. In such a system the state has an important role and is subject to many political and economic influences. The last financial crisis gives additional evidence that more attention needs to be paid to the complex interrelation of state and banks, especially in situation of state and market failures. Financial system is interesting for research when it comes to its impact on economic growth, which is confirmed by previous research. Previous research of financial system development and its adjustment prove that the state has great influence. However, in less developed countries bankers usually have strong influence of governments and regulators which then leads to regulators protecting interests of bankers and banks and do not promote general social well-being.

What previous research have confirmed on certain indicators of financial system development is that financial system development leads to greater growth. It is usual that development of financial services through better savings mobilization and greater loan allocation leads towards more efficient capital allocation. Bigger loans in all observed countries cause greater economic growth both long and short term. It suggests that the hypothesis of financial system development which impacts economic growth is accepted in all cases. This impact is greater in some countries, and smaller in others, depending on development level as well as where loans are allocated.<sup>18</sup>

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<sup>18</sup> One research conducted by Irang and Teng in 2006 on Chinese financial system indicates that their banks (which are mostly in state ownership) allocate most loans to public companies. These banks run their business completely

This research indicates better resistance of developed economies than of those less developed. For example, it can be seen in Germany and Austria on one hand, and countries which have joined the EU recently or are in process of accession. Huge shift can be seen in these countries in the sense of reform and financial system development which will very probably lead to more significant results in the future regarding its impact on economic growth. There was also significant shift in the sense of supervision and regulation which lead to improvement in financial system performance. It was believed that the process of transformation (privatization of banks and creation or foundation of new private banks) would last longer, but huge progress has been recorded already in the first decade of transformation. After the previous period it can be said that financial systems in most observed countries are far from perfectly developed. However, there is a pro-market orientation, which is a rule in all observed countries, and not an exception.

Of course, financial system of a country can play a leading role in economic development or can play a passive role in responding the demands of developing economy. Today we witness overly liquid banks which transfer information that there are insufficient good investment demands from the market, and on the other hand, investors feel that the banks have become

„too rigid“. Therefore, depending from which side we observe, whether it is from side of offer or demand, but there is definitely room for increasing cooperation and bigger and faster economic growth.

Reforms of financial systems in most observed countries have influenced the development of financial system and economic growth and it is very important to continue with further reforms. Namely, development of financial system will continue to strengthen which will contribute to better allocation of resources and higher economic growth. Increase of competition and creation of a profitable financial system will open that financial system to international competition. When it comes to financial system, banking system, as its subsystem, should not be the only one which is supposed to encourage economic growth. That is why a balanced financial system development is required to enable a stable and long-term economic growth. However, banking system as a part of financial system should not be more developed in relation to economy. That is why the development of banking system should not be a separate component, but comparative and complementary component with all relevant factors of financial system which powers economic growth of a country. Therefore, all those who work on policies face a challenging job in order to balance the development of financial system with economic growth in countries selected for this research.

This research did not consider external factors such as legislative and legal regulations, business practice which is a reflection of local business habits, as well as differences in regulation and supervision of financial system and which can have restrictive measures on financial development as well as economic growth as a consequence. It is planned to include some other countries in the sample for further research and to consider the differences in regulation and supervision of financial system, economic freedom and business risks.

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different from private banks. The biggest problem which occurs as result of such financing is a relatively large share of NPL in total loans, but they do not give up on such model of financing and in that way encourage large infrastructure projects which bring positive results on growth in long term period.

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# COLONIAL BUILDINGS AND RECENT DEVELOPMENTS IN THE BUILDING CONSTRUCTION SECTOR IN BUEA, SOUTH WEST REGION, CAMEROON

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## Abstract

Buea, the headquarters of the South West Region, Cameroon, is located along the slopes of Mount Cameroon, and has a population of 90,088 (at the 2005 Census). Closeness to Mount Cameroon exposes Buea to seismic activity which occurs from time to time. This geophysical vulnerability of Buea makes it expedient for constructions to be of high quality and resilient. However, the growing need for new buildings, apartments and shopping malls has caused many developers to ignore important quality standards. Building and urban planning regulations are scarcely enforced, and both architects and regulatory officials turn a blind eye to how building constructions are executed. This generally leads to poor execution and unanticipated amendments in the building.

Buea has a handful of functional colonial era buildings, notably the palatial former residence of the German governor, Jesko von Puttkamer which is currently the Prime Minister's Lodge. Such colonial architectural relics have remained useful with minimal routine maintenance work, while many recently constructed buildings have depreciated at very fast rates. Indeed, it is feared that a major earth tremor may cause many modern buildings to collapse, leading to loss of lives and destruction of property. The dangers associated with poorly constructed buildings have been discussed in earlier studies and publications. But few studies have examined in specific terms how the quality standards of the colonial era can be restored or better still surpassed.

This paper seeks to draw attention to why strict building codes and standards should be enforced and what each stakeholder needs to do for that outcome to be achieved. More specifically, the paper compares the different stages of the building construction project management of the colonial era with what obtains in recent times, to identify the gaps responsible for quality depreciation, and proposes what needs to be done to ensure the delivery of qualitative, effective and easy-to-maintain buildings that meet modern architectural standards in terms of aesthetics, durability and cost effectiveness.

Primary data was obtained from expert testimonies, consultative interviews, and focus group discussions with groups of stakeholders in the building construction industry. Secondary information was obtained from records on building registration and permits in the city's town planning unit and the Buea Central Archive.

**Keywords:** colonial buildings, geophysical vulnerability, urban planning regulations, modern architectural standards, Mount Cameroon, building construction.



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### **Abstract**

The European Commission in 2015 has introduced a Better Regulation Agenda. This comprehensive package of reforms covering the entire policy cycle will boost openness and transparency in the EU decision-making process, improve the quality of new laws through better impact assessments of draft legislation and amendments, and promote constant and consistent review of existing EU laws, so that EU policies achieve their objectives in the most effective and efficient way. How in this situation we could posit a constructive reinvestigation of law making process in Bosnia and Hercegovina? Goal of this paper is to show that Bosnia and Hercegovina must rigorously assess the impact of legislation in the making, including substantial amendments introduced during the legislative process, so that political decisions are well-informed and evidence-based. And while the natural tendency of politicians is to focus on new initiatives, it is necessity to devote at least as much attention to reviewing existing laws and identifying what can be improved or simplified. This approach for more transparency and scrutiny, and providing more opportunities for people to give their views, is key for Better regulation. It can only work if it is a shared commitment at all governmental levels of Bosnia and Herzegovina. To envisage new possibilities means to integrate best practices of the EU with as much as possible initiatives for simplification and reducing regulatory burden. This is why states and even regions that wish to take part in the international framework of business must expand and harmonize the heritage of traditional law making in order to meet the new business conditions.

**Keywords:** *better regulation, law, business*

**JEL classification:** K20

# IMPACT OF TECHNICAL AND FUNCTIONAL SERVICE QUALITY ON PERCEIVED CORPORATE IMAGE IN TELECOMMUNICATION INDUSTRY

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## Abstract

The quality of service is an essential requirement for market survival in modern business conditions. The purpose of this study is to assess the role of technical (output) and functional (process) quality of telecommunication services in creating the perception of the image of the firms. Grönroos's model and SERVQUAL model were used as the conceptual base for the study. When it comes to the technical quality, a detailed analysis of this dimension in the telecommunication services context has been conducted. Technical quality concept was further operationalized through two sub-dimensions: technical quality of the baseline network system, and technical quality of the additional network offer. A five dimensional SERVQUAL framework has been used in the operationalization of the process quality of the services: reliability, assurance, tangibility, empathy, responsibility. In order to empirically test the conceptual framework, a quantitative survey was conducted with n=414 clients of one telecommunication operator in Bosnia and Herzegovina. Results suggest that both technical quality dimensions positively impact perceived image of the telecommunication services, while only two out of five process quality dimensions have significant impact: tangibles and assurance. Discussion of the results and their implications for marketing theory and practice is presented in the study, and future research directions identified.

