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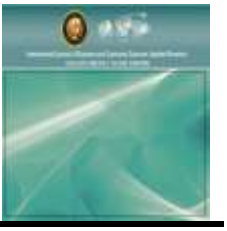


Business ethics and economic growth: An empirical analysis for Turkish economy

Ekrem Erdem[1] and Can Tansel Tugcu[2]

[1]*Erciyes University, Kayseri-Turkey, ekremerdem@erciyes.edu.tr*

[2]*Corresponding Author, Akdeniz University, Antalya-Turkey, cantanseltugcu@akdeniz.edu.tr*

Abstract

Purpose *– The roots of the science of modern economics are originated from the ideas of Adam Smith who is not a pure economist but a moralist-philosopher. Basic concepts in the Wealth of Nations which is perceived as the hand book of economics depend on the arguments that Adam Smith suggests in his Theory of Moral Sentiments. In this theory, business ethics as a part of the Law of Sympathy appears as one of the factors that provide the invisible hand to operate properly. In light of this property, it is possible to assume business ethics as one of the components of the market mechanism. In this context, this study aims to analyse the link between business ethics and economic growth in the Turkish economy.*

Design/methodology/approach *– The study employs bounced cheques and protested bonds for representing the degradation of business ethics and tries to show how this degradation affects economic growth in the Turkish economy for the period 1988-2013.*

Findings *– Either illustrative or empirical results show that business ethics is an important determinant of economic growth in the Turkish economy and damaging it negatively effects the growth rate of the economy.*

Research limitations/implications *– One of the most restrictive things conducting the present empirical analysis is the lack of various and longer data sets. Using different indicators in terms of business ethics with longer time span will definitely increase the reliability of the study. However, in the current form, results imply a policy that is capable of limiting the failures of business ethics may boost the Turkish economy up.*

Originality/value *– The results tend to support the close link between business ethics and economic growth.*

Keywords: Business ethics, Economic growth, Turkish economy

JEL Classification: O47

1. Introduction

The roots of the science of modern economics are originated from the ideas of Adam Smith who is not a pure economist but a moralist-philosopher. Basic concepts in the Wealth of Nations which is perceived as the hand book of economics depend on the arguments that Smith suggests in his Theory of Moral Sentiments. In this theory, business ethics as a part of the Law of Sympathy appears as one of the factors that provide the invisible hand to operate properly. In light of this property, it is possible to assume business ethics as one of the components of the market mechanism. When we come back to modern macroeconomics, it is seen that Max Weber

(1904) is the pioneering study that systematically analyzes the relationship between business ethics and economic development. According to Weber's ideas, any kind of ethics is an important component of cultural heritage and religion. In this regards, he argues that cultural endowments which stem from strong religious beliefs could facilitate economic performance. He also suggests that the basic dynamic which constituted the capitalism in northern Europe, as transforming attitudes toward economic activity and wealth accumulation, is the Calvinist doctrine of predestination (i.e. Protestant Business Ethics).

In the present time, many of the people in business sector may assume that ethical behavior is out of the range. Businessmen or women are assumed as entrepreneurs who may dare anything for profit. Customers are seen as people who are ready for doing anything in order to buy goods and services at lower prices. However, Rea (2010) rejects this and gives some examples about how people in the business environment act in ethical ways:

- It is not uncommon to observe customers who have been undercharged for goods volunteering this information to shop assistants.
- Many individual and firms pay the expected amount of tax on their income, despite opportunities to use tax loopholes and avoidance mechanisms.
- Many people go beyond what is strictly required in their employment contracts because they want to do a good job.

Although it seems as a personal decision to act ethically, business ethics generally reflects an aggregate decision and it is all about the economy. In this sense, one may entitle business ethics as one of the drivers of the continuum of economic activities. Since economic activities are among the engines of economic growth, it may be concluded that business ethics may impact on the growth performances of economies. Given this learning, Naude (2008) put forwards two ethical guidelines for economic growth:

- Economic growth is desirable if the distributive effect increases the welfare of the poorest section in society in the medium term and creates a more egalitarian society in the longer term. If economic growth only increases the welfare of the middle and upper classes and leaves the poorest people worse off, the social cost in the long run is too high. This is a controversial point. But—following the social contract tradition and notions of prioritarian justice—strong ethical arguments can be made in favour of growth that is measured not in general terms, but by whether the position of the worse-off has improved.

Economic growth is desirable when it is sustainable in the holistic sense of the word. If economic growth is only conceptualized as empirical data and not also in terms of its social and ecological effects, we will fail the moral demands of inter-generational justice. In governance discourse one could say that economic growth should be embedded in triple bottom-line thinking. The business of business is unfortunately not business alone.

This study aims to analyze the link between business ethics and economic growth in the Turkish economy for the period 1988-2013. To this end, the study employs bounced cheques and tries to graphically illustrate the link between the degradation in business ethics and economic growth, and protested bonds and utilizes the Autoregressive Distributed Lag approach to cointegration by Pesaran et al. (2001) for the investigation of the long-run effects of the degradation in business ethics on economic growth.

2. A brief note about Turkish economy

With her 800 billion dollars GDP in 2014, Turkey is one of the 20 biggest economies of the world today. Especially after experiencing fundamental political and economic transformations in 1980's and turning her face to the world as leaving inward-oriented

understandings fully behind, the country has faced with a rapid improvement. Table 1 below illustrates some macroeconomic facts about the Turkish economy. Accordingly, GDP in 2014 is approximately five times bigger than that is in 1995. GDP per capita in 2014 is approximately 3.6 times bigger than that is in 1995. Turkey has a large and active population and thus has a large labor force. However, the unemployment is an important macroeconomic problem for the economy. It seems that Turkish policy makers have achieved to solve inflation problem. After the adoption of inflation targeting strategy, inflation rate has slightly fallen down. Turkish economy is an active trader. However, the country is a net-importer and this creates some disadvantages in terms of balance of payments.

Table 1: Some Macroeconomic Facts about Turkish Economy

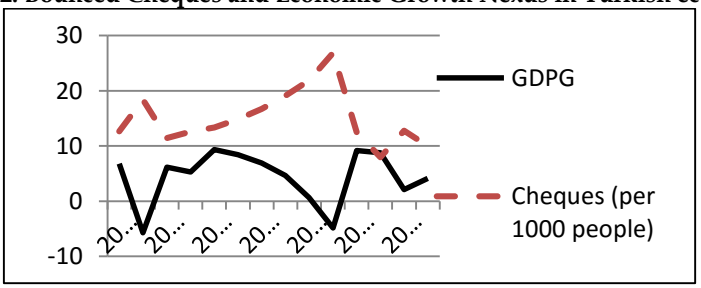
	1995	2000	2005	2010	2014
GDP (Bio)	169	266	483	731	800
GDPPC	2896	4219	7129	10135	10404
Population (Mio)	58.5	63.2	68	72.1	77.7
Labor Force (Mio)	20.8	21.3	22.3	25.6	28.7
Unemployment Rate	7,6	6,5	10,6	11,9	9,9
Inflation (Consumer Prices)	88,10	54,90	10,13	8,56	8,85
Exports (Bio)	33.7	53.5	105.5	155	157.7
Imports (Bio)	41.2	61.5	122.4	195.6	242.2

Source: World Bank, World Development Indicators.

Since Turkish economy has a large body, problems faced in it are also big. In parallel with the subject of the present study, there are some ethical issues that force markets not to operate properly. In these circumstances, channels of market mechanism may be broken down and the whole economy is affected.

Bounced cheques are one of the most common offences plaguing a market. They are among the failures that reduce the level of business ethics in that market. These failures are dangerous either for the improvement of the market or the whole economy. Figure 1 shows the relation between bounced cheques (per 1000 people) and GDP growth in Turkish economy for the periods 2000-2013. Statistics are in natural logarithms. It is clearly seen that there is a strong negative correlation between two indicators. Given this learning, we can simply suggest that bounced cheques in Turkish economy are among the factors that negatively affect the growth rate of the economy.

Figure 2: Bounced Cheques and Economic Growth Nexus in Turkish economy



Source: Author's own

3. Data, methodology and results

3.1 Data

The study is based on annual time series data covering the time period 1988-2013. Data set includes annual GDP growth (GDPG), gross fixed capital formation in current US dollars (GFCF), total employment (EMP) and the value of protested bonds (PB) in current Turkish Liras. Data related to GDPG, GFCF and EMP were obtained from World Bank, World Development Indicator database, whereas PB is sourced from Turkish Statistical Institute.

3.2 Methodology

For investigating the long-run relations (cointegration) among the time-series variables, several econometric approaches were developed over the last three decades. For instance, while Engle and Granger (1987) uses two-step residual-based procedure for testing the null of no-cointegration, Johansen and Juselius (1990) uses the system-based reduced rank regression approach. But all of these methods concentrate on the cases in which the underlying variables are integrated of order one. This situation inevitably involves a certain degree of pre-testing, thus introducing a further degree of uncertainty into the analysis of level relationships.

Pesaran et al. (2001) developed a novel cointegration method which is known as Autoregressive Distributed Lag (ARDL) approach (i.e. the bounds testing approach) to cointegration. Pesaran et al. (2001) pointed out the advantages of this approach over other cointegration tests (e.g. Engle and Granger (1987), Johansen and Juselius (1990)). While other cointegration methods concentrate on the cases in which the variables are integrated of order one, the bounds testing approach is applicable irrespective of whether the underlying variables are purely I(0), purely I(1) or mutually cointegrated. Finally, Pesaran and Shin (1999) indicate that the ARDL approach performs better in small sample size and yields consistent estimates of the long-run parameters asymptotically distributed as standard normal irrespective of the underlying variables are I(0) or I(1).

The bounds testing approach requires estimating the following ARDL representation:

$$\Delta \ln GDPG_t = a_0 + \sum_{i=1}^{p} a_{1i} \Delta \ln GDPG_{t-i} + \sum_{i=0}^{p} a_{2i} \Delta \ln GFCF_{t-i} + \sum_{i=0}^{p} a_{3i} \Delta \ln EMP_{t-i} + \sum_{i=0}^{p} a_{5i} \Delta \ln PB_{t-i} \quad (1)$$
$$+ \theta_1 \ln GDPG_{t-1} + \theta_2 \ln GFCF_{t-1} + \theta_3 \ln EMP_{t-1} + \theta_4 \ln PB_{t-1} + u_t$$

where Δ is the difference operator, p is the lag length, and u is the serially uncorrelated error term. The ARDL procedure involves two stages. In the first stage, the null hypothesis of no-cointegration relationship in the long-run is tested against the alternative hypothesis of cointegration. Testing cointegration relationship is based on the F-statistic. Since the asymptotic distribution of this F-statistic is non-standard irrespective of whether the variables are I(0) or I(1), Pesaran et al. (2001) therefore tabulated two sets of critical values. One set assumes that all variables are I(0) and other set assumes that all variables are I(1). This provides a bound covering all possible classifications of the variables. If the calculated F-statistic lies above the upper level of the bound, the H0 is rejected, supporting cointegration relationship in the long-run. If the calculated F-statistic lies below the lower level of the bound, the H0 cannot be rejected, indicating lack of cointegration. If the calculated F-statistic falls between the bounds, then the test becomes inconclusive and the error-correction term in this case is used to determine the existence of cointegration. If a negative and significant error-correction term is obtained, the variables are said to be cointegrated.

Once a long-run relationship is established, the second stage of the ARDL procedure is to estimate the error-correction model (ECM) from equation (1). The ECM can be written as follows:

$$\Delta \ln GDPG_t = \alpha + \sum_{i=1}^{p} \omega_k \Delta \ln GDPG_{t-i} + \sum_{i=0}^{p} \lambda_k \Delta \ln GFCF_{t-i} + \sum_{i=0}^{p} \phi_k \Delta \ln EMP_{t-i} + \sum_{i=0}^{p} \gamma_k \Delta \ln PB_{t-i} \quad (2)$$
$$+ \psi EC_{t-1} + u_t$$

where is the error correction parameter and EC is the residual obtained from equation (1).

Since cointegration among the variables does not ensure the stability of the parameters, one should provide that the cointegration parameters are stable over the time. In this regard, cumulative sum (CUSUM) and cumulative sum of squares (CUSUMSQ) tests for parameter stability developed by Brown et al. (1975) are widely utilized with the ARDL modeling framework. These tests are based on the recursive regression residuals. The CUSUM and CUSUMSQ statistics are updated recursively and plotted against the break points of the model. If the plot of these statistics falls inside the critical bounds, one decides that the coefficients from the estimated model are stable over the time.

3.3 Results

ARDL estimation results presented in Table 2 show that protested bonds are cointegrated to the growth rate of GDP and all coefficients are stable over the time. Analysis has no failure in terms of serial correlation, heteroscedasticity, normality and functional misspecification. The long-run coefficients take place under Panel B indicate that a percent increase in the value of protested bonds decreases the growth rate of GDP by 2.41 percent. The coefficient of PB is statistically significant even at 1 percent level of significance. Finally, negative and statistically significant error-correction parameter reveals that the model has stable equilibrium in the long-run.

Table 2: Results of Empirical Analysis (Dependent Variable: lnGDP)

Panel A: Cointegration		
F-stat		25.98
Error-correction Parameter		-1.28 [0.000]
Panel B: Long-run Coefficients		
Constant	-578.35 [0.090]	
lnGFCF		16.85 [0.001]
lnEMP		13.96 [0.427]
lnPB		-2.41 [0.006]
Panel C: Diagnostic Checking		
Adjusted-R^2		0.42
Serial Correlation[a]		3.453 [0.063]
Heteroscedasticity[b]		1.683 [0.195]
Normality[c]		0.124 [0.940]
Functional Form[d]		1.704 [0.192]
Panel D: Stability Checking		
CUSUM		Stable
CUSUMQ		Stable

Note: The critical values for F-statistic are (2.72-3.77) for 10 percent, (3.23-4.35) for 5 percent, and (4.29-5.61) for 1 percent level of significance, obtained from Table CI(iii) Case III in Pesaran*et al.* (2001: 300).

a: The Breusch–Godfrey LM test statistic for no serial correlation.
b: The White's test statistic for homoscedasticity.
c: The Jarque–Bera statistic for normality.
d: The Ramsey's Reset test statistic for regression specification error.
Numbers in brackets are p-values.

4. Conclusion

In this study, the link between business ethics and economic growth was investigated in terms of the illustrative link between bounced cheques and the growth rate of GDP by using time series data covering the time period 2000-2013, and cointegration relationship between protested bonds and growth rate of GDP by using time series data covering the time period 1988-2013. For the latter purpose, the study has utilized the ARDL approach to cointegration.

Either illustrative or empirical results showed that providing business ethics positively affects the growth rate of the Turkish economy. Proxies that corrupt business ethics (i.e. bounced cheques and protested bonds) are among the factors that decrease the growth rate of GDP. For instance, there exists a very strong negative correlation between bounced cheques and the growth rate of GDP, and the long-run relation between protested bonds and the growth rate of GDP is statistically significant and negative. These results imply a policy that is capable of limiting those failures may boost the economy up.

One of the most restrictive things conducting the present empirical analysis is the lack of various and longer data sets. Using different indicators in terms of business ethics with longer time span will definitely increase the reliability of the study. Thus, if this problem is solved, it would be a good opportunity for the future researches.

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Opportunities and challenges in promoting youth entrepreneurship in Montenegro

Vesna Karadzic[1], Radivoje Drobnjak[1] and Manijeh Reyhani[2]

[1]*University of Montenegro, Faculty of Economics, Montenegro,*

vesnaka@ac.me, radivoje.drobnjak@gmail.com

[2]*The University of Western Australia , Business School, Australia, P O Box 19 Mosman Park Western Australia 6912, mmreyhani@graduate.uwa.edu.au*

Abstract

Purpose *– The purpose of this paper is to examine the opportunities and challenges that youth entrepreneurs are facing in Montenegro, considering all aspects of youth participation in the development of the country. A quality research of several successful young entrepreneurs is presented.*

Design/methodology/approach *– Several successful young entrepreneurs were interviewed. The principles of case study design and method were followed. Data collection involved both macro and micro level analysis of interviews and direct observation.*

Findings *– The analysis shows that although in the areas of youth participation, significant progress has been made in the last several years, youth entrepreneurship programme in Montenegro is still in its early stages of development and needs strong sustainable commitment, assuring the development and efficient functioning of various youth participation mechanisms at the local, regional and national level. It is also essential to continue to standardize and support youth work, youth information and non-formal business education of young people. Surveys show that young people in Montenegro believe they have much to offer and can significantly contribute to all areas of the society's development. However, their potential remains greatly untapped due to certain obstacles that they face. There are needs for encouraging programs to inform youth about the value of their participation in all aspects of society.*

Research limitations/implications *– The main limitations were access to a greater number of successful young entrepreneurs making the analysis more descriptive and conclusive.*

Originality/value *– The paper supports understanding of the complex employment challenges and opportunities facing youth and stimulates discussion on how to address this key development issue.*

Keywords: Entrepreneurship, Youth, Montenegro, Business, Employment

JEL Classification: M13, M31, O40

1. Introduction

Montenegro lies in southeast Europe on the central part of the Balkan Peninsula on the coast of the southern Adriatic Sea. Montenegro borders Croatia and Bosnia Herzegovina to the west, Serbia to the north, Albania to the east and Italy over the sea. Montenegro covers a territory of 13,812 square km with 300 km of seacoast border. The geographic position of the country provides favourable conditions for specific economic activities, above all tourism.

In Montenegro, small enterprises are dominant and present 96.5% of the total of 6539 firms. The large enterprises present only 0.8% of the total. The number of medium enterprises is also low; they represent only 2.7% of the sample. During the recent years only 20 enterprises or 37.95% of 53 large enterprises have positive business result. This percentage is 41.5 within the group of medium and 20.8 within the group of small enterprises (COMMENT 7, 2001).

More than half of all registered enterprises have trade as their main sector of activity. The other dominant sectors are industry, construction, transport and communications. Although tourism is declared to be of strategic importance for the development of Montenegro, it accounts for only 6.6% of all enterprises (COMMENT 4, 2001).

Analysis of the population (15+) of Montenegro in 2010 survey (Ipsos, 2011) shows 48.8% male and 51.2% female. Male employment is 57.3% of the male population and female employment is 42.7% of the female population. The percentage of male citizens who, after primary school, gain appropriate professional education is double of the female. The male self-employed population is 21.3% almost double of female population at 8.9%. This is indicative of much less opportunity for the female entrepreneurs. Nevertheless, this fast and emerging economy shows promising opportunities for youth entrepreneurs. However the country faces a high youth unemployment rate whether male or female.

The support for youth entrepreneurship in Montenegro is strong. The focus of the entrepreneurship programme at the faculty of economics at University of Montenegro is mostly on youth. There are several other organisations such as The Montenegrin American Youth Alumni Association (MAYAA), and The United Nations Development Programme (UNDP), which also organize a variety of presentations and workshops for students to pursue entrepreneurship. Recently one Montenegrin student's business plan, a proposal for the establishment of the Centre for Professional Rehabilitation and Employment of Persons with Disabilities, won the national competition in Montenegro, and was ultimately named the winner of the overall Europe-wide competition.

Literature on entrepreneurship has extensively noted the differences between 'necessity' and 'opportunity (productive)' entrepreneurship (Baumol, 1990). Necessity entrepreneurship has been widespread, but opportunity entrepreneurship has been relatively scarce (Rogerson, 2001). While opportunity entrepreneurship has a significantly positive effect on development, necessity entrepreneurship has almost none. This study tries to understand whether entrepreneurship is the preferred career choice among the Montenegrin youth or whether they prefer and desire to become entrepreneurs due to the lack of other opportunities. Put it differently, the research endeavoured to find out if young people are less or more committed to entrepreneurship than adult entrepreneurs. The study on 'Opportunities and Challenges to Youth Entrepreneurship: Perspectives of Young Entrepreneurs in Montenegro looks into several factors in business development by young people and highlights that in addition to the business environment, other factors namely positive community and family attitudes and culture of entrepreneurship as well as skills and motivation of entrepreneurs are critical for fostering productive youth entrepreneurship in the country.

This paper will also enhance understanding of the complex employment challenges facing Montenegrin youth and will stimulate discussion on how to address this key development issue. Given the disadvantages young entrepreneurs face compared to their adult counterparts, they are on average likely to spend more time than the adults dealing with taxes and regulations. They are also more easily discouraged. The range of barriers that youth need to overcome on their way to entrepreneurship tends to be more extensive than for the adult entrepreneurs (Schoof, 2006). The study could be a building block for strategies, policies and programs for sustainable livelihoods of Montenegrin youth, in particular job creation and entrepreneurship.

Montenegrin youth as everywhere in Europe face a major youth employment challenge, as evidenced by a high youth unemployment rate. At the same time, policymakers have been increasingly recognizing entrepreneurship as a key driver of economic development by fostering growth, technology adoption and innovation as well as poverty alleviation. In this paper, entrepreneurship is defined to be 'resources and process whereby individuals utilize opportunities in the market through the creation of new business firms' (Naude, 2010).

2. Methodology

The research procedures involved the development of six case studies of successful young people between 20-30 years old engaged in business. Interviewing these young entrepreneurs who were graduates of the entrepreneurship course at the University of Montenegro were carried out separately and with focussed well-designed research questions.

The process for the development of theory from case study research was used as a guide to the study. Each of the eight steps advocated by theory was followed, along with the principles of case study design and analysis recommended by Yin (Yin 1989). Documentary and verbal data was collected with a case study protocol to provide consistency of focus across the six cases. While interviews, observations, and archival sources are particularly common, inductive researchers are not confined to these choices. This study utilizes five carefully designed areas with research question for interview and quality research. Six cases were studied through careful analysis of the answers given through interviews. Their qualitative responses provided the basis on which the research findings were analysed.

Young Montenegrins are drawn to entrepreneurship out of both desire for change and an opportunity to realize their vision to contribute to their country and the community.

Table 1: List of Cases and their description

CASE 1	*Young entrepreneur has launched the production of handmade dresses for small and big princesses. She has a bachelor degree in banking and finance and has experience in marketing. She has worked in the financial sector. She has had the desire to change her life and align her business and family obligations in a different and creative way. She has succeeded in a mother and daughter business and expanded the business with excellent potential for future.*
CASE 2	*An IT company with great enthusiasm and creative energy is led by a young entrepreneur. His team consists of talented and experienced strategists, managers, designers and engineers who are intensely curious and passionate for their design and technology. We enjoy real simple, functional and beautiful projects with which they are very proud of our clients and us. In the end, creativity is our playground and our inspiration.*
CASE 3	*Company founder, a young entrepreneur, is a mechanical engineer. His company is a young trading company in private ownership. The main activity is trade equipment and installers in the construction industry, primarily for heating, air conditioning, water supply and sewage. The satisfaction of the customers is imperative for their business. The main vision and mission of the company is to become a reliable partner to all their customers and together with them to develop and nurture close and intense relationship.*
CASE 4	*The goal of this start up is to provide integrated health food of organic origin, in the territory of Montenegro. Through the website this young entrepreneur has developed, he is promoting the organic products but also healthy lifestyles through raising awareness of its importance. Website connects farmers from Montenegro through the presentation of their offers, and currently on the website presents 120 different products from 15 different manufacturers mainly from rural areas of Montenegro. The motto is: "give and you give yourself and loved ones healthy foods and go back to nature and its fruits in unmodified form.*
CASE 5	*Founder of this company is a young graduate of economy. The agency he started is engaged in providing services through facilities that best suit the needs of both the tenant and the lessor. Landlords are expected to showcase their properties to a number of potential tenants. The company is responsible for the right match. When choosing a property for the clients they always follow specific needs and requirements in the offer.*
CASE 6	*Young man after finishing his studies in finance and banking in Italy, where he played basketball decided to shape his career in accordance with his wishes. He started a family business. He had a clear goal with an ambitious vision. He has since represented brands such Michelin, Continental, Pirelli, Bridgestone, Goodyear, Michelin, Bridgestone, Falcon, Riken, Kingstar, Zeta, Solideal and Galaxy in his business. They are committed to quality and building loyal customers.*

While well recognised constraints in the business environment (e.g., access to credit, property rights) undoubtedly play an important role, other factors such as positive family and friends support and education for entrepreneurship are also critical for fostering youth entrepreneurship.

Implications for policies point to the need to foster more support training and technical assistance for youth beyond the nascent stage of their businesses to ensure higher perseverance and 'graduation' to higher value activities; to develop new and innovative sources of finance taking into account specific characteristics (higher risk, innovativeness, use of ICT) of youth; and improve the regulatory environment, including transparency and accountability.

3. Result and discussion

The study highlights that young entrepreneurs are often not familiar with conditions they need to meet in order to start a business or obtain a loan. They are also not aware of all the supporting available institutions and services. In this regards, a well-targeted entrepreneurial training is needed. Experiences of other countries emphasize the need to implement integrated reform packages rather than individual measures. Understanding the opportunities and constraints to youth entrepreneurship in different settings is thus critical for driving and successfully implementing this policy.

Traditionally and culturally Montenegrin youth are encouraged to look for employments in public or private sectors. In recent times it has become even more challenging for youth graduates to find employment in the public sector or in established private firms. The emergence of youth entrepreneurship as a viable livelihood option is thus high on the policy agenda in most of European countries, making this study timely.

Recognizing the complexity of factors that drive youth entrepreneurship and the multi-disciplinary nature of the topic, this research focuses on five distinct, but interlinked approaches, first is the values and factors that have motivated or de-motivated the young entrepreneurs. The second approach is the social and cultural attitude to start up. Then the study focuses on the constraint in the business environment and the restrictions on financial supports. Finally, the most important area of support services is examined. The paper provides new insights into the aspirations of young entrepreneurs in Montenegro. All cases are distinctly analyzed and the approaches are described in the following tables.

Table 2: Entrepreneurs values and factors that encouraged (motivated) or discouraged (demotivated) them to start the business

	CASE 1	**CASE 2**	**CASE 3**	**CASE 4**	**CASE 5**	**CASE 6**
Motivated	Desire for change	Independence	Desire for change	Independence	Independence	Desire for change
De-motivated	Finance& regulations	Finance& regulations	Finance& regulations	Finance& regulations	Finance& regulations	Finance& regulations

Table 3: Social & cultural attitude to start up

	CASE 1	**CASE 2**	**CASE 3**	**CASE 4**	**CASE 5**	**CASE 6**
Cultural	No support	No support	No support	No support	No support	No support
Social	Family support	Family& friends support	Family support	Family support	Family& friends support	Family& friends Support

Table 4: Constraints in the business environment

	CASE 1	CASE 2	CASE 3	CASE 4	CASE 5	CASE 6
Marketing	Difficult	Difficult	Difficult	Difficult	Difficult	Difficult
Regulations	complex	complex	complex	complex	complex	complex

Table 5: Challenges to access the finance

	CASE 1	CASE 2	CASE 3	CASE 4	CASE 5	CASE 6
BANK	None	None	None	None	None	None
Personal	Savings&parents	Family & friends	Personal	No funding	Friend	Savings & friends

Table 6: Support services

	CASE 1	CASE 2	CASE 3	CASE 4	CASE 5	CASE 6
Government	No	Yes	Yes	No	No	No
NGO	Yes	Yes	Yes	Yes	Yes	Yes

Inconsistencies among the preferences of young entrepreneurs are directed or for independence (primarily from their parents), or to create their own destiny in terms of a different approach to creating career of the previous which was characterized approach of "security" (work in the government sector).

All respondents had positive experiences regarding the support of their families and/or friends, which is a major positive impulse to young entrepreneurs. It is a positive experience that testifies about changes that the Montenegrin society is facing, but also the potential for development in the future should be used. On the other hand, all respondents were unanimous in their assessment that the cultural prerequisites for the development of entrepreneurship among young people are very difficult and additionally complicated by bureaucratic constraints.

Respondents identified that there are major operational obstacles not for starting up but for running a business, especially in are of administrational paper work and complex tax regulations systems. although Montenegrin market is small, its mechanisms are not sufficiently developed, which is why all the respondents have experienced problems related to the appearance on the market and maintaining communication with final users customers.

Almost all respondents agreed that the biggest obstacle to the development of entrepreneurship among young people, the lack of good quality sources of financing. The availability of bank credit is very poor and in cases when there are credit lines, these are burdened by bureaucratic and other barriers. On the other hand, most of them alleged that they set up the business did not need a larger

amount of capital, and they were guarded in their savings or from family / friends.

Respondents agreed that the procedure for the establishment of the company's simple and affirmative influences on the development of entrepreneurship among young people. However, believe that along this, the government can further improve the environment by improving the support system for young people (especially in the field of non-formal education) to better overcome the obstacles that young entrepreneurs are facing during the first years of starting up a business. Young entrepreneurs in Montenegro are satisfied with the support provided by the NGO sector.

4. Conclusions

The study highlighted that young entrepreneurs are often not familiar with conditions they need to meet in order to start a business or obtain a loan. They are often driven by their desires to make a change or become more independent. They are also not aware of all the supporting institutions and services available to them. A well-targeted entrepreneurial training is needed to advance the development of the youth in this regard. Given the limited access to finance, the importance of reforms aiming at increased transparency and accountability, also in provision of financial services, cannot be overemphasized. Experiences of other countries emphasize the need to implement integrated reform packages rather than individual measures. Understanding the opportunities and constraints to youth entrepreneurship in different settings is thus critical for driving and successfully implementing this policy.

In this research, entrepreneurship is defined to be 'resources and process whereby individuals utilize opportunities in the market through the creation of new business firms' (Naude, 2010). Entrepreneurship often promotes social identity of youth by giving them a stronger sense of community where they are valued as well as of 'meaning' and 'belonging' (White and Kenyon, 2000). In sum, this examines the opportunities and to entrepreneurship as seen by young entrepreneurs in constraints Montenegro.

