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JOURNAL INFORMATION

PUBLISHING OF THE JOURNAL IS SUPPORTED BY THE MINISTRY OF SCIENCE, EDUCATION AND SPORTS OF THE REPUBLIC OF CROATIA
TYPESET AND PUBLISHER JURAJ DOBRILA UNIVERSITY OF PULA, DEPARTMENT FOR ECONOMICS AND TOURISM "DR. MIJO MIRKOVIĆ"
Printed at Info Tisakd.o.o.
The editors or the publisher assumes no responsibility for the views expressed by authors in this journal
English language translation and editor: Iva ŠtekarCergna
Croatian language editor: MarijaBelullo
The journal is published four times a year (March, May, September, December)
Annual subscription rate: 40 US$
A catalogue record for the journal is available from the University library Pula
EKONOMSKA ISTRAŽIVANJA – ECONOMIC RESEARCH (ISSN 1331-677X) (UDK 338)

Journal indexing/abstracting:
SOCIAL SCIENCE CITATION INDEX®, SOCIAL SCISEARCH®, JOURNAL CITATION REPORTS/SOCIAL SCIENCE EDITION (WEB OF SCIENCE) THOMSONREUTERS® (USA)
CAB ABSTRACTS (WALLINGFORD, UK)
EBSCO PUBLISHING DATABASE
ECONLIT (AMERICAN ECONOMIC ASSOCIATION, USA)
SCOPUS, GEOBASE (ELSEVIER, AMSTERDAM, NETHERLANDS)
CABELL'S DIRECTORY OF PUBLISHING OPPORTUNITEIES IN ECONOMICS & FINANCE
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EKONOMSKA ISTRAŽIVANJA – ECONOMIC RESEARCH

Vol 26, No. 1, March 2013

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EKONOMSKA ISTRAŽIVANJA-ECONOMIC RESERACH
ISSN 1331-677X print

2013 Volume 26(1): 1-16

DETERMINANTS OF THE CURRENT ACCOUNT BALANCE IN TURKEY: AN ARDL APPROACH

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ARTICLE INFO

Article data:
- Received: 9 September 2011
- Accepted: 26 January 2012

JEL classification: C12, C22, F32, N5

Keywords:
- Current account
- Balance of payments
- ARDL
- Boud Test

ABSTRACT

The objective of this paper is to examine the theoretical and empirical linkage between current account deficits and a broad set of macroeconomic variables in Turkey. This paper employs the Auto Regressive Distributed Lag (ARDL) model to specify the determinants of the current account in Turkey between 1987 and 2009. Results indicate that inflation affects the current account balance positively, whereas growth, openness, oil prices, and appreciation of the real exchange rate cause the current account balance to deteriorate.After any shock, it takes four quarters for the current account balance to return to its long-run equilibrium level.

Reference to this paper should be made as follows: Insel, A., ; Fazl, K.. 2013. Determinants of the current account balance in turkey: An ARDL approach, *Ekonomska istraživanja – Economic Research 26(1): 1-16.*

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http://theerjournal.com

I. INTRODUCTION

The current account balance of an economy is an important indicator of its performance and has many significant roles in policymakers' analyses of economic growth and development. First, the current account balance is closely related to the level of the saving-investment ratio, which is one of the key factors for economic growth. Second, a country's current account balance mainly reflects the trade balance, which is the sum of domestic residents' transactions with the entire world in the markets for goods and services. Third, since the current account balance determines the evolution of a country's stock of net claims on the rest of the world, it represents the intertemporal decisions of that country's citizens. It also has implications for imbalances, especially in terms of accumulation of foreign debt that may not be sustainable. In this respect, the growing debt stock of a country matters because it requires trade surpluses in the future to pay it back. Consequently, economists are trying to explain the changes in the current account balances, to estimate their sustainable levels and look to cause required changes in the balance through policy actions (Aristovnik, 2007, p.1).

With the liberalization of many economies after the 1980s, differentiation of exchange rate regimes, technological improvements in the financial markets, and the globalization of the world, international capital flows have become more mobile and increased in magnitude. This has introduced new problems, such as more severe and frequent crises in developing countries. These crises have showed the need for a clear understanding of the factors underlying a country's current account position. Despite the relatively extensive body of theoretical literature on the subject, there are only a few studies that empirically analyze the effect of macroeconomic variables on the current account deficit. This lack of empirical evidence is surprising, given that the position of the current account is typically used as one of the main leading indicators for future behavior of an economy and is part of the everyday decision process of policymakers. The objective of this paper is to examine the theoretical and empirical linkage between current account deficits and a broad set of economic variables. Current account balance is associated with many components of the economy; hence, it has implications for economic growth, exchange rate, and competitiveness, as well as capital flows and some other macroeconomic variables.

The pattern of current account imbalances has received considerable attention in the economics literature for many years. However, the growth of current account deficits and financial crises in the last decades has caught the attention of policymakers and economists. Until recently, most empirical studies have dealt with the response of the current account balance to shocks in one specific determinant. A broad part of the literature consists of studies that specifically choose one structural parameter and analyze its effects on the current account: examples include demography in Kim and Lee (2008), inflation in Mansoorian and Mohsin (2005), inflation stabilization in Calvo (2007), interest rates in Boileau and Normandin (2003), exchange rate adjustments in Obstfeld and Rogoff (2005), exchange rate intervention in Mann (2004), terms of trade shocks in Kent and Cashin (2003), terms of trade shocks as Harberger-Laursen-Metzler effect in Obstfeld (1982), economic integration in Blanchard and Gravazzi (2002), financial development in Chinn and Ito (2007), capital mobility in Adalet and Eichengreen (2005) and Yan (2007), openness in Cavallo (2007), liberalization in Paulino (2007), and uncertainty in Ghosh and Ostry (1997).

Despite the great volume of work on the specific determinants of the current account, it is difficult to assess all of the factors jointly and compare their separate contributions. Thus, comprehensive empirical studies on the determinants of current account are quite scarce. An early attempt to provide a comprehensive cross-country study with a set of macroeconomic variables was performed by Debelle and Faruqee (1996). Following that, Calderon, Chong, and

Loayza (2000) with GMM, Chinn, and Prasad (2003) with OLS and FEM, Milesi-Ferretti and Razin (1998) with PROBIT and Özmen (2005) with OLS and GIVE have contributed to the literature by analyzing current account deficits in developing countries, Freund (2000) with OLS for high income countries, Gruber and Kamin (2007) with FEM for Asian countries, Kandil and Greene (2002) with VECM for the United States.

Specialized empirical studies on Turkey and its current account deficit problem began with a macroeconomic model-building paper by Eken (1990). Then, Yücel (2006) analyzed the determinants of the current account balance of Turkey with OLS, Erkılıç (2006) with OLS and VAR, and Akçay and Üçer (2006) with VAR. However, with the exception of Kandil and Greene (2002), all of the studies concerning the current account problems of Turkey or of other countries and regions in the world which dealt with the VAR analysis were only able to explain the effects of a few (generally two variables) macroeconomic variables on the current account. The first contribution of this paper is to analyze the current account problem in terms of a broad set of macroeconomic variables. Its second contribution is that the selection of variables was based on the special characteristics of the country being analyzed rather than on general theoretical arguments about the subject, which has not been done in the literature in general.

In the next section, theoretical arguments about the candidates for current account determinants for Turkey, together with the theories behind the variable selection, will be presented briefly. The third section consists of the data description, methodology, and empirical results, which are made up of bound test and ARDL analysis. The fourth and final section will present an evaluation of the current account position of Turkey and conclusions about possible determinants according to the empirical results.

II. THEORETICAL BACKGROUND

It is very difficult to assess all of the factors jointly and compare their separate contributions to the pattern of current account balances; no single theoretical model can capture the entire range of theoretical and empirical relationships, and there is no consensus about the pattern of current account dynamics (Gruber and Kamin, 2007). As Chinn and Prasad (2003, p. 48) affirm, "alternative theoretical models have different predictions about the factors determining current account balances and about the signs and magnitudes of the relationships between the current account fluctuations and these factors." Furthermore, determinants of the current account balance can vary from country to country, since countries have different characteristics, resources, economic structures, and economic policies according to their different needs. Thus, the specific characteristics of the economy being analyzed should be given more priority than standard econometric techniques in discovering the determinants of the current account balance. In this paper, the factors that contribute to the current account balance of Turkey will be determined by comparing the Turkish economy with those of some other regions in the world different aspects of which are similar to and different from Turkey. East Asian and Latin American countries were selected for comparison since they are especially known for their persistent current account surpluses and deficits, respectively. The figure below present annual data about current account balances for those regions in order to give insights about the structural similarities and differences between them.

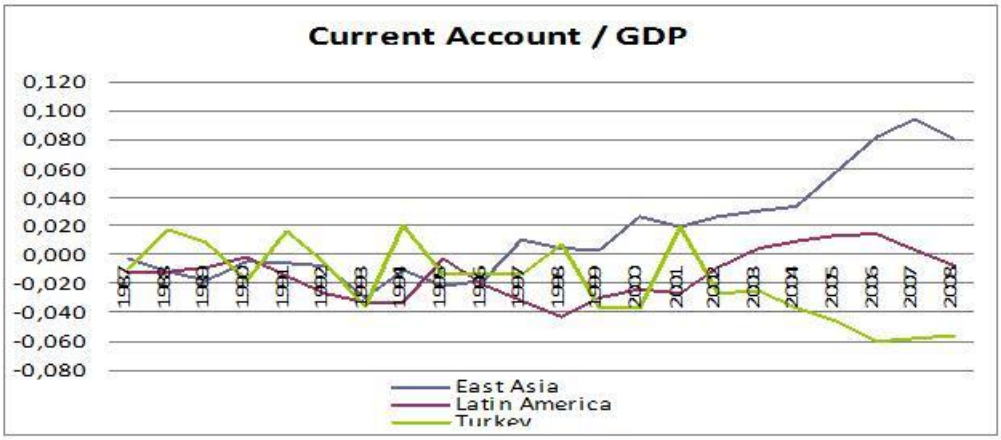

FIGURE 1. CURRENT ACCOUNT BALANCES OF TURKEY AND OTHER REGIONS

Source: World Bank; World Development Indicators and Global Development Finance

Since the 1980s, Turkey has implemented extensive trade liberalization programs either voluntarily or under pressure from international economic institutions—much like most Latin American countries. The purpose was to improve macroeconomic performance and especially to reach high growth rates with a better balance of payments. This is because neoclassical theory argues that opening up to international trade brings technology transfers and capital accumulation together with inflows, which are seen as a source of rapid growth for developing countries. However, it can be much easier for importers to respond to lower trade barriers than for domestic producers to switch resources from producing for home market to exports. According to the Economic Commission for Latin America and the Caribbean (ECLAC) framework, contrary to developed countries, for most developing countries income elasticity of imports is higher than income elasticity of exports. Thirlwall (1995) formalized this approach and applied it to a group of developing and developed countries to explain the differences in growth and balance of payment statistics. Vos, Taylor, and Barros (2002) proved this framework in their survey of balance of payment liberalization of some selected countries, showing that higher import propensities offset the growth impacts of export expansion for nearly all countries. Thus, it can be claimed that East Asia's export lead growth strategies cannot be implemented in all economies. This was especially what happened in Turkey. Together with growth, imports have increased much more than exports and trade balance, which deteriorated and then constrained growth. Hence, openness and growth may be appropriate candidates to explain the current account position of the Turkish economy.

A reasonable assumption of development theories is that, given a certain level of technical progress and the way available resources are allocated, the higher the savings and investment rates, the higher the economic growth. However, given developing countries' shortage of savings, foreign savings in the form of credit facilities and investments would be an excellent way of promoting such development. Thus, one growth strategy offered to developing countries can be the growth of foreign savings and opening a capital account strategy, since it is seen as natural for capital-rich countries to transfer their capital to capital-poor countries. Furthermore, foreign savings received by a country will automatically be transformed into productive investment. However, national income identity reveals that the current account can be defined as saving minus investment, hence it can be expected theoretically that increase in the investment level leads to a current account deficit. As a result, a relatively appreciated level of real exchange rate

and permanent current account deficits would be normal and advisable conditions for developing countries, provided that they were sufficiently moderate and did not lead to a balance of payment crisis. Nevertheless, as Bresser-Pereira and Gala (2009) found, this policy and the resulting exchange rate overvaluation have shown that capital inflows increased the consumption and foreign indebtedness, but not investment, in developing countries. Moreover, if an increase in investment is directed to the less productive sectors in which the return from that investment is lower than the cost of borrowing, or directed heavily to nontradable sectors which do not induce foreign exchange revenue, it will significantly impede the country's external debt repayments.

Whereas East Asian countries have used capital inflows mostly for investment in tradable sectors, in Turkey and Latin America those inflows and resulting exchange rate overvaluation have caused increased consumption (along with decreased savings) and current account deficits. Cross country empirical works support this fact that current account deficits are mainly due to fall in saving rather than increase in investment. Fall in savings are reflected in increasing consumption and import demand resulting with current account deficits. Freund (2000), by analyzing 25 industrial countries in terms of current account reversals, points out that decrease in the saving rate is one of the important reasons for the deterioration of the current account balance. Ülengin and Yentürk (2001) provided evidence for this argument in their analysis of the impact of foreign savings on aggregate spending categories in Turkey.

Real exchange rate contributes to the determination of prices for tradable goods. Depreciation in the local currency immediately increases the trade bill for predetermined imports and decreases the foreign exchange revenue which causes current account deficit. As the time passes, decrease in the value of the home currency in terms of others stimulates the volume of exports according to the law of demand. This worsening of the current account immediately after real currency depreciation and beginning to improve later, is called a J curve hypothesis. Nevertheless, the change in the export revenue and the import receipt depend on the elasticities. When the sum of import demand and export supply elasticities are greater than unity in absolute terms, i.e. Marshall-Lerner condition holds, depreciation of the real exchange rate improves the current account. High and persistent inflation also brought about increased savings due to the uncertainty of the macroeconomic environment and resulting lack of monetary credibility. In such an environment, people do not make many investments and tend increase their savings as a precaution, leading to a lower current account deficit. Hence, it can be concluded that investment and savings rates together with real exchange rates and inflation rates can serve as determinants of the current account in Turkey.

Turkey is an emerging country with a growing economy, and is challenged by a growing demand for energy. Turkey's energy consumption has grown and will continue to grow along with its economy. Balat (2009) states that more than 70 percent of energy use is imported since energy consumption is high, but domestic energy reserves and their production levels are low. Total primary energy production met only about one quarter of the total primary energy demand in recent years. Interestingly, Akçay and Üçer (2008) calculated that the non-energy current account balance has averaged almost zero for the last ten years. Since oil has the biggest share in total primary energy consumption, oil prices are a good candidate for the determinant of Turkey's current account position.

III. DATA AND METHODOLOGY

A. Data

Data were obtained from the Central Bank of the Republic of Turkey, the Turkish Statistical Institute, the Energy Information Administration, and the World Bank. Turkish lira values of all the variables are used. Variables in which the values are obtained as US dollar are transformed to Turkish lira by using the monthly averages of the exchange rate of the Central Bank of the Republic of Turkey, which are current account balance and oil prices. The frequency of the data is quarterly between 1987:4 and 2009:4. Since the observations for gross domestic product were only obtained for each quarter in the period, other high frequency variables have been transformed to the quarterly data. There are definitions and some summary statistics about the variables in the tables below.

TABLE 1 – DEFINITIONS OF THE VARIABLES

CA	Ratio of Current Account to GDP
GROWTH	Real Gross Domestic Product Growth Rate
INV	Ratio of Gross Capital Formation to GDP
SAV	Ratio of Saving to GDP
OPEN	Ratio of Exports and Imports to GDP
OIL	Growth of Brent Oil Prices in Europe
INF	Consumer Price Index Growth Rate (1978 based)
REER	Reel Effective Exchange Rate

Source: authors' calculation

TABLE 2 – DESCRIPTIVE STATISTICS FOR THE VARIABLES

	Mean	Median	Max.	Min.	Std. Dev.	Skewness	Kurtosis	Jarque-Bera	Obs.
CA	-0,024	-0,023	0,053	-0,125	0,040	-0,272	2,689	1,455	89
GROWTH	0,017	-0,048	0,352	-0,249	0,178	0,207	1,507	8,903	89
INV	0,222	0,225	0,284	0,121	0,037	-0,516	2,943	3,954	89
SAV	0,191	0,188	0,346	0,105	0,041	0,704	4,288	13,509	89
OPEN	0,513	0,529	0,816	0,258	0,148	-0,020	1,923	4,310	89
OIL	0,037	0,024	1,311	-0,589	0,216	2,091	15,62	656,15	89
INF	0,106	0,114	0,419	-0,013	0,075	0,768	4,819	21,016	89
REER	1,266	1,189	1,920	0,850	0,274	0,625	2,375	7,250	89

Source: authors' calculation

B. Methodology and empirical results

First, all of the variables were adjusted seasonally using the X12 additive method. Seasonally adjusted components were used in the analyses. Then, the variables were checked for stationarity by using the Augmented Dickey-Fuller (ADF), Phillips-Perron (PP), Dickey-Fuller Generalized Least Square (DF GLS) and Kwiatkowski-Phillips-Schmidt-Shin (KPSS) unit root tests. According to the test results, CA, GROWTH, OIL, and INF are stationary. INV, OPEN, and REER could become stationary after taking their first differences; SAV could become stationary once detrended. The test results are summarized in Table 3 below.

TABLE 3 – UNIT ROOT TEST STATISTICS FOR THE VARIABLES

	ADF		PP		DF GLS		KPSS	
	Trend and Intercept	Intercept	Trend and intercept	Intercept	Trend and intercept	Intercept	Trend and intercept	Intercept
CA	-4.20***	-2.94**	-4.41***	-3.04**	-3.26**	-2.79***	0.15°°	0.82°°°
GROWTH	-11.6***	-11.6***	-11.6***	-11.6***	-10.6***	-10.1***	0.03	0.07
INV	-2.14	-2.06	-2.05	-2.10	-2.09	-1.14	0.13°	0.45°
SAV	-4.05**	-2.14	-3.90**	-2.20	-3.19**	-1.09	0.08	0.88°°°
OPEN	-3.20*	-0.49	-3.04	-0.21	-2.68	0.23	0.07	1.12°°°
OIL	-9.84***	-9.86***	-9.90***	-9.92***	-9.89***	-9.54***	0.03	0.08
INF	-3.61**	-2.17	-7.12***	-4.14***	-3.65***	-1.28	0.22°°°	1.08°°°
REER	-3.29*	-1.49	-3.29*	-1.36	-3.26**	-0.80	0.22°°°	1.01°°°
ΔINV	-7.95***	-7.98***	-7.97***	-8.01***	-7.15***	-5.60***	0.05	0.10
DT(SAV)	-5.73***	-5.77***	-5.71***	-5.75***	-5.21***	-3.24***	0.03	0.03
ΔOPEN	-7.25***	-7.11***	-9.40***	-9.19***	-8.56***	-7.74***	0.06	0.11
ΔREER	-10.3***	-10.3***	-11.0***	-11.0***	-10.3***	-10.1***	0.03	0.04

* , ** and *** denotes the rejection of the null hypothesis of unit root at 10% , 5% and 1% levels.
° , °° and °°° denotes the rejection of the null hypothesis of stationary at 10% , 5% and 1% levels.
Δ denotes the first difference, DT denotes detrended.
Source: authors' calculation

In this section, a Vector Error Correction (VEC) setup was employed and an Auto Regressive Distributed Lag (ARDL) bounds testing approach was used both to specify the determinants of the current account empirically and to decide whether the empirical results support the theoretical findings in the former section about the current account behavior of the Turkish economy. An ARDL representation of the model is shown in Equation 1.

$$\Delta ca_t = c + \alpha_{1i}\sum_{i=1}^{n}\Delta ca_{t-i} + \alpha_{2i}\sum_{i=0}^{n}\Delta growth_{t-i} + \alpha_{3i}\sum_{i=0}^{n}\Delta inv_{t-i} + \alpha_{4i}\sum_{i=0}^{n}\Delta sav_{t-i}$$
$$+\alpha_{5i}\sum_{i=0}^{n}\Delta open_{t-i} + \alpha_{6i}\sum_{i=0}^{n}\Delta oil_{t-i} + \alpha_{7i}\sum_{i=0}^{n}\Delta inf_{t-i} + \alpha_{8i}\sum_{i=0}^{n}\Delta reer_{t-i}$$
$$+\delta_1\begin{pmatrix} ca_{t-1} - \beta_1 growth_{t-1} - \beta_2 inv_{t-1} - \beta_3 sav_{t-1} - \beta_4 open_{t-1} - \beta_5 oil_{t-1} \\ -\beta_6 inf_{t-1} - \beta_7 reer_{t-1} \end{pmatrix} + \varepsilon_t \quad (1)$$

This representation allows us to analyze both the long-run equilibrium and the short-run adjustment phase. It starts with conventional unit root tests and continues with a Johansen (1988) cointegration test, if all of the variables are integrated of the same order. However, it can be seen from the above results that the variables in the empirical analysis are not integrated of same order. CA, GROWTH, OIL and INF are integrated of order zero (I(0)), whereas SAV, INV, OPEN and REER are integrated of order one (I(1)). Since it would be misleading to employ the Johansen cointegration test in this case, the ARDL bounds test proposed by Pesaran, Smith, and Shin (2001) was used.The choice of this test was based on the following considerations. First, unlike most of the conventional multivariate cointegration procedures, which are valid for large sample sizes, the bounds test is suitable for a study with a small sample size. Second, the bounds test does not impose restrictive assumptions that all of the variables under study must be integrated of the same order. Its asymptotic distribution for the F statistic is non-standard under the null hypothesis of no cointegration relationship between the examined variables, irrespective of whether the explanatory variables are purely I(0), I(1), or mutually cointegrated. Hence, the order of integration is no longer a sensitive issue and estimation can continue without performing the unit root tests. Since the error correction term in the ARDL does not have any restriction, the ARDL is actually an Unrestricted Error Correction Model:

$$\Delta ca_t = c + \alpha_{1i}\sum_{i=1}^{n}\Delta ca_{t-i} + \alpha_{2i}\sum_{i=0}^{n}\Delta growth_{t-i} + \alpha_{3i}\sum_{i=0}^{n}\Delta inv_{t-i} + \alpha_{4i}\sum_{i=0}^{n}\Delta sav_{t-i}$$
$$+\alpha_{5i}\sum_{i=0}^{n}\Delta open_{t-i} + \alpha_{6i}\sum_{i=0}^{n}\Delta oil_{t-i} + \alpha_{7i}\sum_{i=0}^{n}\Delta inf_{t-i} + \alpha_{8i}\sum_{i=0}^{n}\Delta reer_{t-i}$$
$$+\gamma_1 ca_{t-1} + \gamma_2 growth_{t-1} + \gamma_3 inv_{t-1} + \gamma_4 sav_{t-1} + \gamma_5 open_{t-1}$$
$$+\gamma_6 oil_{t-1} + \gamma_7 inf_{t-1} + \gamma_8 reer_{t-1} + \varepsilon_t \quad (2)$$

The bounds test is a Wald Test (or F test) in which the joint significance of γ coefficients for lagged variables is tested with F statistics calculated under the null. The distribution of the test statistics under the null is non-standard, in which critical values depend on the order of integration of variables involved. Thus, rather than using standard critical F statistic values, the upper (for I(1)) and lower (for I(0)) bounds of the F statistics presented by Peseran et. al. (2001)

are used. For a given significance level of γ, if the F statistic falls outside the critical bound, a conclusive inference can be made without considering the order of integration of the underlying regressors. If the F-statistic is lower than the lower critical bound, then the null hypothesis of no cointegration is accepted. If the F-statistic is higher than the upper critical bound, then the null hypothesis of no cointegration is rejected. In cases where the F statistic falls inside the lower and upper bounds, a conclusive inference cannot be made. As a first step in the ARDL model, the hypothesis below was tested for Equation 2:

$H_0 : \gamma_1 = \gamma_2 = \gamma_3 = \gamma_4 = \gamma_5 = \gamma_6 = \gamma_7 = \gamma_8 = 0$

$H_1 : at\ least\ one\ of\ them\ is\ not\ zero$

TABLE 4 – RESULTS FOR THE BOUNDS TEST FOR COINTEGRATION

k	N	F statistic	Upper (%1)	Lower (%1)	Upper (%5)	Lower (%5)	Decision
1	7	5.76	2.96	4.26	2.32	3.50	Cointegration

k is the lag length, n is the number of variables in the equation other than lags of dependent variable.
Source: authors' calculation

Testing for cointegration by using Equation 2 requires deciding the optimal lag length first. SIC and HQ select the optimal lag length as one, although AIC selects five. There is no autocorrelation in the residual term for the first four lags. Hence, optimal lag length was selected as one. The results of the test according to the one-lag model are given in Table 4. The hypothesis of no long-run relationship is rejected with both 5 and 1 percent significance levels since the F statistic is above the upper bound levels.

After ensuring the cointegration between the series, the next step is to determine the optimal lag length for ARDL model. Following the literature, AIC (Akaike Information Criterion) is used and the lag lengths of the model for long run equilibrium were determined as ARDL (5,2,3,0,0,2,0,2).

$$ca_t = c + \alpha_{1i}\sum_{i=1}^{5} ca_{t-i} + \alpha_{2i}\sum_{i=0}^{2} growth_{t-i} + \alpha_{3i}\sum_{i=0}^{3} inv_{t-i} + \alpha_{4i}\sum_{i=0}^{0} sav_{t-i}$$
$$+\alpha_{5i}\sum_{i=0}^{0} open_{t-i} + \alpha_{6i}\sum_{i=0}^{2} oil_{t-i} + \alpha_{7i}\sum_{i=0}^{0} inf_{t-i}\,\alpha_{8i}\sum_{i=0}^{2} reer_{t-i} + \varepsilon_t \quad (3)$$

Resulting long run relationship is rearranged in which obtained from the estimation of equation 3 with Ordinary Least Square (OLS) as;

$$ca_t = -0{,}301growth - 0{,}223\text{inv} - 0{,}005\text{sav} - 0{,}035\text{open}$$
$$-0{,}034\text{oil} + 0{,}185\text{inf} - 0{,}049\text{reer} \quad (4)$$

The impacts of the GDP growth rate, investment, openness, oil prices, and real exchange rate on the current account balance are negative, whereas the impact of inflation is positive, as expected theoretically. However, the impact of saving is not in line with theoretical arguments.

Next, short-run relationships were estimated by OLS using Equation 5 below. An ARDL (2,0,1,0,0,1,3,2) specification is used in which AIC is minimized.

$$\Delta ca_t = c + \alpha_{1i}\sum_{i=1}^{2}\Delta ca_{t-i} + \alpha_{2i}\sum_{i=0}^{0}\Delta growth_{t-i} + \alpha_{3i}\sum_{i=0}^{1}\Delta inv_{t-i} + \alpha_{4i}\sum_{i=0}^{0}\Delta sav_{t-i}$$
$$+\alpha_{5i}\sum_{i=0}^{0}\Delta open_{t-i} + \alpha_{6i}\sum_{i=0}^{1}\Delta oil_{t-i} + \alpha_{7i}\sum_{i=0}^{3}\Delta inf_{t-i} + \alpha_{8i}\sum_{i=0}^{2}\Delta reer_{t-i} + \delta_1 \mathrm{ECT}_{t-1} + \varepsilon_t \quad (5)$$

As the results indicate, when the current account balance deviates from its long-run equilibrium level as a response to any shock in the explaining variables, it returns to the equilibrium level quite quickly. The coefficient (λ_1) of the lagged Error Correction Term (ECT_{t-1}) is -0.231; that is obtained from the relationship found above. This means that after any shock, it takes four periods for the current account balance to return to its long-run equilibrium level.

IV. CONCLUSION

According to the results of the ARDL model, the impacts of growth, inflation, and investment are higher than the other variables. The effects of savings, openness, oil prices, and real exchange rate are not significant and are so small in magnitude that the impact of savings in particular can be considered negligible. Nevertheless, the effect of savings on the current account balance seems to conflict with the theory as being negative in this framework. According to the estimates, when the growth rate of the economy increases by 10 percent, the current account deficit–to–GDP ratio increases 3 percent. When the investment rate increases 10 percent, the ratio increases 2.2 percent. When the savings rate increases 10 percent, the ratio increases 0.05 percent. When the openness rate increases 10 percent, the ratio increases 0.35 percent. When oil prices increase 10 percent, the ratio increases 0.34 percent. When the inflation rate increases 10 percent, the ratio decreases 1.8 percent, and when the real exchange rate increases 10 percent, the ratio increases 0.49 percent. Evaluation of the coefficient of the Error Correction Term gives insights about the speed of adjustment mechanism; -0.231 means that any deviation in the current account balance is eliminated almost in a year.

The results regarding the impact of investment on the current account in the long-run equation justify the theoretical evaluations made about the variable. It can be argued that an increase in investment worsens the current account in the first instance, but if the investment is directed to the most profitable and tradable sectors, it may improve the current account balance in the future. It is an indicator for the sustainability of the deficits through increasing productive capacity and future income. A negative coefficient of the long-run relationship between investment and current account balance demonstrates that investment decisions in Turkey are not being made according to profitability or sustainability criteria and are far from being rational. This can be explained by the investment attitudes of the households and institutions in Turkey. The private sector prefers mostly the risky investment projects because of the high interest rates; it only invests in the projects that offer a higher rate of return than the interest rates with high risk. In addition, most government investments disregard profitability criteria and consider the voting potential of the investment sector or district. Hence, investment that is directed to the

less productive or nontradable sectors cannot contribute much to the recovery of the current account balance in the long run.

In addition to investment, growth is another very influential negative factor on the current account balance in the long run. This result validates the theory about the structural condition of the Turkish economy which states that growth depends on imports. As the economy grows imports increase more than exports, which results in a current account deficit—since the income elasticity of imports (2.24) is higher than the income elasticity of export (1.99) for Turkey as a developing country (Akal 2010). At the end of the 1980s, when the policy of decreasing costs by wages to obtain comparative advantage came to an end and high tax rates were imposed in all categories of production, imports emerged as a way of decreasing costs, since importing most of the intermediate product was cheaper than domestic production. While imports were growing faster than GDP, the share of industrial production in Turkey's GDP decreased, especially for the last decade. As imports were substituted for domestic production, growth became highly dependent on imports. Hence, the Turkish economy has to endure the current account deficits caused by imports in order to grow.

Inflation emerges as the only factor that influences the current account positively; it has significant impacts on both savings and investment decisions made by households and firms. Since the period under analysis in the Turkish economy was known for its high and persistent inflation rates, the considerable effect of inflation is not surprising. People make investment and savings decisions according to the expected high and long-lasting inflation rates.

The impact of openness on the current account balance seems to be limited. However, the openness rate of the Turkish economy rose sharply during the period of our analysis, even while the country had large current account deficits. This may seem like a contradiction, but it can be argued that openness affects the current account only indirectly. Openness is defined as the totality of import and export rates to the GDP. Only one part of the increase in the openness rate deteriorates the current account: imports. The difference in the growth rates of imports and exports affects the current account negatively. Even though the increase in the imports rate is more than the exports, the difference between them may not be enough for openness to worsen the current account balance. Oil prices and real exchange rate have common features in that both of them contribute to the price formation of tradable goods. Since prices can be considered important at the time trade is realized, they do not seem to have long term effects on the current account balance.

APPENDIX:

TABLE A1: LAG LENGTH SELECTION FOR BOUND TEST IN EQUATION 2

K	1	2	3	4	5
Serial Correlation LM test (prob.)	0.64*	0.54*	0.31*	0.59*	0.05
AIC	-5.424	-5.435	-5.444	-5.332	-5.456**
SIC	-4.744**	-4.522	-4.294	-3.885	-3.824
HQ	-5.150**	-5.067	-4.981	-4.750	-4.800

* denotes rejection of the hypothesis of no serial correlation in the residual term with 5 level of significance.
**denotes optimal lag length selected by that criteria
Source: authors' calculation

TABLE A2: LONG RUN COEFFICIENTS (EQUATION 3)

Variable	Coefficient	Std. Error	P value
Constant	0.060	0.049	0.225
CA(-1)	0.401	0.117	0.001
CA(-2)	-0.091	0.111	0.417
CA(-3)	0.181	0.110	0.105
CA(-4)	-0.119	0.117	0.315
CA(-5)	-0.028	0.099	0.778
GROWTH	-0.034	0.060	0.566
GROWTH(-1)	-0.110	0.054	0.047
GROWTH(-2)	-0.051	0.053	0.333
INV	-0.208	0.173	0.234
INV(-1)	-0.206	0.238	0.390
INV(-2)	0.115	0.254	0.652
INV(-3)	0.152	0.187	0.419
SAV	-0.003	0.112	0.976
OPEN	-0.023	0.020	0.261
OIL	0.007	0.010	0.431
OIL(-1)	-0.001	0.009	0.858
OIL(-2)	-0.027	0.009	0.003
INF	0.121	0.050	0.020
REER	-0.044	0.020	0.037
REER(-1)	-0.035	0.026	0.172
REER(-2)	0.049	0.022	0.031

Source: authors' calculation

TABLE A3: DIOGNASTIC CHECKS FOR THE LONG RUN ESTIMATION

TEST	Statistic	Probability
Breusch-Godfrey Serial Correlation LM Test	0.460	0.632
ARCH Test	0.244	0.622
White Heteroskedasticity Test	1.464	0.124
Jarque-Bera	3.076	0.214
Ramsey RESET Test	0.910	0.343
R Squared	0.872	
Akaike	-5.355	

Source: authors' calculation

TABLE A4: SHORT RUN COEFFICIENTS (EQUATION 5)

Variable	Coefficient	Std. Error	P value
Constant	0.023	0.006	0.001
D(CA(-1))	-0.075	0.105	0.477
D(CA(-2))	-0.181	0.099	0.072
D(GROWTH)	-0.001	0.038	0.975
D(INV)	-0.006	0.169	0.969
D(INV(-1))	-0.286	0.159	0.076
D(SAV)	-0.013	0.131	0.920
D(OPEN)	-0.191	0.079	0.018
D(OIL)	0.014	0.007	0.066
D(OIL(-1))	0.020	0.007	0.009
D(INF)	0.179	0.048	0.000
D(INF(-1))	0.032	0.065	0.615
D(INF(-2))	0.006	0.056	0.905
D(INF(-3))	-0.015	0.039	0.697
D(REER)	-0.067	0.021	0.002
D(REER(-1))	-0.078	0.024	0.002
D(REER(-2))	-0.005	0.024	0.812
ECT(-1)	-0.231	0.073	0.002

Source: authors' calculation

TABLE A5: DIOGNASTIC CHECKS FOR THE SHORT RUN ESTIMATION (EQUATION 5)

TEST	Statistic	Probability
Breusch-Godfrey Serial Correlation LM Test	1.290	0.282
ARCH Test	0.788	0.377
White Heteroskedasticity Test	0.669	0.820
Jarque-Bera	3.735	0.154
Ramsey RESET Test	5.935	0.017
R Squared	0.595	
Akaike	-5.284	

Source: authors' calculation

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ODREDNICE BILANCE TEKUĆEG RAČUNA U TURSKOJ: ARDL PRISTUP

Sažetak: Cilj ovog rada je istražiti teorijske i empirijske poveznice između deficita tekućeg računa i velikog broja makroekonomskih varijabli u Turskoj. Rad koristi model Autoregresijskog distribuiranog pomaka (ARDL) za specifikaciju odrednica tekućeg računa u Turskoj od 1987. do 2009. Odabir skupa objašnjavajućih varijabli motiviran je postojećim debatama o ponašanju tekućeg računa, pod uvjetom da postoji stabilna bazna struktura koja tekući račun povezuje s tim makroekonomskim varijablama. Rezultati ukazuju na to da inflacija pozitivno utječe na bilancu tekućeg računa, dok rast, otvorenost, cijene nafte i aprecijacija realne tečajne stope uzrokuju pogoršanje bilance tekućeg računa. Nakon bilo kojeg šoka potrebna su četiri kvartala da se bilanca tekućeg računa vrati na nivo dugoročne stabilnosti.

Ključne riječi: tekući račun, bilanca plaćanja, ARDL, granični test.

EKONOMSKA ISTRAŽIVANJA-ECONOMIC RESERACH
ISSN 1331-677X print

2013 Volume 26(1): 17-32

THE IMPACT OF FOREIGN DIRECT INVESTMENT ON STOCK MARKET DEVELOPMENT: EVIDENCE FROM PAKISTAN

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ARTICLE INFO

Article data:
- Received: 14 November 2011
- Accepted: 10 April 2012

JEL classification: G24, N25, C50

Keywords:
- Stock Market development
- Foreign Direct Investment
- Pakistan
- Complementary
- Cointegration

ABSTRACT

Developing countries are witnessing changes in the composition of capital flows in their economies due to the expansion and integration of the world equity market. This paper investigates the impact of foreign direct investment on the stock market development in Pakistan. The key interest revolves around the complementary or substitution role of foreign direct investment to the development of stock market. ARDL bounds testing approach to cointegrationand ECM are employed for the analysis. Our results support the complementary role of foreign direct investment to the stock market development in Pakistan. Moreover, domestic savings, income and inflation are the other macroeconomic variables that affect the development of stock market in Pakistan.

Reference to this paper should be made as follows: Shahbaz, M; Lean. H;Kalim,R;. 2013. The impact of foreign direct investment on stock market development: Evidence from Pakistan, *Ekonomska istraživanja – Economic Research 26(1): 17-32.*

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I. INTRODUCTION

A strong financial system guarantees the economic growth and stability of a country. As an important catalyst, capital market plays a vital role in generating long term financial resources and channeling them into productive investments. Hence, efficient capital market is essential for economic growth and prosperity. In between, stock market is an integral part of the financial system of an economy. It is a source of financing new venture based on its expected profitability. Stock market is the replica of economic strength of a country. To boost investment, savings and economic growth; the development of stock market is imperative and cannot be ignored in any economy. The development of stock market is the outcome of many factors such as exchange rate, political stability, foreign direct investment (FDI) and economic liberalization. Theoretical works show positive impact of stock market development on economic growth (e.g. Demirguc-Kunt and Levine 1996; Sing, 1997; and Levine and Zervos, 1998).

In the era of globalization, FDI is a major source of capital in most of the developing countries where it bridges the gap of capital, technology, managerial skill, human capital formation and more competitive business environment. However, the role of FDI in economic development is found mixed in the economic literature. On one hand, FDI transfers business know-how and technology to the host country (Romer, 1993). On the other hand, the presence of pre-existing trade, price, financial, and other distortions will hurt resources allocation and hence sluggishthe economic growth (Brecher and Diaz-Alejandro, 1977; Brecher, 1983; Boyd and Smith, 1999). Carkovic and Levine (2002) showed that FDI does not exert any independent influence on economic growth. Johnson (2005) argued that FDI brings a positive effect to developing countries but not to the developed economies. Rehman and Salahuddin (2009) also suggested that FDI will only promote economic growth under certain policy conditions.Hence, empirical evidences produce ambiguous prediction about the effect of FDI.