**Keywords:** *mobile services, technical service quality, SERVQUAL, perceived image*

**JEL classification:** M31, M80

# SOLVENCY II IN NON EU COUNTRIES – CASE OF BOSNIA AND HERZEGOVINA

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## Abstract

Insurance industry in Bosnia and Herzegovina is undeveloped market with significant challenges. The major challenges are related to low GDP of the country, underdeveloped financial market, non stimulating country's market, etc. At the same time, one of the most sensitive actuarial tasks in insurance company, which is solvency measurement applying new EU standards, is the target of the insurance companies of the country. The current regime, Solvency I, took some time to be appropriately adopted in all counties obliged to implement the system. These days all EU members are obliged to implement the new system (Solvency II), at least its standard part, starting January 2016. All more sophisticated measures are left for the countries' insurance companies and/or supervisors to decide either to implement or not. When discussing the developing countries, non EU members, the insurance directives implementation possibilities is one of very important questions. Given the importance of small countries' stabilization and association procedures, the financial sector is one of its key elements. When it comes to insurance, solvency measurement is, at the time being, the most challenging part of it. Challenges are numerous, and as the most demanding ones are related to lack of data, inappropriate knowledge and continuous education. Also, the supervisors are not aware of their importance in the whole process. The survey concluded between actuaries in insurance companies, has also identified some other important issues that will be elaborated in paper further. The intention of the paper is to make clearer the key challenges of Solvency II regime implementation in small transitional countries, considering the small countries characteristics and the Solvency II complexity.

**Keywords:** insurance, solvency, Solvency II, actuarial function

**JEL classification:** G22

## Introduction

Etymological study of the origins and meanings of the term ‘solvent’ leads to the 17<sup>th</sup> century, when the concept was first used. The root of the term derives from the Latin verb *solvere*, which means to solve or untangle something. In the early 17<sup>th</sup> century (more precisely, from 1620 to 1630), the term had the previously described meaning. In general, the term ‘solvent’ is presently typically used in chemistry and economics. The meaning in the economic context first appeared in the 18<sup>th</sup> century (in the period between 1720 and 1730); the noun ‘solvency’ was also articulated in this period. Sandström (2006)<sup>19</sup> points out that it all started with a German merchant who came to Stockholm with the initiative for establishing a maritime insurance company. In this period, the maritime transport was extremely widespread, but also considerably endangered due to numerous risks, which frequently threatened both the transport and the cargo.

The general definition of the term says that ‘solvent’ refers to the entity that is able to pay, to make payments.<sup>20</sup> A somewhat more accurate definition defines solvency as the ability to pay all just debts.<sup>21</sup> The insurance dictionary defines solvency as an enterprise’s ability to make payments, i.e. as an enterprise’s ability to fulfill its payment obligations as they fall due with the available financial resources; it is a situation where an enterprise’s assets are higher than its liabilities.<sup>22</sup> Based on these definitions, it may be concluded that, in the context of insurance companies, a solvent insurance company is one that settles all the due claims (obligations due to insured events) with the collected premiums (as a revenue which forms the largest part in the structure of total revenues) as they fall due. Such a definition could be analytically broken down to several analytical units, depending on the type of insurance it is intended for (life or non-life insurance). This will be discussed later in the text.

In general, solvency can be viewed from the viewpoint of an insurance company and that of a supervisor.<sup>23</sup> In the context of this paper, an insurance company is a company that is exclusively involved in the premium insurance, and whose business goal is to achieve profits. The insured entities pay premiums (the amount of which reflects the level of insured risk), and if the insured event occurs, the insurance company (insurer) is bound to pay the insured amount (damages). The mutual insurance is opposite to this model, but the elaboration of this model’s characteristics and solvency is beyond the topic of this paper.

If solvency is viewed from the position of an insurer, the basic business goal is to ensure the company’s profitable business in the future. If we define solvency from the supervisor’s viewpoint, the basic business goal is to ensure the security of insurance beneficiary and/or the insured, in the context of the payment of insured amounts in the moment of the occurrence of the insured event. Depending on the need, the two definitions can be used in different situations. However, the comparative definition can lead to the conclusion that the definition which provides determinants from the supervisor’s viewpoint is somewhat narrower and more particular. Indeed,

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<sup>19</sup> Arne Sandström, *Solvency-models, assessment and regulation*, 1st ed., (New York: Chapman&Hall/CRC, 2006.), p. 8

<sup>20</sup> Bratoljub Klaić, *Rječnik stranih riječi*, s.n., (Zagreb: Nakladni zavod matice hrvatske, 2004.), p. 1250

<sup>21</sup> Webster’s Encyclopedic Unabridged Dictionary of the English Language, (New York, Gramercy Books, 1996.), p. 1818

<sup>22</sup> S. Andrijašević and T. Račić-Žlibar, *Rječnik osiguranja*, (Zagreb: Masmedia, 1997.), p. 402

<sup>23</sup> Pentikäinen Teivo, „On the solvency of insurance companies“, *ASTIN Bulletin*, Vol. 4, Part 3 (1967.), pp. 236-247

it is focused on the insured person (or insurance beneficiary) and their well-being. The insurer's business goal should be focused on the insured. When the insurer is able to fulfill its obligations to insurance policy holders, according to maturity terms and under all the reasonably foreseeable circumstances, it can be assessed as solvent<sup>24</sup> (International Association of Insurance Supervisors – IAIS 2002).

The theory distinguishes between three concepts.<sup>25</sup> According to the first concept (going concern situation), the insurer is solvent when it pays its obligations as they fall due. According to the second concept (breakup situation), the insurer pays its obligations not as they fall due but rather at the moment of the business liquidation. The third concept (run-off situation) implies the initial insurer's inability to fulfill its obligations and the transfer of its liabilities (and the entire portfolio) to another insurer who is willing to accept them.

Solvency can be reflected in almost all the company's financial indicators, where valuing liabilities, valuing assets, level of net and gross premiums and the characters of re-insurance should be mentioned as relevant ones. However, in the mid-20<sup>th</sup> century, the focus of studying solvency shifted to the solvency margin (which, in the simplest interpretation, refers to the surplus of company's assets over its liabilities,<sup>26</sup> and can be viewed as a minimum available and as a disposable quantity). In the evaluation of assets, a limitation has been introduced that pertains to the quality of assets, and the available solvency margin (ASM) is taken into account. When assets are greater than liabilities, i.e. when  $ASM > 0$ , the insurer is solvent. The opposite is also true. If the analytical parts of the solvency margin (assets and liabilities) are not properly evaluated, the solvency margin *per se* is not a valid indicator. In the context of modern trends, solvency is reflected in the capital adequacy, insurer's technical reserves, qualitative insurance aspects, as well as in reporting (pursuant to provisions of Solvency I and II).

## 1. Determinants of solvency assessment

In the previous text, there were a lot of definitions of solvency. Most definitions pertained to the general definition of solvency of any company. Besides, the text provided the basic explanations of solvency which are important when discussing solvency of insurance companies. Based on such, fairly general determinants of solvency, the text presented models for assessing life insurers' solvency in a few world countries. In the presented models, one could observe a series of parameters that need to be quantified when the assessment of an insurer's solvency is required. Depending on the assessment system, regulators in individual countries defined parameters which are very similar, though terminologically adjusted to the country where the assessment is made. In the following text, the entire elaboration will be based on the terminology of the European Union, i.e. directives that specify the insurer's solvency.