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Factors determining early internationalization of entrepreneurial SMEs: Theoretical approach

Agne Matiusinaite[1] and Jurgita Sekliuckiene[2]

[1]*School of Economics and Business, Kaunas University of Technology, Gedimino st. 50-415, LT-44239, Kaunas, Lithuania, agne.matiusinaite@gmail.com*

[2]*School of Economics and Business, Kaunas University of Technology, Gedimino st. 50-415, LT-44239, Kaunas, Lithuania, jurgita.sekliuckiene@ktu.lt*

Abstract

Purpose – *This study extends the scientific discussion of early internationalization of SMEs. The main purpose of this paper – to develop a theoretical framework to investigate factors determining early internationalization of international new ventures.*

Design/methodology/approach – *The conceptual framework is built on the analysis and synthesis of scientific literature.*

Findings *– This paper presents different factors, which determine early internationalization of international new ventures. These factors are divided to entrepreneurial, organizational and contextual factors. We argue that early internationalization of international new ventures is defined by entrepreneurial characteristics and previous experience of the entrepreneur, opportunities recognition and exploitation, risk tolerance, specific of the organization, involvement into networks and contextual factors. Study proved that only interaction between factors and categories has an effect for business development and successful implementation of early internationalization.*

Research limitations/implications *– The research was conducted on the theoretical basis of scientific literature. The future studies could include a practical confirmation or denial of such allocation of factors.*

Originality/value *– The originality of this study lies in the finding that factor itself has limited effect to early internationalization. Only the interoperability of categories and factors gives a positive impact on early internationalization of entrepreneurial SMEs.*

Keywords: early internationalization, international new ventures, entrepreneurial, organizational and contextual factors

JEL Classification: F23, M16, L26

1. Introduction

More than 95% of businesses in OECD zone are small and medium-sized (SME) enterprises (OECD, 2005). Their role is constantly growing. The growth and survival often depends on international expansion. The rapid development of globalization, increased competition among enterprises and changes of business environment is encouraging these companies to internationalize their activities from the very beginning or after a short period of time

since its establishment. They rapidly internationalize disregarding higher risk, lack of resources, increased responsibilities and commitments. Such companies are known as international new ventures. These companies are characterized as having innovative, proactive and risk-accepting behavior, and are known as international new ventures (Acedo and Jones, 2007, Mathews and Zander, 2007; Crick, 2009; Gabrielsson et al., 2014). However, there is no common opinion, which factors are the most important and determine the early internationalization of these companies. Taking into account these factors SMEs could strengthen its activities and transform them into unique resources.

The research question could be defined as: what factors determine the early internationalization of entrepreneurial small and medium-sized enterprises?

2. International New Ventures and determinants of early internationalization

2.1. The concept of International New Ventures

The concept of international new ventures combines international business and entrepreneurship disciplines. In today's global world traditional models of internationalization, such as Uppsala internationalization model, are no longer able to explain the expansion of SMEs into foreign markets (Andersson and Evangelista, 2006; Chetty and Campbell-Hunt, 2004). The resulting criticism had encouraged to create the so-called paradigm of "global approach". The paradigm refutes concept of the internationalization process as a gradual commitment i. e. slow, step-by-step expansion into foreign markets (Johanson and Vahlne, 2009). Nowadays, entrepreneurial SMEs seek to have access to a wider range, cheaper resources and not only to occupy a higher number of markets. The impact of increased globalization encouraged companies to start international activities from the very beginning or after a short period of time since its establishment in different countries at the same time.

Such companies are called Born Global (Knight and Cavusgil, 2004; Oviatt and McDougall, 1994), Born-again Global (Bell et al., 2001; Tuppura et al., 2008), Global startups (Oviatt and McDougall, 1994) and International New Ventures (McDougall et al., 1994; Mathews and Zander, 2007). These types of SMEs are shaping international market oriented strategy since from the very beginning of their establishment (Aspelund and Moen, 2005). Most of sales revenue are generated from abroad (McDougall et al., 1994). International New Ventures by using a strategy of Born Global companies are forming innovative, proactive and risk taking behavior which is creating a value beyond borders of home market (Mathews and Zander, 2007). The new approach highlights innovative and organizational capabilities of young companies in early internationalization. Due to innovative products such companies can achieve rapid growth (Nummela et al., 2004). The control of valuable and unique resources, effective international communication and homogenization of markets in many countries, enables young and small companies to carry out early internationalization (Oviatt and McDougall, 1994; Knight and Cavusgil, 2004).

2.2. Determinants of early internationalization

Determinants of early internationalization could be combined into three categories: entrepreneurship and business orientation of managers or founders, organizational factors also contextual factors, related to business environment (Escandón Barbosa et al., 2013; Felício et al., 2014). Determinants, grouped into these three categories and further detailed, are: 1) Characteristics, competencies, previous experience of entrepreneur; 2) Recognition and exploitation of opportunities; 3) Risk tolerance; 4) Organizational factor; 5)

Networking; 6) Contextual determinants: sector (industry) and technological.

Determinant of entrepreneurship. It is essential for small and medium sized companies to have a set of entrepreneurial characteristics. Many studies of entrepreneurial internationalization model based on previously made statements (Cooper et al., 1994; Chrisman et al., 1998) confirmed that entrepreneur of International New Ventures makes a serious influence for company's performance and internationalization behavior. Entrepreneur is characterized as the individual who: "works with a global vision and plays his role of "the best practice" and is building the culture where trust and common sense are important" (Wictor, 2006). This reflects a desire of entrepreneur to move forward bravely (e.g., by introducing new products / services earlier than competitors) and to act as expecting to create needs, change them and shape the environment (Keh et al., 2007). These features represent a very aggressive mode of proactive individuals allowing them to "skim" the foreign markets and achieve a greater international scale (Pérez - Luño et al., 2011). When allocating human and financial resources for internationalization, initiative individuals seem to be more sensitive to the needs of foreign market and are ready to exploit foreign opportunities that match their abilities (Morris et al., 2011).

Previous experience of entrepreneurs (especially international) is also very important and affects the results of rapid internationalization, because it amends a lack of organizational experience in internationalization process. Experience provides a cumulative knowledge for entrepreneurs, business contacts and entrepreneurial skills (Federico et al., 2009). Previous entrepreneurial experience could be understood as related to human capital and entrepreneurial social capital (Unger et al., 2011; Kwon and Arenius, 2010). Previous business experience helps to create knowledge, based on practical skills, which may increase the ability of entrepreneur to recognize opportunities and exploit them.

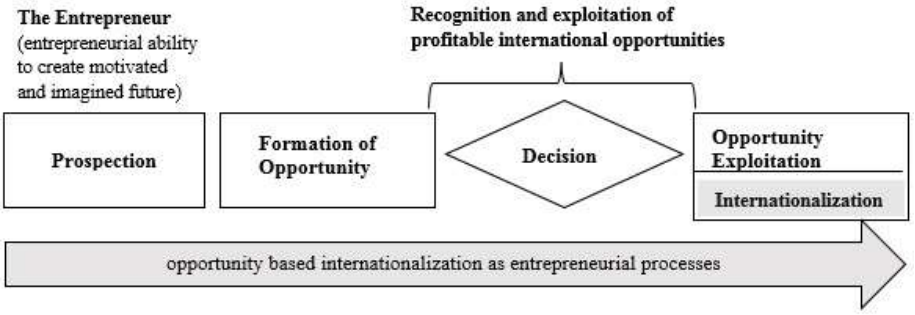
Recognition and exploitation of opportunities. Opportunities based motivation of entrepreneur is related to personalities that seek to benefit from new business opportunities (Shane and Venkataraman, 2000). This is a personal desire to become independent and/or increase revenue compared with employment in another company. Recognition and exploitation of opportunities becomes very important at an early stage of internationalization.

Internationalization is a learning process of a key employees based on the recognition, aspiration and realization of opportunities (Zucchella and Scabini, 2007).

Risk tolerance. Risk-taking is considered to be the desire to deviate from already tested ways also initiative, whereof the possible results are not clearly known (Wiklund and Shepherd, 2003). Risk-taking and initiative are regarded as one of the most important factors in finding international opportunities and increasing the volume of activities abroad. Although a certain tolerance of risk-taking is necessary in seeking international expansion (Pérez-Luño et al., 2011). However, additional costs associated with such a high risk orientation arise. For example, companies, which accepts a higher risk, are more prone to diversification of costly new products than risk averse colleagues (Sapienza, et al., 2005). The high cost of investments, resulting from high risk-taking may negatively affect the profitability which is needed for entering new markets. Acceptance of this method, may threaten the survival of the company abroad and distract from its ability to operate in other markets due to decreased international scope.

Organizational factor. Besides individual-level characteristics there are distinguished characteristics of organizational level that affect early internationalization of new companies (Zucchella et al., 2007).

Figure 1. Recognition and exploitation of opportunities



Source: adapted from Wach and Wehrmann (2014)

Studies of internationalization have shown the importance of organization's characteristics (Ruzzier et al., 2006) especially a characteristic of strategic behavior (Efrat and Shoham, 2013) and technological capabilities of a firm (Brach and Naudé, 2012).

Young companies have structural advantages in evaluating opportunities in foreign markets. Team positions in International New Ventures are mostly undifferentiated. Management and responsibility are shared among themselves. Such undifferentiation allows managers to share their knowledge across organizational structure. With increasing years of company's operation, differentiation in team is becoming higher. It could reduce the amount of transferred knowledge and intensity of communication. Propensity of managers to constantly improve skills and seek to acquire new abilities decreases within time, so the knowledge is stored in "special boxes" (Autio et al., 2000). Therefore, the earlier internationalization is, the more likely that employees will feel the company's potential and advantages of growth. As well as they easily and quickly share those advantages among organization.

Networking. The business processes are affirmatively affected by participation in business and social networks (Wictor, 2006; Andersson et al., 2006). The concept of networking includes the interaction between different participants which are operating inside and outside networks. There are two types of networks: informal networks (e.g., business partners, friends) and formal (e.g., banks, law system, business management structure of government). It was identified that entrepreneur of SME is inseparable and dependent on informal networks. However, the same cannot be said of formal networks. Networking stimulates the establishment of business entities.

Studies have proved the importance of international networks, both individual and organizational level, for international expansion. Studies of SMEs internationalization and especially International New Ventures (Sharma and Blomstermo, 2003; Coviello and Cox, 2006) have shown that international social capital, demonstrated by company's founder, facilitates the process of internationalization. Studies emphasize the importance of evolving relationships and the need to create new networks at the beginning of internationalization. Such importance particularly increases when operating in innovative niche segments due to much more difficult survival using only existing networks (Loane and Bell, 2006). International networks help companies to gain resources that would not be available due to financial constraints or because of small scope of ongoing operations (Gassmann and Keup, 2007). Networks for International New Ventures founders help to envisage new business opportunities and affect the entrance to foreign markets. Also, it is easier for companies to acquire knowledge

about the market, identify the key customers, sources of funding and strengthen its R&D activities (Loane and Bell, 2006).

Contextual determinants. In addition to analyzed individual and internal factors, a significant impact for early internationalization of International New Ventures has external factors. It is a mixture of economic, legal, political, institutional, social and technological factors. Its changes may positively or negatively affect internationalization process of International New Ventures which are having a limited amount of resources. These companies have much more difficulties to predict and cope with effects of external factors. Hence, the internationalization process of International New Ventures are mostly affected by sectors', which the company operates in, and technological factors.

The sector may predetermine the internationalization speed of new companies. Peculiarities of sector, e.g., technology of production or market characteristics, may be more important for internationalization even than the internal aspects of companies (Fernhaber et al., 2008). Some of new companies gain advantages from their industry because they have access to information, knowledge and networks, which increases their chances of becoming exporters (Zucchella et al., 2007). It means that the impact of import-export environment encourages companies to internationalize activities. For example, international entrepreneurship is often associated with high-tech sector. However, early internationalization is related not only with high-tech sector (Gassmann and Keupp, 2007). The degree of internationalization in the industrial sector may also have an impact on the internationalization of new companies (Fernhaber et al., 2008). Factor of technological intensity is related to the company's ongoing R&D part of the expenditure of gross income (in percent). The approach of International New Ventures indicates that early internationalization, besides the already mentioned factors, is promoted by capabilities of organizational learning and innovations (Filatotchev and Piesse, 2009; Knight and Cavusgil, 2004). The biggest effect of innovations manifests in tech industries, due to shorter life cycle of product. Hence, the company has a relatively short period of time to achieve economies of scale until the product is up to date.

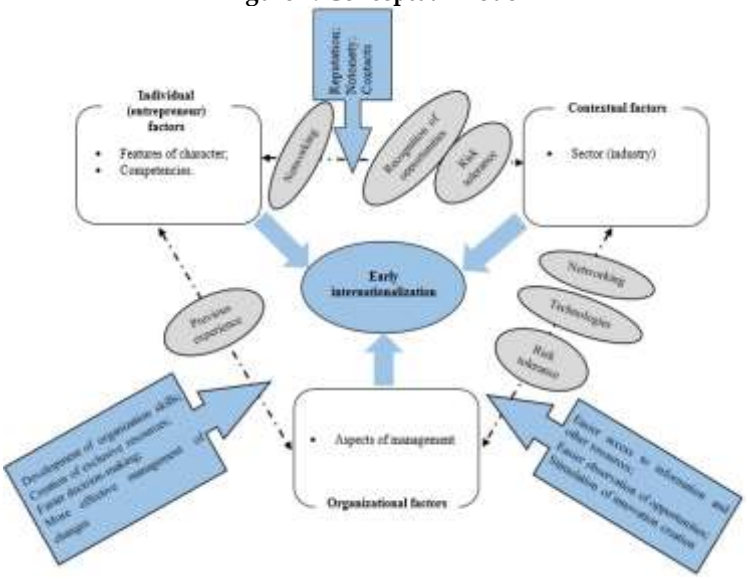
2.3. Development of a conceptual model

Based on a specified factors is formed a conceptual model of factors determining early internationalization (Figure 2). Early internationalization is beneficial for International New Ventures, especially for financial performance (Sapienza et al., 2006). Flexibility, the ability to adapt and quickly respond to the situation enables International New Ventures to achieve growth by using early internationalization as a strategy.

This kind of early internationalization provides opportunity to reach economies of scale and increase the volume of business. Early internationalization for International New Ventures provides an opportunity to get in touch with new customers also to attract resources needed. Different geographic markets may create new challenges, but studies is showing that International New Ventures has "the ability to learn from new experiences" (Autio et al., 2000).

Early internationalization to foreign market may be an expensive process, which partially affects the company's short-term perspective. The lack of previous experience, among International New Venture team members, increases costs of early internationalization.

Figure 2. Conceptual model



Source: created by the authors

However, International New Ventures are incurring lower internationalization costs than previously established companies. This is due to the fact that INV tend to have a limited amount of operations that do not require high transaction and coordination costs. Straightforward organizational structure also reduces these costs. Responsibility of newness and foreignness increases costs, because companies engaged in early internationalization cannot operate so effectively as a local companies. It is likely that new company will make mistakes in new and unfamiliar market.

However, if INV firstly chooses export as an entry mode into a new market, may not increase the mentioned costs (Knight and Cavusgil, 2004). Furthermore, International New Ventures generally occupy niche markets (Lee et al., 2001), which is relatively easy to entrench and begin to communicate directly with suppliers and customers.

Entrepreneur, which in most cases is a manager, making serious impact for early internationalization. However, entrepreneur by itself doesn't determine the successful performance of a company. Only auxiliary factors and skills, such as accumulated experience, entrepreneurial orientation (as strategic approach), innovativeness, risk taking and recognition of opportunities, lead entrepreneur to success in business development and international expansion.

Previous international level experience (and its dissemination in the company) of entrepreneur and strong production are noted as the determinants of successful internationalization of International New Ventures (Andersson and Wictor, 2003). Internationalization experience of the manager may be incorporated into the company's problem solving process. First, it reduces the costs associated with experimentation of new solutions and attempting to find the suitable solution. Secondly, it could reduce the approval time of plans of early internationalization and the number of lost (or undetected) opportunities. Finally, previous experience provides access to business networks and benefits in the sector on the basis of the status, trust and reputation. The entrepreneurs with more international experience are likely to confidentially internationalize their

businesses into global markets (Carroll and Shabana, 2010) and influence international speed of SMEs (Halikias and Panayotopoulou, 2003; Cox and Wicks, 2011).

International experience closely related to the way how the global information and international environment for opportunities are analyzed in order to exploit and seize changes (Santos and Ruffin, 2010).

Recognition of opportunities is closely related to the risk taking which is an inherent characteristic of company with entrepreneurial orientation approach. It has a moderating impact because boosts the innovation quotient and natural ability to take risks of INVs. The benefits of such an approach development in the company will be seen by leaps and bounds as an after-effect of increased risk taking appetite (Rohilla, 2011). Due to the mindset of entrepreneur, company is benefitting by reducing risks and increasing the chances to identify specific opportunities. A young, small company, lacking of resources, becomes entrepreneurial, flexible and capable to carry out a rapid and early internationalization into foreign markets.

However, some partly contradictions arises. Previous studies often emphasized entrepreneurial factors as most important drivers for company's international expansion. These factors provided only the necessary but not sufficient conditions for actual internationalization (Zhang et al., 2015). In this case appears determinant of networking.

Networks are viewed as playing a "bridging" role in entrepreneur's life. For example, network-based information helps to connect entrepreneurs with opportunities by influencing entrepreneurs' cognitive schema, self-efficacy (Ozgen and Baron, 2007) and approach to innovation by impacting cognitive frameworks (Xu, 2011).

Entrepreneur usually uses personal networks to build company networks (Wictor, 2006). Personal networks are helping to develop company's global strategies. Moreover, it is emphasized the importance of having the right contacts in the new country, where the company is striving to be established (Wictor, 2006).

Social relations and networks between individual managers helps in building company's reputation and trust from partner organizations (Peng and Luo, 2000). Also, social networks serve as an integral source of competitive advantage (Manolova et al., 2010) enabling SMEs to access and acquire supplementary resources from network partners in order to strengthen innovativeness on internationalization (Zhang et al., 2015).

Networking between company and external world is concentrating on relations with customers and other companies. Due to importance of niche markets, International New Ventures have to offer unique and highly specialized products/services or latest, by leveraging innovativeness, knowledge and internal capabilities (Gabrielsson and Kirpalani, 2004). Networking, as a linking factor, could help for entrepreneur to create an appropriate strategy and overcome this issue. Business ties at home market and apprenticeship from other companies' internationalization experiences is strengthening company's understanding of what kind of innovative products it should develop for global market (Zhang et al., 2015).

Active networking with other firms at home market could increase dissemination of tacit knowledge and have a direct impact for SMEs' innovative capabilities on export performance (Xu et al., 2008).

Networking also plays an important role in connecting company to its customers. It allows company to develop trust relationships with overseas customers through partners having a good reputation or knowing the foreign market well. Also, it may help to overcome company's lack of resources and capabilities through sharing knowledge, technologies and costs (Zhang et al., 2015). Active participation in all kinds of networks helps to have a greater responsiveness to international demand

(feedback from customers) and makes easier to introduce innovative products (Zhang et al., 2015).

Hence, network ties tend to strengthen the positive effects of entrepreneurial determinants. Networking is actually helping for separated factors to interact with each other and thus contributing to the successful implementation of early internationalization.

Technology, as one of determinants, facilitates communication and is a key driving force for companies constantly moving towards global markets. Technologies enabled to reach relevant information for any kind of business development, to lower storage and retrieval costs. It also connects companies to external world and helps in creating innovative products. Constantly developing technology highly facilitates worldwide communication and information sharing (Karaleviciute, 2012). Due to these improvements specific information on export markets is available.

Most of INVs, participated in McKinsey's survey, admitted that improved communications allowed them to run cheap and responsive sales and services operations across different languages and time zones. Such technological improvements allow firms to take the INV path and be successful at it (Rohilla, 2011).

Hence, the analysis notes the fact that individual, organizational and contextual determinants are closely related to each other and cannot operate independently in order to implement a successful early internationalization of International New Venture.

3. Conclusions and further research implications

Following performed systematic scientific analysis of factors of early internationalization was created a theoretical model. The essence of this model is interaction of individual (entrepreneur'), internal (organizational) and contextual factors also their influence for early internationalization. It revealed that the interaction of these factors have a positive impact on the expansion of International New Ventures into foreign countries. Small and having limited amount of resources companies due to entrepreneur can recognize opportunities in foreign markets faster. Existing contacts help to get acquainted with the target market, internationalize activities much earlier. Therefore, companies achieve better results of expansion to foreign markets. Distinguished factors were theoretically analyzed in details and the impact for early internationalization of INV was submitted.

The theoretical model practically could be used by newly established companies which aim to execute the early internationalization. It could become an instrument to helping realize the essence of internationalization also to form the strategy of expansion to foreign markets. By using this instrument companies could identify the strongest and weakest factors that may affect the internationalization process. Theoretical model clearly shows interoperability of factors and dependency of each other. The weaker areas could be immediately strengthened or starting to look for ways to bypass them. The strongest factors revealed could be used as a basis for the implementation of early internationalization. Such behavior should increase the probability to accomplish a successful early internationalization faster than other companies. What is vitally important for new companies due to lack of resources.

Further studies should include validation of theoretical model in different industrial sectors where small and medium sized enterprises are developing activities outside the country since its establishment. Separation of factors determining early internationalization in different sectors would allow to verify the dependence on the factor of sector. Other studies could include analysis of internationalization speed of International New Ventures and commitment into foreign markets. Also, the presented theoretical model is quite new due

to introduction of more flexible approach to factors determining early internationalization. Therefore, future studies could include a practical confirmation or denial of such allocation of factors.

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Comparative analysis of entrepreneurial orientation of Croatian and Sweden students

Najla Podrug[1], IvonaVrdoljak Raguž[2], Melisa Dedić, MA[3]

[1]*University of Zagreb, Department for Organization and Management, Faculty of Economics and Business Zagreb, Croatia, npodrug@efzg.hr*

[2]*University of Dubrovnik, Economics and Business Department, Croatia, ivrdoljak@unidu.hr*

[3] *mdedic47@gmail.com*

Abstract

Purpose *– The purpose of this paper is to examine the comparison of entrepreneurial orientation of Croatian and Swedish students. Croatian students show significantly lower entrepreneurial intention than Swedish students, and positive attitudes are more frequent with Swedish students.*

Design/methodology/approach *– The cross-cultural research strategy used in this study was a narrow-sample strategy which is based on a survey questionnaire comparison of the similar subcultures in different countries.*

Findings *– Croatian students show significantly lower entrepreneurial intention, while positive entrepreneurial attitudes are more frequent with Swedish students. Interestingly, Swedish students consider the entrepreneurial climate to be more evident in their schools. This finding is especially significant if one considers the significantly lower entrepreneurial education of Swedish than Croatian students.*

Research limitations/implications *– Conclusions based on this research are tentative and require further comparison including representatives of other cultures and faculties. Another limitation is identified through additional option of changing intentions and other factors of entrepreneurial orientation, and therefore would longitudinal research of tracking changes of entrepreneurial orientation over the years of study, as well as after studies, along with exploring the reasons of changing them, be desirable. The size of the sample of respondents appears as another potential limitation.*

Originality/value *– Confidence in their own entrepreneurial skills for Croatian students is dependent on the support of the environment, which is not the case with Swedish students whose confidence depends solely on how individually entrepreneurial they are.*

Keywords: *entrepreneurial orientation, Croatia, Sweden*

JEL Classification: M16

1. Introduction

Entrepreneurship is an important economic and social phenomenon that affects economic growth, increases economic efficiency, competitiveness and stimulates innovation and job creation.

Entrepreneurial orientation includes formal and informal activities company will

respond with to pressures of external and internal environment, resulting in a new business through various forms of innovation. Education can contribute to the development of entrepreneurial behavior through development of an entrepreneurial mindset, raising awareness of entrepreneurship as a possible career and improvement of important skills. However, the environment could easily affect entrepreneurial orientation and national culture as well as restrict entrepreneurial behavior at the individual level. In this respect, a culture that supports entrepreneurship "produces" more people with entrepreneurial potential and consequently strengthens entrepreneurial activity at the national level.

Numerous factors are responsible for the formation of an entrepreneurial orientation, and along with one's personality, one of the factors could as well is the influence of culture and education. Moreover, culture is an influential factor in shaping the way people think, communicate and behave. It is unique and differs between nations; therefore different cultures specify different expectations of an entrepreneurial career. Furthermore, an important role in the entrepreneurial orientation has an entrepreneurship education in creating capacity of universities and individuals in dealing with the complexity and uncertainty of the environment in which they operate. It develops a proactive approach, innovative mindset and accountability of an individual, as well as its willingness to take upon risks in making decisions and solving problems.

The aim of this study is to examine the impact of educational and cultural context, by means of a comparative analysis of two culturally different worlds – Croatia and Sweden. Whether the results confirm the link between cultures, defined by Hofstede's dimensions, with its members, was the main concern tested throughout this study.

2. Entrepreneurial Orientation of Students

There are numerous arguments supporting the claim that career identity starts developing in an early childhood with the comprehension of the concept of unemployment and welfare and at the 10 years of age the concept of salary as well as working conditions within the family. Moreover, research shows that children at the age of five understand work conflicts whereas in adolescence start to imitate the level of commitment and working habits of their parents. However, research confirms that early interactions within the school and work environment play a vital role in shaping one's long-term career interests, personal values, working skills and abilities. Therefore, early work experience (part-time job) forms a later work behavior, and shows positive effections in career when it is challenging, takes away a maximum of 20 hours per week, and carried out under the adult supervision (Feldman, 2009, pp. 295- 316).

Scott and Twomey set a model in which the entrepreneurial orientation of students is affected by a number of specifics - predisposing factors, trigger factors and a business idea. Predisposing factors include personality variables, one's origin (e.g. entrepreneurship in the family), perceptions of self in the context of different types of organizations, work experience, their hobbies. These factors evolve over time. On the other hand, trigger factors are short-term and conditioned by situations, such as job search, acquired career advices and the prospects of unemployment. The third factor - owning a business idea, authors consider the crucial one as simply having an innovative idea carried out under a supervision by an adult can boost aspirations for a challenge (Scott, Twomey, 1988, p.5). These jobs will certainly help students crystallize their professional interests, adapt easier to work after school years, and assure them work experience that will increase their chances of employment, entrepreneurial aspirations, or constitute a 'push' towards entrepreneurship as an independent factor.

Students with high deference towards entrepreneurship tend to have more family role models, work experience and perceive

self-employment desirable. Their hobbies show to be of importance as well. However, the biggest impact in explaining the career aspirations is having a business idea, as a direct predictor, as well as the intervening variable between predisposing factors and trigger factors with entrepreneurial orientation. It is in regards to this that entrepreneurship education plays a significant role, especially activities related to generating, critically evaluating and finally implementing business ideas (Erkko et al., 2001, pp. 145-160).

It is important to notice that the entrepreneurship education should not be limited to formal education for the acquisition of professional knowledge, skills and abilities, after which participants receive a public document. Accordingly, education should extend to other forms of education such as non-formal education, which includes organized learning processes aimed at training, specialization and personal development carried out in adult education institutions, companies, firms, associations, sports clubs, and various centers that do not issue public documents and are independent of the official educational system. As individuals unconsciously accept views, values, skills and knowledge from daily experiences and environment, it is clear that informal education plays an important role in developing entrepreneurial skills and overall improvement in this specific discipline. Although informal education does not have to take place consciously, the exchange of knowledge within the family, among friends, peers, as well as learning from role models and mentors has a crucial role in the development of entrepreneurial behavior. Entrepreneurial way of teaching requires an individual approach of the teacher towards student and his/her capacities, as well as the teacher's high level of flexibility. Therefore, the teacher is the one who should provide a context for the development of entrepreneurial behaviors, skills and attitudes. This means including students in an entrepreneurial project, provide them with the relevant knowledge, inform on practical aspects, help them evaluate self-employment as a legitimate and desirable career option and so on. However, above all, raise their confidence in their own entrepreneurial competence through growing confidence in the entrepreneurial orientation (Miljković, 2010, p.417-423.). Entrepreneurship is a subject of growing interest to universities and business schools around the world. The impact of globalization creates a lot more opportunities, but also introduces uncertainty and complexity in the lives of individuals. Organizations change under the influence of global pressures. Individuals are also facing consequences of globalization through different employment opportunities, frequency of part-timeand limited contract jobs, greater geographical mobility, etc. Furthermore, relationship towards family changes, there is a far greater responsibility to manage your own education, property, life and the prospects of facing pension uncertainty grow (Gibb, 2002, p.135.). Educational institutions and universities must direct their efforts towards preparing students for work in a dynamic, constantly changing global environment, and, thus, entrepreneurship education should equip young people with proper skills and knowledge that would eventually assist them in coping in an uncertain and complex business environment. Entrepreneurship education should go far beyond conventional business context (Gibb, 2002, p. 41).

Throughout entrepreneurship education, teachers have a significant role in achieving desirable objectives, as they should represent a kind of role models of entrepreneurial behavior. Moreover, teaching oriented towards action and learning from experience require additional efforts by teachers and therefore require further self-investment an additional material resources. With the increasing demand for entrepreneurship education, one of the biggest problems faced by entrepreneurial programs at universities around the world is the lack of qualified teachers (Gibb, 2003, p.135). There is a

distinguished difference between teachers for entrepreneurship and teachers of entrepreneurship. Teachers for entrepreneurship usually have previous business experience as opposed to the teachers of entrepreneurship. This division is not surprising since the practical courses are better suited for teachers that have practical experience in entrepreneurship, while teachers who are researchers find courses that investigate the teaching of entrepreneurship and entrepreneurial quality easier to teach (Gibb, 2001, pp. 17-42). Also the introduction of practitioners and real entrepreneurs in classes together with professors from the university represents a possible solution to this problem.

3. Cultural differences in the entrepreneurial orientation of students

National culture affects the development of entrepreneurship primarily through the influence of cultural values that are part of every society, and through institutions that are the subject of this culture. Although the numerous studies have shown a correlation between national culture and entrepreneurial activity, results of cultural affects on entrepreneurial behavior, attitudes and perceptions remain relatively unexplored.

Entrepreneurship is constantly remodeling and promoting social progress and is an important source of innovation and economic growth of the country. Therefore, understanding the impact of culture on entrepreneurship is of great theoretical and practical value. (Hayton et al., 1995, p.56).

In this regard, entrepreneurship "produces" more people with entrepreneurial potential and consequently strengthens entrepreneurial activity at the national level. Although entrepreneurs in different countries usually share some universal characteristics, they can also possess some features specific to their respective national culture. For example, entrepreneurial activity is often encouraged, as a way of achieving economic growth and empowerment of marginalized segments of the population, in less developed countries. (Stopford, Baden-Fuller, 1994, p.521-536). As one of determinants that influence entrepreneurial diversity, many authors suggest cultural differences measured by Hofstede's methodology. Indeed, there are many empirical evidence that support this idea. Moreover, same authors suggest that culture plays a key role in explaining the differences in the intensity of entrepreneurial activity between countries, as cultural aspects are more of a permanent nature than economic conditions (Hofstede, 2001).