It is observed that there is a triangle relationship between FDI, stock market development and economic growth: (1) FDI stimulates economic growth and (2) economic growth exerts positive impact on stock market development in which (3) FDI indirectly promotes the development of stock market (Adam and Tweneboah, 2009). Given this background, the aim of this study is to identify the major contributing factors to the development of stock market in Pakistan with particular emphasis on the role of FDI. The question concerned is either FDI play a complementary or a substitution role in the stock market development. Therefore, it is hypothesized that if there is a positive relationship between FDI and stock market development, FDI plays a complementary role. On the other hand, if there is a negative relationship between the two components, FDI is substituting the stock market development.

The paper as customary is divided into different sections. Section 2 provides a brief overview of the literature on the determinants of stock market development. Section 3 highlights the salient features of the stock markets in Pakistan. Section 4 outlines the methodology and explains the model and data. Section 5 discusses results. Finally, section 6 concludes with some policy implications.

II. LITERATURE REVIEW

Considerable researches on impact of FDI on stock market development have been done in the literature. For example, Errunza (1983) documented long term impact of foreign capital inflows on stock market development. Krkoska (2001) reported that capital formation is positively associated with FDI in the transition countries.

Claessens, Daniela, Schmukler (2002) concluded that the global migration of funds benefited stock market development due to more funds available for corporations and more flexibility for investors. Fritz, Desai, Hines (2005) concluded that FDI and domestic investment are complements in the production process by multinational firms in the US. Sarkar (2007) showed that in majority developed and less developed countries (including France, UK and US); the stock market turnover ratio has no positive long-term relationship with gross fixed capital formation.

Chousa, Krishna, Tamazian (2008) tried to assess whether stock markets are simply known to be the mother of all speculative businesses, or whether they are importantly linked to attract firm level's FDI in the form of cross-border mergers and acquisitions activities. They found a strong positive impact of stock markets on cross border mergers and acquisitions deals and values. Yartey (2008) identified many factors such as institutional and regulatory reforms, adequate disclosure and listing requirements and fair trading practices are important to foreign investment. Apart from that, Adam and Tweneboah (2009) indicated a long-run relationship between FDI and stock market development in Ghana. They found positive impact of FDI on stock market development. Al-Halalmeh and Sayah (2010) also examined impact of FDI on stock prices in Jordan. They concluded that a 1 percent increase in FDI will raise the value of stock market share by 45-50 percent.

In the case of Pakistan, there is no study being done on investigating the impact of FDI on stock market development in Pakistan except Raza, Iqbal, Ahmed (2012). Few studies have been investigated the relationship between stock prices and some macroeconomic variables (i.e. consumption, investment, gross domestic product, index ofindustrial production). For example, Husain and Mahmood (2001) indicated one-way causation from macroeconomic variables to stock prices. Nishat and Shaheen (2004) reported that bidirectional causality exists between industrial production and stock prices.

Rashid (2008) found long-run relationship between real interest rate, consumer prices index, nominal exchange rate and stock prices. Shahbaz, Ahmad and Ali (2008) reported bidirectional causality between stock market capitalization and economic growth. Sohail and Hussain (2011) reported that inflation, GDP and exchange rate are positively linked with stock prices but money supply and three months treasury bills rate have inverse affect on stock prices. Khan and Zaman (2012) reported that gross domestic product and exchange rate raise stock prices while consumer price index declines it.

Recently, Raza, Iqbal, Ahmed (2012) reported that FDI increases stock market capitalization. The result is expected spurious because they just examined the relationship with OLS. An effort is made in this paper to investigate the relationship of some macroeconomic variables in general and FDI in particular with the stock market development in a multivariate framework.

III. STOCK MARKET AND FDI IN PAKISTAN

Stock market in Pakistan is classified as one of the fastest growing stock market in emerging economies. Karachi Stock Exchange (KSE) is the biggest exchange as well as a major source of capital formation in Pakistan. The local and foreign investor's confidence to the investment environment of Pakistan has boosted the stock prices in recent years. The benchmarked stock index, KSE-100 index increased from 1,521 points on June 30, 2000 to 12,130.5 points on May 30, 2008 – a rise of over 10,000 points or 700 percent (Pakistan Economic Survey, 2008). The listed capital at KSE has increased from Rs 236.4 billion in 2000 to Rs 690.1 billion in 2008. KSE is the most liquid exchange in Pakistan. By the end of July 2008, 652 companies are listed with total paid

up capital of Rs 690.1 billion. Although the turnover of shares declined in 2007 but it showed downward trend again in 2008 (Table1). Some major sectors contributed extraordinary to the performance of the stock market in 2008. These sectors include fuel and energy, banks and financial institutions, transport and communication, and chemicals and pharmaceuticals.

TABLE 1-PROFILE OF KARACHI STOCK EXCHANGE

	2005	2006	2007	2008
Number of Listed Companies	659	658	658	652
Fund Mobilized (Rs billion)	54.0	41.4	49.7	49.2
Listed Capital (Rs billion)	438.5	496.0	631.1	690.1
Turnover of Shares (Rs billion)	88.3	104.7	68.8	56.9

Source: Pakistan Economic Survey 2008.

Lahore Stock Exchange (LSE) is the second biggest stock market in Pakistan. LSE index showed a bullish trend during the period of 2004-2008. Aggregate market capitalization increased from Rs 1995.3 billion to Rs 4129.8 billion in 2008 (Pakistan Economic Survey, 2008). The third stock market, Islamabad Stock Exchange also showed a bullish trend in its index that increased from 2432.6 in 2005 to 3536.8 in 2008 (Pakistan Economic Survey, 2008).

Several contributing factors play their role in booming the business in stock market. For example, country's economic fundamental, stability in exchange rate, high corporate earnings, recovery of outstanding/overdue loans, large scale mergers and acquisitions, and improving relationship with the neighboring countries etc. have profound effect on the activity of the stock market. Robust economic growth during 2000-2007 contributed much to the development of the stock exchange market.

TABLE 2- NET INFLOW OF FOREIGN DIRECT INVESTMENT BY GROUP (US$ MILLION)

Economic Group	2003	2004	2005	2006	2007	July –March	
						2007	2008
1. Food, Bev. & Tobacco	7.0	4.6	22.8	61.9	515.8	489.8	33.3
2. Textiles	26.1	35.5	39.3	47.0	59.4	46.8	22.3
3. Sugar, Paper and pulp	2.3	2.1	4.3	5.1	17.4	15.8	9.6
4. Leather & Rubber	1.2	3.5	6.5	8.2	7.3	6.2	4.6
5. Chemicals and Petrochemicals	86.9	16.8	52.1	72.4	52.5	31.8	85.3
6. Petroleum refining	2.2	70.9	23.7	31.2	155.2	98.7	61.7
7. Mining and Quarrying	1.4	1.1	0.5	7.1	23.7	20.5	22.0
8. Oil and Gas Explorations	186.8	202.4	193.8	312.7	545.1	421.9	465.5
9. Pharmaceuticals and OTC products	6.2	13.2	38.0	34.5	38.4	25.7	38.6
10. Cement	-0.4	1.9	13.1	39.0	33.7	13.4	89.5
11. Electronics and Other machinery	17.6	17.0	16.5	21.0	22.0	15.7	36.5
12. Transport Equipment	0.6	3.3	33.1	33.1	50.4	36.7	73.3
13. Power	32.8	-14.2	73.3	320.6	204.6	125.1	39.8
14. Construction	17.6	32.0	42.7	89.5	157.1	114.4	69.7
15. Trade	39.1	35.6	52.1	118.0	173.4	130.9	148.7
16. Communications	24.3	221.9	517.6	1937.7	1898.7	1411.6	923.0
17.Telecommunications	13.5	207.1	494.4	1905.1	1824.3	1350.0	811.6
18. Financial Business	7.6	242.1	269.4	329.2	930.1	696.0	685.6
19. Social and other Services	19.7	16.4	24.7	64.7	88.4	72.3	86.1
20. Others	28.8	33.1	78.9	65.5	166.1	85.7	144.1
Total	798.0	949.4	1524.0	3521.0	5139.6	3859.1	3850.8

Source: Pakistan Economic Survey 2008.

The development of stock market indicates the aggregate level of investment. Total capital assets in the market show the size of the stock market. Pakistan is striving for attracting FDI in order to achieve the country's macroeconomic objectives. FDI has emerged as an important source of capital in Pakistan. Pakistan managed to get US$3.6 billion worth of foreign investment during 2008. The overall foreign investment in Pakistan is comprised of two components – FDI and portfolio investment (i.e. investment in equity market). US, UK, Netherlands, China and UAE are the major sources of foreign private investments in Pakistan.

FDI stood at US$3038 million during July-March (2007-08) against US$3859.1 million in the same period during 2007 showing a decline of 0.2%. Three sectors namely; communication, financial business and oil and gas explorations account for 67% of FDI inflows in the country (Table 2). The amount of reinvested earning has been increased over the last four years indicating the confidence of the existing foreign investors on the future prospects of Pakistan's economy.

IV. DATA AND METHODOLOGY

The following equation[a] is estimated to examine the impact of FDI on stock market development:

$$\ln MC_t = \alpha_1 + \alpha_2 \ln FDI_t + \alpha_3 \ln GNPC_t + \alpha_4 \ln SAV_t + \alpha_5 INF_t + \mu_t \quad (1)$$

where MC = market capitalization as share of GDP as proxy for stock market development, FDI = foreign direct investment as share of GDP, GNPC = GNP per capita as proxy for economic growth, SAV = domestic savings as share of GDP, INF = inflation rate and μ_t is the error term. All variables are transformed into the natural logarithm form except INF[b].

We obtain the annual data from different sources with sample period ranges from 1971 to 2006. GNP per capita and FDI are collected from World Development Indicators (WDI, 2007). We get the domestic savings rate from Economic Survey of Pakistan (2007) and market capitalization from Statistical Bulletins of State Bank of Pakistan. International Financial Statistics provides us the inflation rate.

Justification of variables taken in the model is discussed below:

Market capitalization: Stock market development is usually measured by stock market's size, liquidity, volatility, concentration, and integration with world capital markets. Market capitalization is defined as the total market value of all listed shares. Following Adam and Tweneboah (2009), market capitalization as a proportion of GDP is used as a proxy for stock market development. Garcia and Liu (1999) argued that this measure is less arbitrary than other measures of stock market development.

FDI: The relationship between FDI and stock market development has been widely discussed in the literature (Errunza, 1983; Gracia and Liu, 1999; Yartey and Adajasi, 2007 and Adam and Tweneboah, 2009). FDI may either complement or substitute the development of stock market.

GNP per capita: Numerous studies have suggested that economic growth and stock market development are positively related to each other (Spears, 1991; Atje and Jovanovic, 1993; Garcia and Liu, 1999; Luintel and Khan, 1999). In this paper, it is hypothesized that economic growth promotes stock market development.

Domestic savings: Higher rate of domestic savings in an economy accelerates stock market's activities. Garcia and Liu (1999) found a strong statistical positive relationship between stock market development and savings. This infers that larger savings boost higher amount of capital flows through stock markets.

Inflation: Garcia and Liu (1990) and Naceur, Samir, Omran (2007) used inflation rate as a proxy for macroeconomic stability in their empirical studies and found a positive relationship between the economic stability and stock market development. Shahbaz (2007) also supported the positive relationship between nominal stock returns and inflation in Pakistan.

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[a] Log-linear specification performs betters compare to the simple linear model. Ehrlich (1977) and Layson (1983) argued on theoretical and empirical grounds that log-linear specification makes results more favorable.

[b] Inflation is used rather than price index because we get the data directly from International Financial Statistics. Since INF is in the format of growth rate, it is no need to be transformed into natural logarithm.

A. ARDL Approach for Cointegration

Pesaran, Shin, Smith (2001) established an advanced approach to examine cointegration among variables. This approach is termed as Autoregressive Distributive Lag (ARDL**)** boundstest. The ARDL model can be applied without investigating the order of integration (Pesaran and Pesaran, 1997). It is well known that most macroeconomic variables are integrated at either I(0) or I(1). Haug (2002) argued that the ARDL approach for cointegration presents better results for small sample data compare to other techniques for cointegration such as Engle and Granger (1987), Johansen (1991) and Philips and Hansen (1990).

Furthermore, the unrestricted error correction model (UECM) seems to take satisfactory lags that captures the data generating process in a general-to-specific framework of specification (Laurenceson and Chai, 2003). However, Pesaran and Shin (1999) contented that "appropriate modification of the orders of the ARDLmodel is sufficient to simultaneously correct for residual serial correlation and the problem of endogenous variables". The UECM is being constructed to examine the long-run and short-run relationships among the variables:

$$\begin{aligned}\Delta \ln MC_t = {} & \alpha_0 + \alpha_1 T + \alpha_{MC} \ln MC_{t-1} + \alpha_{FDI} \ln FDI_{t-1} + \alpha_{GNPC} \ln GNPC_{t-1} + \alpha_{SAV} \ln SAV_{t-1} \\ & + \alpha_{INF} INF_{t-1} + \sum_{i=1}^{m} \beta_i \Delta \ln MC_{t-i} + \sum_{j=0}^{n} \delta_j \Delta \ln FDI_{t-j} + \sum_{k=0}^{o} \phi_k \Delta \ln GNPC_{t-k} \\ & + \sum_{l=0}^{p} \varphi_l \Delta \ln SAV_{t-l} + \sum_{m=0}^{q} \gamma_m \Delta INF_{t-m} + \mu_t \end{aligned} \tag{2}$$

where T is trend[c].

Equation (2) presents two segments of results. The first part indicates the long association between the variables such as $\alpha_{MC}, \alpha_{FDI}, \alpha_{GNPC}, \alpha_{SAV}, \alpha_{INF}$ while $\beta, \delta, \phi, \varphi$ and γ explore the short-run dynamic relationships. On the other hand, μ_t refers to the error term and *m*, *n*, *o*, *p* and *q* are the number of lags for the difference terms of the variables. The hypothesis of no cointegration ($\alpha_{MC} = \alpha_{FDI} = \alpha_{GNPC} = \alpha_{SAV} = \alpha_{INF} = 0$) is examined. The decision about cointegration is based on the computed F-statistic. The critical bounds to compare with the F-statistic have been tabulated by Pesaran, Shin, Smith (2001) and later by Narayan (2005) for small samples. The upper critical bound (UCB) is based on the assumption that all variables are integrated at I(1) and the lower critical bounds (LCB) variables should be integrated at level. If UCB is lower than the F-statistic, then the decision is in favor of cointegration among the variables. This indicates the existence of long run relationship among the variables. If the F-statistic is less than LCB, then it favors no cointegration among the variables. The decision about cointegration will be inconclusive if the F-statistic falls between UCB and LCB. In such situation, we will have to rely on the finding of lagged error correction term (ECT) for cointegration to investigate the long run relationship.

[c] T is included in the model to capture the trend that appears in all series.

If there is long run relationship among the variables, the short run behavior of variables is investigated by the following ECM:

$$\Delta \ln MC_t = \delta_1 + \sum_{i=0}^{m} \delta_2 \Delta \ln MC_{t-i} + \sum_{j=0}^{n} \delta_3 \Delta \ln FDI_{t-j} + \sum_{k=0}^{o} \delta_4 \Delta \ln GNPC_{t-k} + \sum_{l=0}^{p} \delta_5 \Delta \ln SAV_{t-l} + \sum_{m=0}^{q} \delta_6 \Delta INF_{t-m} + \eta ECM_{t-1} + \mu_t \quad (3)$$

where *m*, *n*, *o*, *p* and *q* are the lag length of the variables respectively which is selected following AIC criteria. It is documented that if the value of lagged ECM is between 0 and -1, then adjustment to the dependent variable in current period is the ratio of error in the previous period. In such situation, ECM causes the dependent variable to converge to long span equilibrium due to variations in the independent variables. The goodness of fit for ARDL model is checked through stability tests such as cumulative sum of recursive residuals (CUSUM) and cumulative sum of squares of recursive residuals (CUSUMSQ). Finally, sensitivity analysis is also conducted.

V. EMPIRICAL RESULTS

ARDL has the advantage of avoiding the classification of variable into *I(0)* or *I(1)* as there is no need for unit root pre-testing. According to Sezgin and Yildirim, (2002), in the presence of *I(2)* variables, the computed F-statistics provided by Pesaran, Shin, Smith (2001) become invalid because bounds test is based on the assumption that the variables are *I(0)* or *I(1)* or mutually cointegrated. Therefore, the implementation of unit root test in the ARDL procedure might still be necessary to ensure that none of the variable is integrated at order 2 or beyond. For this purpose, Augmented Dickey Fuller (ADF) unit-root test has been employed to find out the order of integration for all series in this study. The results in Table 4 show that INF is *I(0)* while MC, FDI, GNPC and SAV are *I(1)*. This dissimilarity in the order of integration of the variables leads us to support the implementation of ARDL bounds testing approach for cointegration[d].

TABLE 4-UNIT ROOT RESULTS

Variables	Level		First Difference	
	Intercept and trend	Prob-value	Intercept and trend	Prob-value
lnMC	-2.8223	0.2001	-5.0297*	0.0015
lnFDI	-3.0809	0.1269	-7.4962*	0.0000
lnGNPC	-1.3699	0.8506	-6.0279*	0.0001
INF	-3.6526**	0.0400	-4.8539*	0.0023
lnSAV	-3.1266	0.1170	-5.2366*	0.0009

Note: * and ** represent significant at 1% and 5% respectively.
Source: authors' calculation

[d] We use EViews 7.1 for the empirical analysis.

TABLE 5-LAG LENGTH SELECTION AND F-STATISTICS

Order of lags	Akaike Information Criteria	Schwartz Bayesian Criteria	F-Statistics
0	5.9335	6.1580	3.4517
1	2.6781	4.0249	4.8281***

Note: *** represents significant at the 10% level.
Source: authors' calculation

Now we turn to the two-step ARDL cointegration procedure. In the first stage, we use an UECM version of the ARDL model for equation 2, to obtain an appropriate lag order of the variables by means of Akaike Information Criterion (AIC), which is 1 based on the minimum value of AIC as shown in Table 5. The result of the bounds testing approach for cointegration posit that the calculated F-statistic is 4.83which is higher than the upper level of bounds critical value of 4.78 at the 10 percent level of significance. The critical value is referred from Pesaran, Shin, Smith (2001). This implies that there is a cointegration relationship among the variables. Long-run elasticities are reported in Table 6 through the ARDL estimation.

TABLE 6-LONG-RUN ELASTICITIES

Variables	Dependent Variable = lnMC					
	Coefficient	T-statistics	Prob-value	Coefficient	T-statistics	Prob-value
Constant	-11.083	-1.327	0.1944	3.249	0.457	0.6503
lnFDI	0.409	1.994	0.0553	1.220	2.992	0.0054
$lnFDI^2$	-	-	-	0.159	1.852	0.0734
lnGNPC	0.341	3.530	0.0014	0.204	2.639	0.0129
INF	0.050	1.985	0.0564		-	-
lnSAV	1.353	2.002	0.0544	1.205	2.291	0.0289
	R-squared = 0.8567 Adjusted R-squared = 0.8376 Durbin-Watson stat = 1.55 Akaike info criterion = 2.5615 F-statistic = 44.84			R-squared = 0.8665 Adjusted R-squared =0.8492 Durbin-Watson stat = 1.44 Akaike info criterion = 2.4953 F-statistic = 50.28		

Source: authors' calculation

It is documented that one percent increase in FDI is associated with a 0.4 percent increase in market capitalization. This confirms that the relationship between FDI and stock market development is complementary. Economic growth is linked positively with the development of stock markets in Pakistan. The impact of inflation on stock market development is positive but minimal. The positive association between inflation and stock market development supports that Pakistan's stock markets are hedge against inflation. In other words, stock market is an alternative place for investors to hedge their risk against inflation in Pakistan. Domestic savings seem to improve the efficiency of stock market in the country. It is concluded that 1 percent increase in domestic savings increases growth of stock markets by 1.35 percent.

The non-linear impact of FDI is also checked by including squared term of LFDI in the model[e]. The result (Table 6 right hand panel) again confirms that the non-linear impact of FDI on stock market is positive and significant. This finding supports the argument of Claessens, Daniela, Schmukler (2001) that FDI is playing a complementary role in stimulating the stock market development.

Table 7 reports the results of short-run dynamics of variables estimated from ECM. The existence of ECM among the cointegrated variables implies that change in the dependent variable is a function of both the levels of disequilibrium in the cointegration relationship and the changes in the other explanatory variables. This tells us that any deviation from the long-run equilibrium will feed back on the change in the dependent variable in order to force the movement towards the long-run equilibrium (Masih and Masih, 2002). The coefficient of lagged ECM shows speed of adjustment from short run to long span of time and it should have a statistically significant estimate with negative sign. According to Bannerjee, Dolado, Mestre (1998) "a highly significant lagged ECM is further proof of the existence of stable long-run relationship". The coefficient of ECM_{t-1} is -0.709 implies that deviation from the long-term economic growth is corrected by 70.9 percent over each year.

TABLE 7 - SHORT RUN DYNAMICS

Dependent Variable: ΔlnMC			
Variable	Coefficient	T-Statistic	Prob-value
Constant	0.104	0.949	0.3504
ΔlnFDI	0.210	1.652	0.1097
ΔINF	-0.011	-0.413	0.6830
ΔlnGNPC	2.076	2.686	0.0120
ΔlnSAV	-0.935	-1.282	0.2104
ECM_{t-1}	-0.709	-4.667	0.0001
R-squared = 0.4761			
Adjusted R-squared = 0.3825			
Akaike info criterion = 1.972			
F-statistic = 5.089			
Prob(F-statistic) = 0.002			
Durbin-Watson stat = 1.984			
Sensitivity Analysis			
Serial Correlation Test = 1.9079 (0.1827)			
ARCH Test = 0.6802 (0.5146)			
Heteroskedasticity Test = 1.7967 (0.4210)			

Source: authors' calculation

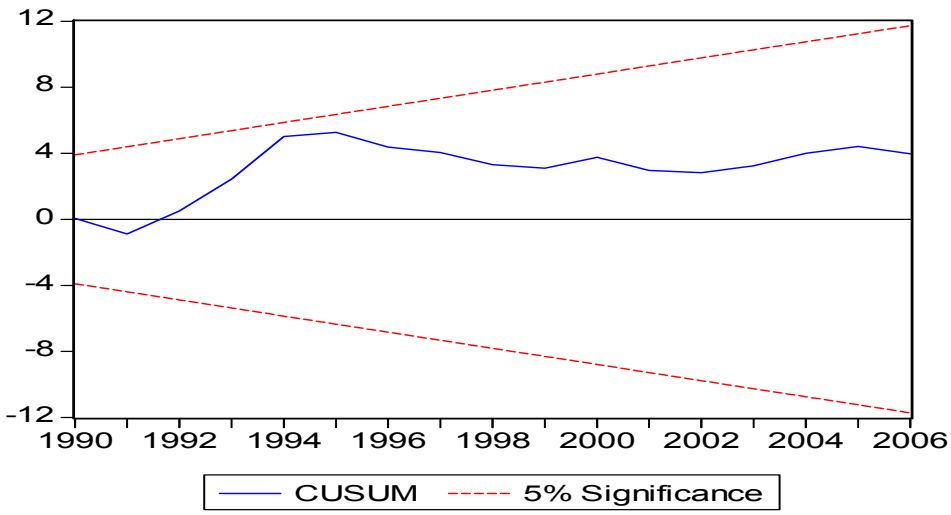
[e] INF is insignificant at 10% level of significance based on t-statistics; hence, we exclude INF from the model.

In the short-run, FDI is linked positively to the stock market development. The positive sign between these two variables again shows that FDI and stock market development nexus is complementary in short span of time. Increase in inflation and domestic saving is associated negatively with stock market development but the relationships are insignificant. This implies that inflation and domestic saving may take time to show their impact on stock market development. GNP per capita and stock market development are correlated positively and GNP per capita is showing dominating impact on stock market development in short-run.

VI. SENSITIVITY ANALYSIS

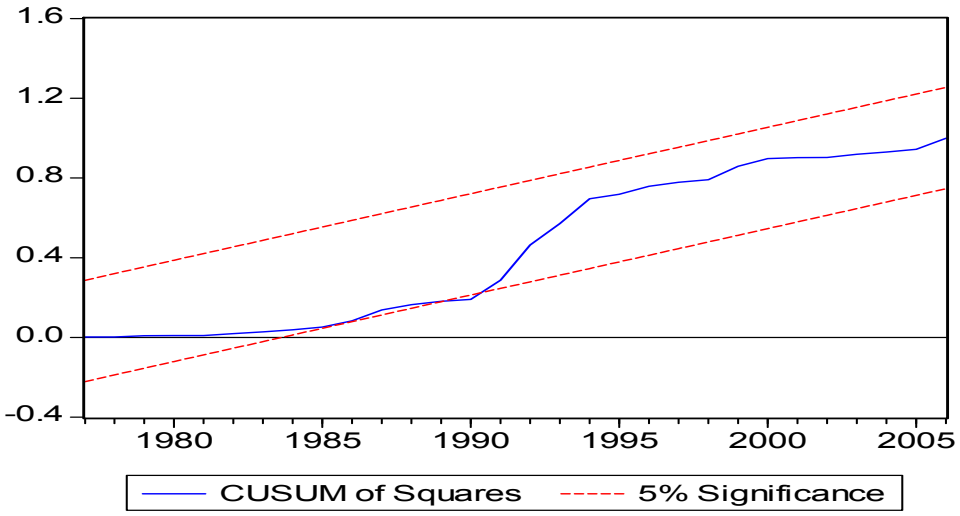
To check for the serial correlation, autoregressive conditional heteroskedasticity (ARCH) and White heteroskedasticity for the model related diagnostic tests have been conducted. Table 7reports that the model passes the diagnostic tests. No evidence of autocorrelation, heteroskedasticity and ARCHis found in the model. Finally, the stability of the long-run coefficients together with the short-run dynamics are checked by the CUSUM and CUSUMSQ with recursive residual as shown in Figures 1 and 2.Bahmani-Oskooee and Nasir (2004) stated that null hypothesis that the regression equation is correctly specified cannot be rejected if the plot of these statistics remains within the critical bounds of the 5% significance level. Figure 1 and Figure 2 show that the plots of both the CUSUM and the CUSUMSQ are within the boundaries. These plots confirm the stability of the long-run coefficients of regressors that affect the stock market development.

FIGURE 1. PLOT OF CUMULATIVE SUM OF RECURSIVE RESIDUALS



Note: The dotted lines represent critical bounds at 5% significance level.
Source: Authors' estimation.

FIGURE2. PLOT OF CUMULATIVE SUM OF SQUARES OF RECURSIVE RESIDUALS



Note: The dotted lines represent critical bounds at 5% significance level.
Source: Authors' estimation.

VII. CONCLUSION AND POLICY IMPLICATIONS

This paper identifies macroeconomic variables with particular emphasis on FDI that affect stock market development in Pakistan. The empirical results indicate a significant positive relationship between FDI and market capitalization in the long-run. This infers the complementary role of FDI to the stock market development in Pakistan. Savings also show a strong positive relationship with the stock market development in the long-run. Impact of GNP implies that economic growth is imperative for the development of stock market in Pakistan. In the short run, FDI and economic growth have positive impact on stock market development. Although inflation and domestic savings are inversely linked with stock market development but they are statistically insignificant.

Stock market is a key element of the modern and market-based economic system because it serves as the main channel to collect funds from depositors to borrowers. As FDI is complement to the development of stock market, the Pakistan government should attract FDI by taking various steps such as 1) assurance of political stability in the country 2) adequate provision of infrastructure 3) minimize thevolatility of foreign exchange and the rate of interest through appropriate and effective monetary policy 4) incentives such as tax exemption, improve the infrastructure in the country etc.

Furthermore, the government should take some appropriate steps to improve the efficiency and transparency of the primary market. It will not only strengthen the government securities in the stock market but also improve efficiency and development of secondary market. Government should encourage FDI in stock market as well to enhance competition, creation of new job opportunities by transferring new technology and skill.

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UTJECAJ IZRAVNIH STRANIH ULAGANJA NA RAZVOJ TRŽIŠTA DIONICA: DOKAZ IZ PAKISTANA

Sažetak: Zemlje u razvoju doživljavaju promjene u sastavu tokova kapitala u svojim gospodarstvima radi ekspanzije i integracije svjetskog tržišta kapitala. Ovaj rad istražuje utjecaj izravnih stranih ulaganja na razvoj tržišta dionica u Pakistanu. Ključni interes se vrti oko komplementarne ili zamjenske uloge izravnih stranih ulaganja u razvoju tržišta dionica. Za analizu su korišteni ARDL granični test za kointegraciju i ECM. Rezultati podupiru tezu o komplementarnoj ulozi izravnih stranih ulaganja u razvoju tržišta dionica u Pakistanu. Osim toga, domaća štednja, prihodi i inflacija su ostale makroekonomske varijable koje utječu na razvoj tržišta dionica u Pakistanu.

Ključne riječi: Razvoj tržišta dionica, izravna strana ulaganja, Pakistan, komplementarna uloga, kointegracija

EKONOMSKA ISTRAŽIVANJA-ECONOMIC RESERACH
ISSN 1331-677X print

2013 Volume 26(1): 33-48

THE REGIONAL LOCATION DECISION OF FOREIGN DIRECT INVESTMENTS IN ROMANIA

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ARTICLE INFO

Article data:
- Received: 26 July 2012
-Accepted: 20 October 2012

JEL classification: F21, F2, R11

Keywords:
-Foreign direct investments,
-Regional investment determinants
-Location choice

ABSTRACT

The regional attraction of foreign direct investments is expected to evolve into an enhancement of local advantages. In this paper we identified the most important benefits which brought the most significant impact on the number of newly established companies with foreign capital at regional level in Romania. Using a nested logit model we described a two stage decision process where the investor first chooses a group of regions with common characteristics, such as the closeness to the capital or to the main transportation routes, and then chooses the specific region from within this group. The main factors of attractiveness are identified in order to be used for stimulating a more equal regional development. Reducing disparities in this way can help to a more advanced economic development of the foreign direct investments' host country.

the paper, comprising about 100 words, should include the purpose and the aims of the paper, methods used, paper structure, basic results, and the conclusion concerning the possible application of the results and the conclusion concerning the possible application of the results.

Reference to this paper should be made as follows: Popescu, R.G., 2013. The regional location location decision of foreign direct investments in Romania, *Ekonomska istraživanja – Economic Research 26(1): 33-48.*

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I. INTRODUCTION

FDI has been an important development factor in Romania, maybe not so much through the amount of capital that was invested, but mainly through the spillovers they created in terms of knowledge, technology and commercial relations. From the regional perspective, some well known agglomerations were formed around the main cities, especially around the capital. Noticing these benefits, it becomes clear that a good way of enhancing competitiveness in lagging regions is to boost FDI taking advantage on the information we can obtain about the location determinants.

There has been a lot of preoccupation in the academic world about the location choice of foreign direct investment companies, trying to establish how a proper decision can be taken, considering the main determinants.

The usual perspective is that of the investor and of the country of origin. The purpose of such analysis is to stress the benefits and the losses of location decision into a certain place with special characteristics. The focus of this article is headed towards the country which receives FDI and struggles to obtain most of the possible advantages. The strategy is constructed on creating an attractive environment for the investors. This should be mainly correlated with the needs of each region, in order to reduce disparities through regional development, and to the general development strategy of the country. The purpose of this article is to identify through what kind of determinants we can attract more investors at regional level in Romania.

We use a two stage nested logit model (McFadden, 1974[1]) to estimate the foreign direct investment location patterns of the eight development regions of Romania (NUTS II) and the process of location decision. Our sample includes all the companies that were established in each development region between 2003 and 2010. Our findings prove that foreign companies are more likely to invest in areas with high income, comparing to other regions, targeting markets with high potential demand.

In the remainder of the paper we included the following: part 2 contains a short summary of the related literature, part 3 is a presentation of the methodology, part 4 clearly describes the data and regional determinants of FDI stating the theoretical hypothesis, part 5 exposes the estimated results and part 6 consists in the conclusions of the empirical analysis.

II. RELATED LITERATURE

The literature regarding the location of FDI is divided in two basic categories: a classification and detailed description of the local and the firm level determinants, which is a more theoretical part, and the domain of the spatial econometric analysis of the decision process, which has been less explored.

According to theoreticians, the strongest determinants of foreign direct investments are those which allow the profit maximization. Within the neo-classic theory, this objective can be attained either through satisfying the demand and ignoring the costs (Krugman, 1991[2]), either through minimizing the costs and ignoring the demand (McCann, 2002[3]). The new directions of this theory evolved in what is called 'evolutionary economic geography', which affirms that on the real market, economic agents look for profit maximization by the means of satisfying the

[1]McFadden, D.„Conditional logit analysis of qualitative choice behaviour". In: Frontiersin econometrics Academic edited by Zarembka P, New York, pp. 105–142, (1974)
[2] P. Krugman, „Increasing returns and economic geography". J Polit Econ 99, 3 (1991): 484–499.
[3] P. McCann, „Classical and neoclassical location-production models". In Industrial location economics, edited by McCann P. (Cheltenham: Edward Elgar, 2002).

demand and minimizing the costs in the same time, taking most of the advantages of the permanently evolving characteristics of the markets (Jovanovic, 2010[4]; Boschma and Martin, 2010[5]).

The literature about the empirical explorations of such theoretical regional factors of attractiveness for foreign direct investments uses mainly the discrete choice methodology based on the random utility maximization framework, initiated by McFadden (1974)[6]. Carlton (1983)[7] adapted this methodology to the location choice model, which has met a few versions (Train,2003[8]).

The nested logit model allows the description of the decision process based on several levels of grouping (nesting) the alternatives according to some arbitrary characteristics which are not found among the explanatory variables. This model was used in several studies to describe the location decision process at different regional level, in different countries or across countries and in different periods of time. But the most important difference between these studies relies in the choice of the set of determinants.

In a discrete choice model, the company chooses the location were the highest utility or profit can be obtained. The utility is influenced by several factors according to the specific activity of each company. Mainly, if the company wants a horizontal development, it will try to find a location which brings the highest market potential (Yeaple, 2009[9]). If the company looks for a vertical development, it will try to minimize the costs (Bloningen et al, 2007)[10].

Last but not least, the existent literature is written mainly from the perspective of the investor, explaining how the location decision should be based on the most effective existent regional benefits: Pusterla and Resmini (2007)[11] – Italian investments in Central and Eastern Europe, Disdier and Mayer (2003)[12] – French investments in Central and Eastern Europe, Hayakawa and Tsubota (2011)[13] – Japanese investments in developing countries. In this article, we want to emphasize the poles of competitiveness in Romania and the main local advantages that attract foreign direct investments in order to improve regional development reducing disparities.

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[4]Miroslav Jovanovic, Evolutionary Economic Geography. Location of production and the European Union (New York: Routledge Studies in Global Competition, 2010).

[5] R. Boschma and R. Martin, R. "The aims and scope of evolutionary economic geography". In The Handbook of Evolutionary Economic Geography edited by R. Boschma and R. Martin. (Cheltenham: Edward Elgar, 2010).

[6]McFadden, D.„Conditional logit analysis of qualitative choice behaviour". In: Frontiersin econometrics Academic edited by Zarembka P, New York, pp. 105–142, (1974)

[7] D. Carlton, „The location and employment choices of new firms: an econometric model with discrete and continuous endogenous variables", Rev Econ Stat65 (1983): 440–449.

[8] Train (2003) used a mixed logit model obtaining a correlations across the location options.
K. Train, Discrete choice methods with simulation (Cambridge: Cambridge University Press, 2003).

[9]S.Yeaple, „Firm Heterogeneity and the Structure of U.S. Multinational Activity". Journal of International Economics 78, 2 (2009): 206-215.

[10]B. Bloningen and others, "FDI in space: Spatial Autoregressive Relationships in Foreign Direct Investments". European Economic Review, 51, no. 5 (2007): 1303-1325.

[11] F. Pusterla and L. Resmini „Where do foreign firms locate in transition countries? An Empirical Investigation", The Annals of Regional Science 41, 4 (2007): 835-856.

[12] A.C. Disdier, A.C and T. Mayer, T. „How different is Eastern Europe? Structure and determinants of location choices by French firms in Eastern and Western Europe", J Comp Econ 32,2 (2003): 280–296.

[13] K. Hayakawa and K. Tsubota, „Location Choice in Low-income Countries: Evidence from Japanese Investments in East Asia". Institute of Developing Economies, Japan External Trade Organization (JETRO) in its series IDE Discussion Papers with number 301, Chiba, Japan, pp. 1-30, (2011).

III. THE NESTED LOGIT MODEL

We estimate using the discrete choice model of foreign companies at subnational level in Romania, the indicators which are expected to have a significant influence over the location choice. We evaluate the factors that determine the attraction of the investors for certain geographical areas in Romania. These are actually competitive advantages of these regions.

The nested logit model (McFadden, 1974)[14] shows the way in which the particularities of a region affect the company's profitability comparing to other regions.

According to this model, the choice made by the investor takes place on the grounds of a profit function, as an expression of utility. So, the investor follows the profit maximization analyzing the regional indicators and the company's strengths and weaknesses:

$\pi_{ij} = x_{ij}\beta + \varepsilon_{ij,}$

where $\pi_{ij} > \pi_{il} \forall l \neq j,$ l = 1, 2, ... J and ε_{ij} is the random part.

The probability that a certain location is chosen from the set of available alternatives j by the investor i is given by the relation:

$$P_j = \frac{exp^{bX_j}}{\sum_{i=1}^{n} exp^{bX_i}} \quad (1)$$

The set of alternatives j are grouped into k non-overlapping subsets, called nests, according to similar unobserved characteristics. The investor chooses a specific location for implantation, which is part of a nest; therefore the decision is taken at once. Nevertheless, this is called a two stage nested logit model, but usually a nested logit model can be used for several levels of decision. It is named according to the number of levels of the nesting structure due to the fact that the nest specific characteristics are also important in the decision process, not only the characteristics of the alternatives. It is worth mentioning that the decision maker compares the attributes of the alternatives before taken its decision. Because of the hierarchical structure, the utility that the investor assumes for its choice depends of the characteristics of each level.