In general, the insurance company's solvency margin is defined as the surplus of assets over the insurer's liabilities. The insurer's assets are analytically classified into categories, as defined by the international accounting standards and financial reporting standards. The same conclusion applies for the insurer's liabilities (besides the liabilities deriving from contracts, the insurer's

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<sup>24</sup> IAIS, *Principles on capital adequacy and solvency*, (Tokyo: IAIS, 2002.), p. 4

<sup>25</sup> Bernard Benjamin, *General insurance*, (London: Heinemann, 1977.), p. 110

<sup>26</sup> Pentikäinen Teivo, „On the net retention and solvency of insurance companies“, *Skandinavisk Aktuarietidskrift*, Vol. 35 (1952.), pp. 71-92

liabilities include capital). Thus, any surplus of assets over liabilities is defined as the solvency margin (SM). This amount of assets, which is a surplus compared to the part needed for covering liabilities typically consists of two parts. One part is composed of high-quality assets that the insurer can dispose with (the available solvency margin – ASM). Assets of same characteristics should also be those that equal liabilities. The second, smaller part of the solvency margin is composed of assets that the insurer cannot dispose with. There are no general conclusions on the time period for which the margin is calculated nor on its relative (or absolute) value (these determinants are specified by countries’ laws or by general directives). If the value of the solvency margin is higher than 0, the insurer is solvent.

Treatments of solvency within a company differ. As stated earlier, it is possible to treat solvency as the necessity of:

- The insurer’s business (which is the company management’s primary goal), or
- Provision of resources that are sufficient for fulfilling obligations to insurance policy holders (which is insurance supervisors’ primary goal).

The two described conditions can be treated complementarily or exclusively. The optimum solution is to view the two described conditions as constituent parts of a whole, i.e. to treat them as complementary parts. This is the context of reasoning that led to the formation of directives Solvency I and Solvency II. In both directives, the first pillar is provided for the definition of quantitative pre-requisites for the calculation of an insurer’s technical quantities, while the second pillar is related to the process of supervision. In this way, both directives create a link between the two conditions that ensure security, solvency and insurer’s optimum business. Besides, insurers can meet all the specific requirements within internal models provided for in EU legislation.

## 2. Models of solvency assessment

Solvency II is described as an event that occurs once in 20 decades. After a series of documents, decisions, instructions and comments by various institutions, the final text of the Directive was published in the Official Journal of the European Union in 2009. The directive which was officially entitled Directive 2009/138/EC of the European Parliament and of the Council on the taking-up and pursuit of the business of Insurance and Reinsurance (Solvency II) was published on 25 November 2009.

The advantages and disadvantages of the system which was supposed to be a more advanced version of Solvency 0 (the initial system of solvency assessment), Solvency I, developed in 2002, are shown in the following table.

**Table 1.** Solvency I – pro et contra

<b>Advantages</b>	<b>Disadvantages</b>
<b>Despite the improvements made, the system maintained simplicity</b>	The model is not sophisticated
<b>Administration is simple and cheap</b>	The model is not comprehensive
<b>The degree of the insured's protection has been increased compared to S 0</b>	Compared to world standards, the system is obsolete (in the USA, the risk-based system – RBC is already in use)
<b>Besides the amount of solvency margin, the</b>	Risk management is becoming an unavoidable part of

<b>system also takes into account the composition of solvency margin and guarantee fund</b>	any business – the system does not recognize it
<b>Calculations are continuously checked and the insurer should dispose with resources at any time</b>	Risks are not explicitly included
<b>EU member-states may tighten criteria for their insurance companies if they want to</b>	
<b>Results between insurance companies can be compared</b>	

Judging by the visual impression, one would say that the Solvency I system should not be changed. Indeed, the advantages of the systems are numerous, while there are only few disadvantages. The system's simplicity was maintained despite certain improvements that had been made. In the same context, there were no costs of insurers' adjustment to the new system or new administrative costs. The degree of the insured's security was increased by introducing new measures. However, the market complexity evidently increased. In this context, the insured's need for the protection of resources they have invested increased. Thus, the basic disadvantage that was present even in the first directives of Solvency 0, the fact that the model does not include the assessment of risk and does not lean on these results, was decisive for the formation of the Solvency II Committee, based on the conclusions of a 1999 meetings where it was definitely concluded that the new regulation, Solvency I would not be able to adequately respond to all challenges faced by the insurers in the future. A special attention was paid to changes in financial markets, decrease in interest rates (which additionally aggravates acquisition of the expected returns), increase in the expected life expectancy, as well as the increased frequency of the occurrence of large-scale harmful events.

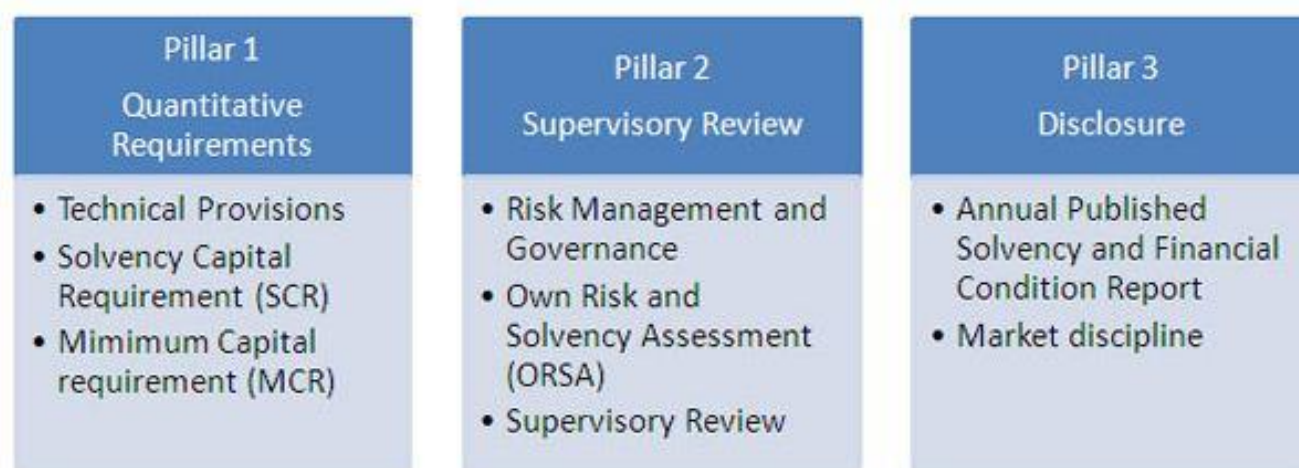
The new regulations changed the basis of the previous system, which was, in any case, a significant change. Actually, the new regulations shifted the focus from a system based exclusively on rules to the risk-based system. The system based exclusively on rules implied the assessment of solvency based on accounting quantities in the insurer's balance sheet. However, new business conditions transcend such an approach. The new environment and turbulent business set new requirements before insurers, and the old system was consequently improved in a way that the solvency assessment primarily takes into account the more valuable risks that the insurer is exposed to.

In the context of the application of Lamfalussy approach, a major step ahead was made in harmonizing processes within the EU.

It was concluded that the system which forms the basis for Solvency II is taken from the banking industry, which is provided for by the Basel II system and includes three pillars.

The first pillar pertains to the quantitative requirements, i.e. to rules for quantifying individual quantities (primarily technical reserves and investments). According to the precautionary principle, capital requirements in an insurer are tracked through three categories: target capital, the necessary amount of capital and the absolute minimum amount of capital. The second pillar pertains to the process of supervision, and includes clearly defined rules of internal control and risk management. The third pillar implies market discipline, particularly the transparency and harmonization of accounting rules.

**Figure 1.** Structure of Solvency II



## 2.1. Solvency Capital requirement – SCR

The previous text mentioned and briefly explained the concept of solvency capital requirement. Thus, SCR is the level of capital that will ensure the insurer’s unimpeded business activities while minimizing the probability of the occurrence of loss. The directive implies that the prospective calculation quantifies the risk-sensitive amount, at the level which will provide adequate information to supervisors on a potential need for their action. Since the primary goal of the development and implementation of directives is the harmonization of rules, this kind of regulations should be harmonized in member-states with their local regulations.