Thomas and Mueller investigated variations of four key entrepreneurial characteristics (innovation, locus of control, risk taking and energy) and concluded that the entrepreneurial traits simultaneously reduce as the cultural distance of the observed countries of the West grows. In another study they examined the link between entrepreneurial characteristics of innovation and Hofstede's cultural dimensions of individualism and uncertainty avoidance. They found that innovation is highly expressed in cultures of individualism and low in cultures that are prone to avoiding uncertainty. There is a strong empirical evidence that the reasons for initiating entrepreneurial activities varies depending on the cultural dimensions of individualism, hierarchical distance and masculinity. Conducted studies provide two key insights on the role of national culture. The first implication is that, in the context of entrepreneurship, motivation theories in different cultures emphasize different motivational needs. Another implication is that national culture affects the national or regional rate of entrepreneurship by creating a larger number of potential entrepreneurs (Thomas & Mueller, 2012, p.287).

Culture, in its various forms, manifests as a moderator between contextual factors and entrepreneurial activities. The moderating role of culture suggests that culture acts more as a catalyst rather than a cause of entrepreneurial activities. Although some studies have found significant relationships between national culture and entrepreneurial outcomes, most suggest that cultural traits

transform and complement the institutional and economic contexts that influence entrepreneurship. Economic and institutional context are key initiators of entrepreneurship and economic development (Leff, 1979, p. 129).

If we explore the Croatian culture through the lens of the 5-D Model, we can get a good overview of the deep drivers of the Croatian culture relative to other world cultures. Croatia scores high on dimension power distance (score of 73) which means that people accept a hierarchical order in which everybody has a place and which needs no further justification. Hierarchy in an organization is seen as reflecting inherent inequalities, centralization is popular and the ideal boss is a benevolent autocrat (Hofstede, 2013). Croatia, with a score of 33 is considered a collectivistic society. This is manifest in a close long-term commitment to the member 'group', be that a family or extended relationships. Offence leads to shame and loss of face, hiring and promotion decisions take account of the employee's in-group, management is the management of groups. Croatia scores 40 on the dimension masculinity/femininity and is thus considered a relatively feminine society. In feminine countries the focus is on "working in order to live", managers strive for consensus, people value equality and solidarity in their working lives. Conflicts are resolved by compromise and negotiation. Incentives such as free time and flexibility are favoured. Croatia scores 80 on the dimension uncertainty avoidance and thus has a very high preference for avoiding uncertainty. Countries exhibiting high uncertainty avoidance maintain rigid codes of belief and behavior and are intolerant of unorthodox behavior and ideas. In these cultures there is an emotional need for rules (even if the rules never seem to work) time is money, innovation may be resisted, security is an important element in individual motivation (Hofstede, 2013).

Highly decentralized and supported by a strong middle class, Sweden is among the lower power distant countries (score 31). Co-determination rights are comparatively extensive and have to be taken into account by the management. A direct and participative communication and meeting style is common, control is disliked and leadership is challenged to show expertise. It is a truly individualistic one (Hofstede, 2013). Small families with a focus on the parent-children relationship rather than aunts and uncles are most common. There is a strong belief in the ideal of self-actualization. Loyalty is based on personal preferences for people as well as a sense of duty and responsibility. This is defined by the contract between the employer and the employee. Communication is among the most direct in the world following the ideal to be "honest, even if it hurts". Within a score of 5 Sweden is considered a feminine society. It is important to keep the life/work balance and you make sure that all are included. An effective manager is supportive to his/her people, and decision making is achieved through involvement. Managers strive for consensus and people value equality, solidarity and quality in their working lives. Conflicts are resolved by compromise and negotiation and Swedes are known for their long discussions until consensus has been reached. Incentives such as free time and flexible working hours are favoured. The whole culture is based around 'lagom', which means something like not too much, not too little, everything in moderation. Sweden scores 29 on uncertainy dimension - low UAI societies maintain a more relaxed attitude in which practice counts more than principles and deviance from the norm is more easily tolerated. In societies exhibiting low UAI, people believe there should be no more rules than are necessary. Schedules are flexible, hard work is undertaken when necessary but not for its own sake, precision and punctuality do not come naturally, innovation is not seen as threatening. The Swedes score 29, making it a short term orientation culture meaning they generally exhibit great respect for traditions, a relatively small propensity to save, strong social

pressure to "keep up with the Joneses", impatience for achieving quick results. Western societies are typically found at the short-term end of this dimension, as are the countries of the Middle East (Hofstede, 2013).

4. Methodology and interpretation of empirical research

The cross-cultural research strategy used in this study was a narrow-sample strategy which is based on a survey questionnaire comparison of the similar subcultures in different countries. The intention is to maximally reduce the variance of data including age, sex, education so that remaining differences can be assigned to the national/cultural differences. Therefore, the respondents in Croatia and Sweden were students (at the University of Zagreb and the University of Lund). Total sample size was 103 with 52 Croats and 51 Swedes, and characteristics of this sample are presented in tables below.

Table 1: Gender

COUNTRY		N	%
Croatia	M	23	44,2
	F	29	55,8
	TOTAL	**52**	100,0
Sweden	M	30	58,8
	F	21	41,2
	TOTAL	**51**	100,0

Table 2: Have they ever been self-employed

COUNTRY		N	%
Croatia	No	31	59,6
	Yes	21	40,4
	Total	52	100,0
Sweden	No	32	62,7
	Yes	19	37,3
	Total	51	100,0

Table 3: Plans on being self-employed after they graduate

COUNTRY		N	%
Croatia	Very likely	8	15,4
	Probably	26	50,0
	Unlikely	13	25,0
	Probably not	5	9,6
	Total	52	100,0
Sweden	Very likely	5	9,8
	Probably	21	41,2
	Unlikely	17	33,3
	Probably not	8	15,7
	Total	51	100,0

From the above tables we can see there is no significant difference between the students of both cultures in the gender of the subject, then in the issue of self-employment of the students and their parents.

Table 4: Participation in any form of entrepreneurship education

COUNTRY		N	%
Croatia	Yes	52	100,0
Sweden	No	14	27,5
	Yes	37	72,5
	Total	51	100,0

Table 5: Participation in entrepreneurship education at the University?

COUNTRY		N	%
Croatia	No	3	5,8
	Yes	49	94,2
	Total	52	100,0
Sweden	No	9	17,6
	Yes	42	82,4
	Total	51	100,0

There is a visible significant difference in the entrepreneurship education between the Croatian and Sweden students, to the benefit of Croatian students. However, this finding should be interpreted with interset to the

sample of Croatian students, who are all students of the Faculty of Economics. It is interesting to note that the Swedish students, although other faculty orientations (technical professions), had the opportunity to attend entrepreneurship on its faculty.

Table 6: Testing differences between samples of Croatian and Swedish students

	t	Sig.
Entrepreneurial intentions	-6,177	,000
Entrepreneurial	-1,438	,154
Open for new experiences	-,214	,831
Concrete entrepreneurial goals	1,439	,153
Entrepreneurial goals	-3,579	,001
The impact of college on the development of entrepreneurial tendencies	-10,171	,000
Entrepreneurial education	3,467	,001
Support of the environment	-,867	,388
Confidence in entrepreneurial abilities	-1,267	,208
Entrepreneurial initiative	,235	,815
Determinants of entrepreneurial success	-5,901	,000
Question about lottery	-1,887	,062
Entrepreneur plan	-3,607	,000
Evaluation of success	1,705	,092

The analysis results evident in Table 6 t-test analysis revealed a significant difference in the entrepreneurial intention, planning, attitudes, and determinants of entrepreneurial success (impact faculty and entrepreneurial education). There was no significant difference in the entrepreneurial initiative between Swedish and Croatian students.

Table 7: Testing differences between arithmetical means within two independent samples of students in Republic of Croatia and Sweden

	COUNTRY	N	Mean	Std. Deviation
Entrepreneurial intentions	Croatia	52	15,5769	3,30387
Entrepreneurial	Sweden	51	19,3137	2,81062
Open for new experiences	Croatia	52	13,5000	2,89354
Concrete entrepreneurial goals	Sweden	51	14,2941	2,70772
Entrepreneurial goals	Croatia	52	9,4808	2,82489
The impact of college on the development of entrepreneurial tendencies	Sweden	51	9,5882	2,21970
Entrepreneurial education	Croatia	52	40,2719	39,97884
Support of the environment	Sweden	51	30,4265	28,38105
Confidence in entrepreneurial abilities	Croatia	52	17,0769	3,60199
Entrepreneurial initiative	Sweden	51	19,5882	3,51668
Determinants of entrepreneurial success	Croatia	52	13,0192	3,14044
Question about lottery	Sweden	51	19,4118	3,23837
Entrepreneur plan	Croatia	52	1,9423	,23544
Evaluation of Success	Sweden	51	1,5490	,78266
Entrepreneurial intentions	Croatia	52	15,8462	3,03176
Entrepreneurial	Sweden	51	16,3529	2,89706
Open for new experiences	Croatia	52	17,3654	4,29787
Concrete entrepreneurial goals	Sweden	51	18,2941	3,01526
Entrepreneurial goals	Croatia	52	113,2719	43,38918
The impact of college on the development of entrepreneurial tendencies	Sweden	51	111,5049	31,97736
Entrepreneurial education	Croatia	52	30,8077	5,31383
Support of the environment	Sweden	51	37,3137	5,86682
Confidence in entrepreneurial abilities	Croatia	49	8,0612	6,64708
Entrepreneurial initiative	Sweden	51	10,3137	5,22873
Determinants of entrepreneurial success	Croatia	49	5,2041	1,82551
Question about lottery	Sweden	51	6,5294	1,84773
Entrepreneur plan	Croatia	49	35,2937	38,47361
	Sweden	51	23,7990	27,86593

Higher levels of entrepreneurial education in Croatian students in comparison to Swedish ones should be emphasized.

Background of these higher levels of education is clearer if we take the selection of faculty orientation of Croatian students into account compared with Swedish students, who are not that often economics profession. The unexpected results reveal equal levels of incentives and risk taking preferences (lottery) in students of both cultures.

How the entrepreneurial orientation is influenced by individual culture can be tested by the regression analysis, or determining how certain factors affect development of entrepreneurial orientation in students. In accordance to this, regression analysis was applied to determine which factors explain higher levels of entrepreneurial initiative, intentions, self-esteem, attitudes and clarity of business objectives in both national cultures.

Regression analysis showed that the overall impact of the environment has a statistically significant effect on the entrepreneurial initiative of Croatian students (these factors explained 21.9% of entrepreneurial initiative of Croatian students $F_{3,48} = 4.48$, $p < 0.01$). The same factors explained 13.7% of entrepreneurial initiative of Swedish students, which was not statistically significant ($F_{3,47} = 2.49$, $p > 0.05$).

Table 8: The coefficients of the regression analysis to determine predictor importance of certain factors in predicting entrepreneurial initiative among students

COUNTRY		standardized coefficient	t	Sig.
Croatia			-,258	,797
	The impact of college on the development of entrepreneurial tendencies	,043	,287	,775
	Entrepreneurial education	,057	,436	,665
	Support of the environment	,440	2,982	,004
Sweden			2,149	,037
	The impact of college on the development of entrepreneurial tendencies	-,086	-,435	,665
	Entrepreneurial education	-,130	-,947	,348
	Support of the environment	,422	2,124	,039

According to Table 8, a statistically significant factors of entrepreneurial intentions of both cultures are open to experiences as personality traits and self-confidence, and confidence in their own entrepreneurial skills. Thus, students of both cultures more open to experience and more assertive about their entrepreneurial skills will have more pronounced intention to engage in entrepreneurship.

Confidence personality traits, clear objectives, attitudes and environment predict a lesser extent in the Croatian population of students (33.3% self-confidence, $F_{8,43} = 2.68$, $p < 0.02$), than in the case of Swedish students (69.7% self-confidence, $F_{8\ 42} = 12{:}07$, $p < 0.001$).

Table 9: Coefficients of regression analysis that determine predictor importance of certain factors in evaluating entrepreneurial intention among students

COUNTRY		standardized coefficient	t	sig.
Croatia			1,427	,161
	Entrepreneurial	,028	,190	,850
	Openness to experience	,325	2,622	,012
	Concrete entrepreneurial goals	-,027	-,235	,816
	Entrepreneurial attitudes	,035	,223	,825
	The impact of college on the development of entrepreneurial tendencies	,171	1,094	,280
	Entrepreneurship education	-,093	-,807	,424
	Support the environment	,074	,462	,646
	Entrepreneurship can not be taught	-,034	-,289	,774
	Confidence in their entrepreneurial abilities	,355	2,678	,011
Sweden			2,274	,028
	Entrepreneurial	,032	,143	,887
	Openness to experience	,292	2,265	,029
	Concrete entrepreneurial goals	,006	,058	,954
	Entrepreneurial attitudes	,126	,830	,411
	The impact of college on the development of entrepreneurial tendencies	,150	,775	,443
	Entrepreneurship education	,017	,164	,870
	Support the environment	-,031	-,192	,848
	Entrepreneurship can not be taught	-,085	-,795	,431
	Confidence in entrepreneurial abilities	,419	2,431	,020

As seen in Table 9 higher levels of entrepreneurial initiatives in both cultures is best predicted by a greater environment support.

Entrepreneurial spirit and openness as personality traits, clear objectives and attitudes, along with the influence of environment and education jointly account for higher levels of intent by students of both cultures (50.9% for Croatian students, F9,42 = 4.83, p <0.001, and 63.1% for Swedish students, F9,41 = 7.80, p <0.001).

Table 10: Coefficients of regression analysis that determine predictor importance of certain factors in evaluating self-confidence among students

COUNTRY		standardized coefficient	t	sig.
Croatia			1,338	,188
	Entrepreneurial	,014	,082	,935
	Openness to experience	,060	,418	,678
	Concrete entrepreneurial goals	-,021	-,160	,874
	Entrepreneurial attitudes	,194	1,078	,287
	The impact of college on the development of entrepreneurial tendencies	-,170	-,958	,344
	Entrepreneurship education	-,041	-,307	,760
	Support of the environment	,485	2,888	,006
	Entrepreneurship can not be taught	-,168	-1,259	,215
Sweden			2,909	,006
	Entrepreneurial	,750	4,656	,000
	Openness to experience	-,089	-,777	,441
	Concrete entrepreneurial goals	,145	1,518	,136
	Entrepreneurial attitudes	-,047	-,344	,733
	The impact of college on the development of entrepreneurial tendencies	,227	1,333	,190
	Entrepreneurship education	-,069	-,773	,444
	Support of the environment	-,043	-,303	,763
	Entrepreneurship can not be taught	-,052	-,546	,588

Table 10 shows that support of the environment plays a greater role for the development of entrepreneurial self-confidence of Croatian students, than it is the case with Swedish students. Among Swedish students, instead of environment support that was not shown to be important for their self-confidence, sole initiative explained most of their entrepreneurship confidence. The views are equally explained by personality factors and the influence of the environment in both cultures (48.9% attitude is explained by this factor and for Croatian students, F5,46 = 8.81, p <0.001, a little more variance attitudes 57.9%, is explained in the Swedish students, F5 , 45 = 12.37, and p <0.001).

Table 11: Coefficients of regression analysis that determine predictor importance of certain factors in evaluating entrepreneurial attitude among students

COUNTRY		standardized coefficient	t	sig.
Croatia			,181	,857
	Entrepreneurial	,315	2,388	,021
	Openness to experience	-,029	-,245	,807
	The impact of college on the development of entrepreneurial tendencies	,324	2,273	,028
	Entrepreneurship education	,077	,694	,491
	Support of the environment	,227	1,785	,081
Sweden			1,761	,085
	Entrepreneurial	,375	2,245	,030
	Openness to experience	-,049	-,388	,700
	The impact of college on the development of entrepreneurial tendencies	,389	2,243	,030
	Entrepreneurship education	-,070	-,700	,488
	Support of the environment	,089	,565	,575

Table 11 reveals that in both cultures one can predict more positive attitudes towards entrepreneurship if students exert more entrepreneurial intentions and their universities had a greater impact on development of their entrepreneurial tendencies.The influence of the environment, entrepreneurial spirit and self-confidence proved to be irrelevant indicators of clarity of entrepreneurial goals for students of both cultures. Only 10.3% of clear entrepreneurial goals are identified by these factors for Croatian students, which is not statistically significant, F5,46 = 1.05, p> 0.05.

5. Conclusion

Croatian students show significantly lower entrepreneurial intention, while positive entrepreneurial attitudes are more frequent with Swedish students. Interestingly, Swedish students consider the entrepreneurial climate to be more evident in their schools. This finding is especially significant if one considers the significantly lower entrepreneurial education of Swedish than Croatian students. Further analysis identified a number of similarities among Croatian and Swedish students: in both cultures one may predict higher level of entrepreneurial initiatives where there is greater environment support exerted. Students from both cultures that are more

open to new experiences along with possessing greater confidence in their own entrepreneurial skills will, as a result, exert stronger entrepreneurial intentions. However, confidence in their own entrepreneurial skills for Croatian students is dependent on the support of the environment, which is not the case with Swedish students whose confidence depends solely on how individually entrepreneurial they are.

Key objective of this empirical study was to demonstrate the impact of cultural and educational context onbehavior of the individual in his/her entrepreneurial orientation, specifically of Croatian and Swedish students.

Therefore, conclusions based on this research are tentative and require further comparison including representatives of other cultures and faculties. Another limitation is identified through additional option of changing intentions and other factors of entrepreneurial orientation, and therefore would longitudinal research of tracking changes of entrepreneurial orientation over the years of study, as well as after studies, along with exploring the reasons of changing them, be desirable. The size of the sample of respondents appears as another potential limitation. Moreover, one has to keep in mind that since the research was conducted partly on the territory of Sweden, the availability of potential respondents in this area was not equal to one in Croatia. Finally, since this was a survey research, it lacked the "supervision" over the exploratory sample.

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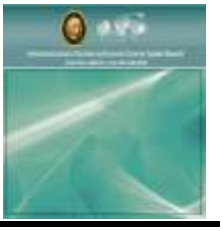


Innovators' vs. Non-innovators' perceptions of corruption in European post-transition economies

Valerija Botrić[1] and Ljiljana Božić[2]

[1]*The Institute of Economics, Zagreb, Trg J.F. Kennedy 7, 10000 Zagreb, Croatia, vbotric@eizg.hr*

[2]*The Institute of Economics, Zagreb, Trg J.F. Kennedy 7, 10000 Zagreb, Croatia, ljbozic@eizg.hr*

Abstract

Purpose *–The purpose of this paper is to analyse whether innovators perceive corruption to be systematically more important than non-innovators across different post-transition EU countries.*

Design/methodology/approach *–We use the Business Environment Survey (BEEPS V) data. The sample consists of 3,716 firms from the post-transition EU members (Bulgaria, Romania, Latvia, Lithuania, Poland, Croatia, Slovakia, Hungary, Czech Republic, Slovenia and Estonia). We first estimate simple matching model, specifically, average treatment effect of the treated (ATT) framework. In order to explore the determinants of the innovation activity of the firms in the analysed countries, conditional on the fact that they consider the corruption to be important obstacle for their business activity, we employ the Heckman probit procedure.*

Findings *– The results imply that there is a link between innovation activity of the firms, perceptions of corruption and the evaluation of innovation enabling specificities in the analysed countries.*

Research limitations/implications *– Although the results confirm that in most of the analysed countries innovative firms perceive corruption to be major impediment for their business activity, based on this analysis we cannot argue that innovation activity would be higher if corruption perceptions were lower in the analysed countries.*

Originality/value *– The results suggest that, in order to boost innovation, not only traditional innovation-supporting policy measures should be considered, but also wider spectrum of activities oriented towards business climate improvement.*

Keywords: innovation, corruption, post-transition countries

JEL Classification: O30, D73

1. Introduction and literature review

Two often emphasized problems in post-transition countries are low level of innovativeness and high level of corruption. The link between the two problems has been documented in the literature, both on the country and firm level. Anokhin and Schulze (2009), for example, argue that countries aiming to improve innovativeness should put additional efforts to control corruption. Corruption is perceived as major obstacle for doing business in general (De Rosa, Gooroochurn and Görg, 2010). Although it is generally recognised as a problem in societies and economies, extant literature provides evidence on possible positive side-effects of

corruption. Often explored question is whether corruption sands or greases the wheels of an economy and some of studies explicitly emphasize the effects for the innovative firms.

Meon and Sekkat (2005) argue that corruption in general cannot have positive effects on specific economy as their findings indicate it causes negative effects on investment and growth. Some studies argue that overall effect is not general, but depends on the specific country institutional setting. Habiyaremye and Raymond (2013) found that bribery by foreign firms in host countries can have some positive effects on their innovation activities but it is very harmful for innovation and R&D in transition host countries. They point out that not just public servants but also managers of multinationals benefit from these activities without dealing with externalities of corruption in long run. Some studies additionally argue that effects of corruption differ by types of innovation. Corruption is damaging for product and organizational innovation, beneficial for marketing innovation and has no impact on process innovation development (Mahagaonkar, 2008). The negative effects of corruption on product innovations have been also confirmed by Starosta de Waldemar (2011).

As previously indicated, some authors emphasize that negative effects are more pronounced in countries with efficient governments, while in countries whose governments are less efficient corruption in fact canhave positive effects (Méon and Weill, 2010). In developed economies increase in level of corruption leads to double or even more direct decrease of entrepreneurship than it is the case in developing economies (Avnimelech, Zelekha and Sharabi, 2014). Furthermore, effects of corruption are not the same across geographical regions. Corruption has negative effect on investment in transition countries but not on investment in Latin America and Sub-Saharan Africa (Asiedu and Freeman, 2009). In Russia, for instance, corruption is one of the factors that reduce firms' capacity to get involved in innovation activities (Chadee and Roxas, 2013). In transition countries higher level of corruption is related to lower economic prosperity (Goel and Budak, 2006). Although transition economies are usually not considered as developing countries according to the values of their economic indicators, studies certainly reveal that the level of institutional development is not satisfactory. Consequently, without additional research we cannot a priori assume the nature of the effects of corruption on innovation activity.

The "greasing the wheels" hypothesis implies revealed general benefits of corruption. Lui (1985) explains how both customers and public servants act to make bribery efficient. Positive perceptions of corruptions have been documented in the literature. Budak and Rajh (2011) reveal that in Western Balkan countries professionals with some experience in bribing are more likely to see benefits from corruption. Kramer (2013) finds that corruption is a solution for anomic condition caused by rapid changes in transition economies that in fact positively affects innovation development. This is found true in case of Bulgaria, one of the least innovative EU countries where corruption has positive effects on both radical and incremental innovation (Krastanova, 2014). The positive impact of corruption on doing business is identified also by Vial and Hanoteau (2010) who provide evidence of positive effects on plant growth.

Since corruption effects have been found to vary in developing and developed economies, important issue of institutional setting has to be emphasized. Certainly, entrepreneurs' intention is to overcome institutional barriers, and within that setting the bribing emerges as an effective practice. Studies have shown that opportunity motivated entrepreneurs are more sensitive to corruption and more likely to grease the wheels compared to necessity motivated entrepreneurs (Dejardin and Laurent, 2014). Furthermore, corruption reduces negative effects of complex regulations on

entrepreneurship (Dreher and Gassebner, 2013). Although there is no evidence of better treatment by public servant, innovative firms are more likely to bribe government officials according to some studies (Ayyagari, Demirguc-Kunt and Maksimovic, 2009).

Discussion on greasing and sanding the wheels still remains open. Relying on extant findings, it can be hypothesized that corruption hinders innovation activities and creates an environment in which firms are unable to develop innovation and introduce it to the market. On the other hand, we cannot exclude possible benefits of corruption for innovation, as identified by existing studies. Thus, it remains to conclude that literature argues the effects of corruption depend on the specific situation.

In this paper we analyse whether innovators perceive this impediment to be systematically more important than non-innovators across different countries. Countries in focus are post-transition EU members. They are Bulgaria, Romania, Latvia, Lithuania, Poland, Croatia, Slovakia, Hungary, Czech Republic, Slovenia and Estonia. Of these countries only Estonia and Slovenia are innovation followers while rest of them are modest (Bulgaria, Romania and Latvia) and moderate innovators[1] (Lithuania, Poland, Croatia, Slovakia, Hungary and Czech Republic). Innovation Union Scoreboard reveals that Estonia and Slovenia have the best innovation performance among selected countries. Their average innovation performance is only slightly below the EU average. In particular, Summary Innovation Index 2013 for EU-28 was 0.554. Its value for Estonia was 0.502 and for Slovenia 0.513. Innovation performance of the rest of the selected countries lags behind the EU average. Bulgaria, Latvia and Romania are the countries with lowest innovation performance in EU. Their innovation performance is less than 50 percent of EU average. Summary Innovation Index 2013[2] for Bulgaria was 0.188, Latvia 0.221 and Romania 0.237. The innovation performance of Lithuania, Poland, Croatia, Slovakia, Hungary and Czech Republic is somewhat better but still well below EU average. Their innovation performance ranges from 50 to 90 percent of EU average. The closest to the EU average of the selected post-transition moderate innovators is the Czech Republic with Summary Innovation Index value 0.422. Summary Innovation Indexes 2013 for the rest of the post-transition moderate innovators are as follows: Lithuania 0.289, Poland 0.279, Croatia 0.306, Slovakia 0.328 and Hungary 0.351[3].

At the same time, the Transparency International Corruption Perceptions Index indicates that corruption varies across the post-transition EU member states. The country with the lowest level of corruption perception is Estonia. The Corruption Perceptions Index (CPI) in 2013 for Estonia is 68. The CPI 2013 scores for the countries in our sample are: Poland 60, Lithuania and Slovenia 57, Latvia 53, Hungary 54, the Czech Republic and Croatia 48, Slovakia 47,

[1]According to Innovation Union Scoreboard (IUS), innovation followers are countries whose innovation performance is less than 20 percent above or more than 90 percent of the EU average. Modest innovators are the countries with innovation performance less than 50 percent of the EU average. Moderate innovators are those with the innovation performance below the EU average that ranges between 50 percent and 90 percent of the EU average.

[2] Summary Innovation Index 2013 and Corruption Perceptions Index (CPI) in 2013 for all countries in the sample are given in the table in Appendix.

[3] More information on innovation performance is available on http://ec.europa.eu/enterprise/policies/innovation/policy/innovation-scoreboard/index_en.htm

Romania 43 and Bulgaria 41[4]. This simple overview of the country rankings according to the different indicators already provides initial indication that innovation performance is related to corruption level of the country. The relationship is, however, not straightforward. Bulgaria and Romania indeed struggle the most with corruption. However, Poland and Lithuania for example, have corruption level close to Slovenia and Estonia that both have better innovation performance.

In order to further elaborate this issue, we explore the empirical relationship between innovation activity and corruption perceptions in the analysed countries. To that end, the next section contains information on the data used in the empirical analysis. Methodology for the empirics is briefly presented in Section 3, where more emphasis is put on the presentation of the results. The last section summarizes conclusions.

2. Data and preliminary findings

Data used in this analysis are from the latest Business Environment Survey (BEEPS V) conducted by the European Bank for Reconstruction and Development (EBRD) and the World Bank, which relates to the years 2012-2013. The full database contains responses from 15,600 manufacturing and services firms in 30 EBRD countries gathered by employing face-to-face interviews.[5] BEEPS is widely used dataset for research on corruption (e.g. Ayyagari, Demirguc-Kunt and Maksimovic, 2009; Habiyaremye and Raymond, 2013, Kramer, 2013, De Rosa, Gooroochurn and Görg, 2010), since it enables comparative overview across different countries. To the extent that we omit judging on possible cultural differences of responding to the same question in different countries, this approach ensures important insight into the corruption patterns.

The sample used in the analysis in present paper consists of 3,716 firms from the selected countries, among which 2,190 can be considered as innovators. For the purpose of this study innovators are firms that report (1) successful development of new or significantly improved product[6], production/supply practice, organisational/management practices or structures, marketing methods and logistical or business process, and/or (2) investment in (intermural or extramural) R&D and and/or giving employees time to develop or try out a new approach or new idea about products or services, business process, firm management or marketing during the last 3 years. Since we have already emphasized in the introduction that the sampled countries lag behind in innovation activity, it might be surprising that the sample contains relatively large share of innovative firms. Consequently, we might argue that there are overall sample selection issues that might impede on the research focused on comparative analysis of innovation activity on the national level. However, we claim that such sample enables the analysis of the differences between innovative and non-innovative firms across countries because there are no a priori reasons to assume that there would be a systematic difference in responding to these questions between the two analysed subgroups.

The question „To what degree is corruption an obstacle to the current operations of this establishment?" was used

[4] For more information on CPI visit http://www.transparency.org/cpi2014/results

[5]More on BEEPS V can be found on http://ebrd-beeps.com/.

[6] The response rate to the first question, i.e. whether the enterprise had new or significantly improved product during the last the years is rather high in the sample. Thus, although some specific questions related to the type of innovation have higher non-response rate, since we are dealing with the overall innovation activity, these potential missing observation issues found in similar studies should not be reflected in our results.

to assess the perception of corruption of responding firms. 5-points Likert scale was offered to respondents, ranging from "no obstacle" to "very severe obstacle". The data shows that higher percentages of innovative firms perceive corruption as important obstacle to business (23.15 percent) in comparison to non-innovative firms (12.71 percent) if we consider overall sample. However, as Figure 1 shows, there are important differences in perceptions among countries. In some countries, non-innovative firms perceive higher corruption problems (Poland), while in others countries the size of the problem for both population subgroups is relatively small (Estonia).

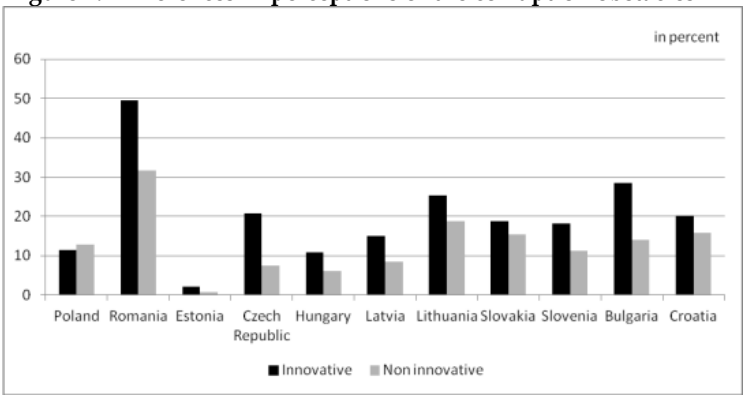
In order to shed some light on such findings, we analyse differences across countries in additional responses. BEEPS enables analysis of a number of interesting questions[7]:

- In any of inspections or meetings with tax officials was a gift or informal payment expected or requested? (Variable name: Tax)
- When establishments like this one do business with the government, what percent of the contract value would be typically paid in informal payments or gifts to secure the contract? (Variable name: Contract)
-In reference to that application for an operating license, was an informal gift or payment expected or requested? (Variable name: Operating)
-It is often said that firms make unofficial payments/gifts, private payments or other benefits to public officials to gain advantages in the drafting of laws, decrees, regulations, and other binding government decisions. To what extent have the following practices had a direct impact on this establishment?