The vector of characteristics x_{ij} describes the advantages of the location j (ex. market potential) and of each firm i (ex. firm size). $x_{ij}\beta$ is the nonstochastic profit and takes different values for each company that locates in an alternative within the nests. Within this function, ε is the random variable, which follows the generalized extreme value (GEV) distribution, having a cumulative distribution as follows:

$$\exp\left[-\sum_{k=1}^{K}\left(\sum_{j\in G_k} exp\left(\frac{-\varepsilon_{ij}}{IV_k}\right)\right)^{IV_k}\right] \quad (2)$$

IV is the inclusive value parameter, also called the dissimilarity parameter and it measures the degree of independence among the alternatives within the group $G_{k.}$

The problem of heteroscedasticity is partially solved because the inclusive values parameters are included in the nested logit model. The IV parameters must belong to the (0,1) interval for the consistency with the random utility model, the condition being sufficient.

In the case that the J alternatives are grouped in K nests, the probability that a company decides to establish in region j, included in the group k, is given by the relation:

[14]McFadden, D„Conditional logit analysis of qualitative choice behaviour". In: Frontiersin econometrics Academic edited by Zarembka P, New York, pp. 105–142, (1974)

$$P_{kj} = P_{j/k} * P_k = \frac{exp^{x_{jk}\beta}}{\sum_{j\in k} exp^{x_{jk}\beta}} * \frac{exp^{(z_k\gamma+\sigma_k IV_k)}}{\sum_k exp^{(z_k\gamma+\sigma_k IV_k)}} \quad (3)$$

Where x_{jk} is the vector of characteristics specific to the region j from the nest k and z_k is the vector of characteristcs of the nest k.

The inclussive value:

$$IV_k = \ln \sum_{j\in k} exp^{x_{jk}\beta} \quad (4)$$

denotes the average utility that the investor can expect from the region within each nest k. The parameter of the inclusive value belongs to the (0,1) interval if the nested logit model is the correct model, and it represents the degree of independence between the unobserved parameters. It is also a necessary condition to obtain the profit maximization. If $\sigma_k = 1$, there is no correlation between the elements of a nest, the nesting structure is not plausible and the model becomes a conditional logit.

The model is tested through the log-likelihood function, which should be maximised in order for the nesting structure to hold:

$$\mathrm{LL}(\beta) = \sum_{i=1}^{I} \sum_{k=1}^{K} \sum_{j\in G_k} y_{ij} \ln P_{kj} \quad (5)$$

y_{ij} represents a binary variable which indicates the choice made by the investor i taking the value 1 for the chosen region and 0 for all the others.

The final location alternatives are grouped in accordance to their level of similarity. The possible choices are grouped in a manner that allows maximum correlation within a single group and minimum correlation between groups. The investor chooses firstly the nest and afterwards, in a second step, the region.

In order to test the model, Mc Fadden (1974) used a likelihood ratio index, similar to the R^2 from the linear regression model. This index belongs to the $[0, 1]$interval. Estrella (1998)[15] suggested that the goodness-of-fit-measures can be established through the following formula:

$$R_{E1}^2 = 1 - \left(\frac{\ln L}{\ln L_0}\right)^{-\frac{2}{N}*\ln L_0} \quad (6)$$

This measure should also belong to the unit interval and if it is 0, there is no fit, while if it equals 1, there is perfect fit. It is interpreted in relation to the level of significance of the estimated coefficients.

Because the choice of the nesting structure is in somehowrandom (Louv[16]iere et al. 2000),we tried several combinations according to the know similarities between the regions: the level of economic development, the existence of traditional industries, the closeness to the Western borders (borders with EU members), to the capital and to important Black Sea and Danube ports.

IV. DATA

The data will be at NUTS II level (Eurostat) corresponding to the eight regional development regions. The determined variable of this model is the location decision of the companies with

[15]Estrella, A. „A New Measure of Fit for Equations with Dichotomous Dependent Variables", Journal of Business & Economic Statistics, American Statistical Association 16, 2 (1998): 198-205.
[16] J. Louviere, D. Henscher and J. Swait, Stated choice method. Cambridge: Cambridge University Press, 2000.

foreign capital which established in each region of development from Romania, between 2003 and 2010[17]. This variable takes the value 1 for the host region and 0 for all the others. The total number of companies which were registered within this period of time is 81708.

The regional characteristics that we included in the study are the explanatory variables and it was lagged one year because we consider that the investor founds its decision on the data from the previous year. Explanatory variables have been expressed in log form to be able to set a relation of proportionality between a one percent change in the explanatory variable and the location decision in one region.

Due to the data availability and the connection that we are waiting to obtain between several indicators and the location decision of foreign direct investments, we chose a series of explanatory variables under the following categories: (1): the market potential – *the regional GDP*[18] (Disdier and Mayer, 2003)[19]; (2) the labor market[20] (quality and availability of work force, labor costs): *the number of employees*(Hilber and Voicu, 2007[21]), *the average net wage* (Traistaru, 2001[22]; Goschin, 2008[23]; Pusterla and Resmini, 2007)[24], *the number of students from universities* (Hilber and Voicu, 2007[25]), *the number of employees* and *total expedintures from the research and developement* (Trăistaru, 2001[26]); (3) Agglomerations: *the stock of FDI*[27], *the turnover* and the *gross investments* of the foreign and local companies together[28] (Hilber and Voicu, 2007; Trăistaru, 2001[29]); (4) The political dimension - indicators of accesability: *the road density*[30] (Hilber and Voicu, 2007[31]; Trăistaru, 2001; Pusterla and Resmini, 2007[32]).

Based on the literature review, there were identified certain hypotheses that shall be tested within this model regarding the factors' impact. The average wage might have a different impact on the location decision. If it has a significantly positive impact, it means that it is perceived as an indicator for a higher quality of labour (which is better paid to be stimulated or rewarded) advantage which is sought by the investor. If it the impact is negative, the investors are looking for a location which offers the possibility of obtaining small labour costs. The level of skills for the work force is also measured by the number of students in universities, which should be

[17] Source: The National Trade Register Office
[18] Source: The National Institute of Statistics
[19] A.C. Disdier, A.C and T. Mayer, T. „How different is Eastern Europe? Structure and determinants of location choices by French firms in Eastern and Western Europe", J Comp Econ 32,2 (2003): 280–296.
[20] Source: The National Institute of Statistics
[21] C. Hilber and I. Voicu, „Agglomeration Economies and the Location of Foreign Direct Investment: Empirical Evidence from Romania", Munich Personal RePEc Archive, Paper No. 5137, 2007.
[22] I.Trăistaru, „Regional Patterns of Private Enterprise Development in Romania", European Regional Science Association, ERSA Conference Papers, ersa01p198, Vienna, 2001.
[23] Z. Goschin, D. Constantin, M. Roman and B. Ileanu, „The Current State and Dynamics of Regional Disparities in Romania", Romanian Journal of Regional Science 1, 2 (2008): 80-105.
[24] F. Pusterla and L. Resmini „Where do foreign firms locate in transition countries? An Empirical Investigation", The Annals of Regional Science 41, 4 (2007): 835-856.
[25] C. Hilber and I. Voicu, „Agglomeration Economies and the Location of Foreign Direct Investment: Empirical Evidence from Romania", Munich Personal RePEc Archive, Paper No. 5137, 2007.
[26] I.Trăistaru, „Regional Patterns of Private Enterprise Development in Romania", European Regional Science Association, ERSA Conference Papers, ersa01p198, Vienna, 2001.
[27] Source: The National Trade Register Office
[28] Source: The National Institute of Statistics
[29] I.Trăistaru, „Regional Patterns of Private Enterprise Development in Romania", European Regional Science Association, ERSA Conference Papers, ersa01p198, Vienna, 2001.
[30] Source: The Eurostat database
[31] C. Hilber and I. Voicu, „Agglomeration Economies and the Location of Foreign Direct Investment: Empirical Evidence from Romania", Munich Personal RePEc Archive, Paper No. 5137, 2007.
[32] F. Pusterla and L. Resmini „Where do foreign firms locate in transition countries? An Empirical Investigation", The Annals of Regional Science 41, 4 (2007): 835-856.

directly proportional to the regional attractiveness. An intensive research and development activity suggests that innovative companies could find this type of services in the region, as well as specialized personnel. If companies want locate in regions where technological spillovers exist, they will also choose a region with many employees and high expenditures in research and development (Dunning and Lundan, 2008[33]). Another advantage would be an increased possibility of setting connections with other companies which offer high quality goods and services (Hilber and Voicu, 2007[34]).

The general availability of labor is expressed through the number of employees, which generally is a minimum condition for location (Jovanovic, 2010[35]). We did not choose, like other authors, the unemployment rate (Disdier and Mayer, 2003[36] and Hilber and Voicu, 2007[37]) because we want to avoid the interpretation that a high unemployment might signal low level of skills and of competitiveness. The number of employees shows the willingness to work. Also, newly established companies would rather attract personnel which has already been employed because it is easier to benefit from the information that they have about the market and the technology avoiding some qualification and market research costs.

The importance of agglomeration forces is widely discussed and accepted as a major determinant of FDI (Guimarães et al., 2000[38]; Head et al., 1995[39]) and we expect this to have an important influence on the location decision.

The regional GDP is a good indicator for the market size and the local demand, more precisely. It is expected to have a significant positive influence on the attractiveness of firms which seek to sell the products in the region where they invest.

The road density should be directly proportional to the political interest of developing a certain region, while expanding the infrastructure is one the first steps to be taken by public authorities, increasing in this way the level of regional investments, regardless of the industrial branch. The road density could also be a proxy for the trade costs (Hayakawa and Tsubota, 2011)[40] or for accessibility (Jovanovic, 2010[41]).

Regarding the grouping structure of the eight development regions according to their attractiveness to FDI, one of the hypothesis which is tested is whether the capital region (Bucharest-Ilfov) could form a group with any other regions or the disparities between this region and others are too high. The main purpose is to identify a relevant nesting structure that shows which are the main unquantifiable characteristics that stay on the base of the location decision in

[33]J.H. Dunning and S. M. Lundan, „The geographical sources of competitiveness of multinational enterprises: an econometric analysis", International Business Review 7 (1998): 115-133.
[34]C. Hilber and I. Voicu, „Agglomeration Economies and the Location of Foreign Direct Investment: Empirical Evidence from Romania", Munich Personal RePEc Archive, Paper No. 5137, 2007.
[35]Miroslav Jovanovic, Evolutionary Economic Geography. Location of production and the European Union (New York: Routledge Studies in Global Competition, 2010).
[36] A.C. Disdier, A.C and T. Mayer, T. „How different is Eastern Europe? Structure and determinants of location choices by French firms in Eastern and Western Europe", J Comp Econ 32,2 (2003): 280–296.
[37]C. Hilber and I. Voicu, „Agglomeration Economies and the Location of Foreign Direct Investment: Empirical Evidence from Romania", Munich Personal RePEc Archive, Paper No. 5137, 2007.
[38] P. Guimarães, Figueiredo and D. Woodward, „Agglomeration and the Location of Foreign Direct Investment in Portugal", Journal of Urban Economics 47, 1 (2000): 115-135.
[39]K. C. Head, J.C. Ries and D.L. Swenson, „Agglomeration Benefits and Location Choice: Evidence from Japanese Manufacturing Investments in the United States", Journal of International Economics 38 (1995): 223-247.
[40] K. Hayakawa and K. Tsubota, „Location Choice in Low-income Countries: Evidence from Japanese Investments in East Asia". Institute of Developing Economies, Japan External Trade Organization (JETRO) in its series IDE Discussion Papers with number 301, Chiba, Japan, pp. 1-30, (2011).
[41]Miroslav Jovanovic, Evolutionary Economic Geography. Location of production and the European Union (New York: Routledge Studies in Global Competition, 2010).

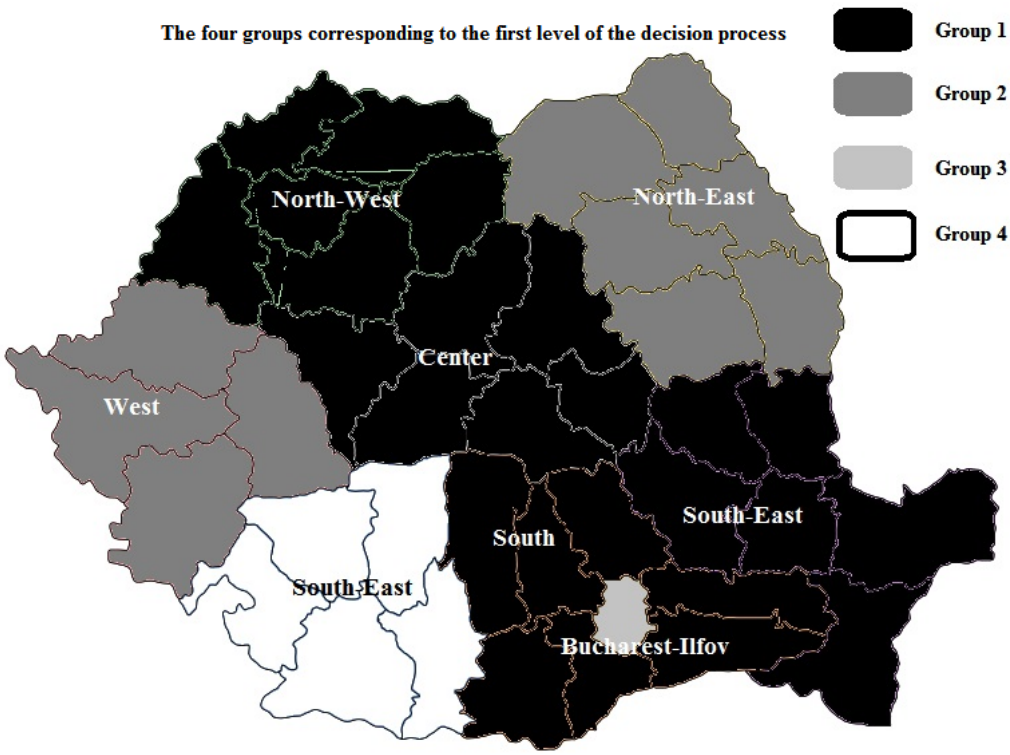
Romania. Is it important for the investor to opperate closer the Western border, to the capital region or to the sea ports benefitting from a better accessibility to major markets outside Romania, or is it important that they locate in isolated regions benefiting from smaller costs?

V. EMPIRICAL RESULTS

Testing several combinations of regional grouping, the only structure which held was the one in which we used the following groups: (South East - SE, South - S, North-West - NW, Centre - C); (North-East - NE, West - W); (South-West - SW); (Bucharest Ilfov - BI). This was confirmed by the Likelihood Ratio (LR) test of homoscedasticity that allows us to reject the hypothesis of regions equally substituting across the chosen nests. It is also confirmed by the Estrella coefficient, which is over 50%. Therefore, the model does not collapse into the conditional logit model and the nesting structure is relevant. The inclusive value parameters also belong to the (0,1) interval and have a high level of significance of over 99%, which means that foreign companies are strongly influenced by the certain common characteristics of region, which allowed us to draw these grouping patterns. The value of the inclusive parameter shows the relevance of the group: when the parameter is closer to 0, the group has more inner similarities and more dissimilarities with the other groups. The group formed of the Bucharest-Ilfov region is very different from the others, while the South-West region could be more easily included into other groups. (Table 1)

According to this structure, the Bucharest-Ilfov region and the South-West region form different groups individually. Bucharest-Ilfov (Group 3) benefits from the most important factors of competitiveness (as it noticed from the level of the exogenous variables, which is the highest in the case of this regions) and it attracted most of the foreign investors (41.03% from the total). The South-West (Group 4) attracted only 3.64%, holding the smallest share of the total number of foreign direct investment companies. The fact that two of the eight development regions could not be included in any region indicates a high level of inequalities. Nevertheless, the nested logit model does not show the distance between the groups. Group 1 consists of two southern regions, which are close to the capital city and have a good accessibility from the sea and river ports (South-East and South) and other two neighboring regions (North-West and Centre), all four forming a transport corridor between Bulgaria and Hungary. Group 2 is formed of two regions which lie in opposite corners of the country (West and North-East). (Figure 1)

Figure 1: The four groups corresponding to the first level of the decision process.



Source: author's

The North-East has been traditionally a less developed area, mainly agricultural and where urbanization and industrialization has taken place scarcely and relatively late. It is also very isolated from both the capital region and the western border. It forms a group together with the West, which is situated in the most western corner of the country. The benefits that the West region has, with more cultural similarities to the older members of the European Union, eases the adaptability of the investors coming from these countries. In the last years, this region has met a very rapid development due to its long industrial, commercial and cultural activities. Regardless the differences, the North-East and the West form the same group due to a proportional attraction of new foreign companies according to their various assets. The important differences, as it results from the significant parametres in Table 1, that determine the preference for the West region consist in the presence of other foreign direct investment companies, smaller road density and higher average wage, while the North-East compensates through a higher number of students and an increased level of expenses in research and development.

The group formed by the North-West, Centre, South-East and South shows the importance of: the closeness to the capital, such as in the case of the Centre and the South, the closeness to the Western border, as already explained, and the belonging of the only sea ports. These ports offer an important connection of Europe with Russia and the Middle East because of the meeting point of the river Danube with the Black Sea. The four regions draw an axe between the north-western and south-eastern part of the country, crossing the capital region and overlapping the most developed part of the transport infrastructure, such as it is obtained by the

mapping of the counties (NUTS III) function to an index of competitiveness potential (Cojanu et. al. 2011[42]).

Group 1 contains several well known agglomeration economies. But the existence of such poles of competitiveness does not necessarily appear accordingly in the number of attracted foreign direct investment companies. The main reason is, as Cojanu et. al. (2011)[43] observed analyzing the differences between the component counties, especially in the case of the South and South-East regions, that the intraregional disparities are sometimes very high. As a consequence, even though counties like Argeș, Prahova (South) and Constanța (South-East) contain important industrial agglomerations, the development regions where they are included, do not attract the highest number of foreign companies[44] due to the mainly agricultural counties (Călărași, Dâmbovița, Brăila, etc.). It is interesting that, even though the South has a relatively small number of investors, the stock of FDI in 2010, according to the National Trade Register Office exceeds the one from the North-West and South-East (Appendix 1). The most important investments that took place in the South are in the car building industry, in the Argeș county, where there were created important pozitive externalities through the stimulation of the car components production companies, creating a quite profound regional specialization (Cojanu and Pîslaru, 2011)[45]. Tipically, in the high-tech or medium-high technollogy sectors, there are a few companies, but with a high level of investments. Indeed, the South region, after the capital region, reaches the highest values for the following indicators used as exogenous variables: turnover, gross investments and GDP.

Referring to the regional determinants of FDI, not all of them are relevant and two of them have the unexpected sign: the road density, which has a negative impact on the location decision (Table 1). Even if the road density does not bring large disparities between the regions, the high significance of its negative coefficient might suggest the fact that investors want to avoid congestion, the size and the quality of the roads being also poor, especially in the first analyzed years. We consider that this result is according the economic reality because most of the foreign investors come from western European countries, and, even though the regions from the eastern side of the country benefit from a higher road density, the investors have chosen the regions that are closer to them. Congestion is also associated with a high cost of land (Hayakawa and Tsubota, 2011)[46], but since we did not take into consideration the cost of land in this econometric analysis we cannot establish its significance.

[42]V. Cojanu, I. Stupariu and R. Dobre. „An Exploratory Study Of The Regional Context Of Competitive Development In Romania", Transylvanian Review of Administrative Sciences, 33 (2011): 67-89.
[43]V. Cojanu, I. Stupariu and R. Dobre. „An Exploratory Study Of The Regional Context Of Competitive Development In Romania", Transylvanian Review of Administrative Sciences, 33 (2011): 67-89.
[44]The South and the South-East account together 11.68% of the number of FDI companies established between 2003-2010.
[45]Cojanu, V., and Pîslaru, D. „How important are agglomeration economies? A Case Study of the Romanian Industrial Clusters", Review of Economics & Business Studies 4, 1 (2011): 35-58
[46] K. Hayakawa and K. Tsubota, „Location Choice in Low-income Countries: Evidence from Japanese Investments in East Asia". Institute of Developing Economies, Japan External Trade Organization (JETRO) in its series IDE Discussion Papers with number 301, Chiba, Japan, pp. 1-30, (2011).

TABLE 1. THE NESTED LOGIT ESTIMATES

Parametre	Estimate	Standard Error	T stud	P-value
FDI Stock	0,3202	0,1047	3,06	0,0022
Number of employees	-0,1407	0,3808	-0,37	0,7117
Average net wage	1,3965	0,5178	2,7	0,0070
Number of students	1,8171	0,8590	21,17	<0,0001
Number of employees in R&D	-0,6586	0,1145	-5,75	<0,0001
Total expenses in R&D	0,7583	0,0923	8,21	<0,0001
Regional GDP	0,1606	0,7253	0,22	0,8248
Turnover	-0,3837	0,3992	-0,96	0,3364
Gross Investments	0,1781	0,1379	1,29	0,1965
Road density	-2,1481	0,5385	-3,99	<0,0001
IV_L2G1[47]	0,8123	0,1167	6,96	<0,0001
IV_L2G2	0,6240	0,1397	4,46	<0,0001
IV_L2G3	0,5016	0,0868	5,78	<0,0001
IV_L2G4	0,9806	0,1881	6,81	<0,0001

Source: author's calculations

The agglomerations of foreign companies have a significant positive influence of the location choice of foreign companies in Romania. They assure the investors that the success of doing business in that region is possible. The fact that we proxied the agglomerations through the stock of foreign invested capital allows the interpretation that when the existent companies increase their capital, they intend to enhance their activity on the basis of previous achievements. The importance of the agglomerations effects has been empirically proved by a multitude of authors, such as: Disdier and Mayer (2003)[48], Devereux and Griffith (1998)[49], Head et. al (1995)[50], Guimarães et al. (2000)[51], Hilber and Voicu (2007)[52]. On the other hand the turnover and the gross investments have an unexpected insignificant influence on the location decision. This might reside in the fact that the investors perceive the local companies very different from their own and their activity (successful or not) has very little in common with what they are waiting from their own activity to achieve. Another suggestion is that the new investors do not intend to use suppliers among the domestic producers. Indeed, Romania has been for a long time a favorite

[47] Inclusive value for decision level 2, for nest 1.
[48] A.C. Disdier, A.C and T. Mayer, T. „How different is Eastern Europe? Structure and determinants of location choices by French firms in Eastern and Western Europe", J Comp Econ 32,2 (2003): 280–296.
[49] M. P. Devereux and R. Griffith, „Taxes and the location of production: Evidence from a panel of US multinationals", Journal of Public Economics 68 (1998): 335-367.
[50]K. C. Head, J.C. Ries and D.L. Swenson, „Agglomeration Benefits and Location Choice: Evidence from Japanese Manufacturing Investments in the United States", Journal of International Economics 38 (1995): 223-247.
[51] P. Guimarães, Figueiredo and D. Woodward, „Agglomeration and the Location of Foreign Direct Investment in Portugal", Journal of Urban Economics 47, 1 (2000): 115-135.
[52]C. Hilber and I. Voicu, „Agglomeration Economies and the Location of Foreign Direct Investment: Empirical Evidence from Romania", Munich Personal RePEc Archive, Paper No. 5137, 2007.

destination for 'lohn' companies, which use their own inputs and the cheap labor from the host country. Additionally, Romanian companies are not considered possible rivals for their products. It is also a hint that not all the products that are made locally by foreign companies are destined to the domestic market. Competition is not yet sharp in any region of Romania, which explains again why investors perceive the existent agglomerations as a possibility for creating linkages and as a great source of potential that has not been explored.

An increase in the average net wage, actually positively and strongly influences the number of the newly established foreign companies, which contradicts previous studies on the location in Eastern European countries (Disdier and Mayer, 2003[53]; Pusterla and Resmini, 2007[54]) or in other parts of the world (Head et al., 1995[55]). Hilber and Voicu (2007)[56], on the other hand, find that the influence of wages is insignificant for the location choice of FDI in Romania between 1990 and 1997. Our results are consistent with those of certain studies which identify a positive effect of the average wage (Guimarães et al., 2000[57]; Hilber and Voicu, 2007[58]). The quality of the labor is an asset of the regions which want to draw foreign capital in Romania, because higher wages indicate the fact that employees are well motivated to make a more qualified work of good quality. Supporting this idea, the number of students in universities has a positive important influence for the attraction of FDI, as well as the expenses in research and development. The existence of a higher number of students together with higher wages represents advantages which override the agglomeration forces as it is indicate by the estimated coefficients of these parameters. A suggestion for regional policy would be that stimulating the increase of these regional assets in lagging areas could further reduce disparities by attracting new foreign direct investments.

The result which proves that investors are attracted to Romania for low labor costs are therefore in contradiction with the results of this study. It is generally believed that Eastern European countries attract companies with labor intensive activities (Pusterla and Resmini, 2007[59]). Our results show a preference for regions with better paid and qualified personnel, which is generally important in most of the industries, regardless of the complexity of production. But there are also economic activities which reside mostly on intensive cheap labor, such as the garment industry, where the general trend of growing wages in Romania, determined the relocation of many companies in other countries (Cojanu and Pîslaru, 2011)[60]. This was the result of an inadequate specialization based on intensive production, without a sufficient share of innovation, which allows increased value added. A more concentration the local demand is necessary to identify some niches and obtain profit from the local market. The adaptation of production to luxury products, as it is the case of the shoe industry from the Centre, West and

[53] A.C. Disdier, A.C and T. Mayer, T. „How different is Eastern Europe? Structure and determinants of location choices by French firms in Eastern and Western Europe", J Comp Econ 32,2 (2003): 280–296.
[54] F. Pusterla and L. Resmini „Where do foreign firms locate in transition countries? An Empirical Investigation", The Annals of Regional Science 41, 4 (2007): 835-856.
[55]K. C. Head, J.C. Ries and D.L. Swenson, „Agglomeration Benefits and Location Choice: Evidence from Japanese Manufacturing Investments in the United States", Journal of International Economics 38 (1995): 223-247.
[56]C. Hilber and I. Voicu, „Agglomeration Economies and the Location of Foreign Direct Investment: Empirical Evidence from Romania", Munich Personal RePEc Archive, Paper No. 5137, 2007.
[57] P. Guimarães, Figueiredo and D. Woodward, „Agglomeration and the Location of Foreign Direct Investment in Portugal", Journal of Urban Economics 47, 1 (2000): 115-135.
[58]C. Hilber and I. Voicu, „Agglomeration Economies and the Location of Foreign Direct Investment: Empirical Evidence from Romania", Munich Personal RePEc Archive, Paper No. 5137, 2007.
[59] F. Pusterla and L. Resmini „Where do foreign firms locate in transition countries? An Empirical Investigation", The Annals of Regional Science 41, 4 (2007): 835-856.
[60]Cojanu, V., and Pîslaru, D. „How important are agglomeration economies? A Case Study of the Romanian Industrial Clusters", Review of Economics & Business Studies 4, 1 (2011): 35-58

North-West (Cojanu și Pîslaru, 2011), left place for the incresead wages and maintained the foreign direct investments companies in this sector. Around these companies, by the positive externalities, there were establishes numerous Romanian plants in the same field.

The number of employees in research and development is perceived as a negative aspect of regions. So the expenditures in R&D per employee are preferred to be high, suggesting that a small number of people manage high R&D budgets. This is a sign of competitiveness in the field if the work is productive.

Investors which look for a new market to sell their products will usually locate in central areas from where they can reach most of their potential customers (Disdier and Mayer, 2003[61]; Pusterla and Resmini, 2007[62]). This could be an important reason why most of the companies located in Bucharest. From the estimations of the present model, the GDP has an insignificant influence on the location decision. Even though a tremendous percent of the foreign companies activating in Romania come from the European Union, and the expectation that the enlargement of this entity would bring the possibility of expanding the market, is not confirmed through this empirical analysis. The fact that 72.4% of the exports (according to the National Bank of Romania) are held by the foreign companies indicates that a high share of their products is destined to the external market, but because the data regarding the exports of these companies is not available, we cannot establish the exact measure. Nevertheless, the lack of significance for this parameter means that there is no preference for regions with higher GDP, but the country as a whole, could have been chosen for a satisfying potential demand.

VI. CONCLUDING REMARKS

In this paper we led an original analysis of a large scale of determinants of FDI in Romania, explaining which of them stand at the basis of the location choice. In the scarcely explored field of spatial econometrics over the regional characteristics of Romania, we tried to sketch a brief portrait of the foreign investor using a two stage nested logit analysis, emphasizing the most significant regional factors of attractiveness (NUTS II).

The results of our study confirm the importance of the agglomeration forces on the attractiveness of FDI. Foreign companies locate mostly in regions were other successful foreign businesses take place, but not necessarily were all the companies (foreign or domestic) have the most developed activities.

Investors prefer regions with relatively high average net wages, which was used as a proxy for costs as well as for the purchasing power. Therefore, we obtained that local demand is a more important factor than the low costs. In fact, the investors would rather support higher costs for a better quality of labor and research activities. Nevertheless, the idea that investors look to identify regions with a higher market potential is not confirmed by the GDP parameter, which has an insignificant influence. The political efforts of increasing the regional attractiveness are not based on the development of infrastructure.

In order to obtain most of the regional benefits from the inward FDI Romania should attract foreign companies which use highly skilled personnel and innovation, stimulating in this way the increase in wages, demand and GDP and overriding in the same time the powerful agglomeration forces.

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[61] A.C. Disdier, A.C and T. Mayer, T. „How different is Eastern Europe? Structure and determinants of location choices by French firms in Eastern and Western Europe", J Comp Econ 32,2 (2003): 280–296.

[62] F. Pusterla and L. Resmini „Where do foreign firms locate in transition countries? An Empirical Investigation", The Annals of Regional Science 41, 4 (2007): 835-856.

The empirical results of the location decision process of the whole sample of foreign direct investment companies gives a few suggestions about the investor's profile, which activates in industries where workers do rather complex operations (due to the need for qualified and well paid work). The limited data availability did not allow computing the analysis separately on different technological levels of the manufacturing sectors, but further research could complete the interpretation of the results through a series of study cases.

ACKNOWLEDGEMENT

The paper takes part of the research project „Doctorat în economie la standardele Europei cunoasterii (DoEsEC)" financed from the European Social Fund, within the contract POSDRU/88/1.5/S/55287.

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Appendix 1 – Table A1. FDI location in Romania

Development region	Number of new FDI companies (2003-2010)	FDI stock in 2009 (million Lei)
North-East	4010	4408.4
South-East	4880	5289.6
South	4662	6205.6
South-West	2308	3292.7
West	10715	6315.2
North-West	11625	5673.4
Centre	9941	6989.4
Bucharest-Ilfov	33536	50937.1

Source: Author calculation

ODABIR REGIONALNE LOKACIJE ZA IZRAVNA STRANA ULAGANJA U RUMUNJSKOJ

Sažetak: Očekuje se da se regionalno privlačenje izravnih stranih ulaganja razvije u poboljšanje lokalnih prednosti. U ovom radu smo ustvrdili koji su najvažniji pozitivni učinci koji su najviše utjecali na broj novoosnovanih tvrtki sa stranim kapitalom na regionalnom nivou u Rumunjskoj. Koristeći „nested logit" model, opisali smo dvostepeni proces donošenja odluka pri kojem investitor prvo odabire skupinu regija sličnih karakteristika, kao što je blizina glavnog grada ili glavnih prometnih pravaca, a zatim odabire specifičnu regiju iz te skupine. Glavni faktori privlačnosti se određuju kako bi se iskoristili za poticanje ujednačenijeg regionalnog razvoja. Smanjenje razlika na ovaj način može pomoći boljem ekonomskom razvoju zemlje koja prihvaća izravna strana ulaganja.

Ključne riječi: Izravna strana ulaganja, odrednice regionalnog ulaganja, odabir lokacije

EKONOMSKA ISTRAŽIVANJA-ECONOMIC RESERACH
ISSN 1331-677X print

2013 Volume 26(1): 49-68

DYNAMIC EVALUATION AND DETERMINANTS OF CHINA'S INTER-REGIONAL EQUALIZATION OF BASIC PUBLIC SERVICES

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ARTICLE INFO

Article data:
- Received: 19 November 2011
- Accepted: 11 July 2012

JEL classification: M41, O1, P45, N5

Keywords:
- Basic Public Services (BPS)
- Econometric Analysis
- Panel Data

ABSTRACT

Despite the 30 years of reform and opening up that has led to China's rapid economic development, the gap of basic public services, such as basic education and medicine, among regions in China widened, which forced the Chinese government to put forward the strategy on Equalization of Basic Public Services (BPS) in 2005. Through econometric analysis, this paper analyzes the reasons why the regional equalization level of BPS in China has been decreasing. We find that the level of regional gaps of economic development, differences in fiscal decentralization, the degree of opening to the outside world and of marketization, and the level of urbanization are significantly positively correlated with the level of regional BPS; while regional disparity of financial capacity and governments' preferences are significantly negatively correlated with the level of regional BPS; but transfer payments from the central government do not play a role in promoting the equalization of BPS. It can be seen that in order to raise regional equalization of BPS in China, the gap of regional economic development should be controlled within reasonable ranges, normative fiscal decentralization established, and the system of transfer payments reformed with explicit equalization goals in mind. At the same time, the central government should reform the current rigid system of household registration management or internal passport system, known as hukou. To ensure the rational flow of population, and it should force local governments to improve the supply of BPS rather than simply relying on competition for regional economic growth.

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I. INTRODUCTION

Since the Reform and Opening-up policy was implemented 30 years ago, all levels of government in China have played such a small role in the field of basic public services (BPS) that a serious shortage of BPS affecting people's welfare has not been developed as rapidly as economic growth has happened; therefore education, health, and housing have become the "new three big mountains" to conquer in the minds of the people. At the same time, because of the inconsistency of China's regional economic development, the gap in the economic development between the eastern regions and the central-western regions has gradually been widening, which creates a huge gap in China's regional BPS. This situation has not been helped by uncertain goals and non-standardized operation of the existing inter-governmental transfer payment. Nowadays China's BPS has been characterized as"low performance level, imbalanced development, and low-level efficiency converging"(Chen Changsheng and Cai Yuazhou, 2007), However, in order to provide inter-regional equalization of BPS to build a service-oriented government within a "harmonious society" and to reduce regional economic disparities, the current expansion of China's government financial capacity and the transformation of governmental functions lay a solid economic and political foundation for the Chinese equalization of BPS. Therefore, researching the equalization of regional BPS has important practical and theoretical significance within the context of current political and economic policy in China.

This paper's contribution is mainly reflected in two aspects. Firstly, we build a system for evaluation of China's inter-provincial equalization of BPS by means of an Eigenvalue method with Experts' Questionnaire, and analysis of basic characteristics of the equalization of BPS.

The current literature has produced more qualitative research and much less quantitative research on China's inter-provincial evaluation system of the equalization of BPS. Chen Changsheng and Cai Yuazhou(2007) constructed by far a most comprehensive performance evaluation system of BPS, and they choose 165 indicators to research eight BPS. But they focused on regional differences in the performance of China's BPS. An Tifu and Ren Qiang (2008) chose 7 BPSs of 16 single indicators to measure China's inter-provincial equalization level of BPS from 2000 to 2006. In addition, there are some other scholars such as Chen Zhenming and Li Deguo (2011), Wang Xin-min and Nan Rui (2011), Luo Yongmin and Fan Liming(2011), Ma Huiqiang, Han Zenglin and Jiang Haixu(2011) who using some indicators studied the equalization degree of BPS between within province, between provinces, between urban and rural areas, respectively.

Since they chose too few indicators that are stocks in nature, their analysis would lead to richer regions strengthening their advantageous position. This study is bound to draw the conclusion that the gap of China's inter-provincial BPS has been widening, which cannot reflect that poorer regions have improved their BPS level year by year1. At the same time, the research interval is too short to draw reliable and scientific conclusions.

The evaluation system built into this paper is made of 35 indicators of China's inter-provinces from 1996 to 2006, including basic education, public health and basic medical care, public culture, basic scientific research, employment and social security, public infrastructure and environmental protection as second-level indicators and China's inter-provincial BPS index as the first-level indicators. We find that China's inter-provincial equalization of BPS has experienced lower levels, and it shows a downward trend. The equalization level of all kinds of BPS varies significantly. The services whose equalization level is relatively reasonable are public cultural services, public infrastructure services, and ecological and environmental protection services. The

[1]This could be possibly richer regions experience faster increase than poverty regions in BPS.

services whose equalization level must be improved are employment and social security services, public health and basic medical services. The services whose equalization level is urgent to increase are basic education and basic R&D services.

Secondly, we make use of panel data to analyze the determinants of inter-provincial equalization levels of BPS in China. Presently, there are rather few papers which use qualitative analysis to look into determinants of inter-provincial equalization level of BPS in China, and most papers focus on transfer payments(Xiaoning Song et al, 2008; Yongzheng Liu, 2008). These papers have adopted a relatively narrow perspective, neglecting other factors potentially affecting the equalization level of BPS.

Through the econometric analysis in this paper, we research the reasons why the regional equalization level of BPS in China has been decreasing. We find that several variables play significant roles, including the level of regional gaps of economic development, differences of fiscal decentralization, the degree of opening to the outside world and marketization, and the level of urbanization which significantly are all positively correlated with the level of regional BPS. Regional disparity in financial capacity and governments' preferences are negatively and significantly correlated with the level of regional BPS.

We also find that transfer payments from the central government do not play a role in promoting the equalization of BPS. It can be seen that in order to raise regional equalization of BPS in China, the gap of the regional economic development should be controlled within reasonable ranges, and normative fiscal decentralization and the system of transfer payments should be reformed with this objective in mind. At the same time, the central government should reform the current rigid system of household registration management to ensure the rational flow of the population, and it should force local governments to improve the supply of BPS rather than simply relying on the competition of regional economic growth.

The rest of the paper is organized as follows: Section 1 builds the dynamic evaluation system of China's inter-provincial equalization of BPS and analyzes its characteristics from 1996 to 2006. Section 2 presents the main results concerning determinants of China's Inter-Regional Equalization of BPS. Section 3 concludes.

II. DYNAMIC EVALUATION SYSTEM AND ASSESSMENT RESULTS OF CHINA'S INTER-PROVINCIAL EQUALIZATION OF BPS

A. Selecting and designing the dynamic evaluation system

Basic public services(BPS) should have the minimum scope and boundaries in a certain stage according to the overall level of economic and social development of a country, in order to maintain economic and social stability in the country, social justice and cohesion and to protect individual basic right to life. In practise, Many statistical indicators only reflect one side of BPS. Therefore, it is necessary to translate many indicators into a single index to reflect overall developmental trend of BPS by certain technical means such as input-output methods(Chen Changsheng and Cai Yuazhou, 2007) or dual-tier indicators rating(An Tifu and Ren Qiang, 2008) .In this paper, the dynamic evaluation system of China's inter-provincial equalization of BPS is divided into a three-tier rating system, which expand the dual-tier indicators rating ways.