Besides SCR, Directive Solvency II provides for the calculation of another capital requirement – risk margin. Calculation of SCR uses the best estimate of the insurer’s liabilities. Calculation of risk margin uses the approach developed on the cost of capital. The approach based on the cost of capital is also recommended by the Directive when the basis for calculation implies the expected future value of SCR.

The best estimate of insurer’s obligations is calculated gross from reinsurance (thus with included obligations toward the reinsurer), while the cost of capital in risk margin is calculated after the deduction of obligations for reinsurance (thus net of reinsurance). Risk margin is not calculated for all types of insurance (as specified by Directive), but only for the types where hedging, as an alternative to some risks, is not possible (in most cases, it is the case with life insurance).

$$SCR = BSCR + SCR_{ops} + IA$$

**Formula 1**

Thus, pursuant to the Directive provisions (Article 103), SCR is calculated as the sum of basic SCR and SCR, while for operational risk (adjusted value), the intangible assets are added.

Basic SCR is calculated as the sum of SCR’s for non-life underwriting risk, life underwriting risk, health underwriting risk, market risk and general risk, as follows:



$$BSCR = SCR_{non-life} + SCR_{life} + SCR_{health} + SCR_{market} + SCR_{default}$$

**Formula 2**

Another approach, based on the cost of capital, which forms the basis for calculating the risk margin, includes the underwriting risk and operational risk (while it does not take account of market risk).

$$CoC = \sum_i (BSCR^i - SCR_{market}^i) \cdot CoCfaktor$$

**Formula 3**

for each  $i > 1$  but lower than the time period.

$$CoCfaktor = Rfi + 6\%$$

**Formula 4**

where Rfi is the risk-free interest rate.

## 2.2. Minimum Capital Requirement – MCR

Pursuant to provisions of Solvency II, MCR is the amount of capital which is the lowest limit of capital available to the insurer. If the amount of available capital comes close to the value calculated for MCR, or falls below this value, it is an alarming sign for the supervisor indicating that action is necessary.

Calculation of MCR is based on technical reserves and risk-insured amounts (not on risk as is the case with SCR) but it does not take account of the risk margin.

$$MCR = MCR_{non-life} + MCR_{non-life}^* + MCR_{life} + MCR_{life}^*$$

**Formula 5**

## 3. Solvency I vs. Solvency II

Differences between systems Solvency I and Solvency II could be defined as follows:

- The required amount of solvency margin (RSM) is replaced with the minimum capital requirement (MCR);
- MCR should be calculated at least quarterly and report the results of the calculation to supervisor;
- The minimum amount of MCR has been determined at the level of EUR 2,0 million (the guarantee fund from S I is replaced with MCR);
- MCR acts as a safety limit – if the amount of resources falls below MCR, supervision is activated;

- S II names the additional capital requirement 'solvency capital requirement (SCR); this amount in the initial quantity for calculating the adequacy of quantitative requirements at various levels;
- SCR can be calculated using the standard model (standard formula) or using internal models;
- Amounts of MCR and SCR are calculated separately; MCR uses technical reserves as the basis while SCR is risk-sensitive calculation.

**Table 2.** Values of factors for individual types of insurance<sup>27</sup>

	<b>Solvency II</b>	<b>Solvency I</b>
<b>Assets valuation</b>	Market-consistent value	Market/bookkeeping value
<b>Liabilities valuation</b>	Market consistent value	Methods are not uniform, though margin of safety is within technical reserves
<b>Available capital</b>	Holistic approach to balance sheet	Partly used
<b>Diversification</b>	Used	Not used
<b>Risk mitigation</b>	Used	Partly used
<b>Levels of solvency control</b>	SCR and MCR	One level determined by supervisor
<b>Insurer groups</b>	Recognized	Partly recognized
<b>Calibration</b>	Based on economy, uses market and historical data and experiences	Subjective and usually does not correspond to insurers' specifics

Omnibus II is a directive proposed by the European Commission in January 2011. This directive brought certain extensive amendments to the Solvency II system.

According to the initial plan, Solvency II was supposed to be an operationally applicable document starting from October 2012, while due to Omnibus II the date changed to January 2016. The intention of the implementation of Solvency II is better harmonized and reliable system in the countries that compose the European economic area. The new regime was created in a way that allowed a higher degree of compatibility with the market practice but was in the same time more risk-sensitive. The final calibration of the model was initially planned for the study QIS5 (of 2010). However, the active and turbulent market requires considering new calibrations, since those from QIS 5 are, in a way, inapplicable in some segments.

EIOPA, a supervisory authority formed during the crisis replacing the CEIOPS, is an institution that in 2011 became very interested in the new regime – Omnibus II. By adopting the new regime, EIOPS extended its authorities so that it is better able to affect the detailed technical specifications of the regime, as well as to take the role of mediator between national supervisors and insurers at the international level.

The following text will describe the basic technical corrections.

<sup>27</sup> The authors used and adjusted the table from CEA, Insurers of Europe, *Assessing the Impact of Solvency II on the Average Level of Capital*, Brisel, CEA, 2006., p. 8

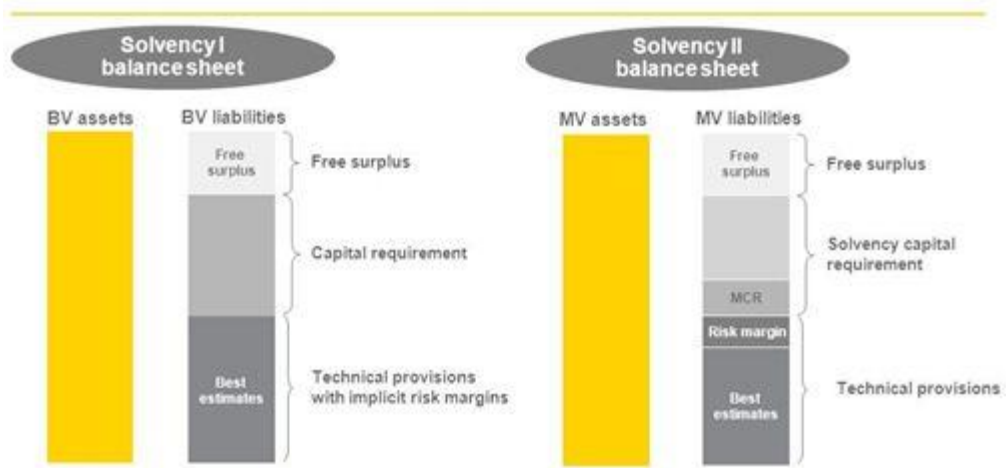
The original Solvency II directive provided for a period of the insurers' adjustment to the new capital requirements. Thus, no technical reserves were provided for the transition period which, pursuant to Solvency II, lasted for a year. Thus, within a year, an insurer is supposed to adjust its business to capital requirements provided for by Solvency II (specifically, to MCR). In the same time, it should be noted that pursuant to provisions of the previous system (i.e. the currently valid one), each insurer has at its disposal the required solvency margin. Omnibus II proposes to the European Commission an easier transition to the new system, through the following steps:

- Insurers can rely on financial instruments which are allowed for investment according to system Solvency I,
- The implementation of management system should be distributed into stages, rather than applied at once;
- Allow insurers the "transition SCR", which will temporarily simulate the classic SCR (calculated by standard formula )and which will quantitatively satisfy the following two conditions:
  - a. maximum amount: SCR calculated according to standard formula,
  - b. minimum amount:  $MCR + \frac{SCR - MCR}{2}$ ,
- allow countries – potential members of the EEA, which meet the criteria provided for by the Solvency II system, to access it essentially and wait for the formal acceptance to membership;
- transition reserves can last no longer than 10 years.