- Private payments/gifts or other benefits to Parliamentarians to affect their votes (Variable name: Parliament)
- Private payments/gifts or other benefits to Government officials to affect the content of government decrees (Variable name: Government)
- Private payments/gifts or other benefits to local or regional government officials to affect their votes or content of government decrees (Variable name: Local)

We report the percentages of innovative firms in each country that have reported corruption experiences as described by previous questions.

Figure 1: Differences in perceptions of the corruption obstacles



Source: authors' calculations based on BEEPS

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[7]The term given in the brackets is used as a reference to each described question.

Table1: Innovative firms' perceptions of corruption, percentage

Country	Tax	Contract	Operating	Parliament	Government	Local
Poland	0	2.01	0	0.93	2.17	1.86
Romania	4.59	0.78	2.17	3.62	4.11	3.62
Estonia	0	0	0	0.72	0	0.72
Czech Republic	0.53	3.13	0.53	9.57	7.46	6.38
Hungary	0	15.00	0	3.13	2.34	0.78
Latvia	0.75	0.25	0	0.75	0.75	0.75
Lithuania	3.17	0.30	1.59	6.35	7.94	9.52
Slovakia	0.72	0	0.72	5.76	7.19	5.76
Slovenia	0.55	1.27	0	1.10	2.21	1.10
Bulgaria	3.03	0	2.42	4.85	6.67	7.27
Croatia	0	0.72	1.58	3.16	3.16	4.74

Source: authors' calculations based on BEEPS.

The truthfulness in respondents' answers to every survey can be questioned. The answers related to corruption activity involvement should be taken with additional care, since such practices are often illegal not only on the demand side of the transaction but also for the supply side (i.e. the respondents in the survey). To the extent that cultural and legal differences influence the responses in analysed countries, the absolute comparison of different levels of percentages across the countries should be avoided. However, the data presented in previous table provides some interesting information on the differences in corruption perceptions across countries. In Romania, the country where innovators perceive corruption to be relatively larger impediment to doing business among the analysed countries, respondents have repeated experiences in bribing tax and in general government officials. Such practice could be related to the "greasing the wheel" hypothesis, when government procedures are not developed in adequate manner, so that the entrepreneurs seek alternative ways to overcome business barriers.

It is interesting also to note that in some countries enterprises are expected to provide gifts to local levels of government (Croatia, Bulgaria, Lithuania), while in others parliament seems to be the place where innovators seek opportunities to enhance their businesses (Czech Republic, Hungary). Although probably the most unreliable question – the percentage of contract amount paid as a bribe – the average number for Hungary seems really high.

In order to investigate the relationship between corruption and innovation output, we have to bear in mind that innovation propensity on a firm level also depends on a large number of factors. Some of the widely studied issues in innovation literature are how firm size (e.g. Hausman, 2005, Keizer, 2002) and sector in which firm operates (e.g. Lööf 2005, Forsman 2011, Becheikh et al. 2006,). Thus, in our empirical estimates, we include variables firm size and sector to control for these factors. Three dummy variables have been considered as a sector indicator – manufacturing, retail and services – as available from the BEEPS data. The four dummy variables for the size were related to the micro enterprises, small, medium and large, where the classification has been taken from the BEEPS survey, thus ensuring the comparability across countries. Other control

variables we use to explain innovation output in this paper are firm age, ownership (private or state) and operating as a part of larger group. We have also considered turnover of the firm, productivity (measured as turnover per employee) and employment changes during the period captured by the survey as control variables, but none of these were significant (or in some cases adequate choices due to potential endogeneity, multi-colinearity or other econometric issues) in our specifications.

Relying on these data, specific empirical strategy as well as results is further discussed in the following section.

3. Estimation methodology and results

Initial investigation on the country level has shown that there is a negative correlation between the innovation scoreboard index and the share of innovative firms perceiving corruption to be important obstacles for their business (correlation coefficient -50.85). This implies that countries in which corruption is perceived as an important problem by innovative firms also lag behind in overall innovative performance.

The question is whether we can find evidence in the sample to reveal iffirms who perceive corruption as an obstacle innovate more or less (the so called grease versus sand hypothesis as indicated in introduction). We first estimate simple matching model in order to reveal the impact of corruption perceptions on innovation activity. Specifically, we use the average treatment effect of the treated (ATT) framework where we assume that corruption perception is the treatment variable and innovation activity is the outcome variable. Within the propensity score matching procedure, initial set of variables considered usual determinants of innovation activity (size, sector, ownership, age) referred to in other studies[8]. Balanced property has been satisfied and the estimates were restricted to common support. Although it can be assumed that there are important endogeneity constraints, we have used this methodology to gain first insights into the relationship between the two variables of interest.

The results in Table 2 indicate that the firms, which have stated that they perceive corruption to be important obstacle for their business activity, are still more likely to have innovative activities (innovation output) than their matched counterparts. This would either corroborate the "greasing" hypothesis or indicate the firms' determination to innovate in spite of perceived obstacles. The latter could be interpreted optimistically, having in mind the Innovation Scoreboard results for the analysed countries. However, inspection of the sample showed disproportionally high number of innovative firms in the sample. Consequently, the sample structure itself might provide too optimistic evidence for judging the actual situation in the analysed countries.

In order to explicitly deal with sample selection issues, we rephrase the research question. We investigate whether we can find the determinants of the innovation activity of the firms in the analysed countries, conditional on the fact that they consider the corruption to be important obstacle for their business activity. The dependent variable is thus whether the firm has been classified as innovative. This has been modelled with the Heckman probit procedure. Corruption perception has been put into relationship with different performance scores of innovation scoreboard index in order to incorporate the different economic conditions the firms face in the analysed countries. The results of the estimates are presented Table 3[9].

Since rho value is statistically different from zero, the overall likelihood of the estimates is not equal to the sum of the likelihoods of selection equation and probit equations. Consequently, sample selection

[8]The probit estimates from the propensity score matching algorithm available from the authors upon request.

[9]The table presents results of the robust estimates, which were similar to the estimates without this specific option.

correcting for the perception on corruption makes sense. Thus, we have found that the probability of innovation activity is increasing with the size of the enterprise and the sector the enterprise operates in, conditioning on the corruption perception differences. It also shows that some of the frequently emphasized determinants of innovation activity of firm – being a segment of a larger enterprise or operating as a private firm (as opposed to state ownership) – were not significant for our countries.

Additionally, it is interesting to note - from the selection equation - the relationship between various dimensions of Innovation Scoreboard index and corruption perceptions of sampled firms in post-transition countries. The results imply that in the countries with more favourably assessed human resources, research system and innovators in general, corruption is more likely to be perceived as the important obstacle to doing business. On the opposite side, countries in which firm investment, linkages and entrepreneurship, intellectual assets and economic effects were assessed more favourably, firms seem to have put less emphasis on the corruption to being important obstacle for doing business. It could be argued that these correlations are due to the fact that the indicators themselves represent the countries the firms originate from. Even with this indirect connection, it seems that these factors which are used for innovation performance rating are also correlated with corruption perception of the firms.

Table 2: ATT estimates:
innovation outcome conditional on perceiving corruption to be an obstacle

Method	Estimated ATT	Standard errors	Treated/controls
Nearest neighbour	0.177***	0.028	699/601
Kernel matching	0.172***	0.019	

Source: authors' estimates based on BEEPS.

Table 3: Propensity of innovation, controlling for corruption perceptions

Variable	Coefficient	Standard error
Innovation – probit equation		
Constant	0.777**	0.303
Age	-0.002	0.005
Private firm	0.061	0.162
Segment of larger firm	0.078	0.191
Small	0.384*	0.196
Medium	0.476**	0.207
Large	0.847***	0.262
Manufacturing	0.240**	0.096
Corruption – selection equation		
Constant	-2.871***	0.820
Human resources	5.937***	1.728
Research system	13.624***	1.869
Finance and support	-3.206	0.650
Firm investment	-1.540**	0.770
Linkages and entrepreneurship	-7.297***	1.329
Intellectual assets	-3.024***	0.750
Innovators	4.139***	1.107
Economic effects	-1.481***	0.466

Diagnostics		
N=3714	Wald chi2(7)=20.75***	LR (rho=0) chi2=16.30***
Censored=3015	Log likelihood=-2033.607	Wald (rho=0) chi2=16.06***
Uncensored=699	Rho=-.607 (.117)	

Source: authors' estimates based on BEEPS.
Notes: ***denotes significance at the level of 1 percent, ** at the level of 5 percent and * at the level of 1 percent.

The results presented in this paper imply that there is a link between innovation activity of the firms, perceptions of corruption and the evaluation of innovation enabling specificities in the analysed countries. Since innovation scoreboard indicators are frequently taken into account by policy makers when considering new innovation policy measures, it is important to notice that they should also consider wider set of business climate indicators, including corruption perceptions. Such combined perspective might result in the better coordination of overall economic policy mix that might boost additional innovation activity and consequently spur overall catching-up process.

4. Conclusions

The main focus in this paper was to empirically analyse the relationship between corruption perceptions and innovation activity in the post-transition European economies. The reason for choosing the sampled countries is that they have been frequently assessed in public debates as well as in research studies as lagging behind more innovative economies and having important governance impediments for successful entrepreneurship development. Based on the BEEPS data, we have confirmed that in most of the analysed countries innovative firms perceive corruption to be major impediment for their business activity, even more so than non-innovative firms emphasize the same issue. Since innovation activity is relatively low in these countries, it could be argued that general policy recommendation to enhance the efforts to reduce corruption should be made, as corruption might deter potential innovators from their activities.

Empirical analysis has shown that firms still innovate in the analysed countries, even if they perceive corruption to be important impediment for their business activity. Based on these results we cannot argue that innovation activity would be higher if corruption perceptions were lower in the analysed countries. It might be the case that enterprises have found the way to operate within the society labelled by high corruption perceptions and that sudden changes of the system could also create additional obstacles. Or it might be the case that decreasing corruption would reduce their operating costs and thus enable better business performance. Such causal relationships are beyond the scope of the present paper.

We have, however, established that the degree of corruption perceptions reported by the respondents in the analysed countries is related to different segments of overall innovation scoreboard index. Consequently, corruption perceptions are correlated also with other factors contributing to overall business climate in a specific country, which makes it more or less favourable for innovation activity.

Our analysis has additionally shown that after corruption perceptions are accounted for, innovation propensity is higher for firms that are larger (in comparison to micro firms) and also the firms in manufacturing (in comparison to services and retail). The first finding might be related to the issue of access to finance, where larger firms have more and better established links with financing institutions.Although manufacturing and services are rather similar when it comes to innovation (Sirilli and Evangelista, 1998), our results reveal that manufacturing firms in selected countries are more likely to innovate.

This might indicate presence of structural industrial differences in post-transition EU countries when it comes to innovation and calls for further research focusing on specific sector or industry.

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Appendix

A1: Summary Innovation Index and Corruption Perceptions Index for the countries in the sample in 2013

	Summary Innovation Index	Corruption Perceptions Index
Estonia	0.502	68
Slovenia	0.513	57
the Czech Republic	0.422	48
Hungary	0.351	54
Slovakia	0.328	47
Croatia	0.306	48
Poland	0.279	60
Lithuania	0.289	57
Bulgaria	0.188	41
Latvia	0.221	53
Romania	0.237	43

Sources: Innovation Union Scoreboard and Transparency International.

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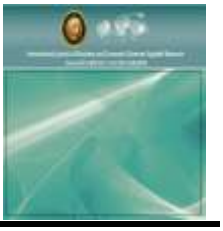


A review of the Mexican national innovation system

Samantha Rullán[1]and Lourdes Casanova[2]

[1]*Visiting Scholar at Johnson Cornell University, 248 Sage Hall Ithaca, NY 14853 USA, srr92@cornell.edu*

[2]*Academic Director Emerging Markets Institute Johnson at Cornell University, 370 Sage Hall Ithaca, NY 14853 USA, lc683@cornell.edu*

Abstract

Governments and business leaders are increasingly aware of the role that innovation plays in economic growth, development and competitiveness. There are imperative challenges for Latin American countries, among them, poverty, social inclusion, sustainable development, climate change, natural disasters, productivity, improve the quality of education and health. Innovations are essential to drive economic growth and prosperity in the region. According to the Global Innovation Index (2015), Mexico is ranked 57th. Most of the research on innovation performance is mostly focused on technological innovation. Therefore, the main variables used, such as patents and number of scientific publications, do not always reflect the other types of innovations (i.e. business model, organizational, etc.) that are developing in emerging markets. The aim of this paper is to analyze the Mexican innovation system using a broad concept with a focus on other types of innovation including cultural aspects to identify the main characteristics that distinguish and determine how innovation in Mexico is formed. Although the Mexican government has improved its institutional structure for innovation and its support policies, they need to evaluate programs and adjust incentive schemes based on performance to improve their innovation policy.

***Purpose** – The purpose of this paper is to examine the Mexican National Innovation System using a broad concept with a focus on other types of innovation and including cultural aspects to identify some of the main characteristics that determine how innovation in Mexico is formed.*

***Design/methodology/approach** – The national innovation systems framework is used to review the Mexican innovation policy.A review of relevant literature on national innovation systems and Mexican innovation policies with data from the Global Innovation Index and INEGI were used for this paper.*

***Findings** – Higher private investment in R&D is needed to enhance innovation, the Mexican government needs to incentivise the private sector investment and collaboration with higher education institutions on innovation projects is essential. Mexico has improved its institutional structure for innovation and its support policies.An explicit innovation policy is recent and it is difficult to evaluate its effectiveness.*

***Research limitations/implications** – This study contributes to the debate on how to improve the Mexican innovation system with emphasis on a broad concept of innovation.The Mexican innovation data is limited.*

***Originality/value** – This paper provides a landscape from which policy makers and academics can build on to present proposals for ways to improve innovation performance in Mexico and other Latin American countries.*

Keywords: Innovation, Mexico, Innovation Policy, National Innovation System

JEL Classification: O54, O290.

1. Introduction

Latin American governments are facing important challenges such as inequality, poverty, climate change, natural disasters and competition, among others. Governments need to determine what will be the basis for their competitiveness. Natural resources have been a source of wealth for countries in the region. They can be an asset but also a weakness, mainly in times when demand for commodities are slow and prices are low. Overdependence on natural resources can hinder innovation. Mexico is not a country that comes into mind when thinking about innovation. Nevertheless, the Mexican government is making an important effort to promote innovation and become relevantin the global knowledge economy.

Mexico is an upper middle-income country with a population of over 123 million and a GDP (US$ billions) of more than $1,282. The country has one of the largest economies in the world ranked 15th and is an emerging power. In the last decades, Mexico's economy has shifted from commodity and agricultural to service and manufacturing. Mexico is one of the most open economies and is currently undergoing major reforms in the telecommunication, energy, fiscal, education and other sectors to drive growth. According to the 2013 Global Entrepreneurship Monitor (GEM) and the Global Competitiveness Index 2014-2015, Mexico is in a transition phase between Efficiency-Driven and Innovation Driven Economy. In the 2015 Global Innovation Index (GII) Mexico ranks in 57th.

Governments in the region are implementing strategies to enhance their innovation performance. Mexico has been slow in embracing innovation as a tool to improve productivity and competitiveness. In 2012, the Mexican government launched an ambitious 25-year Special Program for Science, Technology and Innovation (STI) to achieve economic and social sustainable growth in the country with scientific, technological and innovation development as the main pillars.

In this paper we argue that most research on innovation performance of a country is generally focused on technological innovation and the variables used are mainly suited for developed countries that have largely invested in human resources, infrastructure and other resources to enhance their innovation systems. Therefore, the main variables used such as patents and numbers of scientific publications do not always reflect the other types of innovations (i.e. business model, organizational) that are developing in emerging markets. To identify the main characteristics that distinguishes and determines the innovation that is produced in some developing countries we use a different approach. The types of innovation that are more prevalent and their socio-cultural traits are used to illustrate the innovation capabilities of emerging countries that transcend the traditional conceptions.

For the purpose of this paper we define innovation as the implementation of a new or significantly improved product or process, new marketing method, or a new organizational method in business practices, workplace organization or external relations (OECD & Eurostat, 2005). According to Lundvall (1992:2) National Innovation Systems "is constituted by the elements and relationships which interact in the production, diffusion and use of new, and economically useful, knowledge".

In the last decade, many efforts have been made by the main actors of the innovation system to enhance the innovation performance of a country with high potential but low results according to standard indicators. As Lundvall (2007) noted, in developing countries, research, innovation and competence standard indicators may not capture the reality of the innovation systems. The major challenge consists on developing alternative indicators that capture these elements.

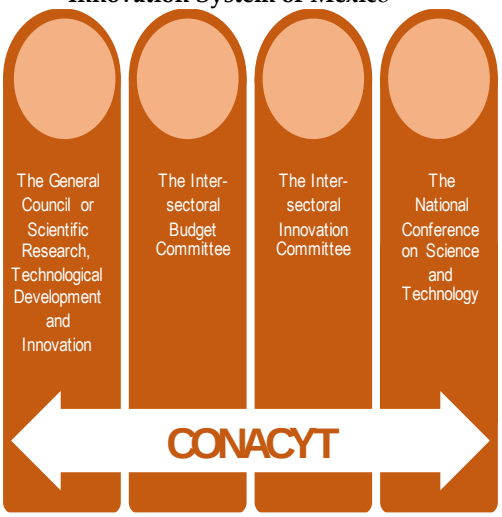
The structure of this paper is as follows. First the role of the public sector in the innovation system of Mexico is presented. Second, the main private actors are identified.

Third, Mexican innovations and some of their cultural traits are presented. In the final remarks some recommendations are introduced.

2. The role of the public sector in the Mexican National Innovation System

Based on the 2002 Science and Technology Law, the main actors in charge of the orientation of the innovation system in Mexico are:

Figure 1. Main public actors of the Innovation System of Mexico



Source: Author's based on the Science and Technology Law http://www.conacyt.gob.mx/siicyt/images/pdfs/ley.pdf

The National Council for Science and Technology (CONACYT by its Spanish acronym) was established in 1970 and it is responsible for articulating the Mexican government's public policies concerning scientific research, technological development and innovation. CONACYT was restructured in 2002, before it was part of the Ministry of Education and it is now an autonomous body within the Executive branch.

The General Council is a high-level scientific advisory body that was created in 2002 to help set the national science and innovation policy. The President of Mexico presides this Council, the National Council for Science and Technology (CONACYT for its Spanish acronym) is the Executive Secretary and among the members are the Foreign Affairs, Energy, Economy, Rural Development, Education and Health Ministers, the Director of CONACYT, the coordinator of the Science and Technology Advisory Forum, the President of the Mexican Academy of Sciences, a representative of the National Conference on Science and Technology, three representatives of the productive sector that have coverage and national representation, a representative of the Public Research System and the Executive General Secretary of the National Association of Universities and Higher Education Institutions.

The Inter-sectoral Budget Committee is coordinated by the Ministry of Finance and Public Credit (SHCP for its Spanish acronym) and the Director of CONACYT, and reviews the correspondence of the programs with the budget.

The Inter-sectoral Innovation Committee is presided by the Minister of Economy, the Director of CONACYT as vice-president and the Minister of Education, and is responsible of approving the innovation program of the General Council.

The National Conference on Science and Technology is entrusted with the coordination of federal and state STI policies and is formed by CONACYT and the representatives of the State Governments in science, technology and innovation.

The public higher education and research institutions that are part of the innovation system are very important and are therefore presented in another section. In Mexico, the institutional structure can generate important limitations and incentives that impact the NIS. Except for CONACYT, most of these main public actors have been established in the last two decades. Until then, Mexico did not have an explicit innovation policy.

R&D investment in Mexico is very low, 0.5 (gross expenditure on R&D % of GDP) and most of it is done by the public sector. The

investment from the private sector for R&D and cooperation with universities remain low.

2.1 Innovation policy

The Mexican Science Technology and Innovation policy has been mainly structured around different programs proposed and coordinated by CONACYT with the participation of federal and state governments as well as the industry and academy. In June 5, 2002 the Science and Technology Law was promulgated. As mentioned before, this law created most of the main actors in the Innovation System of Mexico: General Council for Scientific Research, Technological Development and Innovation and the Science and Technology Advisory Forum, as well as restructured CONACYT. The Special Program for Science Technology and Innovation (PECiTI) was also established based on the guidelines of the National Development Plan. PECiTI is the framework document and planning instrument for the Mexican Science Technology and Innovation policy.

In 2009, an amendment to the Science and Technology Law introduced changes in the governance with the creation of the Inter-sectoral Innovation Committee. The aim is to develop a more comprehensive approach to innovation by fostering greater coordination at the ministry level. A year later, the Committee Specialized in Science, Technology and Innovation was created to improve information in the field. The main coordinator of the Innovation System is CONACYT.

The Special Program for Science, Technology and Innovation 2012-2037 (PECiTI) is the first with a horizon of 25 years in contrast with the previous program (2008-2012) that had a 6-year horizon. The PECiTI is updated every three years. Mexico has been slow in the race to become a knowledge-based economy. The four phases of PECiTI are associated to the six-year Presidential term of office.

The first phase 2013-2018 aims to strengthen and coordinate de STI capacities to transform the institutional setting and consolidate a significant segment of innovative businesses. The second phase from 2019 to 2024 is described as the launch where STI capacities oriented towards strategic sectors and social needs are strengthened, and accelerate innovation. The third phase 2025-2030 is the competitive consolidation; reinforce financing from the business sector. The fourth phase from 2031-2037 is maturity; the business sector accounts for most of the financing for scientific research and experimental development (SR&ED). Each phase comprises different outcomes that are expected in the process to achieve an innovation system that is articulated and will contribute towards Mexico's economic development and social welfare.

Figure 2. The four phases of the PECiTI with expected outcomes

Source: Author's based on the 2014-2018 PECiTI available at: http://www.conacyt.gob.mx/siicyt/index.php/estadisticas/publicaciones/programa-especial-de-ciencia-tecnologia-e-innovacion-peciti/peciti-2014-2018/2420--378/file

In the 2014-2018 PECiCIT significant efforts are aimed at boosting investment in science, technology and innovation. The linkage between the public and private sector is key. Some of the weaknesses mentioned above have been considered and strategies are being implemented to improve the innovation system of Mexico. The development of a comprehensive innovation policy that is coherent with the instruments available could significantly contribute towards achieving the goals setout.

There are six main strategies identified in the Special Program for Science, Technology and Innovation 2014-2018 (PECiCIT) to achieve scientific, technological and innovation development as pillars of economic and social sustainable growth in Mexico:

i. Contribute to the annual growth of national investment in scientific research and technological development to reach 1% of GDP.

The aim is to achieve a sufficiently high rate of investment in the next years with the participation of all sectors, especially, to encourage the private sector to contribute more.

ii. Contribute to high-level human capital formation and enrichment.

Continue efforts to enhance human resources for research, especially in priority sectors and in strategic opportunities. The insertion of this high-level human capital not only in the higher education institutions but also in the industry is very important.

iii. Drive the development of vocations and abilities of local Science, Technology and Innovation to strengthen regional sustainable and inclusive development.

Design and implement public policy that responds to the regional needs that will strengthen each of the entities according to their capacity, vocation and needs.

iv. Contribute towards the generation, transference and exploitation of knowledge by linking HEI and businesses research centers.

To articulate the actors which are not only diverse but there are also weak links among them (government, higher education institutions and industry) is a priority.

v. Strengthen the scientific and technological infrastructure in the country.

With a vision that, among others, reflects the needs of modern science (i.e. spaces, collaborations, connectivity).

vi. Strengthen the STI biotechnology capacities to solve the needs of the country according to the legal framework on biosecurity.

The current infrastructure and specialized human resources need incentives and support to generate biotechnological developments that include the experimental design and a biosecurity culture. The goals and their execution plan in the 2014-2018 Special Program for Science Technology and Innovation are presented in Table 1.

After the North American Free Trade Agreement was signed in 1994, the Mexican government's policies developed what we would like to call the *maquila* model where efforts were made to brand the country as a cheap, good quality and efficient manufacturing destination (see www.maquilaportal.com). Almost ten years later, China displaced Mexico as the second most important trading partner of the US and became a more attractive manufacturing destination for multinational corporations. And internally, this model did not deliver the expected level of economic growth and social welfare. Mexico's GDP growth rate averaged 2.57% for twenty years since 1994. According to CONEVAL, the average poverty rate is still more than 45%. This is inadequate for a country with high potential for growth. As seen in Table 1, the Mexican government is now focusing its efforts beyond manufacturing and moving towards fostering innovations for social inclusion.

In 2014 Mexico's Gross Domestic Expenditure in Research and Development (GERD) as a percentage of GDP remained low at 0.43%. The Government accounts for more than half of the contributions and the goal is to achieve 1% by 2018 with more investment from the private sector.

Table 1: Federal Expenditure in Science, Technology and Innovation in 2012

Activity	Millions of Mexican pesos	Millions of US dollars[1]	Percentage by activity
Scientific Research and Experimental Development	39,474	2,610	63%
Postgraduate Education	13,894	919	22.2%
Scientific Services	7,075	468	11.3%
Innovation	2,228	147	3.5%
TOTAL	62,671	4,144	100%

Source: Author's based on CONACYT PECiTI 2014-2018.

In Table 1, the expenditure by activity clearly discloses the priority of the Federal Government with regards to STI. Most of the investment is in Scientific Research and Experimental Development (63%) activities compared to 3.5% on innovation. CONACYT has created different instruments to finance STI activities. For example, the subprogram AVANCE funds the creation and acquisition of methodologies to help consolidate commercialization and technology transfer developed in Technology Transfer Offices in Mexico to users, and to identify and integrate strategic investors and sponsors in research activities. In 2007 the Technological Innovation Fund (FIT by its Spanish acronym) was created and is operated by CONACYT and the Ministry of Economy as a support mechanism for Micro, Small and Medium Businesses (SME), start-ups and entrepreneurs to develop innovative products and services projects in areas of high value-added.

In 2013, CONACYT and the Ministry of Economy launched a call for proposals to establish Mexican Energy Innovation Centers (CEMIE): solar, bio-energy, geo-thermal and wind energy. The aim of the Centres is to create innovation alliances in the energy sector: human resources, technology transfer, establish links between academia and industry, among others.

2.2 Mexican Public Research Institutions and Higher Education

Education is not only one of the inputs but also a key driver of innovation. According to the Global Innovation Index (2014) Mexico ranks in 89th place in education. The Higher Education System in Mexico is complex and diverse. There are three types of institutions: universities, technological institutes and the Normal schools. According to Forbes (2015) only two Mexican institutions are among the 10 best universities in Latin America, ITESM (private) is ranked 7th and UNAM (public) 8th.

The Public Higher Education Institutions are separated in subsystems. According to the Mexican Ministry of Education (2015) there are 66 Public Universities in Mexico: 9 Federal Public Universities, which are actively involved in academic activities such as teaching and research; 34 State Public Universities that have been created by decree of local congress as decentralized public organisms; 23 Public State Universities with solidary support receive contributions from the budget and state governments mainly provide financing. The Federal government convenes with each state government the solidary contribution. Also, there are 12 Intercultural Universities were created with the aim to promote training for students who

[1] Conversion based on an Exchange rate of $15.12 Mexican pesos per $1 USD. Bank of Mexico http://www.banxico.org.mx/ Last accessed on 14 May 2015.

are engaged in economic, social and cultural development of Mexican indigenous populations. The institutions with most students, funding and intellectual influence are the universities.

Mexico is producing a large number of graduates in engineering, science, manufacturing and construction. According to the 2015 GII, Mexico ranks 18th in the number of graduates in science, engineering, manufacturing and construction with 26.9 (% of total tertiary graduates). This is the result of the Federal government's acknowledgement of the importance of technological training with the establishment of a System of Technological Institutes that is formed by 262 institutes and Specialized Centers (132 Federal Technological Institutes and 130 Decentralized Technological Institutes) with presence in the 32 federal entities and almost 500,000 students. There are 104 Technological Universities that offer students who have completed their middle education an intensive training that will allow them to incorporate in a short period (2 years) to the productive sector or continue their studies to obtain a bachelor's degree in other higher education institutions. There are 50 technical colleges: created in 2001 to offer engineering, bachelors and postgraduate studies at the specialization level. Programs are designed on a competences based model and oriented to applied technological research with close links to the productive, public and social sector.

There are 26 CONACYT Public Research Centers that contribute to the formation of highly specialized human capital, design public policies and linkage with the productive sector, among others. The UNAM research system comprises 71 research centers: 49 for scientific research and 22 for research in social sciences. The National Polytechnic Institution (IPN) has 19 research institutes and CINESTAV has 9 research centers.

On the other hand, Mexico still has significant weaknesses in its education system that needs to be addressed. Although the ranking for the number of science and engineering graduates is high, the number of researchers, headcounts per million populations, is low with 386.43 and is ranked 74th. The number of scientific and technical journal articles (per billion PPP$ GDP) is also very low at 5.86 and is ranked 100th. Academic research in public universities is generally emphasized more than commercial applications. On the positive side there are also strengths such as the number of citable documents H index (number of published articles that have received citations) where it ranks in 33rd with 232.

As for the collaboration between university and industry in R&D, CONACYT provides funding to foster knowledge transfer and university-industry collaboration such as the Innovation Incentives Program (PEI for its Spanish acronym), which supports innovation activities and provides 50% of total project costs for micro and SMEs that collaborate with HEI. According to the OECD (2014) this program has been effective in encouraging business innovation in SMEs. In 2014, the estimated budget for was program is 500 million USD.