The first indicator is the inter-regional equalization index of BPS. In accordance with the connotation of inter-regional equalization of BPS, the indicator is set up as measuring the level of China's inter-provincial equalization of all kinds of BPS. Thus, the first indicator is the coefficient of variation, so the greater the value of the first indicator, the lower the degree of China's inter-provincial equalization of BPS.

The second set of indicators includes basic education, public health and basic medical care, public culture, basis scientific research, employment and social security, public infrastructure and environmental protection; all are considered segundo indicators of China's inter-provincial BPS. The selection of these indicators not only stresses the importance of basic public services as public goods, but also stresses the importance of current financial constraints and requirements of the government's overall strategic objectives.

The set of third indicators must consider its corresponding representation according to the segundo ones, and its availability. At the same time, the third indicators must be expressed in per capita terms indicators to avoid the impact of population size. Finally, some of the third set of indicators must be flow nature indicators and others of a stock nature. Because the main goal of Chinese governments gradually has been transferred from economic construction to the provision of public services, flow indicators can reveal the improvement of he provision of BPS.

To sum up, every segundo indicator is made up of 5 to 7 third indicators. Therefore we choose 35 third indicators for the make up of a dynamic evaluation system of China's inter-provincial equalization of BPS, as shown in Table 1.

TABLE 1-CHINA'S INTER-PROVINCIAL EQUALIZATION EVALUATION SYSTEM OF BPS

First indicator	Second indicator	Third indicator	units
China's inter-provincial equalization index of BPS	Basic education	Budget expenditure on education of every students in primary school	Yuan/student
		Budget expenditure on education of every students in junior school	Yuan/student
		Budget expenditure on education of every students in high school	Yuan/student
		Full-time teachers of every student in ordinary primary school	person/student
		Full-time teachers of every student in ordinary secondary school	person/student
	Public health and basic medicine	Budget expenditures per capita health expenditure	Yuan per capita
		The number of beds per 10,000 people	piece
		The number of doctors per 10,000 people	number
		Water coverage in city	%
		The number of public toilets in city per 10,000 people	number
	Public culture	Expenditure of culture and sports broadcasting per capita	Yuan per capita
		Broadcasting population coverage	%
		TV population coverage	%
		The number of public libraries per 10,000 people	number
	Basic R&D	The fees of three items in technology per capita	Yuan per capita
		Technology spending per capita	Yuan per capita
		The number of domestic invention patent per 10,000 people	item
		The number of domestic design patent per 10,000 people	item
		The number of domestic newly application patent per 10,000 people	item
	Employment and social security services	The registered urban unemployment rate	%
		Per capita expenditure on social security	Yuan per capita
		The ratio of Old-age insurance to total population	%
		The ratio of medical insurance to total population	%
		The ratio of industrial injury insurance to total population	%
		The ratio of maternity insurance to total population	%
		The ratio of unemployment insurance to total population	%
	Public infrastructure	The number of owned mobile phone by per 100 people	number
		The capacity of owned telephone exchanges by per 100 people	number
		The number of owned local telephone by per 100 people	Hu
		highway mileage per capita	M
		Urban public green area per capita	m^2
	Ecological services and Environmental protection	Integrated utilization rate of industrial solid waste	%
		Green area of the urban park per capita	m^2
		The ratio of nature reserve area to land area	Hectare/10,000 hectares
		The ratio of Comprehensive utilization value of waste products of industrial to industrial output value	%

Source: THIRD INDICATORS MAINLY COME FROM CHINA STATISTICAL YEARBOOK 2006.

B. Assessing method

It can be seen that BPS can be divided into 7 categories, so that the evaluation of the equalization system of BPS is a multi-dynamic comprehensive evaluation method. It is necessary to use a certain mathematical model of multiple indicators into a set of holistic indicators. This paper sets up a dynamic evaluation system of China's inter-provincial equalization of BPS using the Experts' Questionnaire2 and Eigenvalue methods. These are calculated as follows:

If X_{ijt} is an original indicator of region i at time t in service j, P_{it} is the population size of region i at time t. Step I: Pre-treatment of evaluation indicators. First of all, the aggregate indicators are converted into per capita indicators as follows:

$$\overline{X}_{ijt} = \frac{X_{ijt}}{P_{it}} \tag{1}$$

Then, we proceed the uniformization of the indicators. Since some are expressed only as minimum values (The smaller, the better) indicators—such as the registered urban unemployment rate, we do the conversion, thus:

$$\overline{X}_{ijt} = 1 - X_{ijt} \tag{2}$$

This indicator has been translated into maximum value one. As for the relative indicators, they remain unchanged as $\overline{X}_{ijt} = X_{ijt}$. Finally, the dimensional indicators must be translated into dimensionless ones. If Mjt and mjt is the maximum and minimum values of $\overline{X}_{ijt}$, then we can write:

$$x_{ijt} = \frac{\overline{X}_{ijt} - m_{jt}}{M_{ij} - m_{jt}} \tag{3}$$

It is clear that the range of (3) is dimensionless with the indicators being between [0, 1]. Step II: We send a questionnaire to 10 experts and ask them for the relative importance of the indicators in Table 1. Then according to these experts' answers, we rank the indicators and give them different weighted value (ranking the more highly weighted higher) pij. Step III: we determine the weighted value of third indicators by the eigenvalue method. If the 7 sub-categories of services as a sub-system, and x_{ijt} is an indicator after pre-treatment of sub-system x in region i at time t item j, then the transform $x^*_{ijt} = p_{ij} x_{ijt}$, and these data can form the matrix:

$$A_t = \begin{vmatrix} x^*_{11} & x^*_{12} & \cdots & x^*_{1m} \\ x^*_{21} & x^*_{22} & \cdots & x^*_{2m} \\ \cdots & \cdots & \cdots & \cdots \\ x^*_{n1} & x^*_{n1} & \cdots & x^*_{nm} \end{vmatrix} \tag{4}$$

[2]Choice standard of experts is professional and familiarity. Professional requires these experts to take mainly on researching public finance and regional economics. Familiarity requires these experts to be familiar with the situation of provision of public services in China. We ask for the experts ranking the sub-BPSs and give more weigh to avarage ranking first. The experts mainly come from Finance Department, Chinese Academy of Social Science and some famous Universities such as Remin University and Huazhong Normal University, and so on.

We structure the symmetric matrix $H_t = (A_t)^T A_t$, and then we calculate the maximum eigenvalue $\lambda_{\max}$ and the corresponding eigenvector b_j of Ht. Finally, we normalize b_j ($\mathrm{j} = 1,2,\ldots \mathrm{m}$) to achieve the weighted coefficient of indicators x_{ijt}:

$$w_{jt} = \frac{b_j}{\sum_{j=1}^{m} b_j} \tag{5}$$

Step IV: We obtain the comprehensive evaluation function of the secondary sub-system function in region i at time t.

$$s_{it} = \sum_{j=1}^{n} w_{jt} x_{ijt} \tag{6}$$

s_{it} represents the relative developmental degree of some certain kinds of BPS.

Step V: We calculate the coefficient of variation (CV) to evaluate the equalization level of sub-BPS at time t.

$$cv_t = \frac{\sqrt{\dfrac{\sum_{j=1}^{n} \left(s_{it} - \bar{s}_t\right)^2}{n-1}}}{\bar{s}_t} \times 100\% \tag{7}$$

$\vec{s}_t$ is the average value of sub-BPS at time t all regions. The greater cvt is, the lower the degree of equalization of sub-BPS is.

Step VI: In fact, the relative importance of sub-BPS may differ. Based on The Experts' Questionnaire approach, we get the weighted coefficients u_i of sub-BPS, and finally obtain the composite indicator of BPS for all regions S_{it}:

$$S_{it} = \sum_{i=1}^{7} u_i s_{it} \tag{8}$$

Then we calculate the coefficient of variation of S_{it}:

$$CV_t = \frac{\sqrt{\dfrac{\sum_{i=1}^{n} \left(S_{it} - \bar{S}_t\right)^2}{n-1}}}{\bar{S}_t} \times 100\% \tag{9}$$

$\bar{S}_t$ represents the average value of overall BPS at time t all regions. The large values of CV show a lower degree of equalization of BPS.

Step VII: Repeat the above steps, and calculate cv_t and CV_t at time t to obtain the evolution profile of equalization levels of BPS in China over time.

C. Data sources and assessment results

With some limitations from the data's availability and integrity, we collected provincial data from 1996 to 2006, except for Tibet. Most of the data came from the following sources: "China Statistical Yearbook" from 1997 to 2007, "China Compendium of Statistics" from 1949 to 2004, "New China Fifty Years' Government Finance Statistics", "Finance Yearbook of China" from 1997 to 2007, "China Educational Finance Statistics Yearbook" from 1997 to 2007, Provincial Statistics Yearbook, and CEI Statistical Database.

After applying the methodology above, we obtained China's inter-provincial equalization index of BPS, which is shown in Table 2.

TABLE 2-CHINA'S INTER-PROVINCIAL EQUALIZATION INDEX OF BPS(1996-2006)

year	BPS	basic education	public health and basic medicine	public culture	basis scientific research	employment and social security	public infrastructure	environmental protection
1996	0.466	0.71	0.545	0.386	1.242	0.525	0.496	0.402
1997	0.456	0.762	0.537	0.355	1.195	0.339	0.503	0.392
1998	0.495	0.77	0.538	0.328	1.135	0.6	0.492	0.398
1999	0.478	0.805	0.527	0.332	1.263	0.466	0.47	0.438
2000	0.487	0.834	0.627	0.3	1.203	0.465	0.435	0.358
2001	0.511	0.838	0.6	0.327	1.325	0.613	0.466	0.367
2002	0.513	0.856	0.632	0.33	1.328	0.49	0.451	0.405
2003	0.502	0.88	0.577	0.363	1.375	0.507	0.432	0.363
2004	0.499	0.896	0.555	0.364	1.36	0.534	0.454	0.355
2005	0.542	0.899	0.751	0.389	1.362	0.586	0.437	0.393
2006	0.523	0.94	0.563	0.374	1.386	0.666	0.379	0.403

Source: Author's calculation.

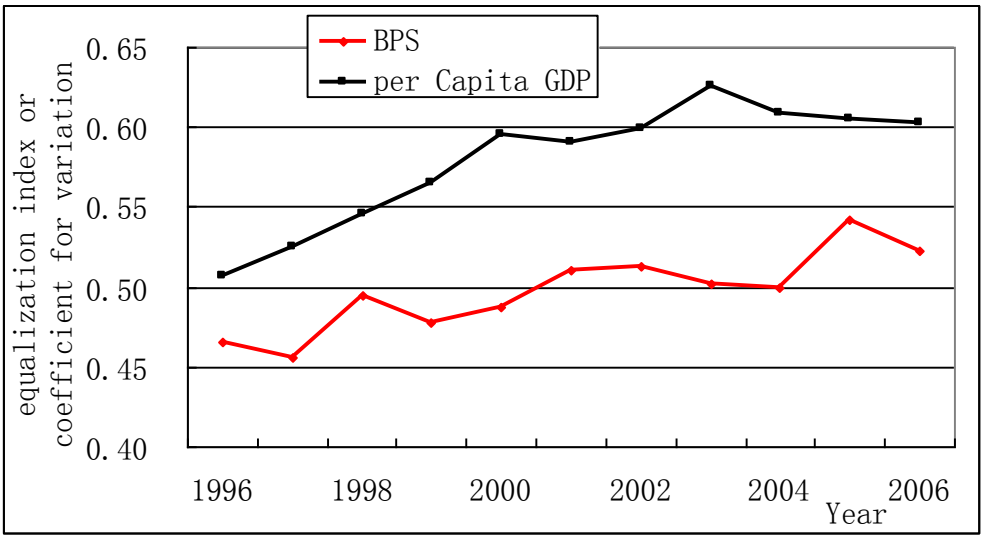
From the overall level and organic composition of China's inter-provincial equalization index of BPS, respectively, we can draw following conclusions:

Firstly, China's inter-provincial equalization level of BPS has decreased and shows a downward trend. As can be seen in Table 2, this index has remained above the 0.45 level, with 0.54 the highest observed mark of 2005. The highest was observed in 2005. This result basically validates the conclusion drawn by Changsheng Chen et al (2007). The BPS in China shows"low performance level, imbalanced development, and low-level efficiency converging". The overall equalization index presented an upward trend that peaked in 2005 and declined slightly in 2006. This shows that the gap of inter-provincial BPS in China may be gradually widening. Fortunately, the index in 2006 is less than the one in 2005, which shows that the deteriorating trend of equalization degree of BPS could be improved. Owing to more emphasis on the implementation of BPS from the central government and governments at all levels recently, inter-provincial the equalization level of BPS in China may gradually show increase in the future.

In order to compare it with the inter-provincial economic gap, we also calculated the inter-provincial weighted coefficient for variation of per capita GDP in China from 1996 to 2006, as can be seen in Figure 1. The coefficient for variation of per capita GDP has been greater than the equalization index of BPS, which accounts for the inter-provincial gaps in BPS being less than

the gap of economic development, and therefore the fiscal system would appear to be producing some equalization results. It is noteworthy that the economic gap between China's provinces has been gradually reduced since 2003, and that the equalization index of BPS began to decline in 2006, lagging 3 years.

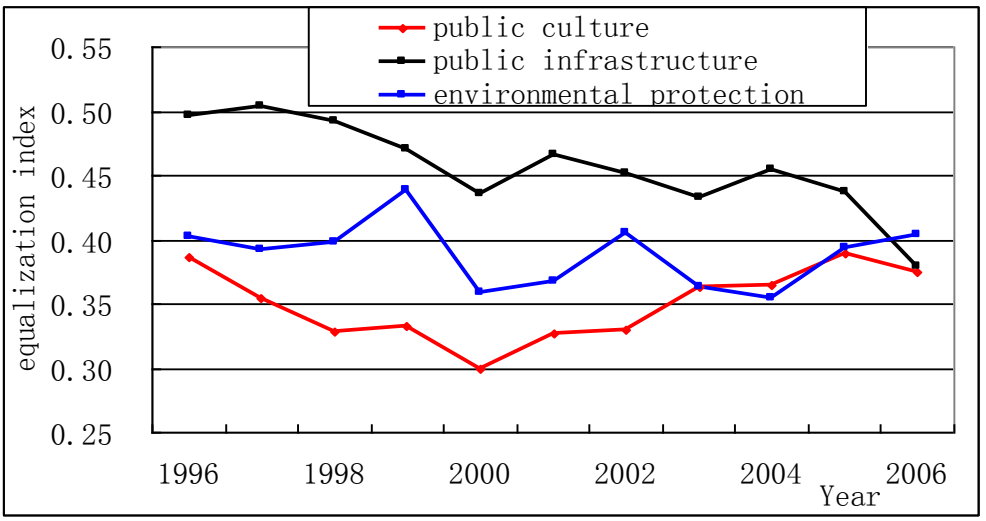
FIGURE 1.CHINA'S INTER-PROVINCIAL EQUALIZATION INDEX OF OVERALL BPS(1996-2006)



Source: Author's calculation.

Secondly, sub-BPS vary significantly in their equalization degree. Based on the average equalization level of sub-BPS in 2002-2006, 7 sub-BPS can be divided into three categories—relatively reasonably well-provided services, must-improved services, and urgent-to-improve services.

FIGURE 2.CHINA'S INTER-PROVINCIAL EQUALIZATION INDEX OF PUBLIC CULTURE, PUBLIC INFRASTRUCTURE, ECOLOGICAL SERVICES AND ENVIRONMENTAL PROTECTION (1996-2006)

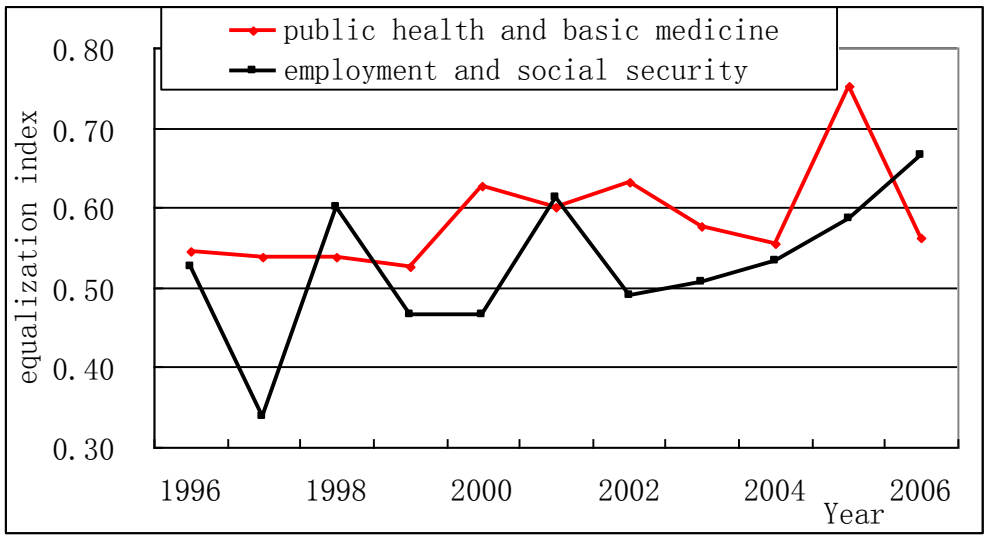


Source: Author's calculation.

Relatively reasonably well-provided services of equalization degree include public culture, public infrastructure, ecological services and environmental protection. As can be seen in Figure 2, the equalization index of the above-mentioned three sub-services in the recent 5-year period were below 0.45 during the recent five years, which placed them under the overall equalization index of BPS. This indicates that these three sub-services were on a relatively higher equalization degree rate, and the gap among them was controlled within a reasonable extent. However, the trajectories of these three sub-services differ. The equalization trajectory for public culture has a "U-type", showing that the gap between provincial public cultural services widened first and then narrowed. The reason for this is because of the relative neglect of the construction of public cultural facilities until recently.

"Must-improved services of equalization degree" include employment and social security services, and public health and basic medical services. The equalization indexes for these two sub-services have been between 0.5 and 0.8, in a middle level among 7 sub-services, so their equalization degrees need improving. The trajectory of public health and basic medical services has been relatively stable (except in 2005) due to this service being stock investment mostly by governments. Regional economic development determines governments' input into public health and medical services, resulting in a regional economic gap the same as the gap for public health and basic medical services(Qin Liu,et al,2010). The equalization index for employment and social security services tended to decrease recently, indicating that the regional gap of this service may be gradually widening. This is mainly because the increase of coverage and security standards depends on regional urbanization, living standards and the size of the government's finance. Developed provinces and cities, owing to local increases in urbanization and living standards, and governments' annual revenue increasing much higher than GDP growth, have been sufficiently funded to increase fiscal expenditure of local job training and social security standards, which leads to the growing gap for this service.

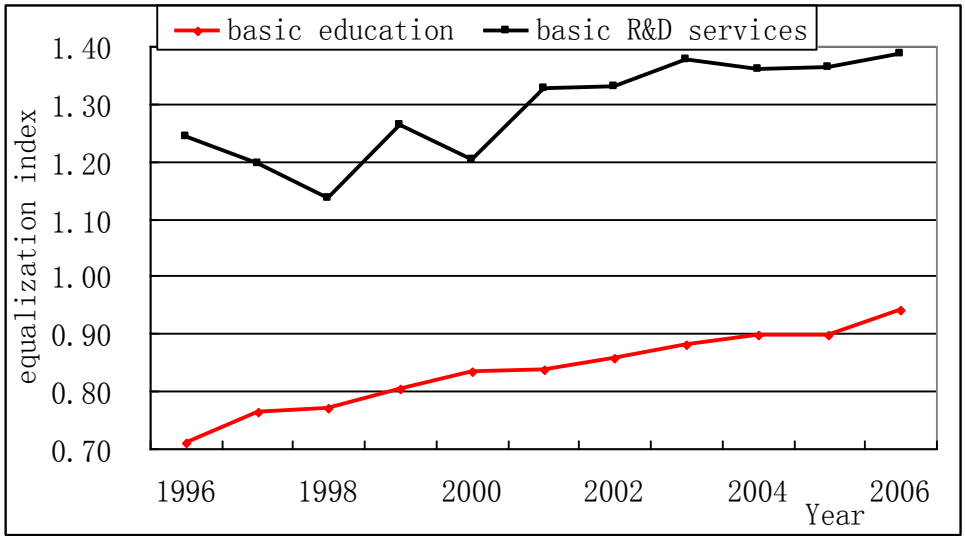
FIGURE 3.CHINA'S INTER-PROVINCIAL EQUALIZATION INDEX OF EMPLOYMENT AND SOCIAL SECURITY SERVICES, PUBLIC HEALTH AND BASIC MEDICAL SERVICES (1996-2006)



Source: Author's calculation.

In the urgent-to-improve services category, we find the basic education and basic R&D services. The average equalization index of basic education and basic R&D services is up to 0.894 and 1.362, respectively, the highest in the 7 sub-services; therefore it would appear urgent for these two services to improve their equalization degree. As can be seen from Figure 4, the equalization index for basic education has increased from 0.71 in 1996 to 0.94 in 2006, witnessing the growing gap in basic education in China. Although the central government has stressed the importance of basic education, the educational input mechanism of "one-province-one-entity" has strengthened the inter-provincial disparities in basic education. Base on Paul R. Blackley, Larry DeBoer(1987), with the rapid economic growth in China, person's basic wants would shift away from physical capital towards human capital wants, and huge educational gap would expand their walfare gap of different regions.

FIGURE 4.CHINA'S INTER-PROVINCIAL EQUALIZATION INDEX OF BASIC EDUCATION AND BASIC R&D (1996-2006)



Source: Author's calculation.

At the same time, basic education shares a much larger weight in the entire BPS, so that improvements in the equalization degree of basic education contribute to raise the overall equalization degree of BPS. The equalization index of basic R&D services has remained at 1.3 or above in the past five years, which accounts for the fact that the gap of regional basic R&D services has been widening to a shocking extent, and therefore the government must attach more importance to these services. In recent years, most of China's basic research funds have been input into developed regions where most of the nation's research institutes and universities are concentrated. As a result of the lack of research funding in backward regions, high-quality talents in scientific research are reluctant to work in backward regions. This vicious circle leads to the growing gap in basic R&D services.

III.THE DETERMINANTS OF CHINA'S INTER-REGIONAL EQUALIZATION OF BPS

A. Model settings

The analysis of the determinants of China's inter-provincial equalization of BPS should begin with the supply and demand of BPS in China.

From the perspective of supply factors, the degree of regional economic development significantly impacts the local supply capacity of BPS. If local governments' tax rates are the same, then the higher the level of local economic development, the more financing is available, the more local BPS the developed regions have, and consequently the greater the gap between the developed and developing regions becomes. However, it should be noted that local residents in developed regions demand local governments to supply higher quality and quantity of BPS and would appear to strongly reject non-resident populations sharing local BPS, owing to perceived crowding effects and, in a sense, holding the perception of local BPS as club goods. Therefore, the gap in the economic development level has a negative correlation with the equalization of BPS; that is, the greater the gap in per capita GDP, the greater the equalization degree of BPS is.

What's more, transfer payments from the central government to local governments can make up for the insufficient supply capacity of BPS at the local government level. Therefore, a rational transfer payment system should serve as a tool of equalizing BPS. But the transfer payment system in China is set up mainly based on political considerations rather than economic ones, with the presence of non-standard and non-transparent transferring and so on. So transfer payments in China play a very small equalizing role, or they may actually play a reverse role in equalizing BPS.

Another important supply factor of BPS is the governments' preferences(Andreu Mas-Colell, 1980). The decision-making mode for public goods such as basic education and infrastructure for governments at all levels in China has been following a top-down mode, and central governments' performance evaluation criteria have emphasized GDP, leading government units at all levels to prefer the supply of hard public goods such as roads, bridges, and so on, to the supply of soft public goods such as basic education, social security, public health and basic medicine. Some local governments are even in arrears with teachers' wages in primary schools. So the local preference for hard public goods also has an impact on the supply level of BPS.

From the perspective of demand factors, local marketization degree, local level of economic openness, local urbanization rate, and the industrialization rate have significantly affected China's inter-regional demand of BPS.

Domestic and foreign scholars generally believe that China's market-oriented reform has put vitality into the Chinese economy and has improved the efficient use of resources. However, the degrees of market-oriented progress between eastern and western regions are obviously very uneven. At the same time, the higher level of marketization degree demands improved government functions, so that local residents and businesses will progressively increase quantity and quality of the supply capacity of the local government for BPS such as basic education. But an excessive marketization degree may also lead to some BPS services being privatized, resulting in the lack of some BPS. Though in developed countries, some education services are produced privately, it could reduce inequality. In China, due to large population, lack of the stock of public services and governments' supervision, the rich enjoy the provision of public services privately mainly, so the provision of BPS privately maybe reduce the equalization of BPS.

So the relationship of marketization degree and equalization level of BPS is uncertain. A rising level of opening to the outside world means the increase in foreign-funded enterprises

locally. Generally, the location choice of foreign-funded enterprises is in the region which has the better quality of BPS. Therefore, the rising of the level of opening-up often is accompanied by the growing of local BPS. In general, the development of city and industry must be based on high-quality development of BPS. The higher urbanization rate means more demand for BPS in the unit of land area and decreasing unit costs of supplying BPS owing to economies of scale.

According to the supply-and-demand factors of BPS, we can generally explain why China's inter-provincial equalization level of BPS continues to be low. With the gradual deepening of the reform of China's socialist market economy, the gap of economic development in China's various regions has widened, and the financial gap among regions correspondingly has also begun to widen. So if every region continues to rely solely on its own revenue for the provision of BPS, the gap of BPS among regions is very likely to widen.

At the same time, China's reform and opening up is also the process of gradual financial decentralization. During this process, the central government gradually took up much more proportion of fiscal revenue, resulting in the gradual inconsistencies with affair rights and wealthy rights of governments at all levels. This requires the central government to carry out transfer payments to local governments to make up for the insufficient supply of BPS. However, due to its defects, transfer payment does not play a role in equalizing BPS. What's more, local governments do not prefer soft public goods such as basic education during this period of speeding up industrialization and urbanization, thereby leading to an inadequate supply of BPS. Local residents in developed regions demand local governments to supply higher quality and quantity of BPS, adding up to the scale effects of supplying BPS owing to rapid urbanization and industrialization, so local governments in developed regions have enough finance to supply BPS.

Also, due to their lower rates of urbanization and industrialization and the migration of a large number of surplus labors to developed regions to work (no scale economy of supplying BPS), the governments in developing regions would appear to be busy with economic construction rather than supplying BPS, resulting in the huge gap in BPS of their regions as compared with developed regions. That is, China's inter-provincial equalization level of BPS began to decrease.

Therefore, we will assume that China's inter-provincial equalization level of BPS is a function of the following factors：

$$E_p = f(PGDP, Finance, \Pr efer, Decen, Transfer, Open, Market, Urban) \quad (10)$$

Where "PGDP" measures inter-provincial differences of economic development, "Finance" is the gap in financial capacity, "Prefer" is differences in local governments' preferences3, differences in local governments' preferences "Decen" is fiscal decentralization degree, "Transfer" is the size of transfer payments, "Open" is the level of opening up, "Market"and "Urban"are marketization and urbanization, respectively.

In order to estimate the function, we use OLS and assume linearity, as in the following:

$$\begin{aligned} E_p = {} & cons + a_1 gdp + a_2\, finance + a_3 prefer + a_4 decentr + a_5 transfer \\ & + a_6 open + a_7 market + a_8 urban + fi + u_i \end{aligned} \quad (11)$$

[3] It can be measured by the ratio of the expenditure of basic construction with total expenditure of the government. The higher the ratio, proportion to the attention of economic construction, the government may pay more attention to the economic growth, rather than the provision of public service.

Where, cons is constant term, fi captures regional fixed effects, and ui an error term.

B. Data description

The variables and data sources in the above econometric model are described as follows.

The dependent variable is S_{it} —China's inter-provincial equalization index of BPS, calculated as in equation (8). The indicators selected in this study considered all BPS by combination with stock indicators and flow ones, more objectively and comprehensively. At the same time, the indicators are obtained after being weighted, reflecting the relative importance of different BPS.

Inter-provincial gap of economic development is the ratio of per capita GDP in one province to the average in the nation. If the ratio is greater than 1, it shows that economic development degree in this province is higher than national average; if less than 1, that province is below the national average.

Inter-provincial gap of financial capacity is the ratio of per capita revenue in one province to the average in the nation.

Provincial governments' preference is the ratio of the investment in capital construction to total expenditure in the local budgets.

The degree of fiscal decentralization is the ratio of provincial per capita fiscal expenditure to the one in nation4.

The size of transfer payments is the ratio of net per capita transfer payments in one province to the one in the nation.

The level of opening to the outside world is the ratio of total investments of foreign-invested enterprises to per capita GDP in one province.

The level of marketization is the ratio of number of employees employed by state-owned units to total number of employees in one province.

The level of urbanization is the ratio of non-agricultural population to total population in one province

The data comes mainly from "Finance Yearbook of China" and "China Statistical Yearbook" from 1997 to 2007.

Owing to lack of relevant data in Chongqing in 1996, missing data in Chongqing in 1996 were by linear fitting of data from 1997 to 2006. At the same time, sampled data eliminates Tibet for its imperfect data. So there are 30-year samples of 29 provinces in panel data. Table 3 shows the results of descriptive statistics of panel data.

4 This variables may can measured by the ratio of non-provincial expenditure at county, community level divided by total expenditures consolidated at provincial level, but I can't find the data.

TABLE 3-DESCRIPTIVE STATISTICS OF PANEL DATA

variable	Mean	Median	Maximum	Minimum	Std. Dev.
Provincial equalization index of BPS	0.282997	0.255023	0.757622	0.084830	0.139539
Inter-provincial gap of economic development	1.121767	0.823569	4.431607	0.335497	0.792429
Inter-provincial gap of financial capacity	0.590021	0.355655	3.293479	0.175730	0.633869
Provincial governments' preference	0.107031	0.093033	0.295092	0.031344	0.048288
The degree of fiscal decentralization	1.259577	0.964169	5.220658	0.517194	0.908842
The size of transfer payments	1.273534	1.037453	6.996580	0.437868	0.721578
The level of opening to the outside world	0.295612	0.107373	1.749675	0.032044	0.389794
The level of marketization	0.159462	0.133103	0.537298	0.054618	0.089476
The level of urbanization	31.88128	26.88000	85.76000	13.87000	15.62169

Source: Author's calculation.

C. Empirical estimating

To estimate model (11), it is necessary to control for non-observed characteristics of individual and time of units in the panel data estimation. At the same time, by weighted least squares estimation method, the effects of heteroscedasticity are eliminated. This paper makes use of the general least squares estimates (EGLS) to correct for fixed effect or random effect. The results from the LM and Hausman tests indicate that using fixed effects panel estimation is the correct approach .to economic analysis. The regression results by software Eviews5.1 can be seen in Table 4.

Model (1) in Table 4 shows regression results when all of the above supply-and-demand factors of BPS are brought into the regression model (11). Based on the regression results of Model (1), we expand it with Model (2) model showing the impacts of location factor by setting up two dummy variables—eastern regions and

TABLE 4-REGRESSION RESULTS OF DETERMINANTS OF CHINA'S INTER-REGIONAL EQUALIZATION OF BPS

Variable	(1)	(2)	(3)
C	0.071089	0.069366	0.070235
	(8.901954)***	(8.212169)***	(8.970144)***
Inter-provincial gap of economic development	0.066332	0.051825	0.053593
	(7.016698)***	(4.485683)***	(4.717903)***
Inter-provincial gap of financial capacity	-0.157503	-0.14202	-0.105662
	(-3.210544)***	(-2.892942)***	(-5.549391)***
Provincial governments' preference	-0.500252	-0.482695	-0.48486
	(-7.479473)***	(-7.101497)***	(-7.348168)***
The degree of fiscal decentralization	0.164165	0.161611	0.130451
	(4.149853)***	(4.120417)***	(11.00952)***
The size of transfer payments	-0.014848	-0.01182	
	(-0.961859)	(-0.768936)	
The level of opening to the outside world	0.068623	0.059684	0.058141
	(7.133885)***	(5.535991)***	(5.433344)***
The level of marketization	0.292997	0.277873	0.267021
	(6.380974)***	(5.994997)***	(5.925570)***
The level of urbanization	0.000913	0.001034	0.001173
	(2.525643)**	(2.696413)***	(3.220761)***
Dummy variable-Eastern regions		0.017335	0.014675
		(2.088673)**	(2.055068)**
Dummy variable-central regions		0.004324	
		-0.715622	
LM test	6.692121***	6.495541***	6.566219***
Adjusted R^2	0.937955	0.938595	0.938783

Source: Author's calculation, The figure in parentheses represents the standard deviation, ***, **, * represent significance level of 1%, 5%, respectively.

central regions5. Also based on the regression results for Model (2), Model (3) shows the regression results after removing variables which are not significant. The three econometric models show that most variables are statistically significant at the 0.01 level or higher, while the adjusted R2 is over 0.90.

I will mainly interpret the results based on Model (3). From Table 4, it can be found that the inter-provincial gap in economic development, the degree of fiscal decentralization, the level of opening to the outside world, marketization and urbanization, dummy variable-Eastern region

[5]Using traditional trichotomy: Eastern regions includes Beijing, Tianjin, Hebei, Liaoning, Shanghai, Jiangsu, Zhejiang, Fujian, Shandong, Guangdong and Hainan(11 provinces); Central region includes Shanxi, Jilin, Heilongjiang, Anhui , Jiangxi, Henan, Hubei, Hunan(8 provinces); Western regions includes Inner Mongolia, Guangxi, Sichuan, Guizhou, Yunnan, Shaanxi, Gansu, Qinghai, Ningxia, Xinjiang, and other 10 provinces (10 provinces).

are relative positively with China's inter-provincial equalization level of BPS; inter-provincial gap of financial capacity and provincial governments' preference relative negatively with equalization level.

Increasing by 1% the inter-provincial gap of economic development, China's inter-provincial equalization level of BPS will decrease by 0.05%, which shows local economic development is the fundamental base for the development of BPS. Therefore, to implement an equalization strategy of BPS, the gap of China's regional economic development cannot be allowed to expand too large, or the gap of regional economic development will lead to a much gap of regional BPS.

Increasing by 1% of the degree of fiscal decentralization, China's inter-provincial equalization level of BPS will increase by 0.13%, which proves fiscal decentralization in China's helps to promote local supply level of BPS. Therefore, it is quite that incentive effects of fiscal decentralization to local governments have been significant and it forced local governments to enhance and improve local BPS in order to heighten regional competitiveness(Dimitrios Diamantaras, Robert P. Gilles, 1996). By provision of better BPS, local governments may be want to attract more FDI or High-quality workers.

Increasing by 1% of the level of opening to the outside world, China's inter-provincial equalization level of BPS will increase by 0.058%, which illustrates China's opening to the outside world is based on providing high-quality and efficient BPS and direct foreign investment (FDI) forces local governments to supply public goods such as roads, bridges and urban construction, thereby attracting more FDI into the local markets.

Increasing by 1% of the level of marketization, China's inter-provincial equalization level of BPS will increase by 0.267%. The growth of the level of marketization means improving gradually local market environment, and the improvement of BPS is also a key to the market environment perfecting during China's transformation from traditional planned-economy to socialist market economy.

Increasing by 1% the level of urbanization, China's inter-provincial equalization level of BPS will increase by 0.11%. The rise of urbanization rate means the concentration of population and industries and the revealing of scale economies in the supply of BPS. Dummy variable-eastern regions has significantly positively correlation with China's inter-provincial equalization level of BPS, and central regions do not have significant correlation with equalization level of BPS, which reveals that the gap of BPS is mainly the one between eastern regions and central-western regions and that the gap of BPS between central and western regions is not very obvious. At the same time, eastern regions are relatively developed regions in China, therefore it must be noted that as eastern regions strengthen their advantages of BPS by taking advantage of their developed economy in the future, the welfare level of residents in central-western regions is going to lag behind the level in eastern regions. Again, one needs to distinguish between two thing (1) western and central regions can improve their BPS, but (2) the gap between produces can widen if BPS in the eastern provinces increases faster.

Increasing by 1% of inter-provincial gap of financial capacity, China's inter-provincial equalization level of BPS will decrease by 0.105%, which shows that most of China's local finance is spending in government consumption and direct investment and a little of local finance in local BPS. Therefore, the gap of BPS does not reflect the gap of local finance, and many local governments hope to gain more from the central government's fiscal transfer payments to supply local BPS. In general, the more local fiscal revenue, the more input of BPS should be. But over recent years, administrative expenses in many developed regions in China have increased quickly,

which is far higher than the corresponding expenses of BPS. The fact that the preferences of provincial governments are relatively negative with China's inter-provincial equalization level of BPS witnessed provincial governments' preference for developing local economy rather than improving local residents' welfare by supplying more BPS. Therefore, it is urgent for local governments to restructure their function and put supplying BPS into the performance evaluation system of officials.

Model (1) and Model (2) show that the size of transfer payments is not significantly related to inter-provincial equalization level of BPS in China (Kinglun Ngok, 2012). Due to the defects of the current transfer payment system, transfers have not played a role in equalization of regional BPS.

IV.CONCLUSIONS

This article analyzes the developing trends and determinants of inter-regional equalization of BPS in China from 1996 to 2006. The conclusions drawn from the analysis are as follows:

Firstly, based on the developing stages of China's economy and social characteristics, the inter-provincial equalization assessment system of BPS in China must include basic education, public health and basic medical care, public culture, basic scientific research, employment and social security, public infrastructure and environmental protection, and set up different weight coefficients in accordance with their fundamental situation.

Secondly, China's inter-provincial equalization level of BPS from 1996 to 2006 shows a worsening or downward trend. Services that are provided in relatively reasonable degree of equalization are public culture, public infrastructure, ecological services and environmental protection; the must-improve services in terms of equalization degree are employment and social security services, public health and basic medical services; and urgently needed to improve services in the degree of equalization are basic education and basic R&D services.

Thirdly, it can be found that inter-provincial gap of economic development, the degree of fiscal decentralization, the level of opening to the outside world, marketization and urbanization, dummy variable-eastern region are positively related with China's inter-provincial equalization level of BPS; inter-provincial gap of financial capacity and provincial governments' preferences are negatively related with the equalization level. Transfer payments have not played a significant role in equalization of regional BPS so far.

These conclusions have some direct policy implications.

Firstly, the governments should reallocate Public Spending for BPS(Santosh Mehrotra, et al, 1998), focusing on those sub-BPS, which have larger weighting coefficients in the equalization assessment system and are urgent-to-improve services, such as basic education, public health and basic medical care, so that limited finance gains the most efficient results.

Secondly, the inter-provincial gap of economic development positively related with China's inter-provincial equalization level of BPS demands a narrow gap of inter-provincial economic development. Allowing the rational flow of the population, supporting developed regions to developing ones, and setting up aggregation economies in central and western regions would help ensure that the economic gap among regions remains at a reasonable limits.