Another issue, which was tackled by Omnibus II as well, pertains to the approval of internal models. Realistically, due to the complicated procedure of auditing and approving the use of internal model, it happened that some internally developed models were not completely reviewed by January 2016 (when the Directive became binding). In this case, all insurers that invested considerable financial resources in model development can suffer damage, since classic SCR requires a higher amount of capital because it is not fully adjusted to the needs of a specific insurer. It was concluded that in such cases the internal model that was developed would be approved only internally and put in use, while the prescribed adoption procedure would be carried out subsequently.

Besides, it should be noted that the previously described issues resulted in a different form of the balance sheet.

**Figure 2.** Comparative outline of balance sheet



#### 4. Application of Solvency II in transition countries – example of Bosnia and Herzegovina

The previous text clearly reveals what kind of essential change is provided for by the application of Directive Solvency II. However, before the actual application of the recommended Directive and implementation of proposed solutions in local markets, it is necessary to create a framework in which such solutions can be applied.

Insurance market in Bosnia and Herzegovina is divided at Entity levels and, accordingly, regulatory agencies in both entities act separately. Legal regulations are dual or, more accurately, both entities have their own respective regulations that are not harmonized. In order to achieve a higher degree of harmonization with the EU recommendations, laws in entities are periodically changed; however, they are not mutually harmonized. Such unequal speed of changes results in the situation where one entity proposes legal solutions that are far stricter than solutions in the other entity.

This is particularly true of the paid-up share capital, where the latest proposed legal solution proposes minimal values twice as high as those valid in the other entity. Tightening the conditions and rules of operation is certainly a praise-worthy initiative; however, in such complex systems as BiH, one must also take account of indirect effects of the proposed solutions. Such a solution implies that all the companies that will be registered for doing business in the forthcoming period will be registered in the entity where it is financially more favorable.

Besides, it should be noted that financial capacity of all the insurers in BiH is fairly low, and that the Directive as applied in the future will be reduced to the use of exclusively standard model of risk assessment (the market does not have a volume necessary for developing internal models for risk assessment).

It should also be noted that the preparation for Solvency II is fairly slow. Solvency margin is still calculated pursuant to provisions of Solvency I, using mathematical reserves as the basis in life insurance and the amount of premium and/or damage by means of coefficients in non-life

insurance. Changes that are typically proposed pertain only to non-life insurance. The proposed corrections only increased amounts and limits that are multiplied with a higher coefficient, but the transfer to a system based on risk assessment is still not seriously considered.

Regulatory bodies still do not treat the actuarial function as they should; indeed, the authorizer actuary is still positioned in the market as the person in charge.

Technical reserves are not calculated as a sum of best estimate and risk margin, but rather using the established actuarial methods of stochastic character. Expertise in the area of actuary science is still at a low level.

Financial instruments proposed for investment in the financial markets are still underdeveloped, and companies do not have realistic abilities to invest resources according to modern principles. Investments in the BiH market are still mostly reduced to investments into real estate and deposits.

## **Conclusion**

The system of assessing capital requirements Solvency II implies three levels of capital. Capital is defined more flexibly and it is possible to include off-balance sheet items. SCR (as a capital requirement) is covered in an accurately defined way and by accurately defined resources. There are two levels of capital requirements in the Solvency II system (SCR and MCR) and two approaches to calculation (standard model and internal model). This system is the first to integrate all risks into calculation, rather than only the insurance risk, as was the case previously. Risks are assessed by VaR method. The concept Solvency II elaborates in more detail the methodology of risk measurement, which contributes to their higher-quality assessment and management.

Bosnia and Herzegovina, same as all the countries that are not members of the EU, is bound to adjust its legal regulations and prepare markets for the implementation of Solvency II.

Stricter legal regulations, as one of the ways of a country's accession to the EU processes is certainly a good initiative. However, stricter regulations must be preceded by the creation of an environment where such regulations can be applied. In Bosnia and Herzegovina, it is still not the case. Regulations are set at entity levels, which is a practice not permitted in the process of the accession to the EU. Besides, the degree of the insurance market development (with respect to products, capital requirements, expertise, innovation) is not at the level that can endure Solvency II (as a very demanding system).

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# ANALYSIS ON THE IMPACT OF ECONOMIC DEVELOPMENT ON MOTIVATION AND JOB SATISFACTION

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## Abstract

Employee motivation which ultimately leads to a higher job dedication and better organizational results has become a crucial task for managers in an increasingly dynamic and uncertain business environment. In addition to improving their own motivating skills, managers are facing the challenge of choosing appropriate motivators and motivation techniques. The objective of this research is to determine similarities and differences in the application of certain motivators between companies operating in markets with developed economies and transitional economies in order to analyse their effect on job satisfaction. Precisely, conducted research strived to determine whether the level of economic development of the country the company is located in has an influence on the application of different employee motivation techniques or not. The research hypothesis states that material and immaterial motivation techniques are used more frequently in countries with developed economies, thus contributing to a higher job satisfaction. Motivators and job satisfaction assessment factors have been derived from Herzberg's two-factor theory. United Nations' (UN) Country Classification Report was used to rank all countries in terms of economic development. Empirical research was conducted through questionnaires with New Yorker employees in 10 countries and it was determined that economically developed countries have an intensive and proactive approach to employee motivation, through the emphasis of a higher quality of work-life and employees' needs, which ultimately results in a higher employee satisfaction. On the other hand, the perception of motivation in transitional economies is obsolete and rigid. The results of this research can be a useful starting point for managers of various companies which operate in selected countries (not only New Yorker) while developing an employee motivation strategy. In addition to that, they can provide a framework for broader researches on the application of motivational techniques in various countries and industries.

**Keywords:** *motivation, job satisfaction, level of economic development*

**JEL classification:** M12, O11, O15



## **1. Introduction**

Appropriate employee motivation in order to increase their satisfaction is an incredibly important criterion of organizational success. A detailed research of this topic is necessary for a better understanding of ways to improve organizational performances and to achieve competitive advantages. Companies with satisfied employees can achieve organizational goals much faster, while companies with unsatisfied employees face problems throughout the implementation of strategic decisions. Therefore, it is important to ensure a high level of employee satisfaction, which is mostly influenced by motivation. This research was conducted in order to improve the motivation and job satisfaction of New Yorker's employees.

The primary goal of this research is the identification of similarities and differences in the application of certain motivators in New Yorker branches operating in markets with developed and transitional economies in order to analyse their impact on employee satisfaction. This way, a blueprint of the impact of motivators on job satisfaction was created. This can be great starting point for managers when developing a motivational system which will lead to a higher employee job satisfaction.

After the theoretical introduction, where concepts of motivation, motivators, job satisfaction and economic development have been explained, the focus switches to the methodology and results of the empirical research. Subsequently, those results were analysed in order to validate the hypothesis and make proper conclusions.

## **2. Theoretical framework**

To provide a good theoretical foundation, this research used various resources of relevant authors on topics of motivation, job satisfaction and economic development. In order to define the concept of motivation and motivators, the works of Guay (2010.), Broussard & Garrison (2004.), Ziglar, (1986.), Herzberg (1959.), as well as Luthans & Stajkovic (2001.) have been used, while works of Locke (1976.), Hulin & Judge (2006.) and Spector (1997.) were consulted to define employee job satisfaction. Works of previously listed authors have been chosen because of the fact that many of these authors have conducted researches on the second topic of interest, which is job satisfaction. United Nation's (UN) World Economic Situation and Prospects (WESP) classification report (2014.) was used to determine the level of economic development for selected countries.