3. Private actors in the Innovation System of Mexico

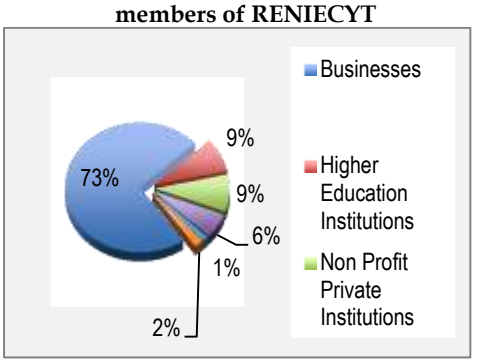
Historically in Mexico, as in most Latin American countries, there are strong ties between education and research institutions but limited ties to the industry. While CONACYT has increased the number of researchers in higher education and research organizations it has been weak at connecting research to the needs of the domestic productive sector.

CONACYT has established a National Registry of Scientific and Technological Institutions and Businesses (RENIECYT) to identify the institutions, centers, and businesses, among others, that participate in scientific and technological activities. In 2014, there are 6,889 registered individuals and corporations.

In Figure 3, from the 72.9% of Businesses 38.7% are Micro, 32.4% are Small, 16% are

Medium, 12.7% are Large and 0.03% are not classified. In 2009, an innovation stimulus package was introduced to detonate private investment in R&D and innovation via subsidies that partially cover the costs of technological innovation projects focused on SME's and projects that link businesses with academia. In 2012 a seed fund for investment in high-tech startups was established by NAFIN.

Figure 3. Individuals and corporations in scientific and technological activities members of RENIECYT



Source: CONACYT, 2015. http://www.conacyt.mx/index.php/estadisticas Last accessed March 03, 2015.

According to data from the 2012 Survey on Research and Technological Development (CONACYT-INEGI) in 2011 the private sector investment in research and technological development as percentage of GDP was 0.2% and the percentage of businesses that carried out these activities was 5%. In 2010-2011 the percentage of businesses that carried out innovation projects was 11.7%, 8.2% of businesses introduced a new product to the market or implemented a new process and 10.3% developed at least one product or process innovation project (INEGI-CONACYT, 2012). This data illustrates the low investment by the private sector in innovation; there is room for improvement. By 2037, the goal of the Mexican government, as mentioned above, is to reverse this situation and for the business sector to account for most of the financing for innovation activities.

To foster linkages between the private and public sector in Mexico the Science and Technology Advisory Forum (FCCyT) was established in 2002 as an autonomous and impartial body in charge of analyzing the development of science, technology and innovation in Mexico. There are 19 members in the Board of Directors of FCCyT who represent of the business, research and technology sector. From 2002 to 2013 they organized 109 events, 60% aimed at the academic sector, 30% to the business and government sector and 20% to the legislative, media and civil society organizations.

Among the events organized by the FCCyT in 2012-2013 is the Citizen's Agenda for Science, Technology and Innovation, a survey conducted in Mexico in which the population could chose one out of 10 challenges that must be met using STI to achieve a better quality of life by 2030. More than 150,000 persons participated and the challenges with most votes were education, water and environment: 'modernize the education system with a humanistic, scientific and technological focus' with 17.09% followed by 'ensuring potable water supply for the entire population' with 15.42% and to 'recover and preserve the environment to improve our quality of life' with 13.54%.

The creation of new innovative firms is a priority in the Mexican innovation policy. Some improvements have been made with regards to the legal framework but access to credit still remains an important barrier in the country.

4. Mexican Innovation Culture

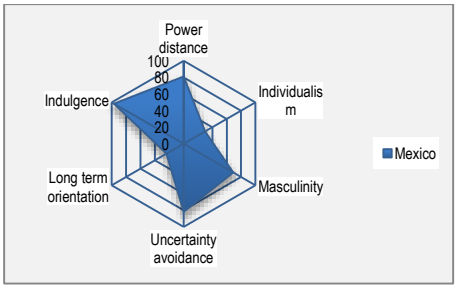
Socio-economic, cultural and political factors have an influence on the ability of Mexico to capitalize on its natural advantages. There are different types of innovation: product, marketing, business model and social, among others. In 2010-2011, the number of businesses in Mexico that carried out at least one type of innovation in product, process, organizational or marketing was 4,179. More than half of them were small businesses (20-50 employees). In 2011, the number of businesses that carried out organizational innovations was 1,231 and the

number of marketing innovation was 609 (INEGI-CONACYT, 2012).

In InnovaLatino (2011) some examples of innovative organizations in Mexico are presented. Cemex-Patrimonio Hoy is displayed as an innovative Corporate Responsibility program that has benefited more than 300,000 families by providing assistance and resources to build and improve houses with a low-cost micro-credit system. Pineda Covalín as a successful marketing/branding innovative company that promotes Mexican culture via de production and distribution of design pieces. Softek, a firm specialized in providing information technology services is portrayed as a business process innovation. Oxxo (convenience stores chain), and Cinepolis (film distributor and theater chain) are presented as examples of business model innovation.

The 6-D model developed by the Hofstede center is used to present some cultural practices that are present in Mexico. Although this model has been widely criticized (Smith, 1998; Schwartz, 1999; Furrer, 2000; and McSweeny, 2000, among others) it is one of the most used pieces of research among scholars. According to the 6-D Model (see Figure 3) Mexico is a hierarchical and collectivistic society that avoids uncertainty with a culture that is normative and a tendency towards indulgence. This clearly illustrates that there are cultural traits are not conducive to a innovation friendly ecosystem and have an influence on the types of innovations that are produced in Mexico.

Figure 4. Mexican culture through the lens of the 6-D Model



Source: Author's based on data from the Hofstede center available at http://geert-hofstede.com/mexico.html Last accessed on 18 March 2015.

Perceptions and attitudes are important elements in the entrepreneurship activity of a country. In the 2014 Global Entrepreneurship Monitor, only 48.9% of Mexicans 18-64 perceives good opportunities to start a business in the area where they live, which represents a significant decline from the previous year 53.6%. This could be explained by the social and political climate in Mexico.

5. Conclusion

There are important deficits in the Innovation System of Mexico illustrated by the data presented in this paper. Regarding the public sector, since 2012, there have been policy and governance changes to improve the innovation performance. In the sections above, we have identified a shift in government focus to move from the *maquila* model towards policies focused on inclusive innovation. The Mexican government is implementing different support mechanisms; we believe this is a step on right direction but it is still early to evaluate its effectiveness.

CONACYT is the main body in charge of coordinating the national innovation system in Mexico. But we pointed out to the challenges that need to be addressed to enhance Mexico's innovation performance. Perhaps a ministry of Science and Technology could strengthen the coordination of the innovation efforts in Mexico and reduce the current myriad of organizations, which make the process rather bureaucratic.

The government should also invest in improving the quality of the education system at all levels. There are incentives to offer high quality graduate programs with the National Program of Quality Graduate Programs (PNPC for its Spanish acronym) based on international standards, a similar program should also be designed to improve the quality at other educational levels. Transference of scientific and technological knowledge from higher education to the productive sector is limited. More internal

and external incentives are needed to improve collaboration and identify opportunities to develop new businesses.

With regards to the private sector, although there are innovations we highlighted in the previous section, the data indicates the extremely low expenditure on R&D. Thus, the private sector is not a relevant actor and its interaction with the universities is weak. More incentives should be introduced to reverse this situation and increase the role of the private sector in the innovation system of Mexico as well as the linkages with the research centers and educational institutions. Higher private investment is needed to enhance innovation in Mexico.

There are innovations emerging from a country that is experiencing important social and political problems. The resilience of Mexican entrepreneurs is evident. In adverse conditions and against all odds they are still innovating.

Mexico has improved its institutional structure for innovation and its support policies, the government needs to evaluate programs and adjust incentive schemes based on performance to improve their innovation strategy and policy.

In this paper we presented the main public and private actors of the innovation system of Mexico. This overview provides a landscape from which policy makers and academics can build on to present proposals for ways to improve innovation performance in Mexico and other Latin American countries.

Acknowledgment

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Hierarchical capitalism in Latin America: Comparative analysis with other economies

Edgar J. Saucedo A.[1] Samantha Rullán[2] and Luis F. Villafuerte V.[3]

[1]*University of Veracruz, Institute of Economics and Social Studies,AV. Luis Castelazo s/n, Col. Industrial Animas, C.P.: 91190, Xalapa (Veracruz), México, esaucedo@uv.mx*

[2]*University of Veracruz, Institute of Economics and Social Studies, AV. Luis Castelazo s/n, Col. Industrial Animas, C.P.: 91190, Xalapa (Veracruz), México, sam@xoles.com*

[3]*University of Veracruz, Faculty of Administrative and Social Sciences, AV. Luis Castelazo s/n, Col. Industrial Animas, C.P.: 91190, Xalapa (Veracruz), México, fvillafuertev@hotmail.com*

Abstract

Purpose *– The purpose of this paper is to compare the three largest economies in Latin America (Brazil, Mexico and Argentina) with other economies that have another type of capitalism, in that way we can extract some effects of the hierarchical capitalism in Latin America*

Design/methodology/approach *– The data were taken from World Economic Outlook (IMF), The Global Innovation Index (INSEAD)and the Democracy Index (The Economist). The selected countries are: Argentina, Brazil, Mexico, South Korea, Spain and Croatia. We establish a comparison among countries in the following dimensions: economic growth, innovation and democracy.*

Findings *– The comparison shows that Argentina, Brazil and Mexico have lower level of economic growth, innovation performance and democracy level than South Korea, Spain and Croatia. The variety of capitalism in Latin America (hierarchical) has lower performance than others kinds of capitalism in other regions of the world.*

Research limitations/implications *– We have compared Latin American countries with countries from other regions of the world. However, a comparison may include more countries and results could vary.*

Originality/value *– The results tend to support the idea that hierarchical capitalism has poor results in comparison with other varieties of capitalism.*

Keywords: Latin America, economic growth, innovation, democracy, varieties of capitalism

JEL Classification: O57, P10

1. Introduction

The Latin American capitalism is hierarchical (Schneider, 2009), due to the existence of monopolies and oligopolies and with high influence of multinationals and large national companies. That situation has an impact on several variables, both economic and social. The aim of this paper is to compare the three largest economies in Latin America (Brazil, Mexico and Argentina) with other economies that have another type of capitalism, in that way we can extract some effects of the hierarchical capitalism. The comparison is based on the following

variables: economic growth, innovation and democracy.

We compare countries with the largest economies in Latin America (Brazil, Mexico and Argentina) with economies that began their transitions to democracy in the eighties (South Korea, Spain and Croatia). The idea is to compare countries that in the eighties had a level of development similar to the selected Latin American countries, but with a different institutional path. We selected countries that underwent a transition from dictatorship to democracy (South Korea and Spain) and one that reached its independence and was recently involved in a war (Croatia), to contrast with Latin American countries that had a transition to democracy in recent decades. South Korea was chosen as one of the countries with higher economic growth, while Spain is important because it managed the transition from a dictatorship to a democracy with an economy that has been transformed and inserted in a regional integration process (i.e. the European Union). Croatia was chosen because its economy was affected by a war. South Korea has a Stated-led plutocratic capitalism characterized by the establishment of large family-led conglomerates (i.e. chaebol) with their own banks, Spain has an economy based on services and tourism, and Croatia has a clientelism capitalist economy. In none of these three countries there is a hierarchical capitalism.

The hypothesis of the paper is that the hierarchical capitalism has negative effects on economic growth, innovation and the democratic level, due to the fact that monopolies and oligopolies have no interest in innovation and they establish power relations with the government. The contribution of the paper is to compare the hierarchical capitalism in Latin America regarding capitalisms in other parts of the world.

After the introduction, in the second section we introduce the varieties of capitalism starting from Hall and Soskice (2001), and then we present the methodology. In the fourth section we perform the comparison of selected countries and the last section are the conclusions.

2. Varieties of capitalism

Globally, there is more than one type of capitalism, while it is true that before the fall of the Berlin Wall, countries were divided into capitalist and socialist, now the economies are classified as developed, emerging and developing countries. Hall and Soskice (2001) perform an analysis of how capitalist economies can be classified focusing on the relationship of the firm with various key players. The authors use five spheres to explain how coordination problems are resolved.

- Industrial relations: how firms coordinate the negotiation of wages and working conditions with trade unions.
- Training and education: companies need workers who are trained, but how much is optimal to invest?
- Corporate governance: refers to the way the company has access to financing and how investors ensure returns on investment.
- Intra-company relationship: the relationship that exists with other companies, suppliers, customers, access to inputs and technology.
- Coordination with employees: refers to how the company ensures that employees have the necessary skills and how they cooperate with business objectives.

Hall and Soskice analyse how economies solve the problems of coordination of each of the five spheres and how complementarity is given. These authors found that economies can be classified into: Liberal Market Economies (LME) and Coordinated Market Economies (CME).

Hall & Soskice's analysis is for developed economies, because it does not include emerging economies and the developing. At the LME, firms coordinate their activities via hierarchies and competitive market arrangements, in addition the relations in the market are competitive and contracts are formal. In the case of CME, firms rely on relationships that are non-market, that is,

agreements with the different actors are informal and incomplete contracts, monitoring is based on the exchange of information.

In the LME hierarchies are the main institutions for the coordination of companies with different players, while the CME strategic coordination is based on the strategic interaction. The United States would be the prototype of the LME country, and Germany would be the extreme case of the CME.

Amable (2003) extends the analysis of Hall and Soskice and includes the following types of capitalism: Asian, Continental, LME, Mediterranean and Social Democrat. The author uses a group of variables: the flexibility of the labour market, financial markets and welfare systems, among others. Cvijanovic and Redzepagic (2011) argue that there may be another type of capitalism, which they regard as clientelism (Croatia) and is characterized by the connections established between government and economic actors.

Since Hall and Soskice (2001) and Amable (2003), there is a classification of types of capitalism for emerging and developing countries. In the case of Latin America, Schneider (2009) and Schneider and Soskice (2009) point out that the countries in the region share the feature that are Hierarchical Market Economies (HME), because the large national firms and the multinational economic groups have control of the economy, causing the existence of monopolies and oligopolies. The HME labour market is characterized by low skills and for being dual, because while formal employment has strong regulation, the informal market is deregulated and flexible.

Bizberg (2015) criticizes the approach of Schneider (2009) and Schneider and Soskice (2009), stating that Latin America cannot be classified into one type of capitalism, because when the economies of the region are analysed (in the period post-stage model of import substitution) there are at least three types of economies. The first type of economy in the region is a capitalist economy subcontracting internationally disarticulated and geared exports, which focuses on the international market and had a drastic break with the way it was handled in the model of import substitution (e.g. Mexico). The second type of economy is geared towards the domestic market, which did not break with the structure model of import substitution and is not dependent on the outside to grow (e.g. Brazil). The third type of state-regulated economy and export-led, characterized by state intervention in the movement of capital and simultaneously promotes exports (e.g. Chile). There are hybrid cases, like Argentina.

3. Methodology

3.1. Economic Dimension

The methodology is based on comparing economic growth among selected Latin American countries (Mexico, Brazil and Argentina) and the other countries (South Korea, Spain and Croatia). Gross Domestic Product (GDPs) of countries was used, and because the data for Croatia is only available from 1993, we used series from 1993 to 2008 (before the crisis). The financial crisis that began in 2008 was not included because the crisis affected much more Spain and Croatia than the other countries. The database used is the World Economic Outlook (IMF), and some economic data from The World Factbook (CIA).

Five of the countries studied have not changed their economic model in the period (1993-2008), and only in the case of Argentina there was a model change in 2003, so we proceeded to divide the period into two sub-periods for that country, the first in 1993-2003 and the second from 2003 to 2008.

Another part of the methodology is to identify the varieties of capitalism with each of the selected countries. For this purpose the theoretical part of the text section is used in order to identify the impact of the type of capitalism on economic growth.

3.2. Innovation Dimension

In the literature, innovations have been defined in different ways by authors either emphasizing features, activities or a combination of both (e.g. Edquist, 1997; Dosi, 1998; Bendis& Byler, 2009). For the purpose of

this paper a broad concept that defines innovation as the implementation of a new (i.e. to the market, to the world) or significantly improved product (good or service) or process, new marketing method, or a new organizational method in business practices, workplace organization or external relations (OECD & Eurostat, 2005). The innovation systems framework is used to present a comparative analysis of innovation in Argentina, Brazil and Mexico compared to Croatia, South Korea and Spain. This framework encourages analysing the whole process of innovation instead of focusing on a single aspect. An essential characteristic is the interaction among components of the innovation system (i.e. structure of production and institutional set-up).

The data from the 2014 Global Innovation Index (GII) is used to analyse the innovation performance of the select countries. The GII comprises 81 indicators and 3 types of data. Also, selected input and output scores are used to compare the countries and illustrate some of their weaknesses and strengths. The inputs capture some of the elements that enable innovative activities and the outputs the actual evidence of these activities. In this paper we classify innovators into three groups: the innovation leaders that tend to have a more balanced innovation system with strengths in all pillars; innovation followers with an innovation system that has more strengths than weaknesses; and emerging innovators with significant weaknesses but are making efforts to improve their innovation performance.

3.2. Democratic Dimension

The analysis of the structural conditions that encourage economic growth and generate innovation in the countries depends on the institutional trust of countries. The indicators that we use for this analysis, are two: the degree of confidence in terms of the rule of law (the fight against corruption), and how each country has tried very specific events that affect the confidence of private or public investment in very specific subjects as processes of public tender, certainty in terms of opening of business or infrastructure spending.

At the second level, we discuss how it is covered by the rule of law, as institutional certainty allows us to establish the conditions to be able to link economic growth with human development parameters, and for that we analyse the position of the countries surveyed in the Human Development Index (HDI). This is important considering that the democracy as a system of government often is not enough to see the stewardship of indicators of economic growth, social welfare and indicators of democracy from a liberal perspective.

In that sense, the discussion about the role that the stability and certainty offered by the institutions built under the parameters of a liberal democracy for the development of conditions that guarantee economic growth and a system of innovation in the countries is essential, since as we explain in this paper, there is a correspondence between the levels of economic growth, the HDI and the degree of democratic stability.

4. Comparative Analysis

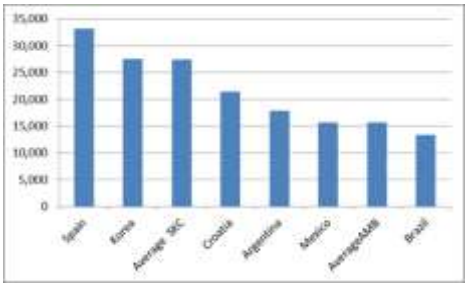
4.1. Economic Dimension

The first variable to compare the groups of countries is the GDP per capita. The following figure shows GDP per capita; Spain, South Korea and Croatia have a higher value in relation to Latin America, because the first group's average is $27,000 dollars, while in Latin America is $15,000 dollars. There are certain factors that have had an influence in the largest countries in Latin America and they have not attained a level of output per person in relation to Spain, South Korea and Croatia, although in the case of the latter (Croatia) is closer to Argentina. Until about 40 years ago, the GDP per capita was greater for Latin American countries than for the other countries selected, so there are certain factors that Argentina, Mexico and Brazil share, which have prevented them to achieve growth.

Spain and South Korea have a GDP per capita of $30,000 dollars (with the financial crisis of 2008, South Korea has already

surpassed Spain), the same level as countries with a high level of development. Croatia has a GDP per capita worth close to $20,000 dollars (with the crisis this indicator has fallen), away from Spain and South Korea. In the case of Latin America, Argentina and Mexico have a similar GDP per capita, while Brazil is behind (see Figure 1).

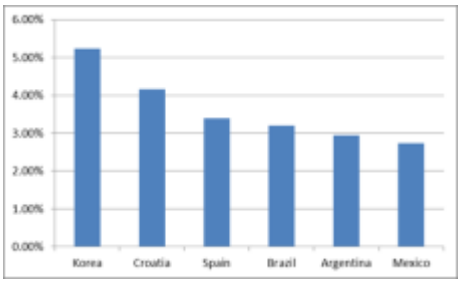
Figure 1. GDP per capita in US dollars, 2008.



Source: WEO (IMF).

A second variable is economic growth, and allows us to analyse the growth over a period of 15 years. Figure 2 shows that from 1993 to 2008 South Korea-Croatia-Spain had a GDP growth higher than the Latin American countries. South Korea grew at an annual average of 5%, followed by Croatia and Spain (both countries change the order in relation to GDP per capita, which indicates that Croatia is converging with Spain), and finally Latin America. Brazil has the highest growth in Latin America (3.20%), followed by Argentina (2.94%) and finally Mexico (2.7%). In the case of Argentina there are two different sub-periods, the first is 1993-2003, with a foreign market-oriented, with zero economic growth, while in the second period (2003-2008), domestic market-oriented, with an average economic growth of 7% annual.

Figure 2. Annual Average GDP growth, 1993-2008.



Source: own elaboration with data from WEO (IMF).

The second part of the analysis is to compare the results of economic growth with the type of capitalism from each of the selected countries. If we link Figure 2 with the Appendix 1 we find that the low economic growth of Latin American countries is due to its hierarchical capitalism (Schneider, 2009), with inequality, and markets that are dominated by groups of domestic enterprises and transnational companies that are oligopolies and monopolies. To explain the difference in economic growth between Mexico and Brazil/Argentina, which is further enhanced if we take into account the 1982-2008 period (Mexico reported economic growth of 2.3%), we use Bizberg (2015). This author points out that Latin American countries do not have the same variety of capitalism, and in the case of Mexico, the author notes that the Mexican economy is characterized by being driven towards the external market, so there is a dependency that does not allow further economic growth, unlike Brazil, which has an economy geared to the domestic market, while the case of Argentina since 2003, its economy is based on the domestic market.

The policy of the Mexican government to grow based on the outside has not brought economic growth, and wage inequality has increased, because real wages have not increased, unlike Brazil and Argentina where it has been giving a boost to the minimum wage in real terms (Bizberg&Théret, 2015), in addition, social spending in these two

countries has been much higher than in Mexico.

Although there are differences among the three Latin American countries, if we compare them with South Korea, the gaps are larger. Such country bases its economic growth on two strategies: the first is the financial support of large conglomerates of families (chaebol) (Witt, 2014), such as Samsung, Hyundai, LG Group and many others, supported by the South Korean government, financially and in terms of regulation (including government control of workers to cooperate with the chaebols). The chaebol have great political influence in South Korea and are comprised of groups of companies belonging to the same family. The second strategy is an active presence of the State (Amable, 2003) to support their national companies in international markets, including supporting the import of raw materials rather than consumer goods. Its exports account for half of its economy (CIA, 2015).

Spain and Croatia have been affected by the financial crisis of 2008, but have grown faster than the average of Latin American countries (in the period 1993-2008) and their GDP per capita is higher than Latin America (the Spanish is higher than the Croatian). The Spanish variety of capitalism is considered Mediterranean (Amable, 2003), between the CME and LME, while in the case of Croatia its capitalism is listed as clientelism (Cvijanovic, & Redzepagic, 2011) and is characterized by patronage ties.

The service sector of Spain and Croatia accounts for about 70% of their economies (CIA, 2015), whereas before its transition to democracy, the industrial sector accounted for a high percentage of the economy. Spain was growing on the strength of its construction sector (which later became the sector that potentiated crisis), banking (with large international banks such as BBVA, Santander) and the tourism sector, while in the case of Croatia its economic growth is based on its tourism sector and the export of some products. In both cases the state has an important role in the development of their new industries.

4.2. Innovation Dimension

According to Edquist and Zabala (2009) the main purpose of an innovation system is to develop and diffuse innovations. The impact of innovation on competitiveness, politics, society and development has been analysed and studied in the literature. Governments are aware of the benefits and are implementing strategies to enhance the innovation performance of their countries. Some countries (e.g. South Korea, Spain and Croatia) have been more successful than others (e.g. Argentina, Brazil and Mexico). According to the 2014 GII South Korea ranks 16th, Spain 27th, Croatia 42nd, Brazil 61st, Mexico 66th and Argentina 70th.

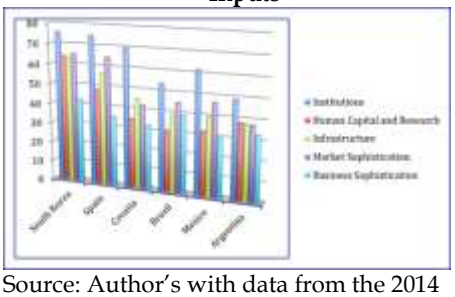
Innovation leaders have invested in infrastructure, R&D, and education, among others, while innovation followers have made important investments in their input pillars but there is room for improvement and emerging innovators are facing important challenges such as weak framework conditions and insufficient investment in innovative activities, among others. There is a sharp contrast among these countries with regards to the scientific and technical resources, and the knowledge gap. South Korea is an innovation leader, Croatia and Spain are innovation followers and Argentina, Brazil and Mexico are emerging innovators according to our own classification.

4.2.1. Innovation enablers: how much have they invested on innovation?

Innovation enablers are the main drivers of innovation performance. In Argentina, the regulatory (129th) and business (124th) environments are weaknesses, as well as, investment (136th) and innovation linkages (133rd). Brazil has a weak business environment (137th) and tertiary education (120th). In both countries knowledge absorption is their most important strength (22nd and 25th, respectively). Mexico has weak innovation linkages but a strong business environment (27th) and in trade and competition (23rd) Croatia is weak in market

sophistication (113th) and investment (139th) and strong in education (17th) and ecological sustainability (16th). Spain has weak innovation linkages (79th) and knowledge absorption (85th) and good infrastructure (16th), market sophistication (15th). South Korea's weakness is trade and competition (103rd) and is strong in human capital and research (3rd), R&D (1st) and ICT (1st). In Figure 3, the innovation inputs of selected countries are presented to illustrate some of the efforts of their governments.

Figure 3. Argentina, Brazil, Croatia, Mexico, South Korea and Spain's 2014 Innovation Inputs



Source: Author's with data from the 2014 Global Innovation Index

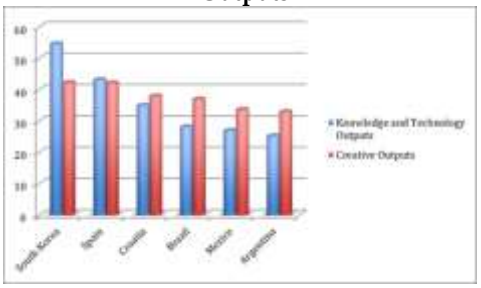
In Figure 3, South Korea, an innovation leader, has an ecosystem that enables innovative activities. Spain and Croatia, innovation followers, possess elements in their national economy that facilitates innovative activities. Argentina, Brazil and Mexico, emerging innovators need to invest more in infrastructure and strengthen their institutions. South Korea is a good example of a country that has been successful in their innovation policies and strategies. The role of government is important and the country has achieved economic growth through innovation.

4.2.2. Innovation outputs: more than the usual suspects

Innovation inputs may result in measurable outputs such as patents and scientific publications. However, innovations are not only technological and these traditional outputs do not always reflect other types of innovation like business model, organization, social innovation and marketing, among others. The 2014 GII not only considers these outputs but also includes creative outputs such as intangible assets, creative goods and services and online creativity. South Korea and Spain have higher knowledge and technology outputs than creative outputs. Croatia, Brazil, Mexico and Argentina have higher creative outputs than knowledge and technology outputs.

In Figure 4, the innovation outputs of selected countries are presented to illustrate the extent to which innovative ideas have been successful; policy makers can also use it to help them identify policy failures. These results could be explained by the type of innovations that are more prevalent in countries that have not invested adequately in infrastructure, human resources, R&D, and technology. As a result process innovations are more common than product innovations.

Figure 4. Argentina, Brazil, Croatia, Mexico, South Korea and Spain's 2014 Innovation Outputs

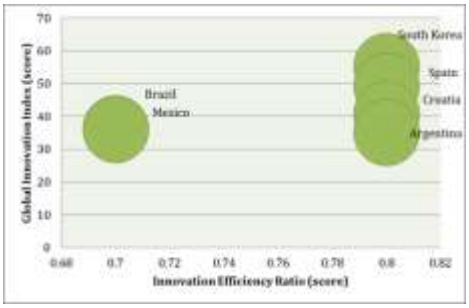


Source: Author's with data from the 2014 Global Innovation Index.

The ability to transform innovation inputs into outputs is key. The Innovation Efficiency Ratio (IER) is calculated as the ratio of the output over the input sub-index. The IER ranks Croatia in 36th, Argentina in 43rd, South Korea in 54th, Spain in 60th Brazil in 71st, and Mexico in 79th. In Figure 5, the Global Innovation Index score vs the Innovation Efficiency Ratio in selected countries is presented. All of the selected countries except Brazil and Mexico are efficient innovators. Countries can have an

enabling environment to innovation but they are not able to translate it into innovation outputs.

Figure 5. Global Innovation Index vs Innovation Efficiency Ratio in selected countries



Source: Author's with data from the 2014 Global Innovation Index

One of the goals in this paper is to compare the selected countries innovation using the data from the 2014 GII to foster learning and help improve performance. We compared the inputs, outputs and innovation efficiency ratio of an innovation leader (South Korea) and two innovation followers (Spain and Croatia) with three emerging innovators (Argentina, Brazil and Mexico) highlighting their strengths and weaknesses. The results are clear; countries that have invested in innovation activities outperform those who have made inadequate investments. Strong institutions, human resources, research and infrastructures that enable innovative activities are key.

Governments need to establish clear and feasible innovation strategies and set measurable goals connected to the outcomes they seek (e.g. economic growth, job creation). Human resources are important but more than quantity, quality should be the goal (e.g. analytical and IT skills). Strengthening institutional capacity for innovation should be a priority in Argentina, Brazil and Mexico. Innovation policies should address systemic problems, each country is unique and it is not recommended to imitate innovation leaders but to adopt and adapt to their specific needs the best practices. Innovations to solve local challenges can emerge from within the country if the required innovation enablers are present and can produce innovative solutions.

4.3 Democratic Dimension

Political theory linked, in the middle of the 20th century, democracy with economic development. By taking the references of the capitalist economic conditions and merging them with procedural institutional processes of the liberal Theories School of democratic pluralism is generated.

The pluralist model is built on the idea that there are two requirements to be able to speak of a democratic system: (a) an established capitalist economy and (b) a rule of law that allows the adjustment of the institutional life of the society.

The first aspect that is covered is the development of conditions of economic well-being, because if they do not exist, the population may undergo a process of disaffection in terms of democracy, or, they may even legitimize an authoritarian political system by which then democracy leads to conditions of a market economy and where conditions of well-being for society arise in general.