Thirdly, the degree of fiscal decentralization, the level of opening to the outside world, marketization and urbanization are positively related with related inter-provincial equalization level of BPS in China, which asks the governments to improve the degree of fiscal decentralization, the level of opening to the outside world, and marketization and urbanization in the central and western regions.

Finally, the facts that inter-provincial gap of financial capacity and provincial governments' preferences are negatively related with equalization level, and transfer payments have not played a role in equalization of regional BPS forces. In order to s Sustainable supply BPS(Deepak Sanan, 2004), it is time for the central government to establish an equitable transfer payment system and should include the BPS in the performance evaluation system of officials at the sub-national level.

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ACKNOWLEDGEMENT

The authors would sincerely like to thank Prof. Chen Xiushan for his important suggestions and an anonymous referee for his important comments and suggestions. All remaining errors and omissions are attributable to the authors alone. Financial support for this research is provided from National Funds of Social Science of China "On Regional Equalization of Basic Public Services and governmental fiscal balance mechanism"(07BJL019), 2010 Major Project Development Scheme in Central University Basic Research Funds of CCNU "Regional economic policy in China: combinational goals, realizing path and dynamic evaluation," and 2012 Explorative and Innovative Projects in Central University Basic Research Funds of CCNU "Fiscal decentralization, governmental preferences and the supply of basic public services" (CCNU12A04002)."

DINAMIČKA EVALUACIJA I ODREDNICE KINESKE INTERREGIONALNE EKVALIZACIJE OSNOVNIH JAVNIH USLUGA

Sažetak: Unatoč tridesetogodišnjim reformama i otvaranju koje je dovelo do brzog ekonomskog razvoja Kine, jaz između osnovnih javnih servisa kao što su osnovno školstvo i zdravstvo se među kineskim provincijama produbio, što je primoralo kinesku vladu da 2005. osmisli strategiju Ekvalizacije osnovnih javnih usluga (BPS). Pomoću ekonometrijske analize, ovaj rad istražuje uzroke opadanja razine regionalne ekvalizacije osnovnih javnih usluga u Kini. Zaključeno je da su razina regionalnih jazova u ekonomskom razvitku, razlike u fiskalnoj decentralizaciji, stupanj otvorenosti vanjskom svijetu i marketizacije te razina urbanizacije znatno pozitivno korelirani s razinom regionalnih osnovnih javnih usluga; istodobno su regionalni disparitet financijskog kapaciteta i vladinih preferencija znatno negativno korelirani s razinom regionalnih osnovnih javnih usluga; ipak, transferna plaćanja centralne vlasti ne igraju ulogu u promociji ekvalizacije osnovnih javnih usluga. Vidi se da bi se u svrhu poboljšanja regionalne ekvalizacije osnovnih javnih usluga u Kini, jaz u ekonomskoj razvijenosti regija trebao kontrolirati unutar racionalnih granica, trebala bi se uspostaviti normativna fiskalna decentralizacija a sustav transfernih plaćanja reformirati s eksplicitnim ciljem ekvalizacije na umu. Istovremeno, centralna vlast bi trebala reformirati trenutni rigidni sustav upravljanja registracijom domaćinstava ili interni sustav putovnica poznat kao *hukou*. Kako bi se osigurao racionalni tok populacije lokalne vlasti bi trebale poboljšati pružanje osnovnih javnih usluga a ne jednostavno oslanjati se na konkurenciju s ciljem regionalnog ekonomskog rasta.

Ključne riječi: Osnovne javne usluge, ekonometrijska analiza, panelni podaci

EKONOMSKA ISTRAŽIVANJA-ECONOMIC RESERACH
ISSN 1331-677X print

2013 Volume 26(1): 69-100

IS EMPLOYMENT DECREASING DUE TO MINIMUM WAGE INCREASE?

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ARTICLE INFO

Article data:
- Received: 14 September 2012
- Accepted: 21 December 2012

JEL classification: J08, J31, J38, J83

Keywords:
- Minimum Wage
- Employment Rate
- Kaitz index
- Croatia

ABSTRACT

The paper aims at modelling and quantifying the connection between minimum wage and the employment rate of workers distributed according to age in the Republic of Croatia, on the basis of data from the Labour Force Survey for the period from 2000 to 2010 and by using a panel method with fixed effects aiming at proving the assumed hypothesis on the negative effect of the minimum wage increase on the employment rate of vulnerable groups of workers. The research results indicate the existence of a relationship with a positive direction but little practical significance considering the need for a felt increase of minimum wage.

Reference to this paper should be made as follows: Blažević, S. 2013. Is Employment Decreasing Due to Minimum Wage Increase?, *Ekonomska istraživanja – Economic Research 26(1)*: 69-100.

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I. INTRODUCTION

Minimum wage economics has been studied and formed as a separate area of research for more than a century. The social and economic turmoil is changing the minimum wage policy and the scientific efforts put forward contradictory conclusions on its influence. Since "economics was not defined once and for all, rather the topic of interest for the economists, whether in terms of the issues they investigate or the analytical techniques used to deal with these issues, changes and develops in time"[1] so does the minimum wage economics keep changing and completing past notions with new notions, depending on the changes that occur.

"The minimum wage is a contentious and emotional issue in the United States and it has been for almost a century"[2]. According to Levin-Waldman[3]the cause of so much interest is not efficiency, because the minimum wage is quite low, but rather the belief that the government is imposing a low wage policy. All through history, public opinion has always been different than that of economists while the workers are undoubtedly advocating a minimum wage increase. The opponents of the minimum wage policy think that it is an institutionally obsolete tool that does not fulfil the goal of diminishing the poverty of workers and increasing their purchase power, rather the contrary, it causes a decrease of employment of vulnerable groups on the labour market. The advocates of the minimum wage think that a moderate increase of the minimum wage increases the welfare of low-paid workers as well as their overall negotiating position. The number of advocates of the minimum wage policy has been rapidly growing in the last decade and the majority is rejecting the classical theory focused on the negative effect and defending the empirical evidence provided by Card and Krueger[4] with the positive direction. The new literature on minimum wage gained importance in 2006 when 659 economists wrote an open letter[5] which stated the positive aspects of the minimum wage increase manifested in the elimination of the unbalance in the negotiation on the labour market, the encouragement of monopsonists to increase employment, the coordination of low-paid work market, an increase in productivity and an increased purchase power of the workers.

From the aspect of public policy, the minimum wage is an attractive tool because it does not request an increase of public expenditure while having a strong political symbolism. Although the majority of empirical studies point out the negative effects, the unions have always supported and advocated the minimum wage increase, seen by some economists as an indicator that is "more consistent with economic self-interest than with altruism"[6].

The literature on the minimum wage is mainly focused on the role of the minimum wage in the domain of workers' employment while neglecting the social sphere. Looking back, the most frequent research was into the relationship of the minimum wage variables and the employment rates, in particular for certain groups of workers like teenagers and low-wage or less educated workers. The stress was on the employment rate compared to the unemployment rate because

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[1] Željko Mrnjavac, "Povijest ekonomije rada i pogleda ekonomske teorije na nezaposlenost," in *Uloga povijesti ekonomske misli u nastavi na fakultetima društvenih znanosti u Hrvatskoj*, edited by Đuro Š. Medić and Ivan Ferenčak, Druga znanstvena konferencija katedri za ekonomsku teoriju ekonomskih fakulteta u Hrvatskoj(Osijek; Ekonomski fakultet Osijek, 2001), 18.

[2] Ritchard Sutch, "The unexpected long-run impact of the minimum wage: an educational cascade", *NBER Working Paper* No. 16355 (2010): 3, http://www.nber.org/papers/w16355.pdf

[3] Oren Levin-Waldman, *The case of the minimum wage: competing policy models* (New York: State University of New York Press, 2001), 4.

[4] David Card and Alan B. Krueger, *Myth and Measurement - The New Economics of the Minimum Wage* (New Jersey: Princeton University Press, 1995)

[5] Economists' Statement, "Hundreds of economists say: raise the minimum wage", *Economic Policy Institute*, (2006): http://www.epi.org/page/-/pdf/epi_minimum_wage_2006.pdf?nocdn=1

[6] David Neumark and William L. Wascher, *Minimum wages* (United States: The MIT Press, 2008), 284.

due to the minimum wage increase, non active persons might be drawn to the labour market and start actively looking for work, thus becoming part of the workforce that can grow faster than the number of jobs, resulting in an increase of the unemployment rate which is not the result of a decrease of jobs. This makes the unemployment rate an unreliable measure so that the economists have turned to the employment rate instead.

At the beginning of the 20th century there was a scientific debate on the effects of the introduction and increase of the minimum wage and until the 90ies the discussion was based on attempts to prove the assumptions of negative consequences. New literature on the role of the minimum wage widened the discussion in both a positive direction and towards arguments on an overrated effect of the minimum wage. Considering the incoherence of the conclusions trying to quantify the scope of the negative effect on the employment level, a generalized dismissal of the minimum wage policy seems to be too harsh. A total absence or an existence of only a negligible negative effect of the minimum wage on employment can conceal harmful latent consequences in the sense of an intensification of the working hours, which can be very bad for the health and safety of the workers. The influence of the minimum wage on the quantitative and qualitative employment of workers depends on numerous specific factors that need to be taken into consideration when dealing with the minimum wage policy in industry, like the interaction with the general level of wages, the level of education and training, working conditions and the national employment policy[7].

II. LITERATURE REVIEW

The debate surrounding the negative connotations of the effect of the minimum wage on the employment of low-wage workers began at the beginning of the 20th century and precisely in 1906 with evidence provided by Smith and Taussig. A different current of thought was represented by progressive economists (Sidney Webb, Roger Seager and John Commons) who, for social reasons (the problem of workers exploitation), believed the minimum wage to be an indispensable instrument. No consensus has been reached for more than a century so that the issue of the minimum wage is the most frequently used example of theoretical and empirical divergence of opinions among economists. In the last two decades there is a third current of thought that has joined the discussion, one pointing out the argument of an excessive stress on the minimum wage policy which was additionally provoked by Michl[8] and his statement on the causes of the dissent which are purely of a methodological nature where the opposite results were obtained depending on the use of the dependent variable (ex. number of workers or number of working hours) as well as on the specification of the model.

Since 1980, in the most fertile period of research into the role of the minimum wage, there have been hundreds of studies on the effect and consequences of the minimum wage that differ according to numerous criteria, among which the most important are: a) the source of information, b) the choice of the dependent variable, c) the choice of the time period for research, d) the state that was researched, e) the choice of the group of workers under the influence of the minimum wage, f) the research of the effect on a micro or macro level, g) the research methodology.

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[7]Daniel Vaughan Whitehead, "Minimum wage revival in the enlarged EU: explanatory factors and developments," in *The minimum wage revisited in the enlarged EU*, edited by Daniel Vaughan Whitehead (International Labour Organization: Edward Elgar Publishing Limited, 2010), 33.

[8] T.R. Michl, "Can rescheduling explain the New Jersey minimum wage studies?", *Eastern Economic Review*, 26, no. 3 (2000): 265-276.

The most frequently used source of information for the analysis of the effect of the minimum wage is the workforce research or the Labour Force Survey (LFS) in Croatia. The greatest number of researches regards the USA where scientists mostly use the Current Population Survey (CPS) as the most detailed research of the working population. The problems arising from such sources are auto-selection, validity, verifiability, reliability, etc. However, from the point of view of methodology, greater problems arise in surveys conducted independently by the scientists, namely the problem of sampling, the way the survey is conducted, repeated questioning and similar. These are all arguments against the research conducted by Card and Krueger who proved the positive effect of the minimum wage on employment through a telephone survey of selected units so that the reliability of their sample is often put in question. The LFS is conducted in most countries so it is possible to compare results and, regardless of some methodological doubts, it remains the most representative source for this kind of research.

The effect of the minimum wage on employment usually takes the employment rate as a dependent variable. Although most research finds a negative relation between the minimum wage and employment, the existence of doubt started a wave of research using working hours as the dependent variable. Authors promoting conclusions on the negative relation of the minimum wage and employment confute the opposing research with the argument of increased working hours, which proves the negative connotation of the minimum wage for the vulnerable groups of workers on the labour market. However, there is much debate around this issue as well because of contradictory evidence. Bernstein and Schmitt[9]pointed to the fact that companies can choose to reduce the working hours of existing employees instead of reducing the number of workers, which makes sense in terms of the traditional model lead by the costs of work. According to their interpretation, companies shall look for ways to reduce the use of a more expensive input, so if they keep the existing level of employment, they will reduce the number of working hours which will result in a decrease of wages. Some recent research[10]indicates that there is no connection between the minimum wage and working hours. Danziger[11] found the cause for diverse conclusions on the effect of the minimum wage on working hours in the non-observance of the Labour Act and the likelihood for the employer to be fined for non-observance (employer's risk), which affects job offer.

The time period is relative to a) the time series taken for the research, b) the effect of the minimum wage in the short, medium and long run. The analyses show that the use of the same methodological framework on the same variables but for a different period leads to different conclusions[12]. As for the horizons of the observed effects of the minimum wage, Baker, Benjamin and Stanger[13]concluded that employment adapts in the long run due to current and past changes of the minimum wage by which the dynamic response of employment to the minimum wage changes cannot be optimally described with short-term parameters but with those having a

[9] Bernstein, Jared and John Schmitt. "Making work pay. The impact of the 1996-97 minimum wage increase," *Economic Policy Institute*, Washington (1998): 37, http://www.epi.org/publication/studies_stmwp/

[10] Dale L. Belman and Paul Wolfson. "The effect of legislated minimum wage increase on employment and hours: a dynamic analysis", *Labour*, 24, no. 1 (2010): 1-25.

[11] Danziger, Leif. "Noncompliance and the effects of the minimum wage on hours and welfare in competitive labor markets," *IZA Working Paper* No. 4408 (2009), papers.ssrn.com/sol3/Delivery.cfm/dp4408.pdf?abstractid=1489231&mirid=1

[12] Nicolas Williams and Jeffrey A. Mills, J.A. "The minimum wage and teenage employment: evidence from time series", *Applied Economics*, 33, no. 3 (2001): 285–300.; Stephen Bazen and Velayoudom Marimoutou. "Looking for a needle in a haystack? A re- examination of the time series relationship between teenage employment and minimum wages in the United States", *Oxford Bulletin of Economics and Statistics*, vol. 64 (December 2002): 699–725.

[13] Michael Baker, Benjamin, Dwayne and Shuchita Stanger. "The highs and lows of the minimum wage effect: a time series cross-section study of the Canadian law", *Journal of Labor Economics*, vol. 17, no. 2 (1999): 318-350.

longer planning horizon (like input substitution). Belman and Wolfson[14] proved that changes and adjustments of employment take place within two and a half years, while adjustments in the working hours take place after the first year, meaning that the horizon included in the research should be carefully determined to avoid making erroneous conclusions on the (non) existence of connection due to the short-term character of the analysis.

Considering the geographical determinant, research can be divided in three groups of states: developed, developing and undeveloped. The level of development is relative to economic indicators, in particular of the labour market (the level on (un)employment, the level of labour market flexibility, participation of young workers, level of union organization, volume of unofficial economy, presence and role of labour market institutions and similar). So many studies research developed countries that Alatas and Cameron find it "surprising that there are so few papers on this topic in developing countries, given that minimum wages are also widely employed there as a means of raising living standards. The issue of minimum wage setting in low-wage countries has stimulated considerable international interest, with concerned citizens in wealthy nations calling for higher wages to be paid in developing countries to limit the exploitation of labour by multinational corporations"[15]. The characteristics of economy and labour market may influence the differences in conclusions on the role of the minimum wage so that it is necessary to gather as much information as possible on the characteristics of the selected states and the included variables as well as the used methodology in order to discover a possible pattern in drawing conclusions considering the research process design. For example, Neumark and Wascher[16]came to the conclusion that the minimum wage does not result in a decreased employment in those countries in which it is determined by way of national collective negotiating. Also, according to their research, in more rigid labour markets minimum wage has a stronger negative effect as well as in those with a higher level of union organization.

Teenagers (persons from 15 to 19 years of age) are a group of workers that are traditionally analyzed when speaking of the minimum wage impact. The most popular model that was taken as a consensus for a whole decade (in the 80ies) is the BGK model[17]. With this model the authors started research that tried to prove or refute their conclusion that a minimum wage increase by 10% decreases the employment of young workers between 1% and 3%. According to the frequency of research, the groups of workers on whom the minimum wage can have various effects are the younger workers (from 20 to 24 years of age), low-wage workers, women, migrants and older workers.

The macro level of the minimum wage effect within the analysis of employment includes the dependent variable of the aggregate employment rate while the micro level of the research relates to the analysis of the impact on single groups of workers considering the demographic, economic and social characteristics like sex, age, education, location in the wage distribution, the actual job of the worker, residence (urban or rural area).

The cause of such variegated research conclusions can be of a methodological nature, mainly due to the use of various proxy minimum wage variables[18] or different theoretical (perfect

[14] Dale L. Belman and Paul Wolfson. "The effect of legislated minimum wage increase on employment and hours: a dynamic analysis", Labour, 24, no. 1 (2010): 1-25.

[15] Vivi Alatas Lisa A. Cameron. "The impact of minimum wages on employment in a low-income country: a quasi-natural experiment in Indonesia," *Industrial and Labor Review*, vol. 61, no. 2, article 4 (2008), 201.

[16] David Neumark and William L. Wascher, *Minimum wages* (United States: The MIT Press, 2008), 90-91.

[17] Charles Brown, Gilroy, Curtis and Andrew Kohen. "The effect of the minimum wage on employment and unemployment," *Journal of Economic Literature*, vol. 20, no. 2 (1982): 487-528.

[18] Sara Lemos. "How do alternative minimum wage variables compare?" *Working Paper* No 05/6, University of Leicester, Department of Economics, 2005, https://lra.le.ac.uk/bitstream/2381/4438/1/dp05-6.pdf

competition model, monopsony model, political model) and empirical models (difference-in-differences method, time series analysis, panel analysis).

III. METHODOLOGY OF RESEARCH INTO THE CONNECTION BETWEEN MINIMUM WAGE AND EMPLOYMENT RATE

The data used in the research are unprocessed entries of answers provided by the respondents in the Labour Force Survey (LFS) conducted by the Croatian Bureau of Statistics and they encompass the period from 2000 to 2010 on a semi-annual basis. Considering the fact that the LFS has been conducted on a quarterly basis since 2007, wanting to keep the dynamics of processing for the semi-annual data, the answers for the first and third trimester as well as the answers for the second and fourth semester from 2007 to 2010 have been summed. The dynamics of surveying (2-2-2) is such that households are surveyed in two consecutive trimesters, left out of the sample for the next two and surveyed again in the following two consecutive trimesters. By joining trimesters we avoid the repetition of the same households in the sample. On average, around 5,600 residential units are selected into the sample in one trimester.

Although the LFS and its variants are used in most minimum wage research, there are methodological problems that can arise from the use of this seemingly most reliable source of information. "The drawbacks of this kind of information gathering can be technical and statistical problems of the scope of the representative sample, changes in the size and composition of the sample, credibility of the answers, and precision of estimates based on the sample and the interpretation of changes during different periods of time"[19]. The LFS is conducted by surveying the population which makes the answers not entirely reliable, regardless of the anonymity of the survey. Another potential problem is the registration of the answers by the person conducting the survey as well as the statistician turning the answers into codes. When a mistake is spotted when entering the data it is difficult to double check the answer, all the more with the passing of time. The person conducting the survey may repeat the question right away but the statistician cannot do that when entering the data. Several solutions are possible: mark the mistake as a missing value or enter the most likely answer for that person. The next problem is the problem of self-selection. For example, when addressing the issue of minimum wage, the obtained results indicate that it has the greatest negative effect on teenage employment rate but teenagers can also be the least productive or the least motivated workers (because they are still in school or know they can rely on the family income) that may be laid off first in case of a minimum wage increase and substituted for more productive workers. The social expenditure would not be substantial in that case and the conclusion may go in the negative direction for teenagers.

The research includes 22 time periods (t). The persons included in the sample are those that answered the question on the amount of their net wage while the peak values have been eliminated. The sample includes dependent workers and craftsmen, meaning those self-employed workers and those not under a work contract are excluded from the sample. In the LFS this question is relative to the position in employment which includes all those respondents working in state enterprises, institutions, organizations, working for an employer in the private sector, working in an enterprise undergoing the transition process and those that work or are entrepreneurs in their own craft. The sample did not include workers/entrepreneurs in their own enterprise, farmers, freelance workers/entrepreneurs, aiding members, those employed with an authoring contract, service contract, student's contract and similar contracts as well as those paid directly in cash, nature or by agreement. The sample was also restricted to those workers working

[19] Željko Mrnjavac. *Mjerenje nezaposlenosti* (Split: Ekonomski fakultet Split, 1996), 40.

for more than 30 hours a week. This made the structure of the respondents similar to that considered by the Croatian Bureau of Statistics when calculating the average wage in Croatia.

TABLE 1 - DATA ON THE NUMBER AND WAGES OF RESPONDENTS IN THE LFS FROM 2000 TO 2010

Period	Number of respondents	Share of answers on net wage (%)	Net wage interval of the sample
2000:1	20,503	31.61	0.1-32,000
2000:2	18,214	34.85	0,1-31,500
2001:1	20,044	34.71	0,1-30,000
2001:2	18,944	35.12	0,1-40,000
2002:1	22,592	35.51	0,1-20,000
2002:2	21,465	35.88	0,1-33,600
2003:1	20,402	36.17	0,1-40,000
2003:2	19,624	36.22	0,1-45,000
2004:1	19,255	37.33	0,1-40,000
2004:2	18,751	36.41	0,1-36,000
2005:1	18,723	34.97	0,1-28,000
2005:2	18,226	35.53	0,1-30,000
2006:1	18,077	34.58	0,1-30,000
2006:2	17,538	36.45	0,1-30,000
2007:1	22,712	38.02	0,1-33,000
2007:2	22,606	38.22	0,1-33,000
2008:1	22,095	38.71	0,1-33,000
2008:2	21,813	38.82	0,1-40,000
2009:1	21,140	38.09	0,1-30,000
2009:2	21,155	37.92	0,1-30,000
2010:1	20,076	30.23	0,1-25,000
2010:2	19,996	36.06	0,1-35,000

Source: Author's calculation based on the LFS entries.

The model was elaborated on an individual level in two variants considering the use of various minimum wage variables. In his work in 1999, Brown pondered the role of data handling and specification in reaching conclusions. He concluded that researchers should use various specifications to test the robustness of the model and include as many control variables as possible[20].

[20] See: Olalekan Edagbami. "The employment effects of the minimum wage: a review of the literature," Research Report W/32, Work Network, Canadian Policy Research Networks (2006), 19: http://hussonet.free.fr/edagbami.pdf

The research was conducted using a panel analysis aiming to prove the assumed negative relation between the minimum wage and the employment rate of workers distributed according to age. A panel analysis was used which set some limitations in modelling. First, it is hard to separate the exclusive effect of the minimum wage because other factors can influence movements on the labour market, like economic cycles, trade conditions, exchange rate, technological conditions and similar. Another problem is the complex econometric methodology that is still developing (the problem of stationarity, endogeneity, seasonal variations, structural breaks, insufficient dispersion of data through time which is also visible in issues such as the minimum wage and model specification).

IV. THE EFFECT OF THE MINIMUM WAGE ON EMPLOYMENT RATE - RESEARCH

The interdependence of the minimum wage and the employment rate is analyzed in more detail in various age groups of workers following the conclusions from literature[21] according to which some age groups of workers, like teenagers, are more affected by the minimum wage increase which manifests itself in a decrease of their employment rate. Since on the Croatian labour market, considering age, people in higher age groups are also part of the vulnerable group of workers, the data on workers were extracted for the following groups of workers:

- group 1 = workers from 15 to 19 (i = 1)
- group 2 = workers from 20 to 24 (i = 2)
- group 3 = workers from 25 to 29 (i = 3)
- group 4 = workers from 30 to 39 (i = 4)
- group 5 = workers from 40 to 49 (i = 5)
- group 6 = workers from 50 to 59 (i = 6)
- group 7 = workers from 60 to 65 (i = 7)

The age groups of workers (i) set for the period from 2000 to 2010 represent a quasi/pseudo panel[22] (hereinafter: panel) structure of data which makes the specification of the model as follows:

$$rate_emp_{it} = \beta_0 + \beta_1 MW_t + \beta_2 rate_emp_{it-1} + \beta_3 \overline{X}_{it} + \beta_4 Z_t + u_t \quad (1)$$

where the dependent variable stands for the rate of employment for the group of workers *i* in the period *t*, i.e. the previous period *(t-1)*. The variable *MW* stands for the minimum wage variable, $\overline{X}$ stands for the control variables vector, while *Z* stands for the dummy variable of the coming into effect of the Minimum Wage Act.

The source of the calculation of independent variables of single groups of workers is the LFS. Since the LFS is not a longitudinal panel and it is therefore not possible to spot changes on

[21] Charles Brown, Gilroy, Curtis and Andrew Kohen. "The effect of the minimum wage on employment and unemployment," *Journal of Economic Literature*, vol. 20, no. 2 (1982): 487-528.; David Card and Alan B. Krueger, Myth and Measurement - The New Economics of the Minimum Wage (New Jersey: Princeton University Press, 1995)

[22] The quasi or pseudo panel structure of data marks a grouped sample from the LFS where each period includes some other individuals in the group

the individual level for each worker, the respondents were grouped as above in order to spot the differences between them. The employment rate for the whole sample is calculated so that respondents older than 15 are selected to obtain the size of the working population while the number of employed people is obtained by isolating people over 15 who were at work or performing the activity they make a living from the previous week (at least for an hour) or did not do that but have a job to go back to or those people who are aiding members who, in the previous week (for at least an hour), worked for a compensation in money, nature or for the well-being of the family. The employment rate according to age groups was calculated by using the same methodology applied by the Croatian Bureau of Statistics, where the size of the working population was relative to the number of respondents in the observed age group while the number of employed people in this age group was obtained by isolating only the employed. The obtained employment rates match the officially published employment rates in the yearbook of the Croatian Bureau of Statistics but since the CBS does not calculate the employment rate of a larger number of age groups of workers, such as were needed for this research, the employment rates were calculated by using the LFS.

TABLE 2 - DESCRIPTION OF VARIABLES OF THE PANEL MODEL (ANALYSIS - AGE STRUCTURE OF WORKERS)

Mark	Description	Source
MW	Minimum wage variables:	
	- nominal minimum net wage	CBS[23]
	- Kaitz index	Independent calculation[24]
$Rate_emp_{t-1}$	Lagged employment rate (employment rate in the previous period)	CBS
$\overline{X}$	Control variables vector including:	
	- share of highly educated people in the total number of workers	LFS
	- share of women in the total number of workers	LFS
	- share of urban population in the total number of workers	LFS
	- average work experience	LFS
	- lagged growth rate of the GDP	Croatian Central Bank
	- minimum wage coverage	LFS
	- nominal average net wage	CBS
Z	Binary variable of the following values:	
	0= Minimum Wage Act not in force (until the second semester 2008)	
	1=Minimum Wage Act in force (from the second semester 2008)	

Source: Author's calculation.

In the panel analysis, the minimum wage variables include the nominal net wage (in log form) and the Kaitz index which uses the average wage for the single group of workers resulting in the Kaitz index for the observed group.

It is necessary to test the stationarity of the variables before the modelling, as shown in table 3. Considering the relatively small sample of time observations (22) and the section units (seven groups of workers) but also a balanced panel, a Levin-Li-Chu (LLC) test was used assuming joint processes of all observed sections in which the nul hypothesis is the existence of I(0), i.e. stationary processes. The results are elaborated further with the use of the Im-Pesaran-Shin (IPS) test in which the nul hypothesis is the stationarity of all series/sections in the panel while the alternative hypothesis is that there are non stationary processes in some sections.

[23] Minimum net wage = minimum gross wage - 20%
[24] Ratio of minimum and average wage (for single groups of workers)

TABLE 3 - STATISTICAL SIGNIFICANCE (P VALUES) OF LLC AND IPS STATISTICS (UNIT ROOT TESTING)

Variable	Constant		Constant and trend		First difference	
	LLC	IPS	LLC	IPS	LLC	IPS
Employment rate*	0.0074	0.0681	0.0073	0.0246	0.0000	0.0000
Log of minimum net wage**	0.9533	1.0000	0.0538	0.0305	0.0000	0.0000
Kaitz index (average wage)**	0.9150	0.9754	0.0048	0.0739	0.0000	0.0000
Log of average net wage*	0.0000	0.0014	0.0001	0.0446	0.0000	0.0000
Share of highly educated*	0.0002	0.0006	0.0000	0.0000	0.0000	0.0000
Share of women*	0.0000	0.0001	0.0000	0.0000	0.0000	0.0000
Share of urban population*	0.0140	0.0191	0.0003	0.0000	0.0000	0.0000
Experience*	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Lagged GDP growth rate**	1.0000	0.6542	1.0000	0.9874	0.0000	0.0000
Minimum wage coverage*	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Source: Research results
Legend: * stationary variable ** nonstationary variable

Separate testing was performed for the existence of unit characteristic values of variables per sections in order to determine the correct specification of the model when analyzing the effect of the minimum wage variables on the employment rate of single groups of workers.

TABLE 4 -STATISTICAL SIGNIFICANCE (P VALUES) OF IPS STATISTICS (UNIT ROOT TESTING)

Variable 58	IPS						
	1	2	3	4	5	6	7
Employment rate	0.4546	0.0665	0.2867	0.2211	0.1682	0.1469	0.7919
Kaitz index (average wage)	0.3031	0.8479	0.4333	0.9685	0.9533	0.8639	0.6773
Log of average net wage	0.8497	0.0100	0.6231	0.0174	0.0115	0.3162	0.0517
Share of highly educated	-	0.0064	0.9680	0.0080	0.0057	0.6373	0.0188
Share of women	0.6258	0.3328	0.0005	0.0083	0.0014	0.4756	0.4306
Share of urban population	0.0399	0.9544	0.1617	0.3117	0.5820	0.5375	0.0002
Experience	0.0245	0.0000	-	0.1143	0.0002	0.4322	0.0891
Minimum wage coverage	0.0000	0.0410	0.0441	0.0603	0.0506	0.0282	0.0008

Source: Research results
Legend: group 1 - workers from 15 to 19 years of age
group 2 - workers from 20 to 24 years of age
group 3 - workers from 25 to 29 years of age
group 4 - workers from 30 to 39 years of age
group 5 - workers from 40 to 49 years of age
group 6 - workers from 50 to 59 years of age
group 7 - workers from 60 to 64 years of age

The following table shows the results of the effects of the minimum wage variables on the employment rate with the use of OLS model with fixed effects and differentiated non-stationary variables.

TABLE 5 - EFFECT OF MINIMUM WAGE VARIABLES ON EMPLOYMENT RATE (PANEL ANALYSIS - AGE STRUCTURE)

Minimum wage variable	Panel OLS (fixed effects, differentiated nonstationary variables)
Log of minimum net wage	7.57
	(3.27)**
Kaitz index (average wage)	0.005
	(0.06)

Source: Research results
The table shows the coefficients of effects and standard error (in brackets)
Legend: ** statistically significant at a level of significance of 5%

Fixed and random effects models are methods used to estimate undetected effects between sections or in time. The fixed effect uses transformations to remove the undetected effects due to correlation while the random effect is attractive in case the undetected effect is not correlated to the other independent variables in the model. A fixed effects model was used since the intention of the research was to allow heterogeneity between section units or groups of workers, whereby it cannot be stated with certainty that the undetected effect is not correlated with other independent variables. The OLS model with fixed effects and differentiated non-stationary

variables points out a positive relationship whereby a minimum wage increase by 1% influences an increase of the employment rate by 0,7, which has no significant practical importance because this is a substantial increase of the minimum wage.

The analysis was elaborated further for each single group of workers depending on their age, in order to analyze the effect on a certain age group and in keeping with the postulates of the first auxiliary hypothesis, a negative relationship is expected for teenagers, young and older workers. The OLS method with fixed effects on differentiated variables was used.

TABLE 6 - EFFECT OF MINIMUM WAGE VARIABLES ON THE EMPLOYMENT RATE OF SINGLE GROUP OF WORKERS[25] (HAC[26])

Minimum wage variables	1	2	3	4	5	6	7
Log of minimum net wage	12.02	21.23	34.40	13.48	5.45	3.46	27.30
	(10.27)	(33.47)	(21.59)	(12.30)	(9.22)	(8.54)	(11.64)
Kaitz index (average wage)	0.15	0.19	0.71	-0.15	0.28	0.07	0.04
	(0.15)	(0.49)	(0.39)***	(0.25)	(0.26)	(0.19)	(0.20)

Source: Research results
The table shows the coefficients of effects and standard error (in brackets)
Legend: ** statistically significant at a level of significance of 5%
***statistically significant at a level of significance of 10%

The OLS analysis of joined data does not indicate the existence of a negative relationship between the minimum wage variables and the employment rates for any of the age groups of workers. The results are the following:

- The increase of the difference of the Kaitz index obtained with the average wage for one unit influences the increase of the difference in the employment rate of young workers from 25 to 29 years of age by 0.71 at a level of significance of 10%.
- In the group of workers aged 60 to 65, the increase of the difference in logarithms of the nominal minimum net wage by 0.1 increases the difference in the employment rate by 2.7 at a level of significance of 5%. The average change of the difference of the log minimum gross wage is 0.02 and the maximum is 0.12, meaning that there is a probability of change by 0.1 that, in practice, can lead to considerable changes in employment for single groups of workers categorized by age, however, this would be an exceptional increase of the minimum wage.
- There is no evidence of a statistically significant relationship between any of the minimum wage variables and the employment rate of teenagers, young workers aged 20 to 24, workers aged 30 to 39 and workers aged 40 to 49 and 50 to 59 years of age.

The analysis of joint data did not find evidence confirming part of the hypothesis relative to the existence of a negative relationship between the minimum wage increase and the

[25] Group 1 - workers from 15 to 19 years of age; group 2 - workers from 20 to 24 years of age; group 3 - workers from 25 to 29 years of age; group 4 - workers from 30 to 39 years of age; group 5 - workers from 40 to 49 years of age; group 6 - workers from 50 to 59 years of age; group 7 - workers from 60 to 64 years of age

[26] HAC stands for Newey-West HAC method which assumes the uncorrelatedness of residuals. It is an estimate that is consistent in cases of heteroskedasticity and autocorrelation of an unknown form.

employment rate of teenagers, young and older workers, which is in keeping with the data obtained with the OLS panel analysis with fixed effects indicating a statistically positive relationship if we observe the whole group of workers divided by age, although the practical significance is minimal. In the context of the set hypotheses, it can be concluded that the negative impact of the minimum wage variables on the employment rate of teenagers, young workers and older workers was not proved.

V. CONCLUSION

The minimum wage policy is largely based on strong psychological and political motives. "We need to summarize all the conclusions from a wide range of literature in order to be able to give guidelines to the public policy holders, however, it is quite difficult due to the large number of researches as well as the real complexity of the matter"[27]. The grouping of workers according to age characteristics indicates a direct positive relationship between the minimum wage variables and the employment rate whereby the minimum wage increase by 1% results in an increase of the employment rate by 0.7, which has no particular practical importance, regardless of the fact that the magnitude of the effect is significant, because this is a substantial increase of the minimum wage. The analysis of joint data did not show the existence of a negative relationship between the minimum wage variables and the employment rate of teenagers meaning that the negative effect was not proved. The assumed negative effect of the minimum wage increase on the employment rate of younger workers is refuted by the research results which indicate that an increase of the Kaitz index obtained from the average wage (meaning that the Kaitz index is declining) by one point affects the increase of the difference in the employment rate of young workers from 25 to 29 years of age by 0.71 at a level of significance of 10%. Namely, in the context of a minimum wage increase, this would mean that the average wage remains unchanged or that it changes to a lesser extent than the minimum wage, which has a positive effect on the employment rate of young workers. In the group of workers from 60 to 65 years of age there is a positive effect of the minimum wage increase on the employment rate, which refutes the set hypothesis on the negative effect.

Although positive effects of the minimum wage increase are noted in some groups of workers with an unfavourable position on the labour market, these are practically imperceptible values. There is room for future research in the analysis of single groups of workers with a more complex methodology "as well as a long-term horizon for labour force adjustment in response to a change in the minimum wage, and with a view to incorporating vital evolutionary changes and dynamics in the labour market"[28]. Also, it would be a good idea to introduce a longitudinal study of a representative sample of workers in the Republic of Croatia in order to clearly see the changes in the life and working cycle of workers as well as the interdependence of single variables, which would certainly lead to a better understanding of the functioning of the labour market and to the creation of effective public policy measures.

[27] See: David Neumark and William L. Wascher, Minimum wages (United States: The MIT Press, 2008), 287.