### **2.1. Motivation and employee job satisfaction**

According to Guay & Chanal & Ratelle & Marsh & Larose & Boivin (2010., pp 711-735), motivation relates to reasons an individual's behaviour is based upon. Broussard & Garrison (2004., pp 106-120) cited Gredler when trying to define motivation describing it as an attribute which drives us to do something or not. Ziglar (1986., pp 102) simply states that motivation is the fuel necessary to keep the human engine running. From a company's perspective, motivation represents an important parameter which, in addition to initial qualifications significantly impacts an individual's performance.<sup>28</sup> Based on that, employee motivation is an incredibly important task and a special challenge for leaders and managers of contemporary companies. Gmuier &

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<sup>28</sup> <http://www.accel-team.com/motivation/> (accessed on: 13. 06. 2016.)

Thommen (2007.) state that the key question for a company is how to drive employees towards action, how to improve their job and goal dedication, and their loyalty to the organization? What this means is that the motivational system of a company, as well as a sum of all motivators, contribute to the level of interest that employees show towards increasing or maintaining their work results. Furthermore, both of these factors contribute to employee loyalty and their intention to remain in the company. In other words, unmotivated employees will devote no or minimal effort to their jobs, they will avoid any activity, achieve below-average results and leave the company when given the chance. On the other hand, motivated employees will be persistent, creative, and highly productive, they will achieve great results and they will be loyal to the company. Therefore, every employee has different initiators, in other words motivators<sup>29</sup> which impact his task completion and goal achievement.

Motivators are defined as assets which drive an individual to certain behaviour. There are unlimited motivators and their intensity is continuously changing, which depends on employees' needs. According to Luthans & Stajkovic (2001.), there are some main motivators in the contemporary business environment.

First of all, there is money, which is the main material motivator. Immaterial motivators include social acceptance, status, performance feedback etc.<sup>30</sup> Furthermore, motivation can be divided into intrinsic and extrinsic motivation. Intrinsic motivation is related to the inner impulse, interest or satisfaction of performing a selected task - this motivation exists within the individual and it is not influenced by external circumstances. On the other hand, Wilson & Lassiter (1982., pp 811 - 819) think that extrinsic motivation is determined through third-parties, e.g. managers, human resource department etc. in order to motivate someone towards a certain behaviour. It is perfectly clear that those are two completely different types of motivation which are dependent on subjective psychological characteristics and objective circumstances, as the influence of others and situations.

Different business environments continuously required the application of new, contemporary motivational techniques. While the carrot-stick approach and the Hawthorne experiment were applicable in the production industry, newer business conditions asked for content (Maslow, Alderfer, Herzberg and McClelland) or process theories (Vroom, Porter & Lawler, Adams and Locke). Based on the fact that the Herzberg & Mausner & Snyderman (1959.) theory was developed in a business environment characterized by less-complicated tasks and moderately-educated personnel, a specific emphasis was put on it. This theory, which is the starting point for this research, distinguishes hygiene factors which don't lead to a higher satisfaction, but whose absence leads to dissatisfaction, and motivators that lead to a higher satisfaction and that are tied to the intrinsic conditions of a job. Hygiene factors include salaries and other benefits, company policies, administration, good interpersonal relationships, quality of superiors, job security, job conditions and work-life balance, while motivators include personal achievement, status, acceptance, challenging job, responsibility, advancement opportunities and growth. The practical classification of selected motivators will be listed in the empirical research segment of this article.

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<sup>29</sup> <https://www.westminstercollege.edu/myriad/?parent=2514&detail=4475&content=4798> (accessed on: 13. 06. 2016.)

<sup>30</sup> [http://www.stajkovic.biz/Alex\\_Stajkovic/Publications\\_files/Stajkovic%20%26%20Luthans%20\(2001\)-AMJ.pdf](http://www.stajkovic.biz/Alex_Stajkovic/Publications_files/Stajkovic%20%26%20Luthans%20(2001)-AMJ.pdf) (accessed on: 22. 12. 2014.)

Cautiously selected motivators which are in accordance with employee's perception and needs lead to a higher satisfaction. Locke (1976., pp 1297–1349) defined job satisfaction as a pleasant or positive emotional state resulting from job assessment and the complete business experience. Others define job satisfaction as the level in which an individual is satisfied with his job. Job satisfaction is assessed on the global and aspect level. Whilst the global level determines whether an individual is completely content with his job, the aspect level tells whether he is content with certain aspects of his job. In that regard, Spector lists 14 aspects: respect, communication, co-workers, benefits, job conditions, nature of the job, organization, personal development, policies and procedures, advancement opportunities, recognition, security and supervision. Also, Spector (1997.) states that job satisfaction is a pleasant emotional state of executing a specific working task.

A contemporary definition of the job satisfaction concept was given by Hulin & Judge, (2006., pp 255–276) who noticed that job satisfaction includes multi-dimensional psychological answers on an individual's job and that these answers have cognitive, affective and behavioural components. Scales for the assessment of job satisfaction are divided into those assessing affective or emotional feeling an individual has towards his job. Affective satisfaction determines the level of satisfaction or happiness that an individual's job completely includes. Cognitive satisfaction in the workplace is a more objective and logical assessment of different job aspects. It does not assess the level of happiness with certain aspects but it expresses the level in which these aspects are considered satisfying, comparing them to individual and business goals. According to Tomazevic & Seljak & Aristovnik (2014., pp 209-227), job satisfaction can be observed in a broader context of problems which have an impact on the job experience or the quality of an individual's working life. It is contemplated through relationships with other key factors, as wellbeing, stress, working conditions etc.

From a company's perspective, it is important to distinguish factors which have an impact on job satisfaction, like emotions, genetics and character. In terms of job satisfaction measurements, in addition to subjective questionnaires with multi-dimensional scales, following techniques can be applied: Brief Index of Affective Job Satisfaction (BIAJS) and Job Descriptive Index (JDI). According to Thompson & Phua (2012., pp 275-307) the BIAJS has four items, mostly affective. It is conceptualized in a way that not only enables intra-company comparisons, but national-, job level- and job type-comparisons. On the other hand, Organ & Ryan (1995., pp 775-802) concluded that JDI specifically measures the cognitive job satisfaction in five categories: salary, advancement opportunities, co-workers, supervision and the job in total. According to the results of a wide-scope research conducted by Al Baghdadi (2009., pp 22-23) in Germany in 2008 (which included 3.400 persons who ranked 23 different factors, on a scale from one to five), the examinees stated that the most important factor is workplace satisfaction, followed by pleasant working environment (good interpersonal relations) and the ability to perform independently.

There are several researches that tried to examine the correlation between the level of economic development, motivation and job satisfaction. Gilleard (1989., pp 21) and Schatz (1965., pp 234) conducted a correlation analysis between data on the economic development of certain countries and motivation, concluding that there is not enough data supporting a significant correlation between those two variables. Newer data, derived from the OECD report (2012.) indicates better job performances in countries with better working conditions and a higher GDP. This implies that

there is a certain correlation between the economic development of a certain country and employee motivation.<sup>31</sup> Furthermore, global consulting firm McKinsey (2009.) determined that in cases of economic crises, or worsened economic conditions, the focus of a company gets switched from employee motivation to cost reduction. In other words, stable economies show a greater tendency to focus on employee motivation in detail in order to improve their job satisfaction, which increases company's chances of keeping employees.<sup>32</sup> Therefore, a specific challenge in this article was to examine the relation of those variables in detail.

## **2.2. Level of economic development of countries**

In the contemporary, dynamic, and uncertain environment, economic conditions change rapidly. Given the fact that economic trends are an important factor for decision making, there is a significant need to track them. In accordance to that, the World Economic Situation and Prospects (WESP) report was developed, which is a joint venture by UN's Department for Economic and Social Affairs (UN/DESA), UN's Conference for Trade and Development and five of UN's regional commissions, including the Economic and Social Commission for Asia and Pacific (ESCAP).

This report classifies all countries in the world in three broad categories: developed economies, economies in transition and developing economies, all according to basic economic conditions. All categories contain subcategories that are based on geographic location or other ad-hoc criteria (membership in G7 etc.).