In the second aspect, the system must comply with a number of requirements for the conditions of participation in organized and institutionalized channels that ensure the development of a society with a degree of consolidation for its democratic political practices, this under the presence of the rule of law.

There is a degree of consolidation in terms of the presence of the rule of law and the degree of democratic consolidation in the selected countries, in this case, in the variable of the corruption, the ranking of countries (see Table 1).

Table1: Corruption Perception Index, ranking for selected countries 2012-2014

Rank	Country	2014 Score	2013 Score	2012 Score
37	Spain	60	59	65
43	South Korea	55	55	56
61	Croatia	48	48	46
69	Brazil	43	42	43
103	Mexico	35	34	34
107	Argentina	34	34	35

Source: own elaboration with data from Transparency International 2014 http://www.transparency.org/cpi2014/results

If we analyse country by country, we would find that the treatment of cases of corruption is different. For example, Spain has faced a series of clear corruption cases, in 2014 the Punica operation cases, the Black cards used by senior officials of the Spanish Government for their personal expenses, the case Urdangarin, the husband of the Infanta Cristina of Spain (still on-going). The constant in all these cases is that even though some of them are not yet in prison, in most of them, there are senior officials who have been held responsible for and are in prison. This has been very positive for the establishment of the rule of law. The same situation ensued in Croatia, where senior officials have been imprisoned such as the Major of Zagreb, Milan Bandic, on suspicion of abuse of power and corruption, and the former Prime Minister, Ivo Sander. In 2015, the Prime Minister of South Korea, Lee Wan-koo, resigned after suspicion of having accepted bribes from a businessman.

However, in the selected Latin American countries the situation is entirely different, since the cases of corruption not only are increasingly noisier, they are handled with a high level of impunity. In Brazil the scandal of the oil company Petrobras, who presents pictures of corruption with an embezzlement of almost $1.6 billion dollars, product of bid-rigging scheme. Nevertheless, it should be mentioned that at least in this case Brazilian prosecutors have accused more than 100 people of corruption, money laundering and other financial crimes, while investigations on-going.

Both Mexico and Argentina represent dramatic examples in terms of corruption cases or scandals, impunity and the lack of the rule of law. For example, according to the 2014 Corruptions Perception Index, Argentina has fallen consistently for the third consecutive year ranked 107 of 175. In Mexico, the case of HIGA group and the conflict of interest with President Enrique Peña Nieto and the Minister of Economy, Luis Videgaray, where this group has obtained very important public contracts and has granted houses for less than 46% of market value.

The application of the rule of law, responds directly to the degree of functioning of pluralist democracy parameters (i.e. as a system of checks and balances) where there must be clarity in the separation of powers and in the management of accountability, showing a social value in the case of countries where there is a fuller democracy applied more widely the rule of law (Spain and South Korea) while in other countries applied reservations or even detected cases of corruption (Brazil and Croatia) that where investigated and punished by the authorities, and in others it was handled with impunity and even cynicism on behalf of the politicians involved (as they might be the case of Mexico and Argentina), and this corresponds according to the scores of the 2014 Democracy Index of The Economist Intelligence Unit as shown in Table 2.

Table 2: 2014 Democracy Index (Full Democracy: FD, flawed democracy, fd)

Ranking	Country	Score	Index
20	South Korea	8.13	FD
25	Spain	8.02	FD
44	Brazil	7.12	fd
50	Croatia	6.93	fd
51	Mexico	6.90	fd
52	Argentina	6.84	fd

Source: own elaboration with data from The Economist Intelligence Unit, 2014

After this analysis, we can infer that countries with a high Human Development Index (HDI), also have less corrupt governments. Spain and South Korea are countries with full democracies. In this sense it becomes necessary to understand that a country can create optimal conditions to generate development and a national system of innovation. It is necessary to build a stable and consolidated institutional environment under an embedded democracy. This means that there is a relationship between the consolidation of institutional indicators, such as democracy and the rule of law, an effective distribution of the economic surplus, transforming them into tangible satisfiers for the quality of life of citizens.

Table 3: 2014 Human Development Index for selected countries

Country	Ranking (2014)	HDI (2014)
South Korea	15	0.891
Spain	27	0.869
Croatia	47	0.812
Argentina	49	0.808
Mexico	71	0.756
Brazil	79	0.744

Source: own elaboration with data from UNDP, 2014.

Thus, as seen in Table 3, Spain, South Korea and Croatia have the greatest potential to consolidate their economic growth with social wealth distribution, and enhance their innovation system, since they have optimal conditions for economic competition, certainty and security for investment and have a system that guarantees more effective conditions for the implementation of the rule of law that tackles corruption and impunity. This environment attracts investment and makes more effective the scheme of a democratic system with an advanced and stable capitalist environment allowing the effective development of the countries.

5. Conclusion

Overall, Brazil, Argentina and Mexico are ranked below South Korea, Spain and Croatia in innovation, democracy and economic growth. Latin American countries share certain characteristics that imply that they do not generate creative destruction, because they have monopolistic and oligopolistic structures in their markets (among other things) and generate hierarchical economies. On the other hand, the lack of innovation in the region explains that economic growth in the period 1993-2008 has been low compared to other countries. In addition, the hierarchical capitalism in the region has prompted a slow democratic progress.

Although Latin American countries share certain features, we have mentioned that the Mexican case presents the lowest levels of economic growth, the lowest indicator of efficiency of innovation and is considered a failing economy, this can be explained by the type of capitalism it employs. The variety of Mexican capitalism is regarded as "sub-contracting international and disarticulated" and the government has prioritized strategies abroad as a means to achieve development, however that economy is disconnected from its domestic market, which has generated high levels of inequality. In the case of Brazil, the government has focused on a strategy that prioritizes the domestic market, which has led industrialization and not completely dependent on international markets. Argentina since 2003 follows a strategy like that of Brazil (not equal), and that has generated economic growth.

South Korea has found a strategy that has enabled it to have economic growth through innovation and strong government support of domestic conglomerates groups that are characterized by being large exporters. Spain based its economy in the sectors of construction, tourism and banking, allowing it to have economic growth, with a strong presence of the State as a regulator. However, some of these sectors became vulnerable to Spain in the 2008 financial crisis. Croatia transformed its economy after its war of independence, from an economy with a strong industrial sector to one based on services (with a strong tourist activity).

Croatian capitalism has been considered "clientelism" due to the government's relations with the various economic actors.

Overall, economic growth, innovation and the level of democracy should go hand-to-hand, although it is not always the case. With the comparison performed among the Latin American countries and a group of countries with different characteristics (South Korea, Spain and Croatia), we can conclude that hierarchical capitalism produces low economic growth, inhibits creative destruction and impact negative to the democracy, due to the existence of monopolies and oligopolies.

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Appendix 1. Varieties of Capitalism

Country	Variety of Capitalism	Author	Characteristics
Spain	Mediterranean	Amable (2003)	-Regulated product & labour markets -Bank-based-systems - Limited Welfare State -Weak educational system
South Korea	-Asiatic -Plutocratic Stated-led	Amable (2003); Witt (2014)	-Governed product market (rather than regulated). -Regulated labour markets. -Low Levels of social protection. -Private-system of higher education and high rate of tertiary education. -The Establishment of large family-led Conglomerates (chaebol) with own banks.
Croatia	Clientelism	Cvijanovic, &Redzepagic (2011)	-Product market competition is guided by international resolutions adopted by the Republic of Croatia. -Segmented labour markets. -The financial system is guided by the big banks (concentration). -High Social security spending, but poorly distributed by patronage systems. -Low Levels of people with higher education.
Mexico	**Hierarchical** & external market-oriented	Schneider (2009); Schneider & Soskice (2009); Bizberg (2015)	-Economies with wage inequality and hierarchical -Capitalism disarticulated because the configuration of the structure of production takes place abroad. -Weak State Intervention -Non-existent coordination between unions and capital -Welfare State: residual and assistentialist.

Brazil	**Hierarchical** & internal market-oriented	Schneider (2009); Schneider & Soskice (2009); Bizberg (2015)	-Economies with wage inequality and hierarchical -The state plays a central role. -The Economy is oriented to the domestic market. -Strong labour unions and business organizations.
Argentina	**Hierarchical** & Hybrid	Schneider (2009); Schneider & Soskice (2009); Bizberg (2015)	-Economies with wage inequality and hierarchical. -Since 2003 its economy was reoriented towards the domestic market, but it depends on changes in political activity.

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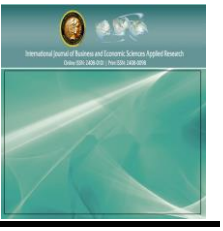

Influence of outsourcing on innovativeness and characteristics of hotel enterprises in the Dubrovnik-Neretva county

Želimir Dulčić[1], Zdenko Klepić[2], Goran Vučur[3]

[1]University of Split, Faculty of Economics, CviteFisković 5, 21000 Split, zelimir.dulcic@efst.hr

[2]University of Mostar, Faculty of Economics, MaticeHrvatske bb, 88000 Mostar, zdenko.klepic@sve-mo.ba

[3]University of Dubrovnik, BraniteljaDubrovnika 29, 20000 Dubrovnik, goran.vucur@unidu.hr

Abstract

Purpose *– The paper aims to explore the application of outsourcing in hotel enterprises in the Dubrovnik-Neretva County. The purpose of the paper is to explore the correlation between outsourcing and innovativeness of hotel companies.*

Design/methodology/approach *– The hypothesis is that an increase in the level of outsourcing is related to a higher degree of innovation of hotel enterprises. We will analyze innovations in the tourism sector related to the introduction of new products and services, technological equipment and software, new activities and organization of business operations, as well as innovations in the field of marketing.*

Findings *– Quick response to market changes and raising the level of competitiveness are considered to be key factors of business of hotel enterprises. Strategic management of hotel enterprises involves the use of different tools that help improve the business performance. Outsourcing of activities can be used as an option that facilitates the improvement of business operations. By using outsourcing, an enterprise tries to improve a variety of business segments that are included in the internal organization of the business, thereby trying to meet the needs of consumers. An important factor in business of an enterprise is innovation that results in creating comparative advantage over competitors.*

Research limitations/implications *– The research was limited to a period of one year and includes area of Dubrovnik-Neretva Countyin Republic of Croatia.*

Originality/value *– The research will be focused on the application of outsourcing in hotel enterprises, where it is planned to investigate the activities that are separated the most and their importance for the company's business. Attention will also be focused on characteristics of hotel enterprises with regard to outsourcing.*

Keywords: outsourcing, innovativeness, characteristics of hotel enterprises

JEL Classification: L20

1. Introduction

After the successfully completed transition period, Croatian tourism achieved enviable results, particularly in the last fifteen years, when progressive growth and development were registered. Considering the last period from 2012 onwards, it can be concluded that the average increase in overnight stays on an annual basis in the Dubrovnik-Neretva County stood at the level of 6.5%.[1] More than 50% of the observed overnight stays accounts for hotels and similar accommodation. In accordance with that, the marked dynamism of the tourist market calls for a clear strategy to be defined by hotel enterprises, by clearly defining the objectives that are intended to be achieved in a certain time period. The specificity of hotel services is manifested in the fact that competition necessitates positioning on the market with the use of outsourcing and innovation that facilitate the differentiation of supply and increase in the market share. In addition, the business of hotel enterprises is sensitive to geopolitical and economic trends in the market, the globalization of which has forced hotel enterprises to invest additional efforts into a strategy that would contribute to achieving business success. Since hotel enterprises cannot influence the external environment, it is necessary to focus attention on internal business segments that can help achieve a better position in relation to the competition.

The objective of the paper is to explore outsourcing as a strategic tool with which hotel companies separate part of their activities and try to reduce costs and raise the quality of their services. The research is focused on hotel enterprises in the Dubrovnik-Neretva County, where it is desired to explore the correlation between outsourcing and innovativeness of hotel enterprises. In accordance with the studied literature, it can be assumed that there is a correlation between outsourcing, which contributes to increasing levels of innovativeness of hotel enterprises through innovations in business operations. The analysis will include manufacturing, technological, process, organizational and marketing innovations.

In accordance with the stated facts, the following hypothesis can be made:

H1: Hotel enterprises that have a higher level of outsourcing have a higher level of innovativeness.

Also, basic characteristics of the hotel companies that separate some business activities will be explored, in which process it will be established whether there is a statistically significant difference with regard to application of outsourcing. In studying the characteristics of hotel companies, it can be assumed that a difference in basic characteristics exists, or that the hotel companies that use outsourcing differ from the hotel companies that do not use it. As the criteria that will be included in the study, it is possible to select: legal form, ownership structure, number of seasonal employees, size and age of hotel companies.

In accordance with the abovementioned, the following hypothesis therefore can be made:

H2: Hotel companies that use outsourcing are different from the hotel companies that do not use outsourcing in basic characteristics.

The research methodology includes a questionnaire as the research instrument that is distributed to randomly selected hotel companies included in the basic set of the study. Once collected, the data were sorted out and processed, and based on the formed database, statistical analysis was carried out, the results of which are presented in the empirical part of the study.

In terms of the structure of the paper, it should be emphasized that the introductory part of the paper covers introductory considerations of the subject area, resulting in the objective and purpose of the research, on

[1] Croatian Bureau of Statistics, www.dzs.hr, (accessed 6.6.2014)

the basis of which we make hypotheses that we will try to prove in the following, by using an adequate methodology. Also, the first part of the paper presents in more detail the theoretical framework that takes into account previous research of the considered subject area. The second part of the paper represents the empirical part of the research in which results of the conducted study are presented. At the end, the paper presents final considerations, recommendations for future research and limitations that affected the considered research.

2. Outsourcing in the context of innovativeness and characteristics of hotel enterprises

Business operations in the hotel sector call for a wide range of knowledge and skills of hotel managers, who often do not have enough time to devote themselves to each hotel activity sufficiently, which poses a problem in current business and puts into question the quality of the performed service and expenses incurred in the performance. In line with this, it is possible to consider the specifics of hotel services in business operations of hotel enterprises that are very sensitive to tourist demand, which is location-specific or specific to the position of the hotel enterprise. The specifics of services offered by hotel enterprises are tangible and intangible in nature. The traditional understanding of basic functions of hotel business is related to food and accommodation, while other functions had a secondary character. As the tourist sector evolves, the functions gradually become business processes consisting of a series of activities, which assume different levels of importance for business operations of hotel companies. The manifestation of performance of certain activities represents the foundation for perception of the service experienced by guests, while employees at all operational levels in hotel companies play the main roles. A special role is played by managers who by their decisions help create a hierarchical structure of business processes or influence the performance of individual business activities of hotel enterprises. In accordance with the above facts, it is necessary to take into consideration various possibilities of operative management, whose ultimate goal is to raise business performance levels of hotel companies. In this context, it is possible to consider the concept of outsourcing, which is offered as a strategic tool for achieving the set goals of hotel enterprises. Outsourcing involves transferring internal business functions, processes or activities to outside suppliers or service providers as set forth in a concluded contract (Greaver, 1999, p.3). In addition to separating certain activities, which may involve transfer of staff, property and equipment, the concept of outsourcing today is used as a synonym for raising the quality levels of performance of some activities so as to include creating added value. Beginnings of the idea of outsourcing were aimed at separating some secondary business activities in order to achieve savings, while recently the concept of outsourcing is used to achieve a strategic position in the market. Separation of certain activities depends on the size, location, market and ownership of hotel enterprises. Consideration of implementation of outsourcing in hotel enterprises need to be viewed through competencies, organizational culture, the system of review, evaluation and control of activities, the branding system and operativeness of the business (Lamminmäki, 2003, p.70-88). Most hotel enterprises in the world base their business on separating and branding individual business activities (Barrows et. al., 2006, p.419). Differentiation of supply through outsourcing is used for implementation of new ideas in order to achieve competitive advantage and increase the level of invention and innovation of hotel enterprises.

Consideration of innovativeness in the context of business of hotel enterprises need to be viewed through the following specific qualities that characterize the business of hotel enterprises (Pivčević, 2010, p.61):

- Simultaneousness of production and consumption of services,
- IT intensiveness,

- Importance of the human factor,
- Importance of organizational factors.

All these parameters represent the specifics of the hotel sector that are manifested through a wide range of hotel business activities, the final product of which are the services provided to guests. The process of innovations is the systematic development and practical application of ideas or the process of turning innovations into new procedures, techniques, technological processes, technologies and products (Buble et. al., 2007, p.90). Previous research (Pivčević, 2010, p.78-81) of innovativeness of hotel enterprises resulted in the conclusion that material innovations were applied more than service innovations. Lack of financial resources is stated as the main reason of the insufficient level of innovativeness. A higher level of innovativeness is registered in larger hotels that have a higher service category, and the environment of hotel enterprise is emphasized as an important factor affecting innovation. Also, it can be concluded that there is a positive relationship between the internal employee training and introduction of innovations. This suggests a strong commitment to employment through training gives positive impacts on innovation activities (Martinez- Ros et. al., 2012, p.693).

In general, innovativeness in the tourism industry can be observed through changes in the product, processes, logistics, organization, market and marketing. The above factors influence the perceived experience of guests (Peters et. al., 2009, p.79.). Innovations in hotel companies are an integral part of internal processes and are aimed at creating long-term value. The research process consists of two stages that are related to research of the market and design and development of a product or service. In the research process, we obtain knowledge of the characteristics of the market and needs of potential and present consumers. Having identified the needs and wishes of consumers in the target market, hotel enterprises make efforts to find innovative solutions for development of new products and services that usually have longer service life than "traditional" products or services (Žager et. al., 2008, p.363-366). Consideration of innovation processes in hotel enterprises need to take into account continuous changes of trends and demands in the market and to involve them in planning processes. To find new ways of attracting guests by promoting the supply and increasing the quality of guest stays is one of the important tasks of innovativeness in hotel enterprises. The analysis should also include the differentiation in relation to the competition through differences in the supply and perception of products and services (Peters et. al., 2009, p.130). It is necessary to consider the facts related to increasingly demanding attitude of guests, who simultaneously want new services and also expect standardized services that hotel companies have, in which process they can be very price-sensitive at one moment, while at another moment they are not interested in the cost price of a certain product or service. Therefore, business operations of hotel companies must take into account innovativeness of all business segments, which guests compare with other competitors, selecting the hotel company that will best satisfy their needs and preferences.

By observing innovations in the hotel business, it is possible to carry out the classification of innovations into (Pivčević, 2010, p.67, 245-246):

- Production innovations – involve the introduction of entirely new products and services and/or significant improvement of the existing ones (e.g. different loyalty programs for guests, traditional events, etc.),
- Technologica linnovations – involve the introduction of new technological equipment or software and/or significant improvement of the existing ones (e.g. surveillance system, "smart" rooms, etc.),
- Process innovations – involve the introduction of new and/or significant improvement of the existing methods of providing services, distribution and/or

support business activities (e.g. changes in logistics etc.),

- Organizational innovations – involve the introduction of new organizational business methods and/or significant improvement of the existing ones (e.g. changes in relations with external partners etc.),
- Marketing innovations – involve the introduction of a new and/or significant improvement of the old design and interior and exterior decoration, method of promotion and/or sales (e.g. new logo etc.).

A continued focus on the satisfaction of guest needs through innovativeness of the hotel business is essential for achieving the leading position in the market. The increasingly demanding market forces hotel companies to understand innovativeness as a key factor of creating value. In this context, predicting future wishes and needs of guests ensures superiority over increasingly large and capable competition. Originality of ideas in the hotel business has an important role in increasing guest loyalty and increasing the share in target markets. Innovativeness may require additional financial investments that represent costs in the short term. However, in the long term, if business of a hotel enterprise is oriented to meeting the needs of guests through satisfied employees, innovativeness helps hotel companies achieve business success.

Characteristics of hotel enterprises that determine business operations of hotel enterprises have an important role in everything. Hotel enterprise is a complex legal body that is different from other enterprises in the tourism sector in many respects. If a comparison with agencies, restaurants and casinos is made, it can be concluded that hotel enterprises are operation- and capital-sensitive. It is these very differences that influence the structure and mechanisms of corporate governance (DropulićRužić et. al., 2011, p.180). As an economic entity, enterprise represents a complex concept that should be considered from the aspects of ownership, scope of activity, size, legal form, sociological aspect, and other aspects that give it some other characteristics (Cerović, 2010, p.102). If ownership structure of hotel enterprises is taken into account, it can be concluded that hotel enterprises that are domestic or foreign majority private property are more successful in terms of business than majority state-owned hotel enterprises (KneževićCvelbar et. al., 2007, p.32). One of the essential characteristics of hotel companies concerns work force and the ratio of permanent to seasonal employees. Due to a high percentage of staff turnover, hotel enterprises spend a lot of time on the recruitment of new employees that may be outside of the hotel enterprise or in the form of promotion of the existing staff (Hayes et. al., 2005, p.145-146). Although hotel enterprises do not pay greater attention to staff recruitment, it should be noted that the said is one of the key factors of business success of hotel enterprises because it is directly related to provision of services and contact with guests. Therefore, it is necessary to examine characteristics of hotel companies in the context of application of outsourcing and analyze the results, on the basis of which it will be determined whether hotel enterprises differ in characteristics with respect to application of outsourcing.

3. Survey

3.1 Survey method

According to the database of the Croatian Chamber of Commerce[2], 51 hotel companies were registered in the area of the Dubrovnik-Neretva County (DNC) under the sort code I551[3] Hotels and Similar Accommodation. The basic set includes all active small, medium and large hotel enterprises that have one or more employees and that have

[2]Croatian Chamber of Economy, http://www1.biznet.hr/HgkWeb/do/extlogon?lang=hr_HR , [accessed 6.6.2014]

[3] According to National Classification of Activities from 2007 of Croatian Bureau of Statistics

submitted financial statements for 2013 and are located in the area of the above county.

Table 1: Number of hotel companies and structure of the basic set and sample

Size of the hotel company	Basic set		Sample	
	Number of companies	% of companies	Number of companies	% of companies
Small (1 or more employees)	33	64,71	20	62,50
Medium	17	33,33	11	34,38
Large	1	1,96	1	3,13
TOTAL	51	100,00	32	100,00

Source: Made by authors

Companies are classified as small hotel enterprises with up to 50 employees, medium hotel enterprises with from 51 to 250 employees and large hotel enterprises with more than 250 employees. A sample of 32 hotel companies was defined by random selection from the predefined basic set, accounting for 62.75% hotel enterprises from the basic set. The questionnaire was distributed to e-mail address of selected hotel companies that duly filled it out. The software suite IBM SPSS Statistics 20 was used for data processing. The data used in the study were related to the year 2013.

3.2 Survey results

Survey results showed that, out of the total number of enterprises that have filled out the questionnaire, 62.5% hotel companies use outsourcing, while 37.5% do not use it. Out of the total number of companies that do not use outsourcing, 16.67% of hotel companies stopped using outsourcing, 25% intend to start using it, while 58.33% of hotel companies do not intend to start using outsourcing.

Table 2: Application of outsourcing in hotel companies in DNC

Application of outsourcing					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes, presently we use it	20	62,500	62,500	62,50
	No, we stopped using it	2	6,250	6,250	68,75
	No, but we intend to use it	3	9,375	9,375	78,125
	No, and neither we intend to use it	7	21,875	21,875	100,0
	Total	32	100,0	100,0	

Source: Survey results N=32

Considering the hotel companies that do not apply outsourcing, it can be concluded that 27.27% of them believe that it is the best to perform all activities within their own company, the same percentage express a concern about jobs of their own staff, 9.10% of them express fear of losing control over transferred activities, 18.18% of them believe that sufficiently high-quality outsourcing partners do not exist in the market, while the same percentage of hotel companies never considered the options of applying outsourcing.

Table 3: Activities that were the subject of outsourcing in hotel companies in DNC

Activity	% of companies
Laundry	31,3%
IT systems	21,9%

Animation	18,8%
Security and surveillance	15,6%
Legal affairs	15,6%
Room cleaning	15,6%
Technical maintenance	12,5%
Cleaning of common premises	12,5%
Accounting	9,4%
Marketing	9,4%
Gardening services	6,3%
Purchasing and delivery	6,3%
Sales	6,3%
Education	6,3%
Restaurants	6,3%
Management	6,3%
Work force	3,1%
Market research	3,1%
Sports and recreation	3,1%
Bars	3,1%
Kitchen work	0,0%
Reception	0,0%

Source: Survey results N=32

If operational activities are taken into consideration, it can be concluded that outsourcing is used the most in the activities related to laundry services, IT systems and animation. Activities that are not separated at all are related to kitchen work and reception.

In order to obtain outsourcing levels of individual hotel companies, it was necessary to carry out the procedure of min max normalization,[1] or divide the number of outsourced activities with the total number of activities. Percentage levels of outsourcing were obtained in the described manner for each individual hotel company. The obtained outsourcing levels were correlated with individual innovation indicators.

A Likert scale of 7 intensity points, indicating innovation levels in hotel companies for each particular indicator, was used to measure innovation indicators. Since innovation indicators are not directly measurable, we conducted confirmatory factor analysis (Rozga, 2011, p.52) that tested and confirmed agreement of models according to the theoretical concept with the empirical data.

Table 4: Correlation between the total outsourcing levels and innovation of hotel companies in DNC

Correlations								
			O1	I1	I2	I3	I4	I5
Spearman's rho	O1	Correlation Coefficient	1,000	,228	,334*	,254	,327*	,268
		Sig. (1-tailed)	.	,105	,031	,080	,034	,069
		N	32	32	32	32	32	32
	I1	Correlation Coefficient	,228	1,000	,692**	,752**	,832**	,736**

[1]http://hr.swewe.net/word_show.htm/?54163_1&Normalizacija, [accessed 4.5.2015]

		Sig. (1-tailed)	,105	.	,000	,000	,000	,000
		N	32	32	32	32	32	32
	I2	Correlation Coefficient	,334*	,692**	1,000	,714**	,754**	,737**
		Sig. (1-tailed)	,031	,000	.	,000	,000	,000
		N	32	32	32	32	32	32
	I3	Correlation Coefficient	,254	,752**	,714**	1,000	,862**	,833**
		Sig. (1-tailed)	,080	,000	,000	.	,000	,000
		N	32	32	32	32	32	32
	I4	Correlation Coefficient	,327*	,832**	,754**	,862**	1,000	,924**
		Sig. (1-tailed)	,034	,000	,000	,000	.	,000
		N	32	32	32	32	32	32
	I5	Correlation Coefficient	,268	,736**	,737**	,833**	,924**	1,000
		Sig. (1-tailed)	,069	,000	,000	,000	,000	.
		N	32	32	32	32	32	32
*. Correlation is significant at the 0.05 level (1-tailed).								
**. Correlation is significant at the 0.01 level (1-tailed).								

Source: Survey results N=32

Spearman's rank correlation coefficient is used to test the influence of the total level of outsourcing of business activities of hotel companies on innovation of hotel companies (Rozga et. al., 2009, p.128). The previous table shows the value of Spearman's rank correlation coefficient between the level of outsourcing in terms of the number of separated activities in % (O1) and introduction of new services and/or significant improvement of the existing ones (I1), introduction of new technological equipment or software and/or significant improvement of the existing ones (I2), introduction of new methods of service provision or distribution and/or significant improvement of the existing ones (I3), introduction of new organizational methods and/or significant improvement of the existing ones (I4), introduction of a new design and decoration of the hotel and/or significant improvement of the existing ones (I5). The results show that there is a positive and statistically significant correlation between the level of outsourcing of business activities of hotel companies and innovation of hotel companies measured by all company innovation variables at a significance level of 10%, except between the level of outsourcing and introduction of new services and/or significant improvement of the existing ones, which slightly exceeds the significance level of 10%. **This confirms the hypothesis H1 that says: Hotel enterprises that have a higher level of outsourcing have a higher level of innovativeness.**

Chi-square test is used to examine if there is a statistically significant difference in characteristics of hotel enterprises with respect to application of outsourcing. An overview of individual relations between application of outsourcing and individual characteristics of hotel companies is given in the following.

Table 5: Relation between application of outsourcing and age of hotel companies in DNC

Application of outsourcing 1 * Age of company Cross tabulation				
		Age of company		Total
		Up to 15 years	More than 15 years	
Application of outsourcing 1	No	8	4	12
	Yes	7	13	20
Total		15	17	32

Source: Survey results N=32

The previous table shows the relation between application of outsourcing (AO1) and age of company (AC) with respect to the number of hotel companies

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Table 6: Chi-square test of application of outsourcing and age of hotel companies in DNC

Chi-Square Tests					
	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	3,020[a]	1	,082		
Continuity Correction[b]	1,882	1	,170		
Likelihood Ratio	3,062	1	,080		
Fisher's Exact Test				,144	,085
Linear-by-Linear Association	2,926	1	,087		
N of Valid Cases	32				

a. 0 cells (0,0%) have expected count less than 5. The minimum expected count is 5,63.

b. Computed only for a 2x2 table

Source: Survey results N=32

The results of chi-square test show that there is a statistically significant difference in application of outsourcing between hotel companies with respect to age of company at a significance level of 10%.

Table 7: Relation between application of outsourcing and size of hotel companies in DNC

Application of outsourcing 1 * Size of company Cross tabulation				
		Size of company		Total
		Up to 100 employees	More than 100 employees	
Application of outsourcing 1	No	5	7	12
	Yes	18	2	20
Total		23	9	32

Source: Survey results N=32

The previous table shows the relation between application of outsourcing (AO1) and size of company (SC) with respect to the number of hotel companies.

Table 8: Chi-square test of application of outsourcing and size of hotel companies in DNC

Chi-Square Tests					
	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	8,667[a]	1	,003		
Continuity Correction[b]	6,441	1	,011		
Likelihood Ratio	8,720	1	,003		
Fisher's Exact Test				,006	,006
Linear-by-Linear Association	8,396	1	,004		
N of Valid Cases	32				

a. 1 cells (25,0%) have expected count less than 5. The minimum expected count is 3,38.
b. Computed only for a 2x2 table
Source: Survey results N=32

The results of chi-square test show that there is a statistically significant difference in application of outsourcing between hotel companies with respect to size of company at a significance level of 1%.

Table 9: Relation between application of outsourcing and legal form of hotel companies in DNC

Application of outsourcing 1 * Legal form of company Cross tabulation				
		Legal form of company		Total
		Limited liability company	Joint stock company	
Application of outsourcing 1	No	9	3	12
	Yes	9	11	20
Total		18	14	32

Source: Survey results N=32

The previous table shows the relation between application of outsourcing (AO1) and legal form of the company (LF) with respect to the number of hotel companies.