[28] Olalekan Edagbami. "The employment effects of the minimum wage: a review of the literature," Research Report W/32, Work Network, Canadian Policy Research Networks (2006), 35: http://hussonet.free.fr/edagbami.pdf

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APPENDIX

TABLE A1

Method: analysis, OLS with fixed effects and robust standard errors of differenced variables
Dependent variable: **employment rate**
Sample: 2001S2 2010 S2
Total number of observations (balanced panel): 140

Variable*	Coefficient	St. error	t statistics	p value
C	-22.03247	11.26007	-1.956690	0.0526
X_1	0.412184	0.059965	6.873726	0.0000
X_2	7.569952	3.272472	2.313222	0.0224
X_3	-0.037202	0.037105	-1.002620	0.3180
X_4	-0.056281	0.220268	-0.255511	0.7988
X_5	0.015105	0.016193	0.932820	0.3527
X_6	0.054134	0.014789	3.660355	0.0004
X_7	-0.148818	0.061618	-2.415168	0.0172
X_8	0.194912	0.043115	4.520773	0.0000
X_9	6.078202	1.519540	4.000028	0.0001
X_{10}	-0.191422	0.386328	-0.495490	0.6211
R^2		0.997817		
Adjusted R^2		0.997533		
DW statistics		2.308398		

Source: Research results

* List of independent variables: X_1 - lagged dependent variable; X_2 - **differenced log of net minimum wage**; X_3 - lag of GDP growth rate (differenced); X_4 - average working experience; X_5 - share of urban population; X_6 - share of women; X_7 - share of highly educated workers; X_8 - share of covered workers; X_9 - log of average wage; X_{10} - Minimum Wage Act implemented (dummy variable)

TABLE A2

Method: analysis, OLS with fixed effects and robust standard errors of differenced variables
Dependent variable: **employment rate**
Sample: 2001S2 2010S2
Total number of observations (balanced panel): 140

Variable*	Coefficient	St. error	t statistics	p value
C	-25.22809	11.76952	-2.143511	0.0340
X_1	0.412258	0.061134	6.743468	0.0000
X_2	0.004772	0.064299	0.074214	0.9410
X_3	-0.071195	0.049210	-1.446749	0.1505
X_4	-0.055909	0.224962	-0.248527	0.8041
X_5	0.019058	0.015114	1.260948	0.2097
X_6	0.054803	0.014270	3.840395	0.0002
X_7	-0.153326	0.065190	-2.351992	0.0203
X_8	0.175053	0.047701	3.669815	0.0004
X_9	6.478848	1.600328	4.048449	0.0001
X_{10}	-0.252169	0.455328	-0.553819	0.5807
R^2		0.997776		
Adjusted R^2		0.997487		
DW statistics		2.248449		

Source: Research results

* List of independent variables: X_1 - lagged dependent variable; X_2 - **Kaitz index differenced (average wage)**; X_3 - lag of GDP growth rate (differenced); X_4 - average working experience; X_5 - share of urban population; X_6 - share of women; X_7 - share of highly educated workers; X_8 - share ofcovered workers; X_9 - log of average wage; X_{10} - Minimum Wage Act implemented (dummy variable)

TABLE A3

Method: Panel analysis (workers 15-19 years), OLS with fixed effects and robust standard errors of differenced variables
Dependent variable: **employment rate differenced**
Sample: 2001S2 2010 S2
Total number of observations: 20

Variable*	Coefficient	St. error	t statistics	p value
C	2.373261	1.370615	1.731530	0.1140
X_1	-0.626470	0.386757	-1.619805	0.1363
X_2	12.01736	10.27443	1.169638	0.2693
X_3	0.133231	0.101631	1.310927	0.2192
X_4	-0.006883	0.044060	-0.156220	0.8790
X_5	0.022340	0.019807	1.127907	0.2857
X_6	-6.170116	10.26444	-0.601116	0.5611
X_7	0.138046	0.150963	0.914436	0.3820
X_8	-6.654417	1.755037	-3.791611	0.0035
X_9	-0.842607	0.973632	-0.865426	0.4071
R^2			0.651356	
Adjusted R^2			0.337576	
DW statistics			1.651500	

Source: Research results

* List of independent variables: X_1 - lagged dependent variable (differenced); X_2 - **differenced log of net minimum wage;** X_3 - lag of GDP growth rate (differenced); X_4 - share of urban population; X_5 - share of women (differenced); X_6 - log of average wage (differenced); X_7 - share of covered workers; X_8 - working experience; X_9 - Minimum Wage Act implemented (dummy variable)

TABLE A4

Method: Panel analysis (workers 15-19 years), OLS with fixed effects and robust standard errors of differenced variables
Dependent variable: **employment rate differenced**
Sample: 2001S2 2010 S2
Total number of observations: 20

Variable*	Coefficient	St. error	t statistics	p value
C	2.448097	1.387642	1.764214	0.1082
X_1	-0.623317	0.391088	-1.593801	0.1421
X_2	0.153635	0.150354	1.021824	0.3309
X_3	0.130658	0.102963	1.268970	0.2332
X_4	-0.006707	0.044083	-0.152135	0.8821
X_5	0.022955	0.019897	1.153673	0.2755
X_6	4.642756	14.02087	0.331132	0.7474
X_7	0.133741	0.152216	0.878630	0.4002
X_8	-6.698305	1.790152	-3.741751	0.0038
X_9	-0.845869	0.979930	-0.863194	0.4083
R^2		0.647737		
Adjusted R^2		0.330700		
DW statistics		1.651216		

Source: Research results

* List of independent variables: X_1 - lagged dependent variable (differenced); X_2 - **Kaitz index differenced (average wage)**; X_3 - lag of GDP growth rate (differenced); X_4 - share of urban population; X_5 - share of women (differenced); X_6 - log of average wage (differenced); X_7 - share ofcovered workers; X_8 - working experience; X_9 - Minimum Wage Act implemented (dummy variable)

TABLE A5

Method: Panel analysis (workers 20-24 years), OLS with fixed effects and robust standard errors of differenced variables
Dependent variable: **employment rate differenced**
Sample: 2001S2 2010 S2
Total number of observations: 20

Variable*	Coefficient	St. error	t statistics	p value
C	-23.47661	78.48593	-0.299119	0.7716
X_1	-0.592093	0.392759	-1.507520	0.1659
X_2	21.22722	33.46742	0.634265	0.5417
X_3	-0.242997	0.227182	-1.069615	0.3126
X_4	0.117656	0.190652	0.617125	0.5524
X_5	0.025213	0.465781	0.054132	0.9580
X_6	1.298108	1.104434	1.175361	0.2700
X_7	2.305588	10.40176	0.221654	0.8295
X_8	0.331464	0.991718	0.334232	0.7459
X_9	0.655289	5.450495	0.120226	0.9069
X_{10}	-4.360007	2.317687	-1.881189	0.0926
R^2		0.643422		
Adjusted R^2		0.247225		
DW statistics		2.765581		

Source: Research results

* List of independent variables: X_1 - lagged dependent variable (differenced); **X_2 - differenced log of net minimum wage;** X_3 - lag of GDP growth rate (differenced); X_4 - share of urban population (differenced); X_5 - share of women (differenced); X_6 - share of highly educated workers; X_7 - log of average wage; X_8 - share ofcovered workers; X_9 - working experience; X_{10} - Minimum Wage Act implemented (dummy variable)

TABLE A6

Method: Panel analysis (workers 20-24 years), OLS with fixed effects and robust standard errors of differenced variables
Dependent variable: employment rate differenced
Sample: 2001S2 2010 S2
Total number of observations: 20

Variable*	Coefficient	St. error	t statistics	p value
C	-6.664144	83.56070	-0.079752	0.9382
X_1	-0.516600	0.307821	-1.678248	0.1276
X_2	0.189170	0.488323	0.387386	0.7075
X_3	-0.258838	0.227396	-1.138268	0.2844
X_4	0.127942	0.184818	0.692258	0.5062
X_5	0.074846	0.523280	0.143032	0.8894
X_6	1.444969	1.093380	1.321561	0.2189
X_7	-0.274378	10.72893	-0.025574	0.9802
X_8	0.581173	0.815662	0.712517	0.4942
X_9	2.051541	5.802630	0.353554	0.7318
X_{10}	-4.041006	2.446338	-1.651860	0.1330
R^2		0.637043		
Adjusted R^2		0.233757		
DW statistics		2.746658		

Source: Research results

* List of independent variables: X_1 - lagged dependent variable (differenced); X_2 - **Kaitz index differenced (average wage)** ; X_3 - lag of GDP growth rate (differenced); X_4 - share of urban population (differenced); X_5 - share of women (differenced); X_6 - share of highly educated workers; X_7 - log of average wage; X_8 - share ofcovered workers; X_9 - working experience; X_{10} - Minimum Wage Act implemented (dummy variable)

TABLE A7

Method: Panel analysis (workers 25-29 years), OLS with fixed effects and robust standard errors of differenced variables
Dependent variable: **employment rate differenced**
Sample: 2001S2 2010 S2
Total number of observations: 20

Variable*	Coefficient	St. error	t statistics	p value
C	-16.27036	20.17768	-0.806354	0.4388
X_1	-0.820289	0.229606	-3.572593	0.0051
X_2	34.39641	21.59008	1.593158	0.1422
X_3	-0.246824	0.083577	-2.953237	0.0145
X_4	-0.101695	0.224200	-0.453590	0.6598
X_5	0.299755	0.415193	0.721965	0.4869
X_6	-0.099214	0.339190	-0.292503	0.7759
X_7	51.41328	29.34406	1.752085	0.1103
X_8	1.102969	0.676534	1.630324	0.1341
X_9	-6.966908	2.368978	-2.940892	0.0148
R^2		0.654931		
Adjusted R^2		0.344369		
DW statistics		2.092116		

Source: Research results
* List of independent variables: X_1 - lagged dependent variable (differenced); X_2 - **differenced log of net minimum wage**; X_3 - lag of GDP growth rate (differenced); X_4 - share of urban population (differenced); X_5 - share of women; X_6 - share of highly educated workers (differenced); X_7 - log of average wage (differenced); X_8 - share ofcovered workers; X_9 - Minimum Wage Act implemented (dummy variable)

TABLE A8

Method: Panel analysis (workers 25-29 years), OLS with fixed effects and robust standard errors of differenced variables
Dependent variable: **employment rate differenced**
Sample: 2001S2 2010 S2
Total number of observations: 20

Variable*	Coefficient	St. error	t statistics	p value
C	-16.28188	19.81275	-0.821788	0.4304
X_1	-0.830678	0.221473	-3.750695	0.0038
X_2	0.708678	0.389509	1.819414	0.0989
X_3	-0.231552	0.076501	-3.026770	0.0127
X_4	-0.093205	0.219206	-0.425193	0.6797
X_5	0.299348	0.407987	0.733718	0.4800
X_6	-0.095655	0.341570	-0.280045	0.7852
X_7	86.98043	38.08712	2.283723	0.0455
X_8	1.105464	0.666724	1.658053	0.1283
X_9	-7.017532	2.220065	-3.160959	0.0101
R^2		0.667228		
Adjusted R^2		0.367734		
DW statistics		2.091443		

Source: Research results

* List of independent variables: X_1 - lagged dependent variable (differenced); X_2 - **Kaitz index differenced (average wage)**; X_3 - lag of GDP growth rate (differenced); X_4 - share of urban population (differenced); X_5 - share of women; X_6 - share of highly educated workers (differenced); X_7 - log of average wage (differenced); X_8 - share ofcovered workers; X_9 - Minimum Wage Act implemented (dummy variable)

TABLE A9

Method: Panel analysis (workers 30-39 years), OLS with fixed effects and robust standard errors of differenced variables
Dependent variable: **employment rate differenced**
Sample: 2001S2 2010 S2
Total number of observations: 20

Variable*	Coefficient	St. error	t statistics	p value
C	-75.36184	42.75637	-1.762587	0.1118
X_1	-1.012716	0.400198	-2.530538	0.0322
X_2	13.47561	12.29516	1.096009	0.3015
X_3	0.033644	0.213723	0.157418	0.8784
X_4	-0.236226	0.211859	-1.115016	0.2937
X_5	0.502940	0.327582	1.535311	0.1591
X_6	-0.165668	0.328459	-0.504378	0.6261
X_7	0.686581	0.932470	0.736304	0.4803
X_8	6.651602	4.496173	1.479392	0.1732
X_9	-0.632000	0.747100	-0.845938	0.4195
X_{10}	-4.701989	1.915455	-2.454764	0.0365
R^2		0.598234		
Adjusted R^2		0.151828		
DW statistics		2.529465		

Source: Research results
* List of independent variables: X_1 - lagged dependent variable (differenced); X_2 - **differenced log of net minimum wage**; X_3 - lag of GDP growth rate (differenced); X_4 - share of urban population (differenced); X_5 - share of women; X_6 - share of highly educated workers; X_7 - average working experience (differenced); X_8 - log of average wage; X_9 - share of covered workers (differenced); X_{10} - Minimum Wage Act implemented (dummy variable)

TABLE A10

Method: Panel analysis (workers 30-39 years), OLS with fixed effects and robust standard errors of differenced variables
Dependent variable: **employment rate differenced**
Sample: 2001S2 2010 S2
Total number of observations: 20

Variable*	Coefficient	St. error	t statistics	p value
C	-63.35139	33.94350	-1.866378	0.0948
X_1	-0.834468	0.342918	-2.433436	0.0378
X_2	-0.145858	0.251477	-0.580005	0.5761
X_3	-0.033461	0.175381	-0.190790	0.8529
X_4	-0.157010	0.186300	-0.842779	0.4212
X_5	0.215524	0.253523	0.850117	0.4173
X_6	-0.426783	0.354930	-1.202441	0.2599
X_7	0.425293	1.028895	0.413349	0.6890
X_8	7.226127	3.362048	2.149323	0.0601
X_9	-0.474827	0.701662	-0.676717	0.5156
X_{10}	-3.586057	2.068450	-1.733693	0.1170
R^2		0.584896		
Adjusted R^2		0.123670		
DW statistics		2.425051		

Source: Research results

* List of independent variables: X_1 - lagged dependent variable (differenced); X_2 - **Kaitz index differenced (average wage)**; X_3 - lag of GDP growth rate (differenced); X_4 - share of urban population (differenced); X_5 - share of women; X_6 - share of highly educated workers; X_7 - average working experience (differenced); X_8 - log of average wage; X_8 - share of covered workers (differenced); X_9 - Minimum Wage Act implemented (dummy variable)

TABLE A11

Method: Panel analysis (workers 40-49 years), OLS with fixed effects and robust standard errors of differenced variables
Dependent variable: **employment rate differenced**
Sample: 2001S2 2010 S2
Total number of observations: 20

Variable*	Coefficient	St. error	t statistics	p value
C	71.66903	38.42618	1.865109	0.0950
X_1	-0.486795	0.294706	-1.651802	0.1330
X_2	5.450257	9.218466	0.591233	0.5689
X_3	0.008445	0.093152	0.090655	0.9298
X_4	-0.215902	0.225568	-0.957146	0.3635
X_5	0.079014	0.313464	0.252066	0.8067
X_6	-0.784239	0.445586	-1.760016	0.1123
X_7	-0.656176	1.005258	-0.652744	0.5302
X_8	-6.353790	3.720450	-1.707801	0.1219
X_9	-0.094067	0.537526	-0.174999	0.8650
X_{10}	0.238883	1.370316	0.174327	0.8655
R^2		0.519715		
Adjusted R^2		-0.013935		
DW statistics		2.867885		

Source: Research results

* List of independent variables: X_1 - lagged dependent variable (differenced); X_2 - **differenced log of net minimum wage**; X_3 - lag of GDP growth rate (differenced); X_4 - share of urban population (differenced); X_5 - share of women; X_6 - share of highly educated workers; X_7 - average working experience; X_8 - log of average wage; X_9 - share ofcovered workers; X_{10} - Minimum Wage Act implemented (dummy variable)

TABLE A12

Method: Panel analysis (workers 40-49 years), OLS with fixed effects and robust standard errors of differenced variables
Dependent variable: **employment rate differenced**
Sample: 2001S2 2010S2
Total number of observations: 20

Variable*	Coefficient	St. error	t statistics	p value
C	62.02009	30.48760	2.034273	0.0724
X_1	-0.349883	0.282792	-1.237245	0.2473
X_2	0.279464	0.258929	1.079305	0.3085
X_3	0.000989	0.082020	0.012061	0.9906
X_4	-0.218114	0.214765	-1.015594	0.3363
X_5	0.133940	0.259873	0.515404	0.6187
X_6	-0.501901	0.466777	-1.075247	0.3102
X_7	-0.657353	0.808947	-0.812604	0.4374
X_8	-5.889457	3.590179	-1.640435	0.1353
X_9	0.065591	0.393052	0.166875	0.8712
X_{10}	-0.234516	1.421134	-0.165020	0.8726
R^2		0.594407		
Adjusted R^2		0.143748		
DW statistics		2.731176		

Source: Research results

* List of independent variables: X_1 - lagged dependent variable (differenced): X_2 - **Kaitz index differenced (average wage)**; X_3 - lag of GDP growth rate (differenced); X_4 - share of urban population (differenced); X_5 - share of women; X_6 - share of highly educated workers; X_7 - average working experience; X_8 - log of average wage; X_9 - share ofcovered workers; X_{10} - Minimum Wage Act implemented (dummy variable)

TABLE A13

Method: Panel analysis (workers 50-59 years), OLS with fixed effects and robust standard errors of differenced variables
Dependent variable: **employment rate differenced**
Sample: 2001S2 2010 S2
Total number of observations: 20

Variable*	Coefficient	St. error	t statistics	p value
C	1.081639	2.214482	0.488439	0.6369
X_1	-0.428642	0.211975	-2.022135	0.0739
X_2	3.459247	8.543145	0.404915	0.6950
X_3	-0.134307	0.231677	-0.579717	0.5763
X_4	0.240030	0.140937	1.703102	0.1228
X_5	0.375831	0.182759	2.056426	0.0699
X_6	0.135523	0.473767	0.286055	0.7813
X_7	-0.273283	0.995338	-0.274563	0.7899
X_8	16.23206	21.77753	0.745358	0.4751
X_9	-0.329419	1.019019	-0.323270	0.7539
X_{10}	-1.018175	0.557972	-1.824778	0.1013
R^2		0.621792		
Adjusted R^2		0.201561		
DW statistics		2.299028		

Source: Research results
* List of independent variables: X_1 - lagged dependent variable (differenced); X_2 - **differenced log of net minimum wage**; X_3 - lag of GDP growth rate (differenced); X_4 - share of urban population (differenced); X_5 - share of women (differenced); X_6 - share of highly educated workers (differenced); X_7 - average working experience (differenced); X_8 - log of average wage (differenced); X_9 - share ofcovered workers; X_{10} - Minimum Wage Act implemented (dummy variable)

TABLE A14

Method: Panel analysis (workers 50-59 years), OLS with fixed effects and robust standard errors of differenced variables
Dependent variable: **employment rate differenced**
Sample: 2001S2 2010 S2
Total number of observations: 20

Variable*	Coefficient	St. error	t statistics	p value
C	1.104365	2.205457	0.500742	0.6286
X_1	-0.432577	0.215734	-2.005140	0.0759
X_2	0.065594	0.188021	0.348866	0.7352
X_3	-0.135873	0.242365	-0.560612	0.5887
X_4	0.239460	0.143910	1.663950	0.1305
X_5	0.377322	0.182307	2.069708	0.0684
X_6	0.134662	0.489346	0.275187	0.7894
X_7	-0.287135	0.991844	-0.289496	0.7788
X_8	18.91819	22.81649	0.829146	0.4285
X_9	-0.330839	1.043133	-0.317159	0.7584
X_{10}	-1.022830	0.558840	-1.830273	0.1005
R^2		0.621242		
Adjusted R^2		0.200399		
DW statistics		2.302043		

Source: Research results

* List of independent variables: X_1 - lagged dependent variable (differenced); X_2 - **Kaitz index differenced (average wage)**; X_3 - lag of GDP growth rate (differenced); X_4 - share of urban population (differenced); X_5 - share of women (differenced); X_6 - share of highly educated workers (differenced); X_7 - average working experience (differenced); X_8 - log of average wage (differenced); X_9 - share ofcovered workers; X_{10} - Minimum Wage Act implemented (dummy variable)

TABLE A15

Method: Panel analysis (workers 60-65 years), OLS with fixed effects and robust standard errors of differenced variables
Dependent variable: **employment rate differenced**
Sample: 2001S2 2010 S2
Total number of observations: 20

Variable*	Coefficient	St. error	t statistics	p value
C	76.08386	26.18024	2.906156	0.0174
X_1	-0.988193	0.147761	-6.687766	0.0001
X_2	27.30380	11.63833	2.346025	0.0436
X_3	-0.130079	0.045392	-2.865708	0.0186
X_4	0.020526	0.087377	0.234917	0.8195
X_5	-0.080252	0.054698	-1.467169	0.1764
X_6	-0.036567	0.070218	-0.520769	0.6151
X_7	-1.202431	0.408085	-2.946517	0.0163
X_8	-8.897870	3.011115	-2.955009	0.0161
X_9	-0.588473	0.352989	-1.667113	0.1298
X_{10}	0.838523	0.537559	1.559872	0.1532
R^2		0.725113		
Adjusted R^2		0.419682		
DW statistics		2.092681		

Source: Research results

* List of independent variables: X_1 - lagged dependent variable (differenced); X_2 - **differenced log of net minimum wage**; X_3 - lag of GDP growth rate (differenced); X_4 - share of urban population; X_5 - share of women (differenced); X_6 - share of highly educated workers; X_7 - average working experience (differenced); X_8 - log of average wage; X_9 - share ofcovered workers; X_{10} - Minimum Wage Act implemented (dummy variable)

TABLE A16

Method: Panel analysis (workers 60-65 years), OLS with fixed effects and robust standard errors of differenced variables
Dependent variable: **employment rate differenced**
Sample: 2001S2 2010 S2
Total number of observations: 20

Variable*	Coefficient	St. error	t statistics	p value
C	25.71710	24.32563	1.057202	0.3180
X_1	-0.796427	0.221145	-3.601386	0.0057
X_2	0.036511	0.197008	0.185325	0.8571
X_3	-0.159796	0.054494	-2.932333	0.0167
X_4	-0.022015	0.095051	-0.231617	0.8220
X_5	-0.082491	0.059524	-1.385827	0.1992
X_6	0.064192	0.079343	0.809045	0.4394
X_7	-0.431273	0.228280	-1.889227	0.0914
X_8	-2.982084	2.822612	-1.056498	0.3183
X_9	-0.116322	0.356796	-0.326017	0.7519
X_{10}	0.857277	0.508563	1.685684	0.1261
R^2		0.596600		
Adjusted R^2		0.148378		
DW statistics		2.166949		

Source: Research results

* List of independent variables: X_1 - lagged dependent variable (differenced); X_2 - **Kaitz index differenced (average wage)**; X_3 - lag of GDP growth rate (differenced); X_4 - share of urban population; X_5 - share of women (differenced); X_6 - share of highly educated workers; X_7 - average working experience (differenced); X_8 - log of average wage; X_9 - share ofcovered workers; X_{10} - Minimum Wage Act implemented (dummy variable)

Sanja Blažević

SMANJUJE LI SE ZAPOSLENOST USLIJED POVEĆANJA MINIMALNE PLAĆE?

Sažetak: Svrha ovoga rada je modelirati i kvantificirati vezu između minimalne plaće i stope zaposlenosti radnika distribuiranih po dobi u Republici Hrvatskoj primjenom podataka iz Ankete o radnoj snazi za period od 2000. do 2010. years i korištenjem panel metode s fiksnim efektima s ciljem dokazivanja pretpostavljene hipoteze o negativnome utjecaju povećanja minimalne plaće na stopu zaposlenosti ugroženih skupina radnika. Rezultati istraživanja ukazuju na postojanje veze pozitivnog smjera no s malom praktičnom značajnošću s obzirom da su potrebna osjetna povećanja visine minimalne plaće.

Ključne riječi: minimalna plaća, stopa zaposlenosti, Kaitz indeks, Hrvatska

EKONOMSKA ISTRAŽIVANJA-ECONOMIC RESEARCH
ISSN 1331-677X print

2013 Volume 26(1): 101-114

A DECISION MODEL FOR PHARMACEUTICAL MARKETING AND A CASE STUDY IN TURKEY

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ARTICLE INFO

Article data:
- Received: 27 December 2011
- Accepted: 20 July 2012

JEL classification: C02, C44, M31, I11

Keywords:
- Marketing
- Decision making
- Pharma industry

ABSTRACT

The choice of the appropriate product for the portfolio of a pharmaceutical company in terms of its strategy and long term commercial value is a sophisticated multi-criteria decision problem in pharma economics. This paper provides a systematic method for licensing in pharma industry and proposes a Fuzzy AHP based decision model for the decision makers in pharmaceutical industry to assess potentials of different products for license-in that may be proper for their portfolio. An application of the proposed model is also performed for a pharmaceutical company in Turkey.

Reference to this paper should be made as follows: Toker, D. ; Tozan, H.; Vayvay, O. 2013. A Decision Model for Pharmaceutical Marketing and a Case Study in Turkey, *Ekonomska istraživanja – Economic Research 101-114.*

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I. INTRODUCTION

Like other sectors of industry it's critical for pharmaceutical industry to sustain growth. Business Development is the key to success in today's highly competitive environment. Two key elements are shaping the pharmaceutical environment: declining Research & Development and customers' economics. Despite injection of huge funding, Research & Development productivity of pharmaceutical companies is declining. Main two reasons are: increased regulations and inability of pharmaceutical markets to shift to new technologies in product development. For the customer economic perspective, health expenses of countries are increasing every year and drug expenses constitute major part of health expenses. Aging population is the main driver in increased drug expense budget. Governments put cost containment majors like motivating cheapest drug or not reimburse the new drugs if it's not superior to existing therapies. All those burdens force pharmaceutical companies to find new eras to ensure their sustainability in the market (Radu, 2012). Business development is the most prominent enabler to find out external alternatives for new products when R&D machines of pharmaceuticals are limited to create new products. There are many business development activities such as product acquisition, technology acquisition, and whole company acquisition.

In the last ten years, number of global acquisitions increased. Even in Turkey mergers and acquisitions experienced in the last years such as: Zentiva, Czech company acquired Eczacıbası İlac in 2007, and Eastpharmaceutical acquired Deva İlac in 2006 and then Saba İlac in 2007.

Usually, companies begin their business development activities by product acquisitions or collaborations. A product can be transferred from one company to another if this transfer will create more value to both companies in terms of field force synergy or portfolio synergy but certainly, those are not the only aspects for products acquisition.

Generally, multi-criteria decision making approaches focuses on model human judgment/inference and implementing them into the decision models (Anagnostopoulos et al., 2008; Turgutet al., 2011). Although there are many studies about pharmaceutical industry in literature, studies about developing frameworks to assess potentials of various pharma products to be a candidate for license-in and fuzzy approaches in this perspective are narrow.

From this point of view, the aim of this study is to get a better understanding of business development opportunities in pharma market especially license-in alternative, to develop a framework to assess potentials of various pharma products to be a candidate for license-in; and also, to offers a valuable tool for managers to assess a new pharma product's potential for their portfolio developing a decision making model (DMM) using both analytic hierarchy process and fuzzy analytic hierarchy process (FAHP) based on Chang's extent analysis (Chang, 1996).

The rest of this study is organized as follows: In the section 2, general background regarding pharmaceutical industry in Turkey is given with challenges of the sector. In section 3, methodology used in the study; AHP and FAHP, is explained briefly. In section 4, the proposed DMM with determination of evaluative criteria for the assessment of potential license-in candidates and hierarchical structure of the model is described. And, a case study for identification of the best product to license-in for the selected Turkish pharmaceutical company is included. Finally, conclusions are given in the final section of the study.

II. GENERAL BACKGROUND OF TURKISH PHARMACEUTICAL MARKET

The Turkish pharmaceutical market registered sales of $10 billion in 2008, growing at 11.5% over the previous year (Business Insight, 2008). The Turkish pharmaceutical industry grew with Compound Annual Growth Rate (CAGR) of 23.5% over 2004-2008. This strong growth mainly driven by growing economy, increased healthcare expenditure, rising consumer spending on

drugs and recent healthcare reform initiatives that have improved access to medicine. With a population of 76.8 million in 2009 and rising consumer spending on drugs and healthcare improvements, Turkey could reach to sales of $16 billion by 2014 (Riley, 2008; Wesley, 2009)

According to Turkish Pharmaceutical Market Outlook to 2014, the key health care reforms which were introduced in the country can be summarized as follows (Datamonitor, 2009; Riley, 2008):

- Drug regulation:

Turkey's aspirations to enter the European Union (EU) have been the driving force for recent changes in pharmaceutical regulations. Major reforms impacting the pharmaceutical industry include implementation of patent legislation in 1995, creation of generics law in 1996 and establishment of a reference pricing system in 2004

Reforms have made the healthcare system more efficient, improved access for the population, synchronized with EU standards. At the same time, Turkey's growing economic consistency has brought in foreign investment into the pharmaceutical sector

- Data exclusivity and patent protection:

Patent law adopted in 1991 but this law covers patent applications submitted since 1995. Drugs registered prior to 1995 were not protected. Data exclusivity and patent protection law was introduced in January 2005, and it is valid for six years from the initial registration of the drug in the EU. This data protection would be valid but limited to patent term.

- Reimbursement:

A new reimbursement system was introduced in Turkey in February 2005 and revisions were made in the following years. Currently over the counter (OTC) medicines were not reimbursed by government. According to the current system, cheapest medicine plus %15 was reimbursed.

- Pricing:

Reference price system was introduced in 2004. Drug prices were determined based on prices in reference EU countries (Portugal, Spain, France, Italy, and Greece). For original products without generic, lowest reference price is taken; whereas for originals with generics and generic products %66 of lowest reference price is taken.

- Bio-equivalence testing for generics:

Generic product manufacturers applying for a product approval in Turkey are required to submit bio-equivalence data. Furthermore, generics that are already registered were mandated to submit a bio-equivalency certificate by December 2005.

- Top 10 pharmaceutical companies in Turkish market:

Currently with around 300 companies, the leading 10 companies of them represent 48% or $4.8 billion of the market in 2008 (IMS Health, 2010). Novartis led the Turkish pharmaceutical market with $763 million in 2008, and Abdi Ibrahim was the second in line registering $585 million in sales. Global major players other than Novartis, namely Sanofi-Aventis, Pfizer, GSK, Bayer and Astra-Zeneca were among the top 10 players. Besides local companies, İbrahim, Bilim, Sanovel have strong presence among the top 10 list, with market share of 13.5% in 2008.

The largest therapeutic segment in the Turkish market was anti-invectives', which recorded $1.8 billion sales in 2008. The anti-infective category in Turkey was led by the cephalosporin which are used in treatment of bacterial infections.

Alimentary tract and metabolism was the second largest therapy area in Turkey with $1.9 billion sales in 2008, capturing 14.5% market share. The leading drug class within this therapy area was proton pump inhibitors which are used to reduce the production of acid in the stomach.

The third biggest therapy area was cardiovascular disorders with $1.4 billion sales in 2008. Antihypertensive and antihyperlipidemia drugs are the largest in this area (IMS Health, 2010)

Turkish pharmaceutical market is highly fragmented with top 10 products capturing 7.1% of the entire market. GSK's Seretide remained the leading brand in 2008 with $108 million sales. The product helps in the relaxation of bronchial smooth muscles, providing relief in these respiratory disorders. Novartis's Foradil Combi which is the sixth product in the market is a big threat against Seretide. Another set of products which exist in top 10 are those used in the management of cardiovascular disorders. Novartis' hypertension management brand Co-Diovan and Pfizer's Lipitor are the biggest brands in this area.

III. RESEARCH METHOD

In this study AHP and fuzzy AHP methods are used as decision support tool individually. In this section AHP and fuzzy AHP methodologies are explained briefly

A. Analytical Hierarchy Process

AHP is one of the most widely used multi-criteria decision making tools (Kahraman et al., 2008, Tozan, 2011). The method was introduced by Saaty in the 1970s. It is basically a mathematical theory for deriving ratio scale priority vectors from positive reciprocal matrices with entries built up by paired comparisons (Saaty et al., 1998; Vijayvargiya et al., 2010, Turgut et al., 2011).It is also a decision making tool that helps the decision making process by decomposing a complex problem into a multi-level hierarchical structure including objectives, criteria, sub-criteria and alternatives (Saaty, 1995; Sharma et al., 2008, Turgut et al., 2011; Zolfani et al., 2012).

The procedures of the AHP can be summarized with the following steps (Saaty, 1995; Lee et al., 2008; Shin et al., 2007; Turgut et al., 2011; Tozan, 2011; Yanar et al., 2012):

- Define the unstructured problem and state clearly the objectives and outcomes.
- Break down the complex problem into a hierarchical structure with decision elements (criteria, detailed criteria and alternatives).After the hierarchical structure is determined, the relative importance of the elements in each level is prioritized. The preference between each pair of elements can verbally be expressed as "equally important, moderately more important, strongly more important, very strongly more important, and extremely more important" with the scale illustrated in Table 1 (Saaty, 1980; Turgut et al, 2011; Tozan, 2011).
- Apply pair wise comparisons among decision elements and form comparison matrices. Use the eigen value method to estimate the relative weights of the decision elements. λmax ; the principal eigen value of the matrix; is determined via the following mathematical relation; $AW= \lambda maxW$ (Turgut, 2011).
- Control the consistency property of matrices to ensure that the judgments of decision makers are consistent.
- Add the relative weights of decision elements to obtain an overall rating for the alternatives.

TABLE 1 - FUNDAMENTAL SCALE USED IN AHP

Intensity of Importance	Definition
1	Equal Importance
2	Weak or slight
3	Moderate importance
4	Moderate plus
5	Strong importance
6	Strong plus
7	Very strong or demonstrated importance
8	Very, very strong
9	Extreme importance

Source: Saaty, 1995; Turgut et al, 2011.

B. Fuzzy Analytical Hierarchy Process

On the contrary human judgment process, crisp methods separates the elements of decision sets in to two basic groups as members (certainly belonging the set) and nonmembers (certainly not belonging the set) which mainly arises from their mutually exclusive structure. And this limitation enforces the decision maker to set a clear-cut boundary between the alternatives (Kahraman et al., 2008; Turgut, 2011, Tozan, 2011). But as the nature of decision making contains vagueness and uncertainty, generally it is very hard to set clear boundaries between the decision alternatives. As fuzzy set theory introduced by Zadeh (1965) has the ability to deal with ambiguous (or not well-defined) conditions (Kahraman et al., 2008) and use approximate rather than precise reasoning (Saaty et al., 2007), it handles this sophisticated decision making process with its brilliant capability of data processing using partial set membership functions (Turgut, 2011; Tozan, 2011).

As the pair-wise comparison in conventional AHP cannot take into account vagueness/uncertainty and the pair-wise comparison is established using a nine-point scale, it fails to capture whole uncertainty associated with the mapping of one's perception to a number. Therefore, fuzzy logic is used in the pair-wise comparison to deal with the deficiency of traditional AHP which is referred as fuzzy AHP (FAHP).

In this paper Chang's extent FAHP is selected and used due to the simplicity of the method. In Chang's extent FAHP; after the hierarchical structure of the model is contracted as defined in section 3.1, objects and goal set are constituted for obtaining extent analysis values for each object. When the analyze is finished; via normalization, the normalized weight vectors can be determined which also indicates solutions for the problematic (Chang, 1996;Tabari et al., 2008; Cakir et al., 2010; Turgut, 2011; Yanar et al.; 2012).

IV. Proposed DMM and an Application in a Turkish Pharmaceutical Company

A. Proposed DMM

As stated before, the goal of the proposed model is to determine the best fit product for the portfolio of the pharmaceutical company in terms of its strategy and long term commercial value. Criteria and sub criteria are determined via questionnaire technique applied to specialists working in pharmaceutical market and profound discussions with experts; especially with the top management of various pharmaceutical companies. After criteria are identified, they are also

checked for relevance with a focus group consists of current and ex business developers. Then a pilot survey is conducted to a sample group of marketing managers and final questionnaire including 46 questions for all possible pair wise comparison of criteria are prepared. The summary of study methodology is illustrated in figure 1.

Main criteria to choose best product are determined as:

- Medical characteristics
- Marketing characteristics
- Commercial attractiveness
- Company fit
- Time to market

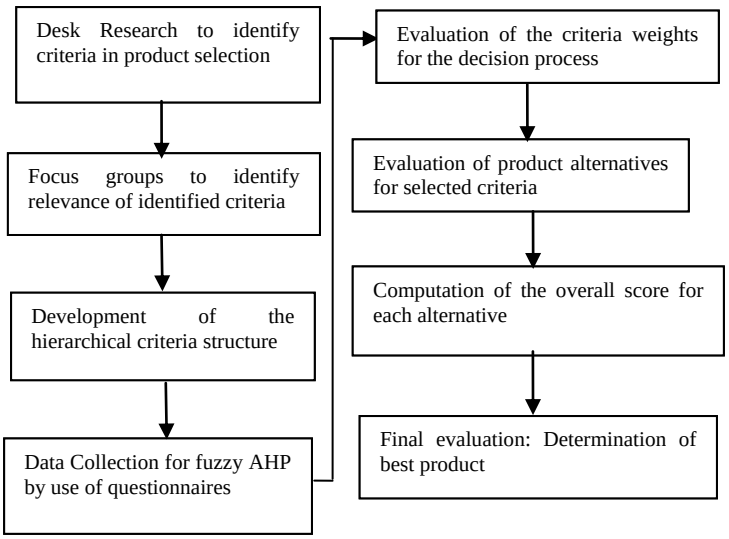

FIGURE1. METHODOLOGY

Source: Authors

Each of main criteria is decomposed into sub-criteria, for example medical attractiveness has following sub-criteria: Superiority to other molecules, meeting an unmet medical need and no of clinical trials conducted and planned.

Similarly, company market share in a related area, company know how in therapeutic area, existence of related sales force in the company are listed under "Company fit".

Seven sub-categories were included under "marketing characteristics": Turkish market size, Turkish market growth, no of competitors in Turkish market, generics impact in Turkish market, expected pipeline product in the same therapeutic area, global market size, and global market growth.

Also, commercial attractiveness includes 3 sub-criteria: Potential attractiveness, potential profitability, expected rate of return.

The last main criteria "time to market" contained 4 sub-criteria: deal easiness, registration easiness, reimbursement easiness, and predicted years to launch.

B. An Application in a Turkish Pharmaceutical Company

The application of the model is implemented in a multinational pharmaceutical company operating in Turkey. The company has a Business Development department mainly focusing on in-licensing opportunities. The aim of the company; which is to assess in-licensing opportunities in a systematic way, is performed using the proposed model. Three potential products with the following characteristics are A, B, and C are compared.

Product A: Niche product in high priced Therapeutic Area like oncology, respiratory

- High market size
- Very high market growth
- High profitability
- Targeted physicians: Specialties like oncologist, endcronologs

Product B: Consumer lifecycle products like food supplements, dermocosmetics,

- Weight loss products
- Promoted by small pharmaceutically teams and trade channel activities
- Paid out of pocket
- High market growth
- High profitability

Product C: Mass chronic products in hyperlipidemia, hypertension, depression

- Promoted by large FF teams
- Medium market growth
- Medium profitability
- Targeted physicians: Specialties like cardiologists, neurologists

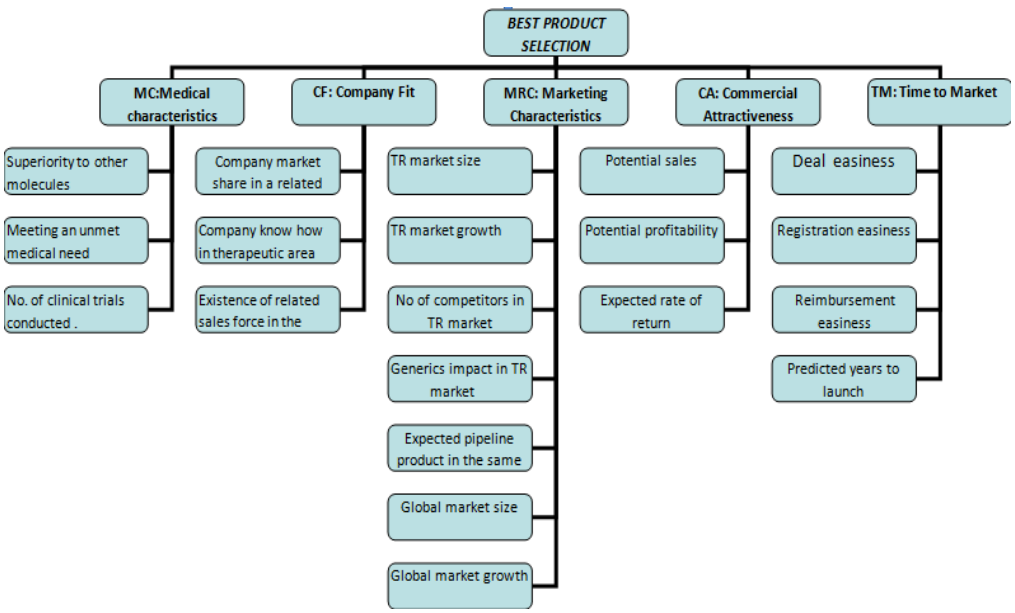

FIGURE2. PROPOSED MODEL

Source: Authors

In the study for fuzzy AHP, the decision makers utilize the linguistic set W as illustrated in Table 2 (Saaty, 1994).