Furthermore, countries are classified based on their development level which is measured by the Gross National Income (GNI). In accordance to this, countries are classified as high-income countries, high-middle income countries, low-middle income countries and low income countries. In order to maintain compatibility with similar classifications, the GNI level provided by the World Bank (WB) has been used. Countries with a GNI below \$1.035 are considered low-income countries, those with a GNI between \$1.036 and \$4.085 are considered low-middle-income countries, those with a GNI between \$4.086 and \$12.615 are considered high-middle-income countries, while those with a GNI above \$12.615 are considered as high-income countries. The GNI per capita was calculated by WB's Atlas method.<sup>33</sup>

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<sup>31</sup> <http://stats.oecd.org/Index.aspx?DatasetCode=LEVEL> (accessed on: 13. 06. 2016.)

<sup>32</sup> <http://www.mckinsey.com/business-functions/organization/our-insights/motivating-people-getting-beyond-money> (accessed on: 13. 06. 2016.)

<sup>33</sup> [http://www.un.org/en/development/desa/policy/wesp/wesp\\_current/2014wesp\\_country\\_classification.pdf](http://www.un.org/en/development/desa/policy/wesp/wesp_current/2014wesp_country_classification.pdf) (accessed on: 15. 05. 2016.)

**Chart 1.** Overview of developed economies and transitional economies

Source:

Developed economies				
Europe				
European Union	New EU member States	Other Europe	Other countries	Major developed economies (G7)
EU-15	Bulgaria	Iceland	Australia	Canada
Austria	Croatia	Norway	Canada	Japan
Belgium	Cyprus	Switzerland	Japan	France
Denmark	Czech Republic		New Zealand	Germany
Finland	Estonia		United States	Italy
France	Hungary			United Kingdom
Germany	Latvia			United States
Greece	Lithuania			
Ireland	Malta			
Italy	Poland			
Luxembourg	Romania			
Netherlands	Slovakia			
Portugal	Slovenia			
Spain				
Sweden				
United Kingdom				

Economies in transition		
South-Eastern Europe	Commonwealth of Independent States and Georgia*	
Albania	Armenia	Republic of Moldova
Bosnia and Herzegovina	Azerbaijan	Russian Federation
Montenegro	Belarus	Tajikistan
Serbia	Georgia*	Turkmenistan
The former Yugoslav Republic of Macedonia	Kazakhstan	Ukraine
	Kyrgyzstan	Uzbekistan

[http://www.un.org/en/development/desa/policy/wesp/wesp\\_current/2014wesp\\_country\\_classification.pdf](http://www.un.org/en/development/desa/policy/wesp/wesp_current/2014wesp_country_classification.pdf)

The WESP report also includes countries with developing economies, in addition to those two presented. However, these countries have not been included into this research because of the fact that the company New Yorker, on which the research was conducted, does not operate in those countries.

### 3. Empirical research and methodological framework

To research the frequency of certain motivators, which are derived from Herzberg's theory, a research was conducted among New Yorker employees whose answers have been ranked on a five-point scale. A score of 1 represents a complete absence of a certain motivator, a rating of 2 describes a rare use, a rating of 3 describes a periodical use, a score of 4 represents a frequent use and a rating of 5 describes a very frequent use of a certain motivator. In that regard, these motivators have been examined to investigate motivational frequency: salary, revenue premiums, various benefits, Christmas allowances, holiday allowances, flexible working hours, job rotation, career development and participation in decision making.

In order to research employee job satisfaction, following factors have been examined: financial stimulations, working atmosphere, leadership style, career development opportunities, job tasks, task distribution, job security and income continuity. Job satisfaction was measured in the same way as motivational frequency. A rating of 1 represents total dissatisfaction, a score of 2 describes a partial dissatisfaction, the rating of 3 is for partial satisfaction, a rating of 4 represents satisfaction and a score of 5 describes an exceptional satisfaction level with a certain motivational factor.

This way, individual results on motivators and job satisfaction formed totals which describe the relationship of these groups towards those segments, which created a great basis for comparison.

### 3.1. Sample structure and size

This research was conducted on 96 New Yorker employees from 6 different countries, which were then grouped, in accordance with United Nation's (UN) country classification report, into those with developed economies and economies in transition. This analysis is part of a broader research which included 10 countries and the selection of those 6 countries is based on their membership in those two groups.

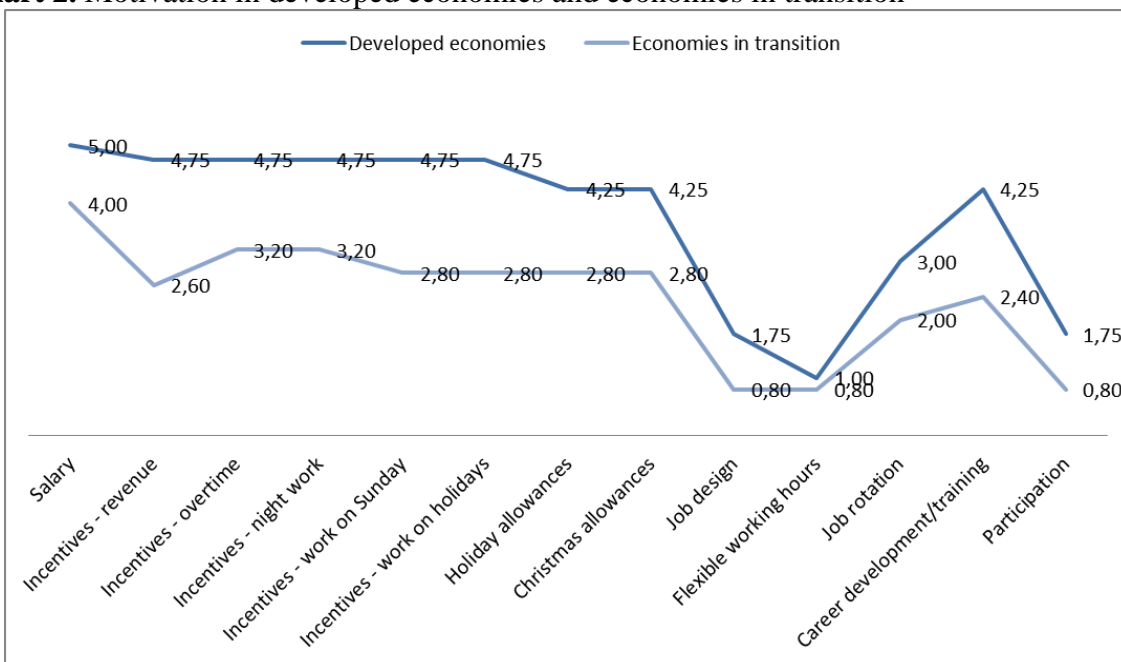
Following countries were included in this research: Bosnia and Herzegovina, Serbia, Germany, Sweden, Spain and France. Subsequently, those were grouped in this manner: Bosnia and Herzegovina and Serbia were classified in the category of transitional countries, while Germany, Sweden, Spain and France were included in the category of developed countries. Based on the fact that the market size of all developed economies is greater than of those in transitional countries, it was necessary to include more countries into the first group (4). That improved the reliability of results in accordance to the group size.

In terms of respondents, per 8 employees were tested from Bosnia and Hercegovina and Serbia, 50 respondents were tested from Germany, and per 10 employees were tested from Sweden, Spain and France. In total, 16 employees from transitional countries and 80 employees from developed countries were tested.

### 3.2. Analysis of results

Based on the following results, this research strived to provide an answer on the usage frequency of certain motivators in developed and transitional countries. In addition to that, a special challenge was to research the influence of motivation on job satisfaction in those economies.