Table 10: Chi-square test of application of outsourcing and legal form of hotel companies in DNC

Chi-Square Tests					
	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	2,743[a]	1	,098		
Continuity Correction[b]	1,659	1	,198		
Likelihood Ratio	2,839	1	,092		
Fisher's Exact Test				,147	,098
Linear-by-Linear Association	2,657	1	,103		
N of Valid Cases	32				

a. 0 cells (0,0%) have expected count less than 5. The minimum expected count is 5,25.
b. Computed only for a 2x2 table
Source: Survey results N=32

The results of chi-square test show that there is a statistically significant difference in application of outsourcing between hotel companies with respect to legal form of company at a significance level of 10%.

Table 11: Relation between application of outsourcing and ownership structure of hotel companies in DNC

Application of outsourcing 1 * Ownership structure of company Cross tabulation				
		Ownership structure of company		Total
		Domestic	Foreign	
Application of outsourcing 1	No	6	6	12
	Yes	18	2	20
Total		24	8	32

Source: Survey results N=32

The previous table shows the relation between application of outsourcing (AO1) and ownership structure of company (OS) with respect to the number of hotel companies.

Table 12: Chi-square test of application of outsourcing and ownership structure of hotel companies in DNC

Chi-Square Tests					
	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	6,400[a]	1	,011		
Continuity Correction[b]	4,444	1	,035		
Likelihood Ratio	6,351	1	,012		
Fisher's Exact Test				,030	,018
Linear-by-Linear Association	6,200	1	,013		
N of Valid Cases	32				

a. 1 cells (25,0%) have expected count less than 5. The minimum expected count is 3,00.
b. Computed only for a 2x2 table
Source: Survey results N=32

The results of chi-square test show that there is a statistically significant difference in application of outsourcing between hotel companies with respect to ownership structure of company at a significance level of 5%.

Table 13: Relation between application of outsourcing and number of seasonal employees of hotel companies in DNC

Application of outsourcing 1 * Number of seasonal employees Cross tabulation				
		Number of seasonal employees		Total
		Up to 30	More than 30	
Application of outsourcing 1	No	6	6	12
	Yes	11	9	20
Total		17	15	32

Source: Survey results N=32

The previous table shows the relation between application of outsourcing (AO1) and number of seasonal employees (NSE) with respect to the number of hotel companies.

Table 14: Chi-square test of application of outsourcing and number of seasonal employees of hotel companies in DNC

Chi-Square Tests					
	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	,075[a]	1	,784		
Continuity Correction[b]	,000	1	1,000		
Likelihood Ratio	,075	1	,784		
Fisher's Exact Test				1,000	,536
Linear-by-Linear Association	,073	1	,787		
N of Valid Cases	32				

a. 0 cells (0,0%) have expected count less than 5. The minimum expected count is 5,63.

b. Computed only for a 2x2 table

Source: Survey results N=32

The results of chi-square test show that there is no statistically significant difference in application of outsourcing between hotel companies with respect to number of seasonal employees.

In keeping with the above results, it is possible to make the following judgment of the hypothesis. We confirm the hypothesis H2, which says: Hotel companies that use outsourcing are different from the hotel companies that do not use outsourcing in basic characteristics.

4. Conclusion

Since the hotel sector records continuous growth in overnight stays and as such represents one of the most important factors of tourism industry, it is necessary to point out the possibilities of improving business through the application of outsourcing as a strategic tool. In addition to numerous advantages that outsourcing brings, it should be emphasized that the conducted research proved that an increase in the level of outsourcing is directly related to an increase in the level of innovation, or that outsourcing contributes to production, technological, process, organizational and marketing innovations in hotel enterprises. Consequently, it can be concluded that outsourcing contributes to the introduction of new or improvement of the existing technological equipment of hotel companies, leads to improved organizational methods of business operations and new methods of providing services, and helps raise the reputation of hotel enterprises. Although the influence of outsourcing on production innovations stood just over the limit of statistical significance, the limit can not be clearly set and it can be concluded that outsourcing has the least influence on production innovations that involve introduction of new products and services in the business of hotel enterprises. The above is set as the logical conclusion that can be explained by the fact that separation of secondary business activities aims to separate those activities that do not have a direct contact with guests, i.e. that such activities do not generate the final product or service, which external contractors directly offer to guests. If we analyze the business activities that are separated the most, it can be concluded that activities concerning the direct supply of products and services to guests are separated in rare cases (except for activities related to animation of guests). Examining the characteristics of hotel

enterprises and correlating them with outsourcing, we can conclude that the typical hotel companies that apply outsourcing are older than 15 years and have up to 100 permanent employees. It is interesting to point out that the trend of separating individual activities in larger hotel enterprises is reverse. The hotel enterprises that apply outsourcing to a greater extent run business as domestically-owned joint stock companies. The situation with foreign-owned hotel enterprises in the opposite. Considering the number of seasonal employees, it can be concluded that there is no statistically significant difference in application of outsourcing between hotel companies. Observing the relevant literature, it can be concluded that the introduction of new products and services linked to the type of communication and presentation which directly affects business results. Also, research shows that the introduction of new information technologies was the most beneficial and had an impact on the future performance of hotel companies.

As one of the possible limitations of the research, it is possible to specify the time frame, which is limited to one year. Outsourcing represents a dynamic process that most often refers to a period of several years, and should be considered as such in order to bring out a more realistic picture on the influence on particular business segments of hotel enterprises. As a limitation, it is necessary to consider the external and internal environment of hotel companies that affect the application of outsourcing in an area, in this case the area of a county.

Future research should be based on studying outsourcing in the context of comparison of different business activities in order to get a clearer picture of application of outsourcing in the economy in general. What should also be explored is the dynamic character of outsourcing involving monitoring of the said phenomenon through a longer period of time, and which has a significant role in creating strategies of hotel enterprises. It is recommended to analyze characteristics of hotel enterprises in even more detail so as to include in the research the largest possible number of indicators that will ultimately generate a model of hotel company with respect to application of outsourcing.

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Four currencies outside the eurozone

Imre Vámos[1] and Zsuzsanna Novák[2]

[1]*State Audit Office of Hungary, 10 Apáczai Csere János u., Budapest 1052, vamosz@vipmail.hu*

[2]*Magyar Nemzeti Bank, 8-9. Szabadság tér, Budapest 1054, novakzs@mnb.hu*

Abstract

Purpose -*In the European Union only a few countries have remained outside the eurozone. Among these countries with independent monetary policies few pursue a floating exchange rate regime: the Czech Republic, Hungary, Poland and Romania (IMF, 2013). The purpose of the paper is to examine whether there is a cointegrating relationship between the same underlying economic fundamentals and the real and nominal exchange rate of these countries against the euro.*

Design/methodology/approach *– The quarterly data used for analysis for the period between 2000 and 2014 were provided by the Eurostat and European economy databases. After testing for unit root in the logarithmised data series Engel-Granger and Johansen tests are applied to discover the existence of long-run equilibrium relationships between the exchange rates and fundamentals explaining balance of payments equilibrium.*

Findings *–Based on a uniform behavioural exchange rate model cointegration can only be revealed in the case of the Polish nominal exchange rate data, though simple OLS estimations indicate a strong relationship between fundamentals and exchange rates in the case of all the four countries.*

Research limitations/implications *– The paper points out that it is difficult to prove the existence of any such relationship: making forecasts of the paths of equilibrium exchange rates is hampered by the lack of an adequate model, the short time series and the strong volatility of these currencies, especially the Hungarian forint and the Romanian leu. Another reason for the low explanatory value of various models can be frequent central bank intervention.*

Originality/value *– As Dick et al. (2015) reveals good exchange rate estimates rely on the forecasters ability to understand the relation between fundamentals and the exchange rates mostly in times when exchange rate more strongly deviate from their PPP value. Therefore, applying more approaches for exchange rate analysis helps us better observe this relationship.*

Keywords: exchange estimates, public debt, cointegration

JEL Classification: F31

1. Introduction

After all the Baltic countries have joined the eurozone and Slovenia and Slovakia chose the currency zone within five years of European Union membership currently six Eastern members of the EU are still outside the eurozone. The Czech Republic, Hungary, Poland and Romania today maintain a floating exchange rate and pursue inflation targeting as monetary policy, whereas Croatia has targeted the exchange rate within the framework of a less flexible exchange rate

system in the last fifteen years and Bulgaria conducts its monetary and exchange rate policy under a currency board regime. As floating rates are naturally more set out to market forces, for an examination of how domestic currencies move against the euro countries with flexible exchange rates are the most adequate sample. In the current analysis the exchange rates of the Czech Republic, Hungary, Poland and Romania are estimated with the help of macroeconomic fundamentals in the period between 2000 and 2014.

The Czech Republic shifted to floating exchange regime as early as in May 1997 and since then the monetary authority has not announced explicit exchange rate bands. The managed float system adopted by the Czech Republic restricts the use of interventions in case of extreme fluctuations. The Czech National Bank has from time to time been intervening in the foreign currency markets lately to prevent a notable appreciation of the koruna. The aim is to maintain the exchange rate of the koruna against the euro close to CZK 27/EUR in accordance with the Bank Board's decision. Since the end of 2013 the Czech National Bank therefore uses the exchange rate as monetary policy instrument and intervenes to keep its "one-sided commitment" (only appreciation is avoided) to the exchange rate. Hungary introduced a fixed exchange rate system with a ±15% band in 2001 and irrevocably switched over to a floating system at the beginning of 2008. From time to time the Central Bank of Hungary also intervenes but it does not follow any declared explicit or implicit target exchange rate, though the exchange rate is an important indicator for achieving the inflation target. Poland introduced a floating regime in spring 2000 after a five-year period of crawling band system. It is important to note that Poland is the least – though increasingly – open economy among the four countries under examination and thus it is the least vulnerable to currency fluctuations as regards trade balance. Romania was gradually converging to managed float by applying different intermediate systems until 2004. Romania also manages external shocks by currency intervention if economic conditions make it necessary. Taking account of the introduction of flexible exchange rates at the beginning of the years 2000 the fifteen-year period promises to be adequate for examining the influence of market forces on the price of the currencies of the four selected countries. All of them have to face the fixing of their currencies against the euro within ERM II sooner or later which necessitates the setting of the right exchange rate for the later introduction of the euro.

In the following we use the model and methodology suggested by MacDonald (2000) and Chen and MacDonald (2010) – drawing on the results of the Central European research papers as well – with a slight modification. Instead of using the net foreign asset variable, we apply the debt-to-GDP ratio as one of the variables influencing investors' motive to purchase assets in an emerging economy. Public debt has become a very important benchmark variable of countries since the financial crisis which underpins the selection of this variable. The sharply increasing public debt in Central Europe was often financed from foreign currency credit and accompanied by the accumulation of foreign currency reserves which is another reason for including this variable. In addition, Vámos (2014) used an equation including public-debt-to-GDP to regress the Hungarian forint and Polish zloty nominal exchange rate and Vámos (2013) also applied a model relying on productivity dynamics, interest differentials and public debt for a panel regression encompassing 15 Central and South Eastern European countries.Égert et al. (2005) found that net foreign assets accumulation can have a dubious effect on exchange rates depending on whether it means foreign direct investment or a higher foreign debt service for the emerging economies, whereas public consumption usually goes together with currency appreciation in the CEECs. The research thus builds upon previous empirical

findings and discusses whether the same model can be applied for countries at different levels of economic development, openness and debt characteristics.

2. Background literature

In an equation based on balance of payments equilibrium MacDonald (2000) suggests that the productivity differential (explaining the trade balance), the interest rate differential (determining capital flows) of the two countries whose currency is compared and the net foreign assets are a good starting point of any equilibrium exchange rate estimations. To explain the deviation of the exchange rate from its long-run path (marked by the purchasing power parity or in case of comparing a less developed and a more developed country by the Balassa-Samuelson effect or simply by different productivity dynamics) a lot of models have been developed in the last some twenty years. The group of those which do not have a normative equilibrium framework but use macroeconomic variables which might well explain the exchange rate are called behavioural equilibrium exchange rate theories.

To gauge the impact of the Balassa-Samuelson effect and the misalignment of the currency from its equilibrium path a lot of research was conducted in the Central and Eastern European countries with the help of the behavioural equilibrium exchange rate approach and other estimation methods. Borowski et al. (2003) used fundamental and behavioural equilibrium exchange calculations to define the equilibrium level of the Polish zloty and forecast the expected real appreciation of the Polish currency until the introduction of the euro. Bęza-Bojanowska (2009) carried out behavioural equilibrium exchange rate and permanent exchange rate analysis in which terms of trade, Balassa-Samuelson-effect, foreign reserves, risk premium and the long-term differential of interest rates and budgetary deficit turned out to have significant explanatory power. Égert et al. (2005) question the Balassa-Samuelson effect but conclude that dual (tradable and non-tradable) productivity differential – similarly to terms of trade and public consumption with less explanatory power – cause currency appreciation in the CEECs. They found that some variables such as openness and net foreign assets can have contradictory effects on exchange rates. Dumitrescu and Dedu (2009) made a behavioural equilibrium exchange estimate by approximating the real effective exchange rate of the Romanian currency with productivity differential in terms of the non-tradable and tradable sector, total consumption, net foreign assets and degree of openness. The modell building was based on both internal and external macroeconomic equilibrium. Komárek and Moti (2012) estimate the Czech Koruna exchange rate (both nominal and real) with the help of productivity differential, real investment to GDP, net foreign assets and net export and find that the strong appreciation of the Czech Koruna against the euro came to a hault in 2009 as a consequence of slowing productivity dynamics in the Czech Republic.

3. The variables of the model

We use the quarterly time series of the nominal and CPI based real domestic/EUR exchange rate of the four countries covered in this paper and investigate their relationship with the productivity (y/emp) and interest rate differential (i-i*) against the eurozone, public debt-to-GDP (debt) and terms of trade (tot). Productivity was captured by GDP per employed person, the interest rate differentials were calculated from three-month interest rates in the selected countries and the eurozone. The data used for estimations is quarterly and collected from the Eurostat and Ameco databases except the terms of trade indices which are annual OECD data. The variables are indexed to 2005 (as 100%) and logarithmised before testing their statistical characteristics.

The basic equation we consider to be adequate for approximating the nominal and real exchange rates of the Czech koruna,

Hungarian forint, Polish zloty and Romanian leu is represented by equation (1):

$$s_t = \alpha_0 + \alpha_1(s_{t-1}) + \beta_1(y/emp_t) - \beta_2(y/emp_t^*) + \gamma_1(i_t - i_t^*) + \gamma_2(debt) + \gamma_3(tot_t) + u_t \quad (1)$$

As we use the euro exchange rate as units of the domestic currency (depreciation means higher values) and the real exchange rate in contrast showing an increase when appreciating, the expected coefficients of the variables will be opposite for the estimation of the nominal and real variables. (Therefore we depicted the change in nominal exchange rates in reverse order in the diagrams.)

First we start by comparing the path of the real and nominal exchange rates and then depicting the variables one by one with both.

Figure 1. Nominal (rhs) and real exchange rate (2000-2014) in Hungary

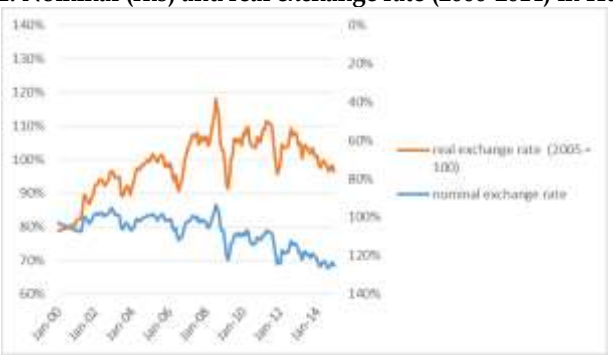


Figure 2. Productivity differential and real exchange rate in Hungary

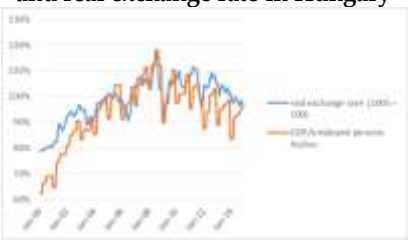
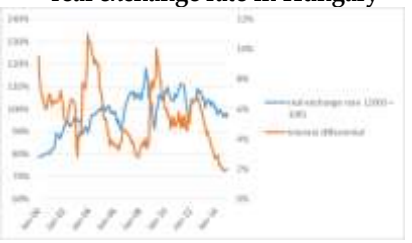


Figure 3. Interest rate differential and real exchange rate in Hungary



Source: Eurostat, European economy, own figure

Figure 4. Nominal (rhs) and real exchange rate (2000-2014) in the Czech Republic

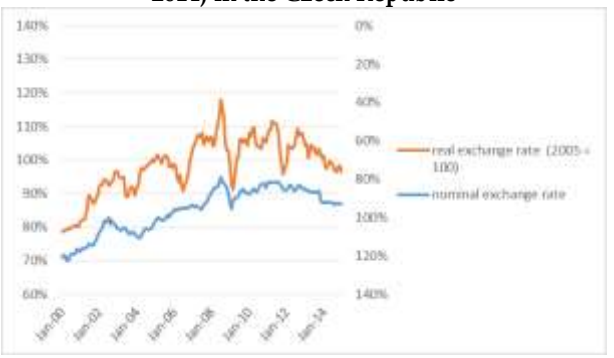


Figure 5. Productivity differential and real exchange rate in the Czech Republic

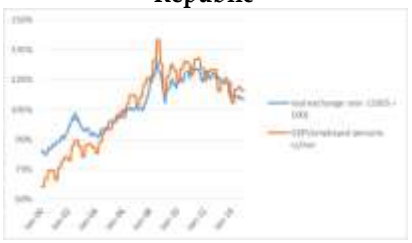
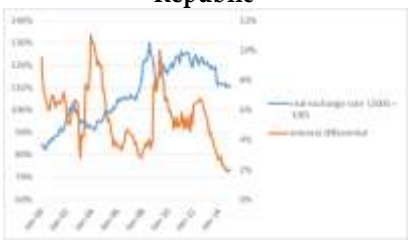


Figure 6. Interest rate differential and real exchange rate in the Czech Republic



Source: Eurostat, European economy, own figure

Figure 7. Nominal (rhs) and real exchange rate (2000-2014) in Poland

Figure 8. Productivity differential and real exchange rate in Poland

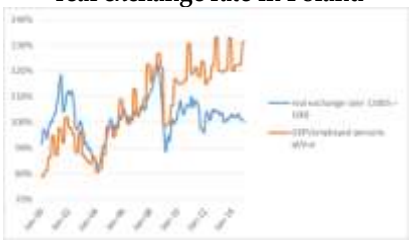
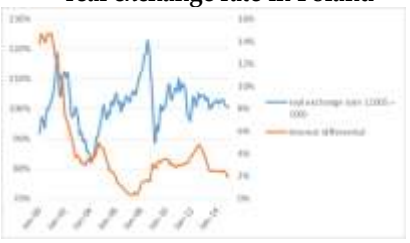
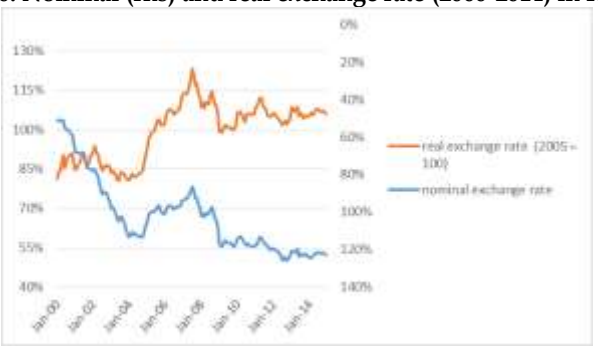


Figure 9. Interest rate differential and real exchange rate in Poland



Source: Eurostat, European economy, own figure

Figure 10. Nominal (rhs) and real exchange rate (2000-2014) in Romania



Source: Eurostat, European economy, own figure

Figure 11. Productivity differential and real exchange rate in Romania

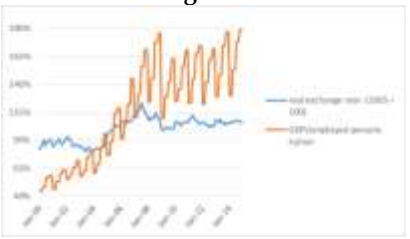
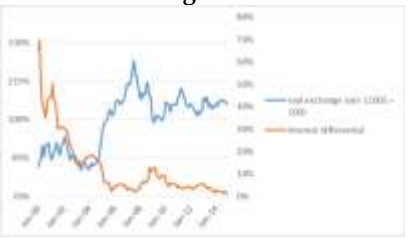


Figure 12. Interest rate differential and real exchange rate in Romania



In the case of three countries out of the four nominal and real exchange rates follow very similar paths. In Romania, however, the two variables start with a very different trend probably due to the more rigid exchange regime in Romania at the beginning of the 2000s as Romania was gradually moving from a fixed exchange rate through intermediate regimes and finally to managed float.

Whereas productivity and real exchange rate move strongly together in all of the countries in the majority of the examined period under analysis, there is no evident relationship (either positive or negative) between interest rate differentials and real exchange rates (the same holds for the debt-to-GDP ratio). The difference in interest rates between 2000 and 2002 was more significant in all the four countries. The continuously decreasing difference (except Romania) can be well observed in three countries out of the four. Between 2002 and 2004 the interest rate differentials moved together with the real exchange rate and a similar tendency evolved in the period after 2012 as can be seen in all the four diagrams. It can be presumed that behind the strong comovement investors' risk avoiding behaviour played a significant role beside the low interest level. In the interim period the interest rate differential and the real exchange rate show opposite cyclicality which is an expected long term phenomenon.

4. Unit root and cointegration tests

To reveal possible stationarity in the dataset the logarithmised variables were submit to ADF and KPSS unit-root tests. The first one is based on the hypothesis of unit root, the second on the stationarity of data. (See results in Appendix A1 and A2.) Most of the variables seem to follow an I(1) process but some variables are likely to be stationary before differencing them (e.g. the nominal exchange rate in Romania and the interest rate differential in the Czech Republic, Poland and Romania on the basis of the ADF test, real productivity in the eurozone /with trend/, nominal and real exchange rate in Poland in KPSS test statistics).

The data are suitable for cointegration tests but first we checked the relationship between the exchange rates of the various countries and the explanatory variables with the help of simple OLS regression estimations. In the case of all countries the regression estimates revealed a strong influence of almost all explanatory variables on the dependent variable, especially the productivity differential a simplified representation of the Balassa-Samuelson effect. In the case of Hungary, the change of the interest rate differential, in the Czech Republic the one-period lagged value of the same proved to be statistically significant. The debt-to-GDP variable was exceptional in the sense that it had almost nil explanatory power in the Czech Republic, whereas it contributed to the depreciation of the currency in the case of Poland and Romania with high explanatory power. In Hungary the variable was significant but the sign of the variable was unreliable as it seemed to depreciate the nominal and appreciate the real exchange rate. The terms of trade of the domestic economy of most of the countriesproved to be less significant than the equivalent eurozone statistics for both the nominal and real exchange rate estimations. (It is interesting to

note that the interest differentials usually contributed to the depreciation of the currency at time t and to appreciation at t-1).

The presence of cointegration was tested by both Engel and Granger and Johansen tests. Instead of inserting the productivity of the domestic and the foreign sector separately the logarithm of the productivity ratio was inserted in the models to avoid collinearity. The Johansen cointegration test is a vector autoregression based test used amongst others in equilibrium exchange estimations to determine the long-run relationship between the real exchange rate and the fundamentals.

The cointegration tests produced contradictory results. Each variable selected proved to be significant in the case of Poland especially for the nominal exchange rate as dependent variable. The coefficients also show economically justifiable relations: the productivity, the interest rate differential and public debt depreciate the currency in the long run whereas improvement of terms of trade compared to the eurozone appreciates the currency. The Czech data are also close to be significant but the coefficients contradict the economic rationale and the regression results. For Hungary and Romania, the two cointegration tests show paradoxical results for the real exchange rate estimates, the one supports the existence of cointegration, the other refuses the same and the signs of the coefficients seem not to reflect economic relations as expected.

.

Table 1: Engel-Granger and Johansen cointegration tests on nominal exchange rates (quarterly time series, number of lags=2)

	Poland		**Czech Republic**	
Engel-Granger	test st.	p value	test st.	p value
constant	-4,39195	0,0001	-2,49483	0,1167
Johansen	test st.	p value	test st.	p value
rank=1	60,329	0,6198	39,172	0,3381
estimated coefficients	normalised beta			
nominal exchange rate	1		1	
productivity diff.	-0,73213		0,47644	
government debt	-0,60614		0,18173	
interest diff.	-0,89437		-6,1612	
terms of trade-domestic	-5,7449		-	
terms of trade_eur	3,1882		0,019325	

Table 2: Engel-Granger and Johansen cointegration tests on real exchange rates (quarterly time series, number of lags=2)

	Hungary		**Romania**	
Engel-Granger	test st.	p value	test st.	p value
constant	-4,79916	0,005903	-3,43088	0,3589
Johansen	test st.	p value	test st.	p value
rank=1	22,033	0,3461	39,172	0,6620
estimated coefficients	normalised beta			
nominal exchange rate	1		1	
productivity diff.	-0,56092		-3,0203	
government debt	-		-0,093186	
interest diff.	-0,53595		-6,1612	
terms of trade_eur	1,1147		0,019325	

The tested model does not seem to be capable of forecasting equilibrium exchange rates in a simple cointegration framework, and a much more refined statistical approach is needed to assess the long-term equilibrium values of the four currencies. In international literature it is an often raised problem that government expenditure and debt-to-GDP ratio as well as interest rate differentials have a dissimilar impact in the short and the long run. (Public debt can increase productivity if it finances fixed capital investment but can crowd out private investment and increase CDS premia at a time). Chen and MacDonald (2010) therefore suggest the application of unobserved component model and separate the permanent and temporary effects of the same variables.This methodology does not neccesitate the existence of a cointegrating relationship for defining permanent equilibrium exchange rates. In addition to the methodological problems it is also to be taken into consideration that Romania and the Czech Republic often use foreign currency intervention which might distort the effect of economic fundamentals on the exchange rate and the reliability of data is sometimes questionable as well (mostly Romanian labour productivity statistics.) In addition to the aforementioned, the global economic crisis brought a one-off sharp devaluation of all the four currencies which might distort test results as well.

5. Conclusion

In case of a cointegrating relationship of strongly related economic fundamentals it is possible to separate permanent and temporary components of exchange fluctuations and detect the presence of currency misalignment. However, Central European currencies undergo great fluctuations which are often counterbalanced by currency market interventions. In the current study encompassing a fifteen-year time interval no cointegrating relationship could be unequivocally established in the case of three out of four Central European currencies with the exception of Poland. Therefore, the adoption of an unobserved component framework and the use of dummies for periods with extreme fluctuations and central bank intervention could help further develop the model comprising productivity dynamics, interest rate differentials, terms of trade and public debt-to-GDP to make it capable of forecasting equilibrium exchange rates.