TABLE 2 - THE SCALE USED FOR FUZZY AHP

Verbal Judgment	Fuzzy Scale
Equal	(1 , 1, 1)
Weak	(2 / 3, 1 , 3 / 2)
Fairly Strong	(3 / 2, 2 , 5 / 2)
Very Strong	(5 / 2, 3 , 7 / 2)
Absolute	(7 / 2 , 4 , 9 / 2)

Source: Saaty, 1994

For determining the values for the application a Visual C# based program. The results are illustrated with the following tables.

According to these results, pharmaceutical companies should find products with high commercial attractiveness which means products with high price, profitability and rate of return. Specialty area products such as oncology, respiratory or niche areas like growth hormones, Gaucher disease products which are seen in a very small population are candidates for high price. If targeted specialty doctors are not very crowded like oncologists, endocrinologists, algologists, the investment needed to promote the product is minimal and it enables high profitability.

TABLE 3 - WEIGHTS OF CRITERIA

Criteria	Sub-criteria	Relative Weight	Global Weight
Medical Characteristics	Superiority to other molecules	37%	7%
	meets an unmet medical need	63%	12%
	No. of clinical trials conducted and planned	0%	0%
		100%	18%
Company Fit	Company market share in related market	34%	4%
	Company know & how in TA	34%	4%
	Existence of related FF team in the company	32%	4%
		100%	13%
Marketing Characteristics	TR (Turkish) market size	17%	3%
	TR market growth	20%	4%
	No of competitors in TR market	17%	3%
	Generics impact in TR market	20%	4%
	Expected pipeline product in the same therapeutic area	6%	1%
	Global market size	13%	3%
	Global market growth	7%	1%
		100%	20%
Commercial Attractiveness	Potential sales	34%	11%
	Potential profitability	34%	11%
	Expected rate of return	32%	10%
		100%	32%
Time to Market	Deal easiness	7%	1%
	Registration easiness	25%	4%
	Reimbursement easiness	47%	8%
	Predicted years to launch	21%	3%
		100%	16%

Source: Author's calculation

Marketing characteristics is the second important factor in choosing the best product. Although it involves seven different sub criteria, most critical ones are Turkish market growth (%20), generics impact (%20), Turkish market size (%17), no of competitors (% 17), other factors has less importance e.g. expected pipeline (%13), global market growth (%7), global market size (%6). For a high potential product candidate Turkish market size and market growth is very critical, if a product is not exist in Turkey looking to global data for the product's market

size and growth may give a good indication, however deep dive analysis should be done to understand major contributor markets in the world. Europe can be a good indicator for Turkey regarding to illnesses experienced and reimbursement rules conducted. Certain types of illnesses are specific to some countries like AIDS in Africa, Hep C in China, India.

Medical characteristics is the third important determinant with sub categories of superiority (%37) to other molecules , unmet medical need (%63). If a product is first in its class , and cures a disease which was not be able to cured by other products , it is obvious that this product will have a very high potential. If a product is differentiated from existing therapies with its medical features such as efficacy, efficiency, life expectancy; this product will be far beyond of other molecules

Time to market is the fourth prioritized aspect in choosing a product for the portfolio. Reimbursement easiness (% 47) , registration easiness (%25) and predicted years to launch (% 21) are drivers of this category. Bringing a new product to the market is a very long process due to extensive R&D and elongated registration and reimbursement steps. This process takes 10 years on the average. If a product is differentiated from existing ones in terms of medical characteristics or low price, registration and reimbursement could be faster, and this creates advantage of realizing sales earlier which is very valuable for any company.

The last criterion in product selection is company fit. Existence of market share, know-how and related field force of the company for the product category determinescompany fit. As can be understood from lowest score of this criteria, if a company sets a target of acquiring new products for the portfolio, that company can build all necessary muscles like field force, Key Opinion Leader's relationship, marketing expertise for this new product. If these capabilities have already been existed within the company it shortens the time necessary for the uptake of the product, and it enables cost saving for the product.

Once all the relative weights have been calculated, a composite weight for each product (A, B and C) is determined. This is achieved by aggregating the weights over the hierarchy for each decision choice. The weights from top of the hierarchy to down for each product are multiplied, and then sum those products over all different pathways to that product. The result is single weight value for each product. The combination of weights for sub criteria and alternatives to determine priority weights for main evaluation criteria is given in the Table 4.

B. Results of the Application

The dimension specific scores shown in table 3 provide managerial insights for strengths and weaknesses of each product. Managers can give attention and evaluate the possibility of increasing low scores by investing on that product, so that this product may be a candidate for the portfolio.

The results indicate that product alternative A is the first choice of the case company with %57 overall score, whereas product B and C has scores of %15 and %28 respectively. The high score of A comes from both it's commercial attractiveness (%18) and medical characteristics (%17). Time to market (%9) and marketing characteristics (%8) are second tier factors, and company fit (%5) is the last factor for prioritizing product A as a best alternative.

Since the product A is a niche product with very high price, and it's market is big and growing fast it's potential sales is expected to be very high. Main two expense items for a product is field force and marketing expense. For product A, field force expense will be low, since the product will be promoted to small no of specialties, although marketing expense per Dr is expected to be high, overall marketing expenses will be reasonable due to size of targeted

doctors. Small field force and reasonable marketing expense together with high priced will lead to high profitability and high rate of return.

Unmet medical need attribute of Product A brings high medical score to the product. This attribute differentiates product A from other alternatives which is really a very critical aspect for a product's success. If a product is a first product in its area and meets a medical need which was not addresses by any other product before, this product will very well accepted by doctors, regulatory authorities for fast registration and reimbursement.

Unmet medical need attribute of product A may expedite reimbursement and registration processes and this may lead to fast launch of product.

TABLE 4 - WEIGHTS OF CRITERIA FOR EACH PRODUCT

	Product A	Product B	Product C
Medical Characteristics	**17,1%**	**0,0%**	**1,3%**
Superiority to other molecules	5,5%	0,0%	1,3%
Meets an unmet medical need	11,6%	0,0%	0,0%
No of clinical trials conducted and planned	0,0%	0,0%	0,0%
Company fit	**4,8%**	**2,9%**	**5,4%**
Company market share in related market	1,6%	1,2%	1,7%
Company know & how in TA	2,0%	0,7%	1,7%
Existence of related FF team in the company	1,2%	1,0%	2,1%
Marketing Characteristics	**8,0%**	**4,2%**	**7,8%**
TR (Turkish) market size	1,0%	1,0%	1,5%
TR market growth	1,7%	1,0%	1,3%
No of competitors in TR market	0,9%	1,0%	1,4%
Generics impact in TR market	1,7%	0,5%	1,8%
Expected pipeline product in the same therapeutic area	0,5%	0,3%	0,4%
Global market size	1,6%	0,0%	0,9%
Global market growth	0,6%	0,4%	0,5%
Commercial Attractiveness	**18,3%**	**5,4%**	**8,6%**
Potential sales	5,6%	2,1%	3,3%
Potential profitability	6,0%	2,2%	2,8%
Expected rate of return	6,7%	1,1%	2,5%
Time to Market	**8,9%**	**2,3%**	**4,9%**
Deal easiness	0,4%	0,3%	0,4%
Registration easiness	2,1%	0,8%	1,1%
Reimbursement easiness	4,8%	0,3%	2,4%
Predicted years to launch	1,6%	0,8%	1,1%

Source: Author's calculation

Product A has low company fit score which means the company does not exist any product in the related therapeutic area, therefore it must build know how, field force and

relationship with doctors. However if the product is very potential one, it is logical for companies invest on that product even if they do not have any experience. Although the model has been illustrated for three alternative products, it is capable of comparing more than three products at the cost of complexity. Biasing of decision makers can be an issue. To avoid such situations, group decision-making techniques should be used. For example, brainstorming and sharing of ideas and insights often lead to a better understanding of the issues than would be possible for a single decision-maker.

IV. CONCLUSION

Finding external products for pharmaceutical companies becomes increasingly important in today's complex environment. Increased regulations, inefficiencies in R&Ds, cost containment pressures of governments pushes pharmaceutical companies create new product alternatives. Business Development activities such as choosing best products through in-licensing evolve very importantly in companies. This study introduced a systematic way for choosing the appropriate external product for a pharmaceutical company. A case study for identification of the best product to license-in for the selected Turkish pharmaceutical company is also performed and three pharmaceutical products ranked according to the proposed model.

With the aid of the methodology used a complex multi-criteria decision-making problem is simplified. Subjective judgments are quantified, which is necessary to evaluate different alternative products. Another advantage of this methodology is that it not only supports group decision-making but also enables us to document the various considerations in the process of decision making. The selection process involves the determination of quantitative and qualitative factors to select the best possible product. Decision-makers face up to the uncertainty and vagueness from subjective perceptions and experiences in the decision-making process. Multi-criteria decision systems need experts in different areas. Fuzzy theory can be used in many decision making areas like that. Fuzzy AHP approach seemed to be particularly effective in reducing the uncertainty in the determination of the relative weight given to the different criteria and in determining the impact of each alternative provider on the attributes considered.

Further studies can be performed using other decision making techniques such as fuzzy TOPSIS and PROMETHEE for the proposed DMM.

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MODEL ODLUČIVANJA U FARMACEUTSKOM MARKETINGU I SLUČAJ TURSKE

Sažetak: Odabir prikladnog proizvoda za portfolio farmaceutske kompanije u smislu strategije I dugoročne komercijalne vrijednosti je sofisticirana problematika baziranana mnoštvu kriterija u farmaceutskoj ekonomiji. Ovaj rad donosi sustavnu metodu za licenciranje u farmaceutskoj industrijii predlaže „fuzzy" AHP bazirani model odlučivanja za one koji u farmaceutskoj industriji donose odluke kako bi odredili potencijal raznih proizvoda koji bi mogli biti pogodni za njihov portfolio. Predloženi model je primijenjen na jednoj farmaceutskoj kompaniji u Turskoj.

Ključne riječi: marketing, odlučivanje, farmaceutska industrija

EKONOMSKA ISTRAŽIVANJA-ECONOMIC RESERACH
ISSN 1331-677X print

2013 Volume 26(1):115-138

NEGOTIATION AND SOURCES OF NEGOTIATION POWER: THEIR ROLE AND IMPORTANCE IN THE EXCHANGE PROCESS IN THE CORPORATE BANKING MARKET

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ARTICLE INFO

Article data:
- Received: 10 December 2012
- Accepted: 4 March 2013

JEL classification: M31

Keywords:
- Negotiation
- Negotiation power
- Corporate banking market
- Exchange process

ABSTRACT

The paper is based on the assumption that the participants in an exchange process can positively influence many aspects of their own businesses, if they master the knowledge and skills in the field of business negotiation. The aim of the paper is to contribute to the knowledge of the specific characteristics of negotiation in the corporate banking market and of the impact of individual sources of negotiation power on the agreed terms of exchange between the banking customer and the bank. The conducted research has shown that banking customers can directly influence the terms of exchange in the corporate banking market. Furthermore, the research has shown the influence that the individual sources of negotiation power have on the achievement of more favourable terms of exchange for corporate banking customers. Implications of the conducted research are multiple. For instance, the results of the research provide guidelines to corporate banking customers as to how to develop an effective negotiation strategy in the corporate banking market, thus helping them to achieve higher business competitiveness.

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I. INTRODUCTION

The banking sector is extremely competitive nowadays and hence oriented to the research of customer needs and wants. It is an indisputable fact that banks offer a large number of various services in the market and that these services are very similar in their essence. The business market, as a segment of the banking market, is highly important for banks in their business operations, because it exceeds the business-to-consumer market in terms of value. The above facts imply that negotiations and the use of different sources of negotiation power can be useful for corporate banking customers to achieve more favourable terms of purchase of banking services. This can eventually directly affect their financial business results. Hence, it becomes indispensable for corporate customers to identify the sources of power that can help them during the negotiation process to achieve better terms of purchase of banking services.

Therefore, the subject of research of this paper are business negotiations and the sources of negotiation power involved in the exchange process in the corporate banking market. The main objectives of the research are: (1) reveal the role and importance of negotiation in the corporate banking market, (2) identify the sources of negotiation power that corporate customers use in negotiations with commercial banks, and (3) determine the intensity of the impact of individual sources of negotiation power on the achievement of the desired terms of purchase of banking services in the corporate banking market.

In order to accomplish the above indicated objectives, it was necessary to: (1) analyze the available theoretical notions of business negotiation in general and the one in the corporate banking market, (2) adjust the theoretical notions of the sources of negotiation power to the specific characteristics of the corporate banking market, and (3) carry out an empirical research.

The paper consists of five main sections, including introduction and conclusion. After the introduction, the second chapter presents the theoretical framework for business negotiation. It is followed by an analysis of the term and the characteristics of negotiation power, as well as the typology of the sources of negotiation power. The fourth chapter is oriented towards the presentation of the methodology of the empirical part of the research, and the analysis and interpretation of the obtained results. The conclusion section of the paper presents in a concise way the most significant implications of the conducted research.

II. FEATURES OF BUSINESS NEGOTIATION

There are many situations, almost on a daily basis, which require the use of negotiation as a tool for defining and facilitating relationships among people. Negotiation has a particular significance in the market exchange process, especially the one taking place in the business market. Negotiation stands at its core. Both purchasers and suppliers use negotiations to establish the terms of the sales agreement. Negotiation is a process working to reach an agreement that is mutually satisfactory to both buyer and seller (Manning, Reece, 2008).

Due to the nature of business markets and the exchange taking place in such markets, business negotiations are often very complex processes. Such processes include several participants, require a series of decisions to be made and last longer than the ones conducted in business-to-consumer markets. During an exchange process in the business market, the negotiations are mainly conducted between the respective buying and selling centres.

Characteristics of the employees working in such centres directly affect the outcomes of the negotiation.[1] Figure 1 shows multilevel relationships between organizational buyers and suppliers.

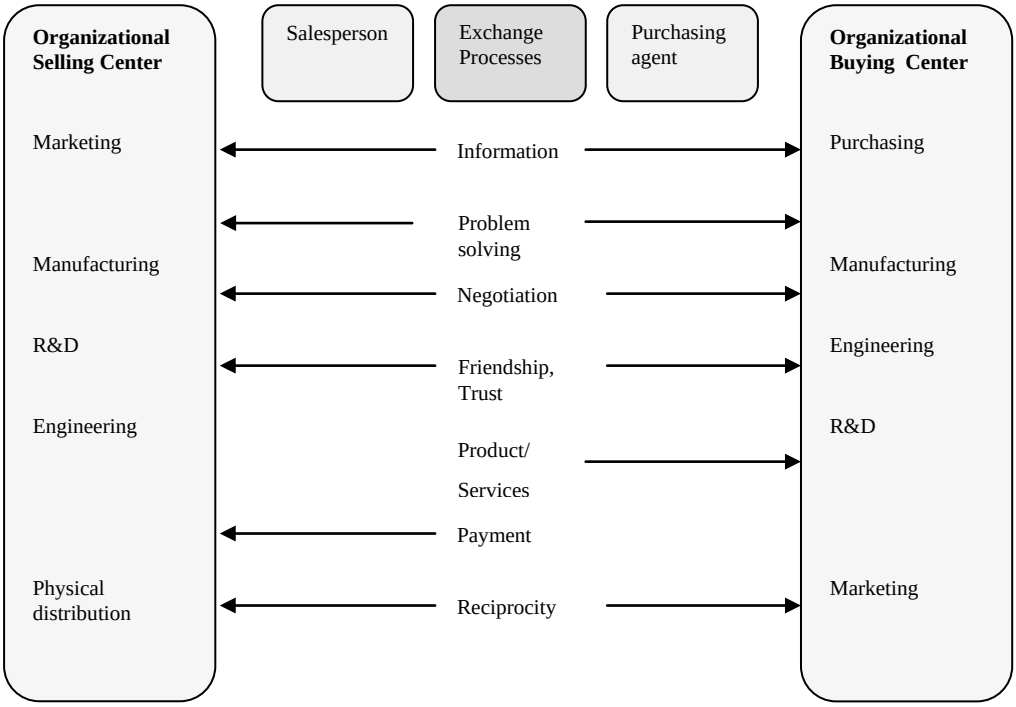


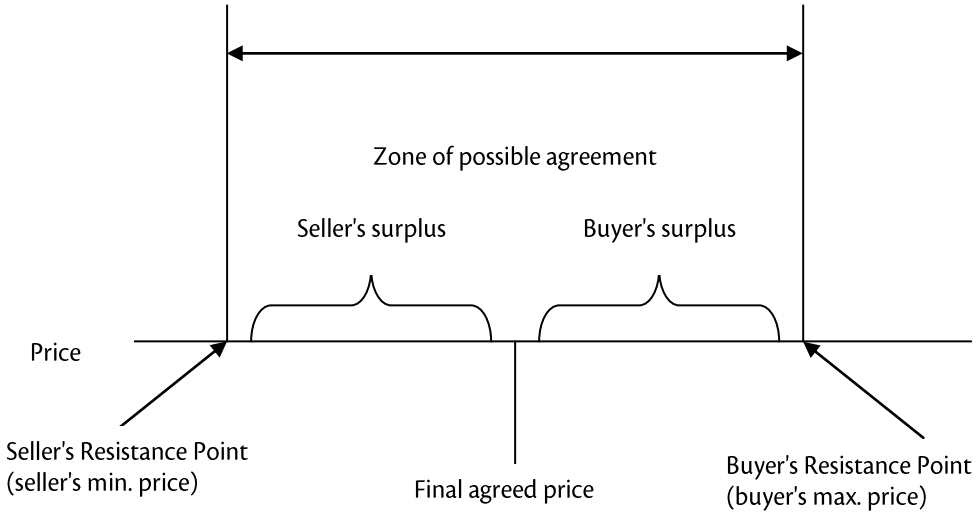
FIGURE 1. MULTILEVEL RELATIONSHIPS BETWEEN ORGANIZATIONAL BUYERS AND SUPPLIERS

Source: Michael D. Hutt and Thomas W. Speh, Business Marketing Management: B2B, nineth edition, (Mason: Thompson South – Western, 2007), 417.

In business markets, the values are usually not exchanged according to pricing lists, as it predominantly occurs in the business-to-consumer market. In most cases, the price - as one of the elements of an offer - is negotiated by the organizational buyer and the supplier. The figure 2 shows the zone of possible agreement on the price in negotiations between an organizational buyer and a supplier.

[1] Klaus Backhaus, Jenny van Doorn, Robert Wilken, „The Impact of Team Characteristics on the Course and Outcome of Intergroup Price Negotiations," Journal of Business to Business Marketing 15, no. 4 (2008): 365-396.

FIGURE 2. ZONE OF POSSIBLE AGREEMENT ON THE PRICE BETWEEN AN ORGANIZATIONAL BUYER AND A SUPPLIER



Source: Howard Raiffa, The Art and Science of Negotiation, (Cambridge: Library of Congress, 1982), 46.

Negotiations represent a key dimension of industrial buying.[2] The skills used by organizational buyers to negotiate the terms of the exchange will directly influence the company's performance. It is obvious that the participants involved in an exchange in the business market that have more skilled negotiators will achieve better operating results, higher profit. On the other hand, better understanding of negotiation behaviour of members of the buying centre will allow the selling company to design a better sales strategy. It is the goal of both the buyer and the supplier to use the negotiations to achieve the best possible terms of exchange for the respective companies. The opposing goals of the exchange and the aspiration to establish a long-term co-operation require from both the buyer and the supplier a flexible approach to the negotiation and the reaching of an integrated agreement for mutual benefit. In the business market and in sales in general, the most used negotiation strategies and methods are the integrative ones.[3] It can be complex to reach such an agreement in the business market due to the respective inter-organizational environments of the buyer and the supplier.

Researchers[4] set forth six principles that salespeople should adhere to in negotiations in order to achieve profitable sales while delivering maximum value to the buyers: (1) present and insist on the value of the solution (product or service) offered, (2) set high targets (those who ask for more, get more), (3) manage information skillfully, (4) know their own sources of power, (5) satisfy all customer needs, and (6) concede carefully. The ability to negotiate on problems or

[2] Stephen W. Clopton, „Seller and Buying Firm Factors Affecting Industrial Buyer's Negotiation Behavior and Outcomes", Journal of Marketing Research XXI (1984): 39-53.
[3] Integrative strategies are also known as cooperative or win-win strategies.
[4] Ron D'Andrea, „Executing Profitable Sales Negotiations: Selling Value, Not Price, Industrial and Commercial Training" 37, no. 1, (2005): 18-24.

objections is one of the most successful ways to create value for the buyer. Contemporary theory and practice emphasize the importance of providing value to the customer.

III. NEGOTIATION POWER AND SOURCES OF NEGOTIATION POWER

Negotiation power is an ability to persuade (or force) someone to do something.[5] Kelley and Thibaut[6] claim that power is defined as the ability to influence others. Power can be described as the ability to get the other side to do something when you want it done.[7] In business context, power is a company's ability to influence another company to undertake activities that it would otherwise not undertake on its own.[8]

Most negotiatiors strive to get as much as possible negotiation power. It represents a potential source of advantage over the other negotiatior, a factor used to accomplish the set goals. Some negotiators consider it as the key factor in the negotiation. The less a negotiatior depends on the other party, the more negotiation power it has. A person or group cannot have power in isolation, without social contact. Power has to be exercised or deployed, or have the potential of being deployed in relation to some other person or group.

Back in 1959, French and Raven[9] pointed out reward power, coercive power, expert power, legitimate power and referent power as the most important sources of power among all other types of power. Lewicki et al.[10] took a broader perspective on power and aggregated the sources of power in negotiation into the following five groupings (Table 1): (1) Informational sources of power; (2) Personality-based sources of power; (3) Position-based sources of power; (4) Relationship-based sources of power; and (5) Contextual sources of power.

[5] Roger Fisher and William Ury, Getting to Yes, (London: Random House Business Books, 1993), 85.
[6] Alexandra Abbeele, Filip Roodhooft, Luk Warlop, „The Effect of Buyer-Supplier Negotiations in Different Power Settings", Accounting, Organizations and Society 34, (2009): 246.
[7] Saša Petar, Pregovorom do cilja, (Zagreb: Denona, 2004), 35.
[8] James C. Anderson, James A. Narus, Das Narayandas, Business Market Management, (New Jersey: Pearson Prentice Hall, 2009), 99.
[9] Robert F. Lusch, „Sources of Power: Their Impact on Intrachannel Conflict", Journal of Marketing Research 13, no. 4 (1976): 383.
[10] Roy J. Lewicky, David M. Saunders, Bruce Barry, Pregovaranje, 5. izdanje, (Zagreb: Mate, 2009).

TABLE 1 – MAJOR SOURCES OF POWER IN BUSINESS NEGOTIATION

Sources of Power	Description
Informational	• Information: the accumulation and presentation of data intended to change the other person's point of view or position on an issue. • Expertise: an acknowledged accumulation of information, or mastery of a body of information, on a particular problem or issue. Expertise power can be positive (we believe the other because of their acknowledged expertise) or negative (we so distrust the other that their claimed expertise leads us to pursue a course of action opposite to the one they advocate).
Personality and individual differences	Power derived from differences in: • Psychological orientation (broad orientations to power use) • Cognitive orientation (ideologies about power) • Motivational orientation (specific motives to use power) • Dispositions and skills (orientations to cooperation / competition) • Moral orientation (philosophical orientations to power use).
Position-based power	Power derived from being located in a particular position in an organizational or communication structure. This power leads to several different kinds of leverage: • Legitimate power, or formal authority, derived from occupying a key position in a hierarchical organization. However, legitimate power can also influence social norms, such as reciprocity or the expected exchange of favours; equity or the expected return when one has gone out of one's way for the other; dependence or the expected obligation one owes to others who cannot help themselves. • Resource control, or the accumulation of money, raw material, labour, time, and equipment that can be used as incentives to encourage compliance or as punishments for noncompliance. Resource control is manifested in reward power, i.e. the use of tangible rewards or personal approval to gain the other's compliance; punishment power, i.e. the use of tangible punishments or with holding of personal approval to gain the other's compliance.
Relationship-based power	• Goal interdependence - how the parties view their goals. • Referent power - based on an appeal to the other based on common experiences, group membership, status, etc. Referent power can also be positive (we believe the other because we respect them) or negative (we so disrespect the other that we pursue a course of action opposite to the one they advocate). • Access to or control over information, resources supply flows, or access, derived from location within flows in a network.
Contextual power	Power derived from context in which negotiations take place. Common sources of power include: • Availability of BATNAs, • Organizational and national culture, and • Availability of agents, constituencies, and audiences who can directly or indirectly affect the outcomes of the negotiation.

Source: Roy Lewicky, David M. Saunders, Bruce Barry, Pregovaranje, 5. izdanje, (Zagreb: Mate, 2009), 192.

IV. ROLE AND IMPORTANCE OF NEGOTIATION AND SOURCES OF NEGOTIATION POWER IN THE EXCHANGE PROCESS IN THE CORPORATE BANKING MARKET - EMPIRICAL RESEARCH

A. Research Objectives and Methodology

Even though, on a global scale, several researches have been conducted on different aspects of negotiation and negotiation power involved in exchange processes in general, hence also in the corporate banking market,[11] to the authors' knowledge, this paper is the first one that explores and identifies the link between negotiations and the achieved terms of exchange as well as the link between individual sources of negotiation power and the achieved terms of exchange in the corporate business market. In order for the research to be carried out, it was necessary to adapt the theoretical knowledge of sources of negotiation power provided by the most relevant authors to the specific characteristics of the corporate banking market, and to develop a measuring instrument.

The research was conducted through May and June 2010 by the interviewing method. A questionnaire consisting of 53 questions was used as the measuring instrument. All questions, except for one, were closed-type questions. In questions with items proposed in order to identify the intensity of the phenomenon statement, the five-point Likert scale was applied. The sample included 330 corporate banking customers in the territory of the Republic of Croatia. In order to achieve sample representativeness (researched population = 165,490 active business enterprises in the Republic of Croatia; basic set = 84,811 business enterprises that have submitted the Annual financial report for 2009 in the Republic of Croatia), and to allow comparison of the answers and identification of the significant differences, the sample was structured in two strata. One stratum was made out of small business enterprises, whereas the second stratum comprised of medium and large business enterprises (classified in accordance with the Accounting Act, Official Gazette 109/2007). The single entities in the sample were chosen by random selection. The authors prepared tables containing the lists of business enterprises belonging to each stratum. They subsequently got random numbers by using computer programs, i.e. 165 random numbers for the small business enterprises stratum and 165 random numbers for the medium and large business enterprises stratum. The numbers obtained represented the ordinal numbers of business

[11] Roy Lewicky, David M. Saunders, Bruce Barry, Pregovaranje, 5. izdanje, (Zagreb: Mate, 2009); Chester L. Karrass, The Negotiation Game, (New York: Harper Paperbacks, 1994); Klaus Backhaus, Jenny van Doorn, Robert Wilken, „The Impact of Team Characteristics on the Course and Outcome of Intergroup Price Negotiations," Journal of Business to Business Marketing 15, no. 4 (2008): 365-396; Laura J. Kray and Leigh Thompson, „Gender Stereotypes and Negotiation Performance: An Examination of Ttheory and Research", Research in Organizational Behavior 26, (2005): 103-182; Amy E. Walters, Alice F. Stuhlmacher, Lia L. Meyer, „Gender and Negotiator Competitiveness: A Meta-Analysis", Organizational Behavior and Human Decision Process 76, (1998): 1-29; Linda Babcock, Sara Lascheve, Women Don't Ask: Negotiation and the Gender Divide, (Princeton: Princeton University Press, 2003); Charles Watson, „Gender Versus Power as a Predictor of Negotiation Behavior Outcomes", Negotiation Journal10, (1994): 117-127; Hirotsugu Uchida, „Empirical Determinants of Bargaining Power", Working Paper, Wakayama, (2006), www.rieti.go.jp/jp/publications/ dp/06e030.pdf (accessed December 3, 2010); Jorg Grunert and Lars Norden, „Bargaining Power and Information in SME lending, Small Business Economics", (2011), www.wiwi.unituebingen.de/cms/fileadmin/ Uploads/Forschung/Workshop/grunert.pdf (accesed July 9, 2010); Steven Ongena, David Smith, „The Duration of Bank Relationships", Journal of Financial Economics 61, (2001): 449-475; João Santos, Luísa Farinha, „Switching from Single to Multiple Bank Lending Relationships: Determinants and Implications", Journal of Financial Intermediation 11, no. 2 (2002): 124-151; John Scott, „Why Do Small Firms Change Banks?" (2006), http://astro.temple.edu/~scottjon/documents/WHYDOSMALLFIRMSCHANGEBANKS7-25-06.pdf (accessed July 20, 2010); John Scott, William Dunkelberg, „Competition for Small Firm Banking Business: Bank Actions versus Market Structure", Journal of Banking and Finance 34, (2010): 2788-2800; Keller Rudolph, Bargaining Power Effects in Financial Contracting, (Berlin: Springer, 2006).

enterprises contained in the excel tables and the questionnaire was subsequently mailed to the selected business enterprises. The questionnaire was designed in electronic format and distributed via e-mail. The data was analysed using SPSS for Windows statistical package.

The questionnaire was properly filled in by 104 survey respondents, out of which 53 were from the small business enterprises group and 51 from the medium and large business enterprises group. The effective return rate of the survey questionnaires was 31.5%, which is considered as a satisfactory level of return i.e. the sample is considered representative. If the presence of business enterprises in the sample is considered by core business, it is evident that almost all business activities are represented in the sample12 (Graph 1).

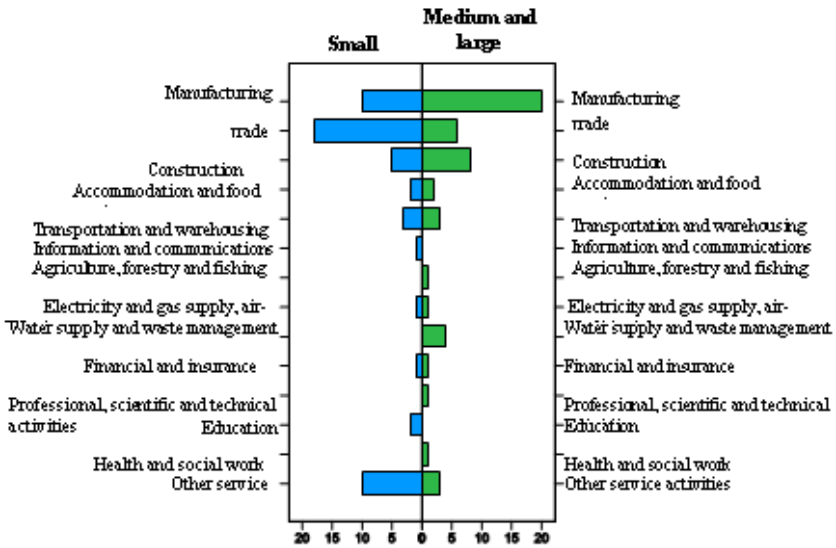


FIGURE 3 STRUCTURE OF THE SAMPLE BY SIZE AND CORE ACTIVITY OF BUSINESS ENTERPRISES

Source: Authors.

In order for the interpretation to be valid, the obtained research results should be analyzed in the context in which the research was carried out. According to the Croatian National Bank (HNB) (2009) data, at the end of the first half of 2009 there were 32 banks, two savings banks and five housing savings banks operating in the banking sector of the Republic of Croatia. With his research, Kraft[13] demonstrated that in the Republic of Croatia, regardless of the tendency of decrease in the number of banks and increase in conventional measures of concentration of the banking capital, the movement of interest rates and the increase in the number of competitors in the market have favoured an increase in competition in the banking market. Strengthening of competition, particularly the one coming from the non-banking sector,

[12] Business activities that are not represented among the interviewed business enterprises are: (a) real estate activities, (b) administration and support service activities, (c) mining, and (d) art, entertainment and recreational services.

[13] Evan Kraft, „Kolika je konkurencija u hrvatskom bankarskom sektoru?", Istraživanja Hrvatske narodne banke, I-19, (2007), (Zagreb:HNB), www.hnb.hr/publikac/istrazivanja/i-019.pdf (accessed August 8, 2010).

implementation of new technologies and deregulation of the financial sector have altered the relationship between banks and their customers.

As a limitation of the conducted research, it should be pointed out that only one negotiating party was interviewed – corporate banking customers. The possibility that the other negotiating party (banks) could have a different perception of negotiation power and negotiation outcomes should not be ruled out. The fact that the research was carried out in the context of one social community should also be taken into consideration.

B. Hypotheses of the Research

Based on the previously analyzed theoretical knowledge on the subject of the research, and in order to accomplish the objectives of the research, the authors have formulated the following hypotheses:

H1: If the corporate banking customer negotiates with the bank, it can obtain more favourable terms of exchange.

H2: The outcomes of the negotiations and the agreed terms of exchange are influenced by informational sources of power of the corporate banking customer.

H3: The outcomes of the negotiations and the agreed terms of exchange are influenced by sources of power derived from the personality of the corporate banking customer.

H4: The outcomes of the negotiations and the agreed terms of exchange are influenced by the corporate banking customer's power deriving from his/her position in a company or society.

H5: The outcomes of the negotiations and the agreed terms of exchange are influenced by the source of power derived from interpersonal relationships between the corporate banking customer and the bank.

H6: The outcomes of the negotiations and the agreed terms of exchange are influenced by contextual sources of power of the corporate banking customer.

C. Analysis and Interpretation of the Research Results

A brief and systematic overview of the obtained research results and the most significant conclusions are set forth in the text below.

Having analyzed the collected data, it can be concluded that the first hypothesis, H1: If the corporate banking customer negotiates with the bank, it can obtain more favourable terms of exchange, cannot be rejected. More precisely, one can come to the conclusion that negotiations with a bank can lead to more favourable terms of co-operation. Namely, the majority of all business enterprises from the sample (73.9%), which have used a loan as a banking service, believe that they have obtained more favourable terms of exchange through negotiations. As shown in Figure 3, larger business enterprises (84.1% of respondents) achieved more favourable terms of exchange through negotiations more often than small business enterprises (63.6% of respondents). The above points to the fact that the size of a business enterprise is an important factor for success in obtaining more favourable terms of exchange in the corporate banking market. Rudolph[14] also proved with his research that more favourable terms of lending grow

[14] Keller Rudolph, Bargaining Power Effects in Financial Contracting, (Berlin: Springer, 2006).

along with the negotiation power of corporate banking customers, and that the probability of obtaining the desired contract terms depends on the negotiation power.

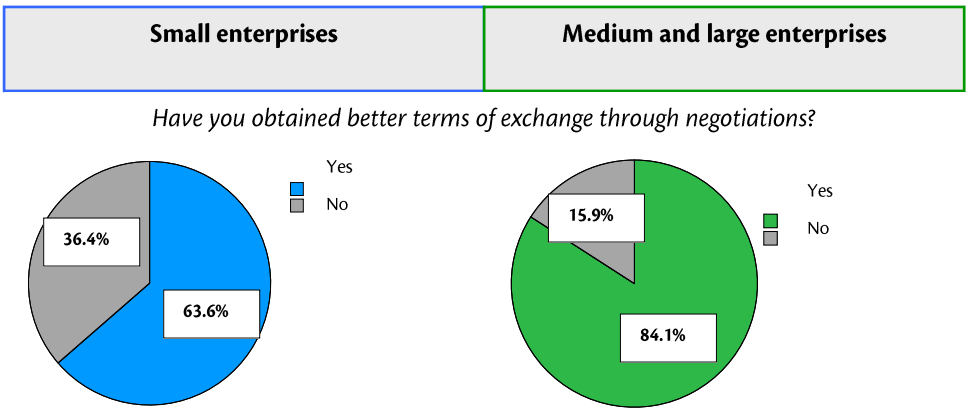


FIGURE 4 STRUCTURE OF THE SAMPLE BY SIZE AND CORE ACTIVITY OF BUSINESS ENTERPRISES

Source: Authors.

Those respondents that have used a loan as a banking product and have obtained better terms of exchange (lending) through negotiations were involved in the testing of the hypotheses H2, H3, H4, H5 and H6 (n=65). One of the so-called multivariate dependence techniques was used in the processing of the data, i.e. the binary logistic regression. Since every source of power comprises several elements, i.e. several structured questions from the questionnaire, it is necessary for each source of power to be summarizable and quantifiable as one variable. In order to do that, the significance of variables and the intensity specified on a Likert scale were taken into consideration. As it is not the case that the elements of individual sources of power have the same significance or the same intensity in all cases, each variable associated with a source of power has its own intuitive logic as to how it has been constructed. Significant variables at the confidence level of 95 percent and more were taken into account. Moreover, in order to avoid ordinal values (i.e. intensity values according to the Likert scale), intensities were transformed into so-called dummy variables[15] so that the evaluations which are equal or above the median are given a value of 1, whereas the evaluations below the median a value of 0[16]. Based on the data processing described above, the authors of this paper obtained the structure of impacts of individual sources of negotiation power on the exchange process in the corporate banking market, which is illustrated in Figure 4.

[15] Dummy variables are used in regression analysis to represent subgroups of in the sample, and they include variables with the values 1 and 0 (for instance, female gender = 1, and male gender = 0; negotiator has used the informational power = 1, negotiator has not used the informational power = 0, and the like). Hence, the dummy variables act as „switches" that turn various parameters on and off in an equation.

[16] This method of recoding of intensity variables is mostly used in researches in the field of social sciences.