**Chart 2.** Motivation in developed economies and economies in transition

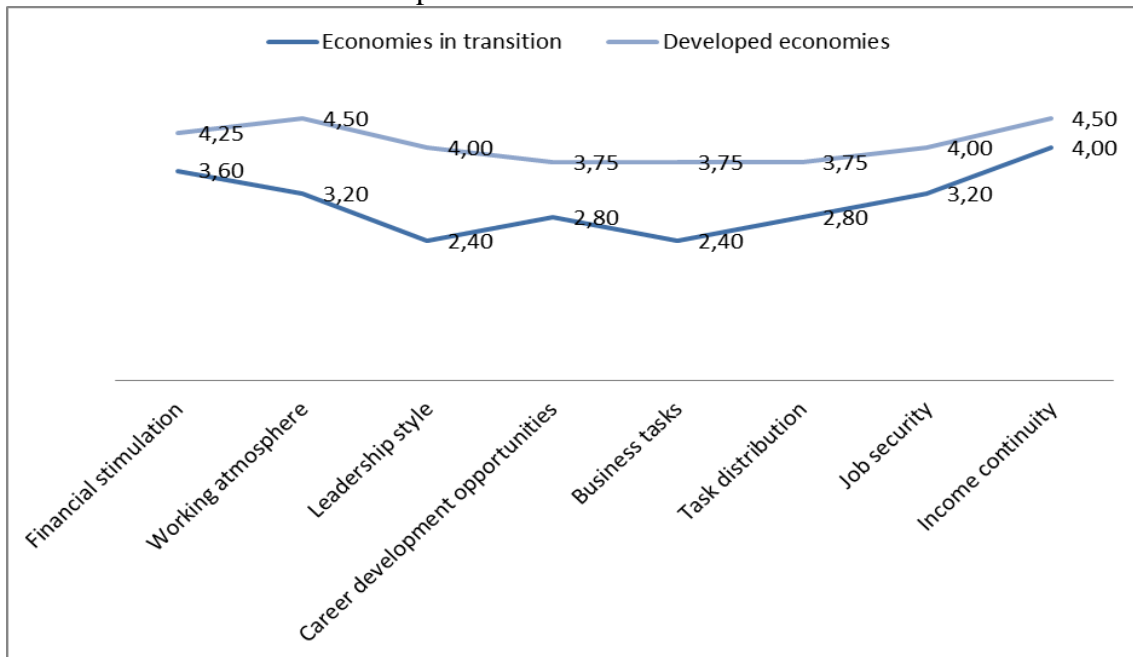


Source: Author's research

Motivation frequency analysis revealed that New Yorker more frequently uses salaries, overtime- and night-work incentives in transitional economies in order to motivate its employees. On the other hand, New Yorker branches in developed countries have a more frequent use of revenue premiums, incentives for Sunday-work, holiday allowances, Christmas allowances, as well as all immaterial motivators, which includes job design, flexible working hours, job rotation, career development and participation.

In reference to research results on the frequency of material and immaterial motivators, there is evidently a more frequent use of both motivational categories in developed economies. Our impression is that countries with transitional economies more frequently use lawfully obliged material motivators than developed countries. However, those advantages in favour of transitional economies are marginal while advantages in favour of developed economies are significant. This proportion in motivator usage frequency is certainly tied to the labour market situation in those groups. Given the fact that the labour market in developed countries is relatively stable with a low unemployment rate, employees have a better foundation to request additional motivators. On the other hand, as the labour market in transitional economies is unstable, employees have a bad negotiating position.

**Chart 3.** Job satisfaction in developed economies and economies in transition



Source: Author's research

An insight in the job satisfaction data shows that New Yorker employees in transitional countries are mostly satisfied with financial stimulations and income continuity, which can be described by a lower life standard in those countries. Those are the only two categories in which they show a higher satisfaction rate compared to their colleagues in developed countries. A research by Rahimic & Kozo (2010.) showed that high unemployment rates, low living standards, and small supply of attractive jobs in Bosnia and Herzegovina surely have an impact on the rank of this motivator. On the other hand, New Yorker's employees from developed countries show a greater



satisfaction rate with the working atmosphere and team-work, leadership style, career development opportunities, job tasks and task distribution than their colleagues. The results show that employees from developed countries are significantly happier with intangible motivators, which is certainly due to their higher usage frequency. A deficit in the use of immaterial motivators is reflected through a lower job satisfaction in transitional economies.

Management's perception on motivation and job satisfaction gives the impression that deviations between developed countries and transitional countries are more significant than questionnaire's showed, which can be described by employee's fear in transitional economies to express their true opinion in order to avoid negative consequences. On the other hand, results for questionnaires in developed countries are considered relevant and credible.

Based on differences in motivator usage frequency, the impression is that employees in transitional countries are considered exclusively as operative job performers, while those in developed countries are treated as talented individuals who can drive a company forward. Employees in developed countries are given high salaries which are supported by benefits and bonuses that value extraordinary efforts. In order to provide an additional feeling of respect, they are more frequently given Christmas- and holiday allowances. Furthermore, employers in those countries show a tendency to design job tasks in accordance with employees' expectations and they also perform temporary job rotation for routine and monotonous tasks. Based on the fact that employees have a higher value in those countries, career development is emphasized more. Flexible working hours is generally not too frequent, but still slightly higher in developed countries. In the end, there is a more frequent participation in decision making in developed countries in order to provide employees with a feeling that they are involved in determining the direction the company is taking. This ensures a higher employee dedication to tasks which lead to mutual goals.

Companies in transitional countries provide employees with basic, lawfully obliged motivators, while other motivation options are used rarely. This is especially obvious in the segment of immaterial motivation. Based on that, employees are less satisfied than those in developed countries. A research conducted by Rahimic & Kozo & Resic (2012., pp 535-543) generally showed that less than one fifth of managers apply almost all of the offered motivational techniques (only 23 out of 124 examinees), while the rest makes use of only a few motivators which confirms results from this research that are related to the usage frequency.

#### **4. Conclusion**

Employee motivation is of strategic importance in the contemporary, dynamic and uncertain business environment. The primary goal of employee motivation is to achieve a higher job dedication and task completion, which ultimately leads to the improvement of performances. However, an exclusive focus on performance improvements can result in unwanted effects if the employee is not satisfied with the selection of motivators.

The imposition of motivators, without compatibility with employee's expectations can lower job dedication and lead to a loss of working enthusiasm. Therefore, it is necessary to adjust the motivation system to co-workers expectations. This way, a higher job satisfaction will emphasize motivators and improve their implications. Previously outlined confirms that job satisfaction should be included in the complete process of motivational design.



The performed analysis confirmed that New Yorker in developed countries more frequently uses immaterial motivators than in transitional economies. In addition to that, those countries also have a higher usage frequency for most material motivators. On the other hand, employees from transitional countries are motivated mostly through basic material motivators. An increased use of immaterial motivators and most material motivators in developed economies has a significant influence on employee job satisfaction. Motivational techniques in developed countries are adjusted in detail to needs and wishes of employees, tending to improve the quality of working- and private life. Conversely, motivational approaches in transitional countries are old-fashioned, rigid and inflexible, and they don't take employee's needs and wishes into consideration.

Therefore, it is evident that the level of economic development has an influence on the application of various motivational techniques. This is certainly due to the fact that the labour market in developed countries is better constructed which is why the topic of motivation gets more attention. Main issue in transitional countries is the unregulated labour market and the false perception of companies in terms of motivation. Those companies do not realize that a highly motivated and satisfied employee can be the main generator of company development. All of this implies that there is a significant difference in motivator application in those two categories.

Given the fact that there are significant differences in motivation between developed and transitional countries, and that those differences positively influence the employee satisfaction in developed countries and reduce employee satisfaction in transitional countries confirms the research hypothesis. This research confirms that satisfied employees, who show a high level of job dedication, are the key of corporative and national success and sustainable development, whilst employee satisfaction is greatly influenced by the motivation system that the company applies.

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