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Appendix -A1: ADF tests

Hungary

test with constant	level			diff		
	estimated value of (a - 1)	test statistic: tau_c(1)	asymptotic p-value	estimated value of (a - 1)	test statistic: tau_c(1)	asymptotic p-value
nominal exchange rate	-0,105567	-1,55235	0,5004	-1,64834	-6,39862	1,24E-08
GDP/employed persons_hu	-0,142191	-2,68039	0,07742	-2,662	-10,6611	2,43E-21
GDP/employed persons_eur	-0,0395634	-1,4536	0,5573	-2,96378	-12,7637	3,468E-28
public debt/GDP	-0,0273035	-0,87461	0,7896	-1,0283	-7,65896	1,18E-08
interest differential	-0,184684	-2,43835	0,1312	-0,839632	-6,37863	9,01E-07
terms of trade hu	-0,0430725	-1,10574	0,708	-1,00529	-7,52298	1,84E-08
terms of trade eur	-0,0836567	-1,55005	0,5015	-1,00069	-7,4885	2,058E-08
real exchange rate (2005 = 100)	-0,167632	-2,82125	0,06141	-1,24826	-6,71961	1,85E-09
real productivity hu	-0,185608	-2,31292	0,1679	-3,59035	-21,7849	4,34E-50
real productivity eur	-0,105315	-1,34872	0,6089	-2,34435	-8,95792	6,447E-16
GDP/employed persons hu/eur						
real productivity hu/eur						

Czech Republic

test with constant	level			diff		
	estimated value of (a - 1)	test statistic: tau_c(1)	asymptotic p-value	estimated value of (a - 1)	test statistic: tau_c(1)	asymptotic p-value
nominal exchange rate	-0,059447	-1,98417	0,2929	-0,967015	-7,25422	4,46E-08
GDP/employed persons cz	-0,0666037	-2,25522	0,1869	-2,37521	-9,13926	1,76E-16
GDP/employed persons_eur	-0,0395634	-1,4536	0,5573	-2,96378	-12,7637	3,47E-28
public debt/GDP	-0,0467494	-2,57574	0,09804	-0,474435	2,90596	0,04465
interest differential	-0,195154	-2,77273	0,06223	-0,818422	-6,46263	6,72E-07
terms of trade cz	-0,119455	-2,18112	0,2152	-1,00453	-7,51732	1,87E-08
terms of trade eur	-0,0836567	-1,55005	0,5015	-1,00069	-7,4885	2,06E-08
real exchange rate (2005 = 100)	-0,0581685	-1,97736	0,2958	-0,925455	-6,94994	1,25E-07
real productivity cz	-0,103199	-1,81494	0,3736	-3,38676	-17,0422	7,24E-41
real productivity eur	-0,105315	-1,34872	0,6089	-2,34435	-8,95792	6,45E-16
GDP/employed persons cz/eur	-0,0763618	-2,51849	0,111	-1,56448	-9,41243	2,46E-17
real productivity cz/eur	-0,0920689	-1,71237	0,425	-3,4804	-18,823	4,45E-45

Poland

test with constant	level			diff		
	estimated value of (a - 1)	test statistic: tau_c(1)	asymptotic p-value	estimated value of (a - 1)	test statistic: tau_c(1)	asymptotic p-value
nominal exchange rate	-0,227106	-2,68967	0,08184	-0,970341	-7,33478	3,41E-08
GDP/employed persons pl	-0,0725415	-1,44747	0,5604	-2,28987	-9,00576	4,58E-16
GDP/employed persons_eur	-0,0395634	-1,4536	0,5573	-2,96378	-12,7637	3,468E-28
public debt/GDP	-0,0587048	-1,56548	0,4937	-0,932235	-6,97824	1,13E-07
interest differential	-0,0855486	-4,39195	0,0001	-0,319108	-2,65336	0,08238
terms of trade pl	-0,0656937	-1,39638	0,5781	-1,01378	-7,58715	1,49E-08
terms of trade eur	-0,0836567	-1,55005	0,5015	-1,00069	-7,4885	2,058E-08
real exchange rate (2005 = 100)	-0,242882	-2,82136	0,06139	-0,978019	-7,36264	3,11E-08
real productivity pl	-0,158536	-1,60312	0,481	-3,88002	-36,1091	1,12E-33
real productivity eur	-0,105315	-1,34872	0,6089	-2,34435	-8,95792	6,447E-16
GDP/employed persons pl/eur	-0,131745	-2,13293	0,2329	-2,00296	-7,63293	5,77E-12
real productivity pl/eur	-0,130555	-1,26551	0,6478	-3,89631	-34,9042	3,05E-37

Romania

test with constant	level			diff		
	estimated value of (a - 1)	test statistic: tau_c(1)	asymptotic p-value	estimated value of (a - 1)	test statistic: tau_c(1)	asymptotic p-value
nominal exchange rate	-0,0964132	-4,59711	0,0004114	-0,52724	-3,01672	0,03338
GDP/employed persons_ro	-0,0678421	-1,37945	0,5941	-3,51418	-18,9247	2,71E-45
GDP/employed persons_eur	-0,0395634	-1,4536	0,5573	-2,96378	-12,7637	3,468E-28
public debt/GDP	-0,0202016	-0,938446	0,7765	-0,416193	-2,86081	0,05007
interest differential	-0,0841565	-3,58574	0,00607	-0,800946	-5,912	1,95E-07
terms of trade ro						
terms of trade eur	-0,0836567	-1,55005	0,5015	-1,00069	-7,4885	2,058E-08
real exchange rate (2005 = 100)	-0,0602786	-1,53796	0,5076	-1,01712	-7,60862	1,39E-08
real productivity ro	-0,131884	-1,82753	0,3674	-3,79848	-29,6223	5,10E-49
real productivity eur	-0,105315	-1,34872	0,6089	-2,34435	-8,95792	6,447E-16
GDP/employed persons ro/eur	-0,0709837	-1,38973	0,589	-3,46081	-17,6103	2,69E-42
real productivity ro/eur	-0,110467	-1,88334	0,3405	-3,67219	-23,0989	2,09E-51

A2: KPSS tests

Hungary

	level		level_tred		diff		diff_tred	
	test statistic	P-value	test statistic	P-value	test statistic	P-value	test statistic	P-value
nominal exchange rate	1,55798	0,010	0,292052	0,010	0,077761	0,100	0,020775	0,100
GDP/employed persons_hu	1,62773	0,010	0,455834	0,010	0,228279	0,100	0,031906	0,100
GDP/employed persons_eur	2,06137	0,010	0,256884	0,010	0,051292	0,100	0,02476	0,100
public debt/GDP	1,9206	0,010	0,170139	0,037	0,119163	0,100	0,119681	0,100
interest differential	0,47321	0,048	0,081777	0,100	0,050365	0,100	0,041669	0,100
terms of trade hu	1,60673	0,010	0,138533	0,068	0,102031	0,100	0,102041	0,100
terms of trade eur	1,24032	0,010	0,131231	0,081	0,082854	0,100	0,073525	0,100
real exchange rate (2005 = 100)	1,27067	0,010	0,347424	0,010	0,206956	0,100	0,021855	0,100
real productivity hu	1,63147	0,010	0,458042	0,010	0,086807	0,100	0,032375	0,100
real productivity eur	1,68237	0,010	0,116824	0,100	0,022145	0,100	0,021793	0,100
GDP/employed persons hu/eur								
real productivity hu/eur								

Czech Republic

	level		level_tred		diff		diff_tred	
	test statistic	P-value	test statistic	P-value	test statistic	P-value	test statistic	P-value
nominal exchange rate	1,72314	0,010	0,335595	0,010	0,291479	0,100	0,054162	0,100
GDP/employed persons cz	1,92263	0,010	0,452653	0,010	0,353081	0,099	0,027456	0,100
GDP/employed persons_eur	2,06137	0,010	0,256884	0,010	0,051292	0,100	0,02476	0,100
public debt/GDP	1,75209	0,010	0,162208	0,042	0,345216	0,100	0,16566	0,039
interest differential	0,257836	0,010	0,245678	0,010	0,128675	0,100	0,046839	0,100
terms of trade cz	0,498074	0,045	0,228183	0,010	0,222624	0,100	0,132408	0,079
terms of trade eur	1,24032	0,010	0,131231	0,081	0,082854	0,100	0,073525	0,100
real exchange rate (2005 = 100)	1,74545	0,010	0,282707	0,010	0,261269	0,100	0,060415	0,100
real productivity cz	1,84834	0,010	0,439807	0,010	0,113891	0,100	0,027131	0,100
real productivity eur	1,68237	0,010	0,116824	0,100	0,022145	0,100	0,021793	0,100
GDP/employed persons cz/eur	1,76968	0,010	0,454592	0,010	0,459675	0,051	0,037026	0,100
real productivity cz/eur	1,81506	0,010	0,479297	0,010	0,180517	0,100	0,029566	0,100

Poland

	level		level_tred		diff		diff_tred	
	test statistic	P-value	test statistic	P-value	test statistic	P-value	test statistic	P-value
nominal exchange rate	0,19742	0,100	0,103106	0,100	0,036435	0,100	0,035639	0,100
GDP/employed persons pl	1,97976	0,010	0,107796	0,100	0,042098	0,100	0,030351	0,100
GDP/employed persons_eur	2,06137	0,010	0,256884	0,010	0,051292	0,100	0,02476	0,100
public debt/GDP	1,52592	0,010	0,12035	0,100	0,104524	0,100	0,059387	0,100
interest differential	0,931001	0,010	0,388534	0,010	0,535522	0,039	0,139822	0,066
terms of trade pl	1,3244	0,010	0,283153	0,010	0,063117	0,100	0,062641	0,100
terms of trade eur	1,24032	0,010	0,131231	0,081	0,082854	0,100	0,073525	0,100
real exchange rate (2005 = 100)	0,180693	0,100	0,092848	0,100	0,038402	0,100	0,035831	0,100
real productivity pl	1,76882	0,010	0,061949	0,100	0,032549	0,100	0,032201	0,100
real productivity eur	1,68237	0,010	0,116824	0,100	0,022145	0,100	0,021793	0,100
GDP/employed persons pl/eur	1,79915	0,010	0,097367	0,100	0,038966	0,100	0,032835	0,100
real productivity pl/eur	1,77675	0,01	0,093996	0,1	0,035887	0,1	0,033621	0,1

Romania

	level		level_tred		diff		diff_tred	
	test statistic	P-value	test statistic	P-value	test statistic	P-value	test statistic	P-value
nominal exchange rate	1,43403	0,010	0,222569	0,010	0,600409	0,029	0,197133	0,020
GDP/employed persons_ro	1,95251	0,010	0,418164	0,010	0,075855	0,100	0,031325	0,100
GDP/employed persons_eur	2,06137	0,010	0,256884	0,010	0,051292	0,100	0,02476	0,100
public debt/GDP	0,782272	0,010	0,447821	0,010	0,447304	0,057	0,161732	0,042
interest differential	1,44103	0,010	0,407264	0,010	0,584761	0,031	0,120019	0,100
terms of trade ro								
terms of trade eur	1,24032	0,010	0,131231	0,081	0,082854	0,100	0,073525	0,100
real exchange rate (2005 = 100)	1,30326	0,010	0,264342	0,010	0,120649	0,100	0,074887	0,100
real productivity ro	1,83962	0,010	0,339276	0,010	0,04949	0,100	0,034358	0,100
real productivity eur	1,68237	0,010	0,116824	0,100	0,022145	0,100	0,021793	0,100
GDP/employed persons ro/eur	1,9015	0,010	0,418327	0,010	0,07597	0,100	0,033149	0,100
real productivity ro/eur	1,81273	0,01	0,333049	0,01	0,050715	0,1	0,034695	0,1

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Investment in green economy as a potential source of value added

Jan Klasinc

University of Zagreb, Trg maršala Tita 14, ajklasinc@gmail.com

Abstract

Purpose *- The hypothesis of the paper is that domestic value added created by exports in Croatia could be increased by investments in green economy.*

Methodology - *In the developed economies only specific products, processes and functions that outperform emerging economies in Global Value Chains are able to profit from the larger share of value added. Large portion of „green economy" is knowledge intensive, and if knowledge based economy (KBC) plays a significant role in determining the domestic value added created by exports, economies with a larger stock of KBC should have a larger difference in VAX between knowledge-intensive industries and less knowledge-intensive industries. Domestic value added embodied in exports can be proxied by attracted FDI.*

Findings - *The results seem to show some support to the hypothesis. In Croatia it has already been shown that sectors of economy with larger stock of intellectual capital measured by Intellectual Capital Efficiency (ICE) index attracted more FDI, which can also serve as a predictor for larger value added in exports due to higher productivity. Knowledge intensity of 18 industries in the US as the benchmark economy shows that „Electrical and optical equipment" has above average knowledge intensity of 0,53, and it can be matched with "green economy" in Croatian industries that attracted more FDI and have higher levels of KBC.*

Research limitations and implications *- Although this study is limited just to KBC, as an extension, the potential role of financial development could be included. Also, the length of time series for VAX measured by OECD does not allow for more thorough analysis.*

Originality/value *– Although not conclusive, this paper is an important first step giving direction to subsequent studies of effects of KBC on value added.*

Keywords: *value added, global value chains, electronics, green economy, competitiveness*

JEL Classification: F21, D24

1. Introduction

The separation between knowledge intensive industries and those that are less knowledge intensive has become even more important with globalization and has given countries with competitive advantage in knowledge capital in certain knowledge intensive industries to participate in Global Value Chains and reap the benefits through exports. In Croatia, it has been shown that sectors of economy with larger stock of intellectual capital attracted more FDI, and therefore it would be reasonable to conclude that those sectors are a potential source of value added in exports through Global Value Chains. However, in developed economies only specific products, processes and functions that outperform emerging economies in Global Value Chains (Kaplinsky and Morris, 2011) are able to profit from the larger share of value added, and Croatian economy has characteristics of both emerging and developed economies and due to higher wages, especially in workers with tertiary education, should be regarded as a developed economy. This is even more true in ICT sector (Kraemer, Linden and Dedrick, 2011), which is mostly service producing and where system integrators are the most productive segment with largest value added. As for green industries that are now emerging in Croatia, those can be seen as a two sector economy, where one employs higher skilled workers with higher wages, and the other lower skilled workers with lower wages. This makes them different from other electronics industries, as they present a potential for growth. It was already shown that in two sector economy skills-biased technological shocks may have an adverse effect not only on unskilled employment, but also on the employment rate of the skilled labor force, which can possibly explain why technological shocks of this type lead to an increase in wage dispersion between unskilled workers with 'good' jobs and those with 'bad' jobs. It was also shown that the higher the initial unemployment rate, the higher the likelihood that skills-biased technological shocks will further increase it. In case of participation in Global Value Chains this need not necessarily be so, as the exports could lead to new employment that would not be limited only to higher skilled workforce, but also to all workforce in green (ICT) industries. Knowledge intensity of 18 industries in the US as the benchmark economy shows that „Electrical and optical equipment" has above average knowledge intensity of 0,53 measured as share of labor compensation of personnel with tertiary education. We have tested the hypothesis on a sample of Croatian firms in different regions, in order to assess which types of knowledge based capital are most important for their competitiveness, value added and investments. The importance of financial development, measured as the amount of credit by banks and other financial intermediaries to the private sector as a share of GDP is also included in order to assess the potential of investments in green economy as a source of value added in Croatia.

2. Methodology

We use industry-economy difference-in-difference estimation. If KBC plays a significant role in determining the domestic value added created by exports, economies with larger stock of KBC should have a larger difference in VAX between knowledge intensive industries and less knowledge intensive industries. This is tested by estimating the following model:

$$VAX_{ijt} = \beta\,(h_{ij} \times KBC_{jt}) + \gamma X_{ijt} + \alpha_{ij} + \alpha_{it} + \varepsilon_{ijt} \quad (1)$$

The left-hand side is the VAX computed from OECD_WTO- TiVA (trade in value added) Database for industry i in economy j at time t. Since it is a ratio the value of which is constrained between 0 and 1, it is transformed to VAX (1-VAX) and uses a log value that better fits the OLS regression. The first term on the right-hand-side is the interaction of industry i's knowledge intensity and the stock of KBC of economy j

at time t. The KBC stock per hour worked by engaged personnel is expressed in log values. If the coefficient β is positive and statistically significant, it means that VAX is indeed higher in more knowledge-intensive industries and that the inter-industries difference is larger for economies possessing a larger stock of KBC. The second term is a vector of control variables that may influence both VAX and KBC. In the standard regression, only the economy-industry level physical capital per hour worked is included. The third and fourth terms represent economy-industry fixed effects and economy-time fixed effects. The former fixed effects control for unobserved heterogeneity specific to each industry in each economy. They control not only for the structural difference among industries in terms of level of value-added embodied in exports, but also for the unique historical or geographical conditions that enable an economy to create large value in specific industries. The latter fixed effects control for economy-specific shocks such as movements in the domestic business cycle and also for each economy's degree of integration into GVCs. As previously mentioned, an industry can have high VAX when its engagement in GVCs is low, because its use of imported contents in its exports is very small. Although VAX declined in many economies after 1990, with the rise of GVCs, the extent of this decline differed substantially across economies. Economies with fast income growth experienced the largest decline (Johnson and Noguera, 2012). Economy specific time fixed effects, therefore, control for such heterogenous trends in VAX. The last term is an error term assumed to be independent and identically distributed across economies and industries but potentially correlated across times. Hetoroscedasticity-consistent standard errors are used to correct for the potential effect of serial correlation. An important issue is the definition of industry level knowledge intensity hij. Because industry level estimates of KBC could not be obtained for the sample economies, they are proxied by the share of labour compensation of employees with tertiary education obtained from the EU-KLEMS database. This choice seems sensible given that advanced educational attainment is usually required for the creation and management of sophisticated knowledge. However, the knowledge intensity of an industry is likely to be influenced by the economy-wide availability of KBC. This may bias the estimated coefficient of the interaction term. Therefore, following Rajan and Zingalse (Rajan and Zingalse, 1998), each economy's industrial knowledge intensity is replaced by that of the United States as the benchmark economy. The Time-averaged value of US knowledge intensity between 1995 and 2005 is used as the knowledge intensity of each industry. Each h_{ij} is thus replaced by the time-invariant h_{ij}s. This approach requires excluding the United States from the sample for a final sample of 14 European countries. Table 1 lists the measure of knowledge intensity for the 18 industries in the TiVA database. Knowledge intensity is relatively higher in manufacturing industries such as electr4ical and optical equipment and in service industries such as financial intermediation and business services (OECD, 2013).

As an extension of the base model, the model may be estimated by incorporating the potential role of financial development. Efficient financial intermediation can facilitate risky and long-term investments in KBC and enable economies to achieve comparative advantage in high value-added GVC activities. An interaction term between each industry's financial dependency and each economy's financial development is included. As the measure of financial dependency, each industry's input coefficients of financial intermediation obtained from WIOD databases are used. The input coefficients are those of the United States, averaged over 1995-2009. The measure of an economy's financial development is the amount of credit by banks and other financial intermediaries to

the private sector as a share of GDP used by Manova (Man ova, 2012).

In Croatian case, as we don't have VAX data from a database, we used FDI per industry in a year t, as a fair estimate of VAX as FDI is correlated with ICE in industries for Croatia. For KBC, instead of share of labor compensation of employees with tertiary education obtained from the EU-KLEMS database, we used average salaries in sectors in the whole labor compensation for all sectors, for all Croatian regions and sectors, bearing in mind that higher labor compensation implies that higher education and skills in Croatia, and therefore also higher KBC. Thus, by approximation, we were able to determine which regions may have the largest stock of KBC for obtaining VAX from GVCs. Finally, we compared these results with results where only green industry sectors were included (J, D, E) to see whether green industry on its own has a better potential or larger stock of KBC for obtaining VAX from GVC than the whole economy. Also the share of credit provided to green industries in comparison with GDP (or economy in general) can be checked.

Table 1: Knowledge intensity of 18 industries
Share of labour compensation of personnel with tertiary education

01t05	Agriculture, hunting, forestry and fishing	0,21
10t14	Mining and quarrying	0,34
15t16	Food products, beverages and tobacco	0,29
17t19	Textiles, textile products, leather and footwear	0,26
20t22	Wood, paper, paper products, printing and publishing	0,38
23t26	Chemicals and non-metallic mineral products	0,42
27t28	Basic metals and fabricated metal products	0,22
29	Machinery and equipment, nec.	0,31
30t33	Electrical and optical equipment	0,53
24t35	Transport equipment	0,36
36t37	Manufacturing nec; recycling	0,29
40t41	Electricity, gas and water supply	0,34
45	Construction	0,17
50t55	Wholesale and retail trade; Hotels and restaurants	0,26
60t64	Transport and storage, post and telecommunication	0,28
65t67	Financial intermediation	0,62
70t74	Business services	0,62
75t95	Other services	0,37

Source: Supporting Investment in Knowledge Capital, Growth and Innovation, OECD, Paris, 2013

Table 2: FDI in million euros, 1993-2005, ICE I-IX 2005 and VAIC 2002

Sector	FDI	ICE 2006	ICE 2005	VAIC 2002
Financial intermediation	714,03	3,79	2,96	2,28

Wholesale and retail trade	589,37	2,37	2,39	2,64
Mining	354,92	3,16	2,2	2,78
Other business services	266,25	2,07	1,84	
Post and telecommun.	159,37	2,58	2,24	2,73
Construction	85,2	2,25	2,11	2,19
Hotels and restaurants	72,85	2,12	2,27	3,4
Other prod. of non-metal. pr.	79,3	2,2	1,44	2,3
Water	32,83	2,87	1,96	--
Other	322,18	--	--	--
Agriculture	1	1,56	1	1,59

Source: Croatian National Bank and CIK – Center for Intellectual Capital

Table 3: VAIC and ICE for chosen firms, ICT sector excluded

	VAIC 96-01	ICE 2003	VA96-01	VA 2006	ICE 2006
TDR	13,72	7,91	556	863	7,4
Tankerska plovidba	10,82	7,59	380	409	8,96
Plinacro	10,78	15.86	177	311	11,71
Končar- e.tr.	8,69	3,68	34	86 (2003)	----
DM	7,33	3,19	68	196	3,48
PBZ Am. Ex	7,32	4,81	154	305	5,96
Žito	7,31	4,37	81	155	5,62
Zagreb.piv.	6,54	6,34	453	----	----
HEP	3,0 (2002)	5,65	1494 (2002)	478	9,85 (2005)
TC Koromačno**	4,47 (2002)	5	---	---	---
Našicecement	5,49	4,64	158	198	5,06
PLIVA	5,47	2,75	2101	1084	4,11
Atlantic trade	4,66	2,71	39	97	2,43
Cedevita	4,49	1,84	93	74	2,97
Belupo	4,44	3,11	230	293	---
Privredna banka	4,17	4,31*	2767	---	5,65*

INA	4,13	3,51	3898	3892,6	3,77
Jamnica	4,1	3,1	175	254	2,04
Vindija	3,91	2,43	123	---	3,3 (2005)
Lura	3,73	2,07	405	375	2,03
Franck	3,71	3,11	201	200	3,25
Coca Cola	3,71	3,45	326	289	2,76
Ledo	3,6	3,61	163	194	2,52
Dalmacijacement	3,25	3,67	208	251	2,63
KONZUM	---	1,28	---	231	1,43
* PBZ Leasing **Holcim					

Source: Intellectual Capital 95-01, November 2002., 2004, 2007; Center for Intellectual Capital

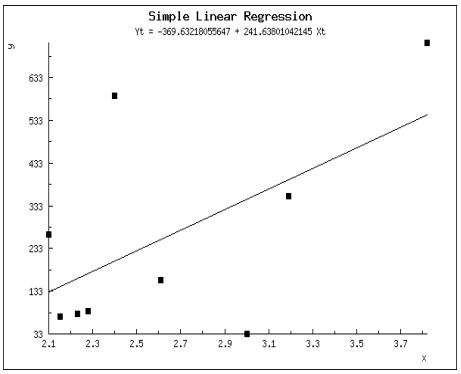
3. ICT industry, TiVA GVCs, KBC, FDI and green economy

One of the main problems of modern economies undergoing a prolonged adjustmet of their domestic markets is how to derive more value from firms international engagement by creaing or capturing value in GVCs. While some economies still focus on enhanicng their export market share, a growing number also focus on enhancing the value added earned per dollar of exports. Even China has shifted ist focus from market share alone, as its sees itself building its future prosperity on innovation in which everyone's creative potential is tapped, by increasing its ablity to produce more value, not more products, moving up the value chain and competing globally in the same product space as advanced countries. Croatia as an EU country is inferred to be closer to developed than to developing countries, and an economy's ability to create larger value in GVCs may be measured by observing the ratio of domestic value-added embodied in its exports to its actual exports. In the GVC literature this is known as „high value-added activity", which refers to activities that are better remunerated (have higher margins) and have higher entry barriers beacause the skills required are difficult to obtain. As it has already been shown by VAIC and ICE indexes that domestic value-added and knowledge based capital (KBC) in Croatia are both correlated to FDI, it follows that in Croatia FDI may be used as a proxy for high value-added activities, especially in case those acritivites are also directed towards exports. ICT sector is one of such sectors, which accounts for exports and high productivity withhigh value-added activities. Green industries may be considered as a special case of electrical and optic industries with higher knowledge intensity and higher skilled workers, but also of machinery nec and equipment and manufacturing industries, which employ lower skilled workers and have lower knowledge intensity. Therefore, green industries may be regarded as two sector economy under technological shock, with all consequences for unemployment that this entails. One important problem for analysis is likening TiVA and FDI Statistics, which is important for Croatia, as it doesn't have TiVA Statistics yet (as it has only recently joined the EU). Multinational enterprises (MNEs) are one of the main drivers of globalisation and of the creaiton of global value chains. FDI is important to many economices, and MNEs account for a substantial part of international trade flows.

Despite substantive and ongoing research on MNEs and on FDI and its economic impact, measures that quantify

the direct and indirect roles of FDI in GVCs ar not available for a wide range of countries and industries.Integrating FDI income receipts and payments into TiVA framework to adjust the TiVA data to better understand the impact of foreign ownership on a country's exports and imports of value added is necessary. This allows us to quantify the „stickiness" of value added produced by foreign owned firms. Sticky parts that are expected to remain in the economy include wages and taxes. However, the other part – the operating surplus or profits – is expected to be less „sticky" because it accrues to the foreign parent. OECD AMNE data indicate that around 45% of foreign produced VA consists of operating surplus and hence can potentially be repatriated. Simlarly, TiVA currently does not specify how much of a country's imported value added is actually produced by the foreign affiliates of a country's MNEs. To produce this link, we have to move to the foundations of TiVA and complement the ICIO with data on ownership and FDI.

Figure 1. Linear regression of FDI 1993-2005 and ICE 2006;
correlation coefficient = 0.67;



First it would be necessary to divide FDI income payments into the part that leaves the economy – distributed earnings and net interest payments – form the portion that potentially sticks in the economy – reinvested earnings. Incorporating FDI income into TiVA requires total FDI income payments and receipts and reinvested earnings by industry at the two-digit level and by partner over time.

One of the main challenges is not only in measuring income flows, but also in linking the FDI income data with the „real" economy (value added or output that is produced). It can appear that countries that host SPEs pay a significant amount of FDI income when in fact that FDI income originates in other countries and passes thorough the economy on its way to the ultimate source of the investment. This paper presents an attempt to better integrate FDI statistics into GVCs, and TiVA by linking them to the concepts of KBC and intellectual capital through ICE and VAIC index, since intellectual capital or KBC is the part of FDI invested into wages and education of employees, that is most likely to „stick" in the country (except in case that the employees leave the country and move to the country of from which the FDI originates). This capital may represent a potential for better integration of Croatia into GVCs, and one way this capital may be used is by activating it through green economy.

4. FDI, high skilled and low skilled jobs

We start with the data for FDI in J sector communication and postal services - or electric and optic equipment - by regions in Croatia, as a proxy to the domestic value added embodied in its exports, using h_{ij} for electric and optic equipment and with the ratio of remuneration for high skilled to low skilled jobs, which are mostly in electric and optic equipment. It can be seen that in some regions more FDI is attracted and that it is correlated with ICE indeks by sectors of economy. More FDI is attracted to ICT and electric and optical industry than to machinery nec. and recycling, which also corresponds to the difference in salaries in those sectors. Therefore value added is higher in those regions and sectors and the ratio between high skilled and low skilled job remuneration is higher as well. In the study of Nina Pološki we may verify whether those

regions also have a larger proportion of tertiary employees. Therefore it can be concluded that ratio of tertiary remuneration in total remuneration is higher in those regions, which implies that they have higher stock KBC. The difference in the stock of KBC is larger not only by sectors, but also by different regions. This could in turn imply that Croatia has a fairly large stock of KBC that could be used for obtaining VAX from GVC, but only if it is able to better connect its regions and organise production on the basis of this better organisation, instead of letting high skilled workers leave the country. Second, we should check the development of green industry by regions. It is clear that some regions with higher KBC and higher FDI could have also received more support for their green industries. That may be compared with the ratio of credits issued by the banks to the GDP and receipts from EU funds for green industries, which should be correlated.

Let us go back to our model:

$$VAX_{ijt} = \beta (h_{ij} \times KBC_{jt}) + \gamma X_{ijt} + \alpha_{ij} + \alpha_{it} + \varepsilon_{ijt} \quad (1)$$

It may be shown that if FDI is correlated to ICE by sectors, and larger positive value of β indicates larger stock of KBC as the difference between knowledge intensive industries and less knowledge intensive industries is larger, than the potential of green industries within the same economy could be measured only as a ratio of green industry sector stock of KBC to the stock of KBC in the whole economy, in which case the formula of the model can be simplified and written without the economy and sector specific correction terms $\alpha_{ij} + \alpha_{it} + \varepsilon_{ijt}$

Thus the model at first becomes just $VAX_{ijt} = \beta (h_{ij} \times KBC_{jt})$ and the measure of green economy potential an the economy i and industry j is then $VAX_{igt} = \beta (h_{ig} \times KBC_{gt}) / VAX_{ijt} = \beta (h_{ij} \times KBC_{jt})$, where g signifies that only „green" industry data can be used as j terms for regression inputs. Instead of VAX and KBC (EU KLEMS) that are not available for Croatia, we may use FDI (sector, region) and ICE or statistics for wages per sector and per region. To further improve the results, we could use the second term on the right side, $\gamma X_{ijt,}$ and employ instead VAIC index for sectors in different times, to account for physical capital correction.

Thus the new simplified formulas become:

$$FDI_{ijt} = \beta (h_{ij} \times ICE_{jt}), \text{ and} \quad (2)$$

$$FDI_{ijt} = \beta (h_{ij} \times ICE_{jt}) + \gamma VAIC_{ijt} \quad (3)$$

Calculation using this formula for „green" economy and total economy wtih all sectors, using conversion for knowledge intensity variable h should give us a fairly good correlation and a fairly large and positive β, implying that Croatian economy has a fair amount of KBC to be competitive, but even more in GVCs of green economy when β just for „green" sectors is put into relation with β for total economy.

5. Job losses and job gains due to technological schocks

It has been shown that technological shocks that demand high skilled workforce create unemployment in low skilled sectors, although they stimulate employment of high skilled workforce (Agenor and Aizenman, 1997). Green industries, however, are different, in that they have the potential for employment in both sectors. It can be shown that the receipts from EU funds for green industries and FDI received by region also correspond to lower unemployment in such regions. Therefore, it may be concluded that green industries have potential for reducing unemployment, although more exact calculation of capital in green industries is necessary.

6. Conclusion

We have analysed the possibilities for development of green industries and have found that sectors with higher FDI have also higher ICE index and therefore KBC should also be larger, which can be visible in the wages of workers in different sectors of economy. This gives us a chance to integrate

FDI statistics into TiVA statistics, which have only recently been made available for Croatia by OECD Stat. Furthermore, it could be checked whether the ratio of high skilled (with higher wages and in high knowledge intensity industries) to low skilled workers is higher in regions with higher KBC expressed by ICE index and if such regions have been able to receive more support for green industries, measured by the ratio of credits issued by the banks to the GDP and EU funds for green industries by regions. It is theoretically possible that green industries, unlike ICT and other high skilled industries, reduce unemployment due to technological shock that is able to stimulate employment not only of high skilled workers, but also of workforce with lower skills. Therefore, it can be concluded that there is potential for development of high value added green industries and their inclusion in GVCs, provided that there exists adequate financial intermediation and high skilled workforce (e.g. in a particular region). One problem for this scenario may appear with the current further opening of EU borders for trade and workforce, which means that Croatian employers have to compete in wages with EU and other non-EU developed countries that may be able to offer higher wages to Croatian nationals than domestic employers, especially in the ICT sector. Comparative analysis of TiVA indexes for Croatia, 2011, and indexes for several CEE countries (Slovenia, Slovakia, Czech Republic, Hungary, Poland), show that Croatia has no significant comparative advantage in general and in green industries (electrical equipment) as well, although green industries in Croatia appear to be slightly more competitive in comparison with total economy if we take into account our simplified model with FDI and ICE indexes. In conclusion, we should expect further publication of TiVA data for Croatia by OECD, as well as EU KLEMS, in order to make further more complex and precise calculations and conclusions, which are now hardly possible with the present sets of data.

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Appendix 1

Table A1
Conversion matrix of FDI industries (ISIC 4) to TiVA industries

Industry (TiVA)	Economic Activity (FDI)	Notes	Industry	Economic Activity (FDI)	Notes
C01T05	595		C34T35	3595	
C10T14	1495		C36T37	----	C36T37 missing completely
C15T16	1605		C40T41	4195	
C17T19	1805		C45	4500	
C20T22	2205		C50T55	5295 + 5500	
C23T26	2595		C60T64	6495	
C27T28	2805		C65T67	6895	
C29	2900		C70T74	7395	
C30T33	3295 + 3300		C75T95	9995	

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