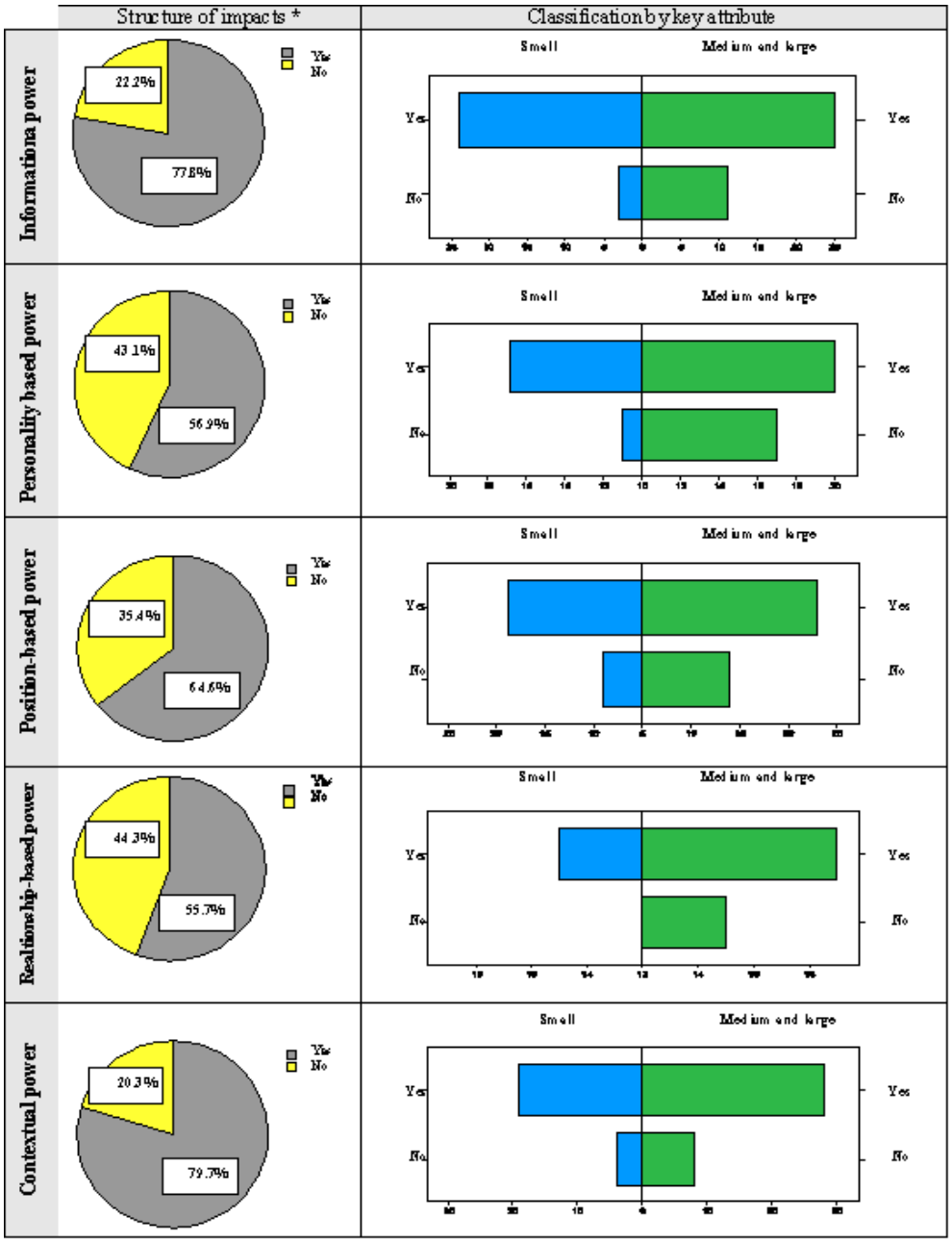


FIGURE 5 STRUCTURE OF IMPACTS OF INDIVIDUAL SOURCES OF NEGOTIATION POWER ON THE EXCHANGE PROCESS IN THE CORPORATE BANKING MARKET AND THEIR CLASSIFICATION BY SIZE OF ENTERPRISE AS PARTICIPANT IN THE NEGOTIATIONS

Source: Authors.
*Yes = it has an impact, No = it has no impact

The recoded variables of the sources of power were tested by using Cronbach's Alpha reliability coefficient, whose value was 0,702. A Cronbach's Alpha of 0,7 or greater is generally considered as an acceptable level of high reliability.[17] The significance of individual sources of power was tested with a chi-square test. Table 2 reports the significance of individual sources of power by subgroups and the entire sample.

TABLE 2 - TEST OF THE SIGNIFICANCE OF INDIVIDUAL SOURCES OF POWER BY SUBGROUPS AND THE ENTIRE SAMPLE

Source of power		Small	Medium and large	Total
Informational power	χ2	16.333***	5.444**	19.444***
	(p)	(0.000)	(0.020)	(0.000)
Personality-based power	χ2	1.286	0.243	1.246
	(p)	(0.257)	(0.622)	(0.264)
Position-based power	χ2	3.571*	2.189	5.554**
	(p)	(0.059)	(0.139)	(0.018)
Relationship-based power	χ2	0.333	0.471	0.803
	(p)	(0.564)	(0.493)	(0.370)
Contextual power	χ2	9.783***	11.111***	20.763***
	(p)	(0.002)	(0.001)	(0.000)

Note: The significance of elements has been tested with a chi-square test. The values in brackets represent the test probabilities. *** means the level of significance at 99%;** means the level of significance at 95%.
Source: Authors.

Furthermore, it should be emphasized that dichotomous questions were applied to determine the use of individual elements of each source of power. In case of a positive answer as to the use (or the existence) of a particular element in the negotiations executed, it would allow an assessment of the intensity of the impact of such element to the finally agreed terms of cooperation. In addition, one question offered a choice between the cooperative and the competitive spirit and the evaluation of the impact of the selected "spirit" on the obtained terms of cooperation between a corporate customer and a bank. On the other hand, one question offered directly to evaluate the impact of the formal position of a respondent in his/her company on the obtained terms of cooperation between a corporate customer and a bank. The responses obtained were processed by descriptive statistics.

The hypothesis, H2: The outcomes of the negotiations and the agreed terms of exchange are influenced by informational sources of power of the corporate banking customer, cannot be rejected. It means that informational sources of power do influence the outcomes of the negotiations and the agreed terms of exchange, actually at a significance level of 99%, if taken in consideration at the level of the entire sample (Table 2). This source of power turns out to be significant for both strata.

[17] Jim Nunally, Psychometric theory – second edition, (New York: McGraw Hill, 1978).

It results from the data set forth in Table 3 that a large majority of all units in the sample (96.9%) presents the relevant information on the company's performance when negotiating, and the significance of such information is at the level of 99%. The lowest share of units in the sample presented information on the general manager or the owner, i.e. on his/her creditworthiness, personal loan debts and any outstanding liabilities, when negotiating with the bank (32.8%). It is noteworthy that small enterprises present the said information relatively more (46.4%) than medium and large enterprises (24.3%). Small enterprises present relatively more the information on the expertise of the Management Board/manager (64.3%). Information on the expertise turns out to be influential (arithmetic mean = 3.8) in the case of small enterprises, and neither influential nor uninfluential in the case of medium and large enterprises (arithmetic mean = 3.4). All kinds of information turn out to be influential at the level of the entire sample. Most respondents stated that, among the information sources of power, exactly the information on the company's performance affected the stipulated terms of exchange (mode for all categories = 4). The information on the company's performance also show the highest arithmetic mean of impacts among individual elements of all sources of power (arithmetic mean = 3.97). This can be brought in connection with the results of some other researches. Uchida (2006), for instance, investigated the determinants of negotiation powers between an enterprise and a bank in the Japanese banking market. He showed that the competition in the banking market, as well as the enterprise's business performance, increase the negotiation power of the enterprise. Uchida (2006) did not find any significant statistical connection between the skills of the management and its gender and negotiation power. On the contrary, Grunert and Norden (2011) showed on a sample of German enterprises that the information on the skills and expertise of the management body affect the negotiator's negotiating power in the lending process.

TABLE 3 - NUMBER, SHARE AND SIGNIFICANCE OF THE INFORMATION ELEMENTS AS A SOURCE OF NEGOTIATION POWER AT THE LEVEL OF THE STRATA AND THE ENTIRE SAMPLE

		Information on company's business performance		Information on owner/manager		Information on expertise of the management board/manager	
		n	%	n	%	n	%
Small enterprises	Yes	27	96.4	13	46.4	18	64.3
	No	1	3.6	15	53.6	10	35.7
	χ2 (p)	24.143*** (0.000)		0.143 (0.705)		2.286 (0.131)	
Medium and large enterprises	Yes	36	97.3	9	24.3	19	51.4
	No	1	2.7	28	75.7	18	48.6
	χ2 (p)	33.108*** (0.000)		9.757*** (0.002)		0.027** (0.869)	
Total	Yes	63	96.9	22	32.8	37	56.9
	No	2	3.1	43	66.2	28	43.1
	χ2 (p)	57.246*** (0.000)		6.785*** (0.009)		1.246 (0.264)	

Source: Authors.

Note: The significance of elements has been tested with a chi-square test. The values in brackets represent the test probabilities. *** means the level of significance at 99%;** means the level of significance at 95%.

The hypothesis, H3: The outcomes of the negotiations and the agreed terms of exchange are influenced by sources of power derived from the personality of the corporate banking customer, can be rejected, as it did not turn to be significant at any sample level. The insignificance of personality as a source of negotiation power of corporate banking customers was confirmed by the results of the chi-square test (Table 2). The obtained results show that all respondents in the sample believe that it is desirable to use power in the negotiations, even though a minority considers it immoral (10.8%), as shown in Table 4. Hence, for a part of the respondents, the desire to obtain more favourable terms of exchange for their own enterprises makes the use of power desirable, although immoral in a wider social context. Most respondents feel that personality does affect the stipulated terms of cooperation (the most frequent evaluation of intensity = 4). Both strata point out that the desirability of the use of power influences the agreed terms of exchange (arithmetic mean = 3.6). However, both strata do not consider the standpoint on ethics as an influential factor in accomplishment of more favourable terms of exchange (arithmetic mean = 3.4), whereas the competitive and the cooperative spirit are considered as an influential factor (arithmetic mean = 3.6). It should be stressed out that the majority of respondents (86.2%) believe to have a cooperative spirit, whereas a minority of the respondents (13.8%) see themselves as competitive (Table 4). The results obtained are not consistent with the research carried out by Karrass (1994), as he proved that personality factors are extremely important in negotiating and obtaining the desired terms of exchange.

By gender, 42.3% were female, while males accounted for 57.7% of surveyed respondents. What has often been discussed in the empirical theory and practice is the fact whether gender affects negotiation (yet not exclusively this factor, but all aspects of management). Walter et al. (1998) demonstrated that there are small but statistically significant differences that indicate that women tend to behave more cooperatively in negotiations than men. Two studies dealing with the comparison of male and female managers showed that men are less inclined to share information than women.[18] However, empirical studies have shown that such differences disappear when other control variables, besides the gender, are introduced in the analysis. Watson[19] demonstrated that the chances that a negotiator would be competitive or cooperative in any given situation are less likely to have to do with gender than other factors, such as position in the organization. After a comprehensive review of theory and empiricism on the issue of gender and negotiation, Kray and Thompson[20] concluded that the negotiation dyad and the contextual factors surrounding the negotiating table play a unique role and sometimes the interaction effects and mutual relationships between such negotiation parties and/or factors are decisive as to whether the negotiator's gender affects the outcomes of the negotiations.

[18] Linda Babcock, Sara Lascheve, Women Don't Ask: Negotiation and the Gender Divide, (Princeton: Princeton University Press, 2003).

[19] Carol Watson, „Gender Versus Power as a Predictor of Negotiation Behavior Outcomes", Negotiation Journal10, (1994): 117-127.

[20] Laura J. Kray and Leigh Thompson, „Gender Stereotypes and Negotiation Performance: An Examination of Ttheory and Research", Research in Organizational Behavior 26, (2005): 103-182

TABLE 4 - NUMBER, SHARE AND SIGNIFICANCE OF PERSONALITY FACTORS AS A SOURCE OF NEGOTIATION POWER AT THE LEVEL OF THE STRATA AND THE ENTIRE SAMPLE

		Desirability of the use of power		**Morality** of the use of power		**Competitive vs. Cooperative spirit**		
		n	%	*n*	%		*N*	%
Small enterprises	Yes	28	100.0	24	85.7	Competitive	3	10.7
	No	-	-	4	14.3	Cooperative	25	89.3
	X^2 (*p*)	-		14,286*** (0,000)		X^2 (*p*)	17,286*** (0,000)	
Medium and large enterprises	Yes	37	100.0	34	91.9	Competitive	6	16.2
	No	-	-	3	8.1	Cooperative	31	83.8
	X^2 (*p*)	-		25.973*** (0.000)		X^2 (*p*)	16.892*** (0.008)	
Total	**Yes**	**65**	**100,0**	**58**	**89.2**	**Competitive**	**9**	**13.8**
	No	**-**	**-**	**7**	**10.8**	**Cooperative**	**56**	**86.2**
	X^2 (*p*)	**-**		**40.015*** (0.000)**		**X^2 (*p*)**	**33.985*** (0.005)**	

Source: Authors.

Note: The significance of elements has been tested with a chi-square test. The values in brackets represent the test probabilities. *** means the level of significance at 99%.

The hypothesis, H4: The outcomes of the negotiations and the agreed terms of exchange are influenced by the corporate banking customer's power deriving from his/her position in a company or society, cannot be rejected, namely at the level of 95% of significance (Table 2). The majority of respondents (67.7%) believe that their formal position in the company has influenced (60.0%) or highly influenced (7.7%) the obtained terms of exchange. It should be emphasized (Figure 5) that the personal presence during the negotiations i.e. the participation of an employee of the corporate banking customer (user of lending services) holding a formal position within the company (such as Director, Finance director and the like) in the negotiations in the case of small enterprises was perceived neither as influential nor uninfluential (score 3 on the Likert scale). In the case of medium and large enterprises, this factor in the negotiation had influence (score 4 on the Likert scale) on obtaining of more favourable terms of exchange. It is interesting to point out that those respondents that stated to be holding a position in the wider social community (15.4%) do not consider such position to represent a source of power in negotiation (arithmetic mean of the impact intensity = 2.3).

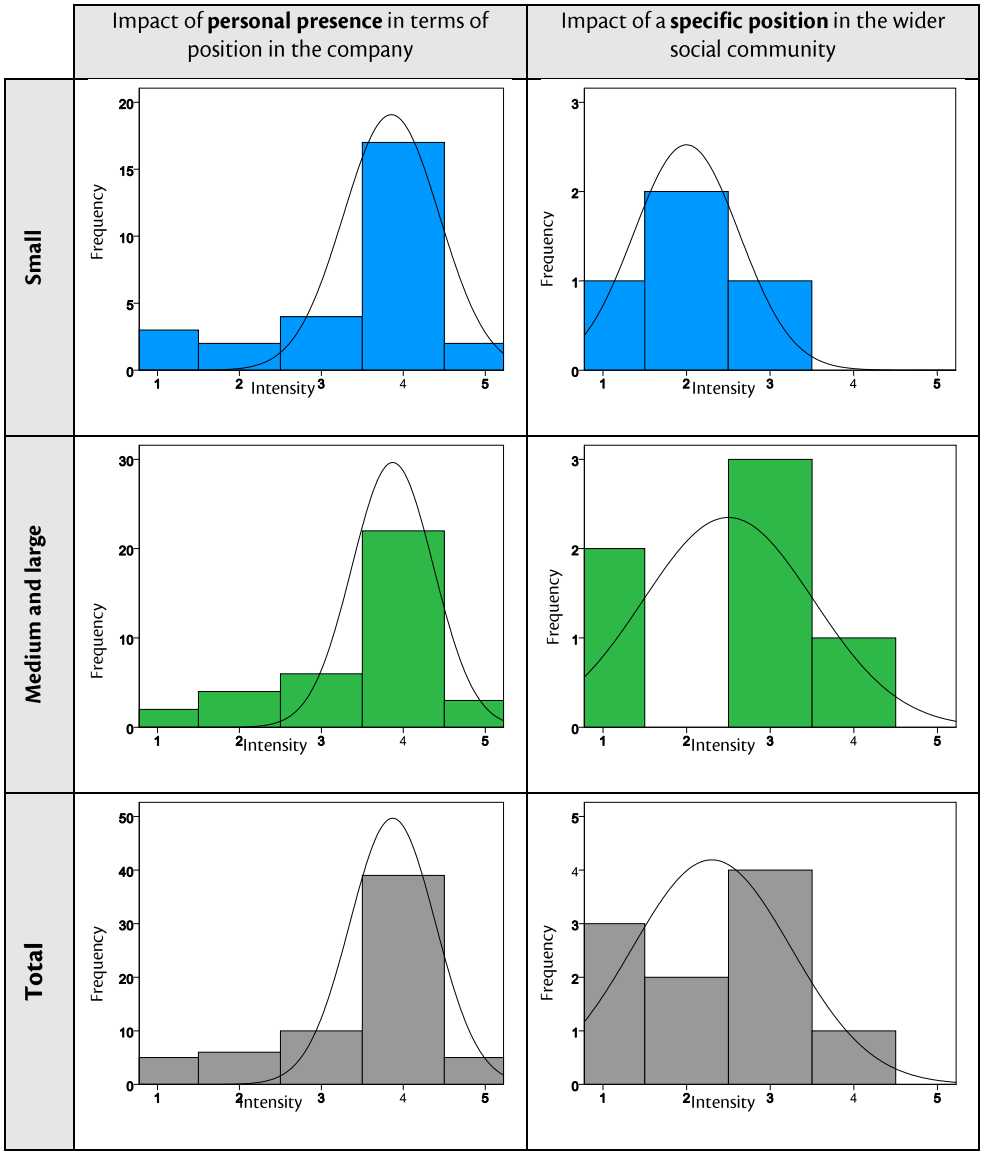


FIGURE 5. COMPARATIVE ILLUSTRATION OF THE FREQUENCY OF THE SPECIFIED IMPACT INTENSITIES BY CATEGORY OF POSITION IN THE COMPANY AND SOCIETY, AT THE LEVEL OF THE STRATA AND THE ENTIRE SAMPLE

Source: Authors.

The hypothesis, H5: The outcomes of the negotiations and the agreed terms of exchange are influenced by the source of power derived from interpersonal relationships between the corporate banking customer and the bank, can be rejected. The insignificance of the impact of this source of power on the outcome of exchange in the corporate banking market was

confirmed by the results of the chi-square test (Table 2). The relationship-based sources of power, along with the sources of power derived from personality, have the lowest frequency of „yes" answers, i.e. „power had an impact" (Figure 4). According to the data from Table 5, the majority of respondents (84.6%) that had collaborated with a bank employee even before contracting the deal with the bank think that such collaboration affected the contracting of more favourable terms of exchange (arithmetic mean = 3.6). Most respondents (78.5%) did not share common interests with the bank officer. Those company employees who shared common interests with the bank officer think that such interests neither affected nor non-affected (arithmetic mean = 3.4) the contracting of more favourable terms of exchange. Most respondents (75.4%) felt they share common goals with the bank officer. According to the respondents' opinion, sharing common goals with the bank i.e. bank officer influenced the obtained terms of exchange (arithmetic mean = 3.8). Existence of co-operation between the participants in the negotiation process proved itself to be the most significant factor of personal relationships between the company and the bank. Scott[21] (2006) suggested that interpersonal relationships are important to maintain the co-operation between the bank and the corporate banking customer, whereas Scott and Dunkelberg[22] pointed out the importance of the interaction between the bank officer and the customer in achieving good relationships and the customer's satisfaction.

TABLE 5 – NUMBER, SHARE AND SIGNIFICANCE OF INTERPERSONAL FACTORS AS A SOURCE OF NEGOTIATION POWER AT THE LEVEL OF THE STRATA AND THE ENTIRE SAMPLE

		Sharing common goals		Existence of collaboration in the past		Existence of common interests	
		n	%	n	%	N	%
Small enterprises	Yes	20	71.4	22	78.6	7	25.0
	No	8	28.6	6	21.4	21	75.0
	χ2 (p)	5.143** (0.023)		9.143*** (0.002)		7.000*** (0.008)	
Medium and large enterprises	Yes	29	78.4	33	89.2	7	18.9
	No	8	21.6	4	10.8	30	81.1
	χ2 (p)	11.919*** (0.001)		22.730*** (0.000)		14.297*** (0.000)	
Total	Yes	49	75.4	55	84.6	14	21.5
	No	16	24.6	10	15.4	51	78.5
	χ2 (p)	16.754*** (0.000)		31.154*** (0.000)		21.062*** (0.000)	

Source: Authors.

Note: The significance of elements has been tested with a chi-square test. The values in brackets represent the test probabilities. *** means the level of significance at 99%;** means the level of significance at 95%.

The hypothesis, H6: The outcomes of the negotiations and the agreed terms of exchange are influenced by contextual sources of power of the corporate banking customer, cannot be rejected at the level of 99% of significance (Table 2). It should be emphasized that the source of power derived from the context affected the majority of enterprises (79.7%) (Figure 4). According

[21] John Scott, „Why Do Small Firms Change Banks?" (2006), http://astro.temple.edu/~scottjon/documents/WHYDOSMALLFIRMSCHANGEBANKS7-25-06.pdf (accessed July 20, 2010).

[22] John Scott, William Dunkelberg, „Competition for Small Firm Banking Business: Bank Actions versus Market Structure", Journal of Banking and Finance 34, (2010): 2788-2800.

to the data from Table 6, the majority of respondents (70.8%) did not involve a third party (consultant, accountant, and the like) in the negotiations with the bank. Furthermore, most respondents (83.1%) negotiated with several banks at the same time – more often large and medium enterprises (97.3%), and less often the small ones (64.3%). Morever, most enterprises (86.2%) had a form of cooperation with the bank even before enetering the negotiations for loan contracting as a form of banking services. It is noteworthy that when the respondents were considering the intensity of the impact of individual elements of the context as a source of negotiation power, they indicated the highest mean value (arithmetic mean = 3.93) in the case of existence of business relationships before loan contracting. The mean value of the intensity of the impact of simultaneous negotiations with several banks is slightly lower (arithmetic mean = 3.89). It is also interesting to point out that small enterprises that involved a person outside the company in the negotiations (21.4%) mostly stressed out that this action affected the outcomes of the negotiations (score 4 on the Likert scale represents the mode and the median). Large and medium enterprises that included a person outside the company in the negotiations (35.1%) are mostly of the opinion that this had a low influence on obtaining more favourable termy of cooperation (score 2 on the Likert scale). Ongena and Smith, and Santos and Farinha[23] demonstrated that small enterprises which achieve high growth rates change the bank more often and faster and that a larger number of banks with whom a company maintains contacts adversely affects the length (duration) of the relationship.

TABLE 6 – NUMBER, SHARE AND SIGNIFICANCE OF CONTEXTUAL FACTORS AS A SOURCE OF NEGOTIATION POWER AT THE LEVEL OF THE STRATA AND THE ENTIRE SAMPLE

		Negotiations with several banks		Existence of business relationships before contracting the loan		Participation of a person outside the company	
		n	%	n	%	n	%
Small enterprises	Yes	18	64.3	22	78.6	6	21.4
	No	10	35.7	6	21.4	22	78.6
	χ^2 (p)	2.286 (0,131)		9.143*** (0,002)		9.143*** (0,002)	
Medium and large enterprises	Yes	36	97.3	34	91.9	13	35.1
	No	1	2.7	3	8.1	24	64.9
	χ^2 (p)	33.108*** (0.000)		25.973*** (0.000)		3.270* (0.071)	
Total	Yes	54	83.1	56	86.2	19	29.2
	No	11	16.9	9	13.8	46	70.8
	χ^2 (p)	28.446*** (0.000)		33.985*** (0.000)		11.215*** (0.002)	

Source: Authors.

Note: The significance of elements has been tested with a chi-square test. The values in brackets represent the test probabilities. *** means the level of significance at 99%;* means the level of significance at 90%.

Finally, it can be noticed in Figure 4 that contextual sources of power affected the outcomes of the negotiations in the case of most enterprises (79.7%). In terms of the share of

[23] Steven Ongena, David C. Smith, „The Duration of Bank Relationships", Journal of Financial Economics 61, (2001): 449-475; João A. C. Santos, Luísa A. Farinha, „Switching from Single to Multiple Bank Lending Relationships: Determinants and Implications", Journal of Financial Intermediation 11, no. 2 (2002): 124-151.

representation, they are followed by informational sources of power which provided more favourable terms of exchange for 77.8% of enterprises interviewed. Sources of power derived from negotiators' personalities (55.7%) and the existence of previous interpersonal relations (56.9%) have the lowest impact on the obtaining of more favourable terms of exchange in the corporate banking market.

It is considered important to stress out the fact that 18.5% of enterprises in the entire sample believe that all five sources of power affected the achieving of more favourable outcomes of the negotiations. The largest number of enterprises (i.e. 31.5%) achieved more favourable terms of exchange by applying four sources of power in the negotiations with the bank, whereas 22.2% of enterprises achieved that by applying three sources of negotiation power. The above implies that the majority of enterprises obtaines more favourable terms of exchange in the corporate banking market based on the application of three or more sources of power.

If correlations among various sources of power are considered (Table 7), the following conclusions suggest themselves. Apart from being the most significant sources of negotiation power that lead to favourable terms of negotiation, informational power and contextual power are also correlated at the level of 95% of reliability.

TABLE 7 – CORRELATION MATRIX OF SOURCES OF POWER

	Informational power	Personality-based power	Position-based power	Relationship-based power	Contextual power
Informational power	1.000	0.231* (0.068)	0.150 (0.241)	0.230* (0.080)	0.305** (0.021)
Personality-based power	0.231* (0.068)	1.000	0.266** (0.032)	0.093 (0.476)	0.043 (0.747)
Position-based power	0.150 (0.241)	0.266** (0.032)	1.000	0.118 (0.363)	0.133 (0.316)
Relationship-based power	0.230* (0.080)	0.093 (0.476)	0.118 (0.363)	1.000	0.193 (0.154)
Contextual power	0.305** (0.021)	0.043 (0.747)	0.133 (0.316)	0.193 (0.154)	1.000

Source: Authors.
Note: Correlation coefficients are based on Pearson correlation; the values in brackets represent the test probabilities. ** means the level of significance at 95%;* means the level of significance at 90%.

As expected, all sources of power produce positive correlation values between each other.

IV. CONCLUSION

For the purposes of this paper, the authors analyzed and broadened the available theoretical notions of the features of business negotiation, adjusted the theoretical notions of the sources of negotiation power to the specific characteristics of the corporate banking market, and developed an original measuring instrument for the implementation of the empirical part of the research. In terms of theory, they have thus contributed to the economic sciences in general, especially to the marketing branch.

This paper establishes the positive impact of negotiation on the obtaining of more favourable terms of exchange for corporate banking customers (opinion of 73.9% of respondents). Moreover, it incontrovertibly establishes the existence of cause-and-effect connections between individual sources of negotiation power and the obtained terms of exchange in the corporate banking market. It defines the sources of power that corporate banking customers in the Republic of Croatia use in the negotiations. It identifies the sources of power that affect the obtaining, for the corporate customer, of more favourable terms of cooperation and exchange with the bank (informational sources of power, the corporate banking customer's power deriving from his/her position in a company or society, contextual sources of power). Furthermore, it identifies the intensity of the impact of individual elements of each source of power on the achieved terms of cooperation, and the interdependencies between individual sources of power.

The research demonstrates the purposefulness of negotiations in the exchange process in the corporate banking market, hence also the need to train the participants in the exchange process in management of the business negotiation process. Namely, the research proves that negotiations can directly influence the stipulated terms of exchange. This is why, in the future, both the bank and the corporate banking customer will necessarily undertake negotiations as a process that directly affects the company's performance and competitiveness. By developing an appropriate strategy and tactics of the negotiation with banks, corporate banking customers will directly influence the increase of their own competitiveness by managing the price of the source of financing. Based on the presented research results and the knowledge of the negotiation process management, corporate banking customers can develop an effective negotiation strategy, by combining the adequate sources of negotiation power. The research also demonstrates the interdependency between individual sources of power, which will help companies in developing their own negotiation strategies.

In terms of application, the obtained research results are useful not only for corporate banking customers but also for banks, because the research provides an insight into: (1) the way the corporate customers of their services perceive the role of business negotiations in the exchange process in the corporate banking market and the importance they attach to them, and (2) the way individual sources of power affect the final outcome of the exchange process in the corporate banking market. Based on the above insights, the bank is able to assess whether it is necessary to provide further training to its own employees who maintain contacts with corporate customers of their services.

For future researches, it is recommended to include in the questionnaire questions about the amount of the agreed interest rate as the only monetized indicator of the successfulness of negotiations. Given the limitations of the research carried out, it is suggested to conduct an identical research in the context of another social community, and on the sample of commercial banks as the other, non-investigated, party in the exchange process in the corporate banking market. The credibility of the results obtained through this research would thus be additionally strengthened.

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PREGOVARANJE I IZVORI PREGOVARAČKE SNAGE: NJIHOVA ULOGA I ZNAČAJ U PROCESU RAZMJENE NA KORPORATIVNOME BANKARSKOM TRŽIŠTU

Sažetak: Rad se temelji na pretpostavci da sudionici u procesu razmjene mogu pozitivno utjecati na mnoge aspekte svojega poslovanja, ako usvoje znanja i vještine u području poslovnog pregovaranja. Cilj ovoga rada je pridonijeti spoznaji o specifičnim karakteristikama pregovaranja na korporativnome bankarskom tržištu i utjecaju pojedinačnih čimbenika snage pregovaranja o dogovorenim uvjetima razmjene između klijenta banke i same banke. Provedeno istraživanje je ukazalo da klijenti banaka mogu izravno utjecati na uvjete razmjene na korporativnome bankarskom tržištu. Nadalje, istraživanje je dokazalo da pojedini čimbenici pregovaračke moći imaju utjecaj na ostvarenje povoljnijih uvjeta razmjene za korporativne klijente banaka. Implikacije provedenoga istraživanja su višestruke. Primjerice, rezultati istraživanja osiguravaju smjernice za korporativne klijente banaka o tome kako razviti učinkovitu strategiju pregovaranja na korporativnome bankarskom tržištu što im pomaže u postizanju veće poslovne konkurentnosti.

Ključne riječi: Pregovaranje, snaga pregovaranja, korporativno bankarsko tržište, proces razmjene

EKONOMSKA ISTRAŽIVANJA-ECONOMIC RESERACH
ISSN 1331-677X print

2013 Volume 26(1): 137-154

THE DEVELOPMENT AND VALIDATION OF A CONSUMER COSMOPOLITANISM SCALE: THE POLAR OPPOSITE OF XENOPHOBIC ATTITUDES

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ARTICLE INFO

Article data:
- Received: 13 July 2012
- Accepted: 4 November 2012

JEL classification: M3 F6F52

Keywords:
- Consumer cosmopolitanism
- Xenophobic attitudes
- Global openness

ABSTRACT

Consumer cosmopolitanism is defined as world citizenship, open interaction with foreigners and the polar opposite of xenophobic attitudes. Although it is the opposite of consumer ethnocentrism, to date, cosmopolitanism has been primarily perceived as the virtue of not seeing foreigners as a threat, not being hateful towards foreigners, and embracing cultural diversity. Based on this conceptualization, our main objective is to develop and test an alternative pilot scale for consumer cosmopolitanism. Fifteen scale items were developed as a result of a literature review and consultation with academic experts. A survey was administered to 484 people in Turkey. Exploratory factor analysis showed that the scale items were grouped in three factors. To measure the validity of this consumer cosmopolitanism scale, Confirmatory Factor Analysis (CFA) indicated that second-order-factor-model was a more rational measurement configuration to determine consumer cosmopolitanism with three factors.

Reference to this paper should be made as follows: Altıntaş, M. H. ; Kurtulmuşoğlu F. B. ; Kaufmann H. R. ; Harcar, T. Gündoğan, N. 2013. The Development and Validation of a Consumer Cosmopolitanism Scale: The Polar Opposite of Xenophobic Attitudes, *Ekonomska istraživanja – Economic Research 26(1):137-154.*

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I. INTRODUCTION

Consumer cosmopolitanism is conceptualized as world citizenship and is described as not being afraid to interact with foreigners and treating everyone equally regardless of culture, nationality, race and religion. Although it is viewed as the opposite of consumer ethnocentrism, the virtue of not seeing foreigners as a threat, not being hateful towards them and regarding them as a cultural asset are much more dominant in the definition of cosmopolitanism. Therefore, cosmopolitanism is much more functional way to measure the polar opposite of xenophobic attitudes. In today's rapidly changing and globalized world, consumers must choose among many products having different features and countries of origin. Similarly there are many factors that affect consumer preferences. One of these factors is consumer attitudes towards their own country and other countries (Suh and Kwon, 2002). These attitudes have a direct influence upon consumer product preference, brands and the companies of foreign countries (Crawford and Lamb, 1982). The investigation of consumer attitudes towards domestic and foreign products and their effects on consumer purchase behavior is amongst the most popular topics in international marketing literature (e.g. Knight, 1999; Shimp and Sharma, 1987). However the positive attitudes towards foreign countries and their products is largely neglected and there is very limited literature on this topic (Crawford and Lamb 1982; Rawwas et al, 1996; Balabanis et al, 2001). Due to the density of the consumers encountering new cultural and consumption styles and the insufficiency of the current literature to explain the tendency to buy foreign products clearly shows that this topic should be investigated in more detail (Riefler and Diamantopoulos, 2009). Attitudes towards foreign products are being conceptualized as the country of origin, consumer ethnocentrism (Shimp and Sharma, 1987), consumer animosity (Klein et al., 1999), consumer world-mindless (Nijssen and Douglas,), and consumer affinity (Oberecker et al., 2008). Therefore it is important to determine the place and the difference of the consumer cosmopolitanism conceptual framework in this process.

First, this paper provides a literature review outlining the evolution of cosmopolitanism and providing the conceptual underpinning of the qualitative and quantitative research to follow. The results of a qualitative research with experts in the field conducted in the first stage in terms of preliminary attitudinal measures of cosmopolitanism are provided. The paper then validates the qualitative findings applying principal component of factor analysis and confirmatory factor analysis. Finally, the empirical findings are discussed and recommendations provided.

II. THE EVOLUTION OF COSMOPOLITANISM

Cosmopolitanism in general is considered a favorable attitude towards foreigners (Russell, 2004). The understanding of consumer cosmopolitanism tends to determine consumption patterns of different countries' products (Caldwell et al 2006). In other words the continuous globalization of marketing and the effect of this globalization upon the marketing activities make the investigation of cosmopolitanism as a consumer structure an absolute necessity (Cannon and Yaprak, 2002). The inclination of the consumers towards cosmopolitan values is largely effected by increasing global competition, technological changes, improved communication technologies, and increased consumer consumption expectations (Cannon and Yaprak, 2002).

The cosmopolitan consumer concept is essentially the same as the "world citizen" concept (Cannon and Yaprak, 2002). Metron (1957) explained this concept as individuals capable of adapting concepts beyond their local cultures. Gouldner (1957) stressed the fact that the cosmopolitan individuals in an organizational structure equate themselves to their occupations rather than the environment where they work. The cosmopolitanism concept is defined by Metron (1957) and Gouldner (1957) as a factor which has been frequently used as an explanatory variable in the literature of innovativeness (Helsen et al 1993), information diffusion (Gatignon et

al 1989), organizational orientation (Robertson and Wind 1983) and consumer behavior. Cosmopolitanism can also be described as an explanatory variable in consumer purchasing decisions (Klein et al 1998).

The first emergence of consumer cosmopolitanism in marketing literature was the contingency model of cross-national segmentation studies (Cannon and Yaprak, 1993). This study related cosmopolitanism as a sociological concept to consumer behavior (Yoon et al, 1996). It depicted cosmopolitan consumers as the people who are open to innovations and evaluate products solely based on their functionality, free from local effects and traditions. Consumer cosmopolitanism was used as transnational classification criterion (Yoon, 1998). He compared the cosmopolitanism values of American and Korean consumers in his multi cultural study and found that open-mindedness and extensive traveling were common to both societies, while ability and positive thinking were more dominant in Korean society. On the other hand, the possession of trendy tastes and wealthy lifestyles were more specific to American society. Beckmann et al. (2001) compared the viewpoints of three different cultures on cosmopolitanism. The study revealed that the participants related cosmopolitanism to the adaptation of different cultural structures and acting freely beyond their boundaries. Thompson and Tambyah (1999) showed that Singapore expatriates were trying to acquire a cosmopolitan identity on one hand and continue their ties with their national traditions while buying the imported products of their own countries on the other hand. Cadwell et al. (2006) focused upon the masculine and feminine features of cosmopolitan consumer orientation. Vida et al. (2005) mentioned the relationship between consumer cosmopolitanism and consumer ethnocentrism in an empirical study. Similarly, Tillery et al. (2011) investigated the relationship amongst world open-mindedness, consumer cosmopolitanism and consumer ethnocentrism.

The presence of the various studies measuring the effect of consumer cosmopolitanism upon purchasing behavior (Cannon and Yaprak, 1993; Beckman et al, 2001; Vida et al, 2005; Jaffe and Ebelzahl 2006) does not change the fact that the studies in this field are mostly conceptual and there is an urgent need for empirical studies. As seen from the previously mentioned examples, the studies which use consumer cosmopolitanism as an explanatory variable in an empirical study are very limited. In the literature related to consumer behavior, different authors attributed consumer cosmopolitanism to different dimensions of consumer behavior. Hannerz (1990) stated that cosmopolitans mostly purchased international media, books and films while Holt (1997) proved that cosmopolitans preferred exotic food and music and sought diversity and sophistication in consumer products. Another important finding was the fact that the cosmopolitans are amongst the minority who adopt innovations first (Rogers, 2004). Cosmopolitanism as an extension of the modernity creates a social class due to its self-orienting features (Skrbis et al, 2004). Cosmopolitanism mostly relates to globalization and a universal human community (Delanty, 2006) and related to consumer experiences (Caldwell, 2006).

III. COSMOPOLITANISM AS A POLAR OPPOSITE OF XENOPHOBIC ATTITUDES

Cosmopolitanism is conceptualized as consumers' openness to cultural products and their variations (Woodward et al 2008). Global consumerism is defined as a culture sub element (Cleveland and Laroche, 2007). Cosmopolitanism coincides with liberal thinking is considered an opposite dimension of xenophobic attitudes (Money, 1999). It is claimed that the reverse structure of the xenophobic attitudes can be evaluated as cosmopolitanism. The basic logical conceptualization of this study is that cosmopolitanism is the opposite of the xenophobic structure based upon out-group hostility. Xenophobia is generally conceptualized with dislike and hatred. The concept of hatred is used as an alternative phobia against foreigners and a reluctance to communicate with them (Pedahzur and Yishai, 1999). The cultural synonym of such

a conclusion is dissimilarity (Starks, 2003). The main reason for foreigner phobia is that "the foreigners are exploiting our resources and they are inferior"(Gotsbachner, 2001). Phobias against foreigners are based upon segregation and even deportation (Banton, 1996). The reason for adapting such a behavior can be explained to prevent the damage which may be caused by the foreigners, and protect the integrity of the original group, and maintain a high level dissimilarity (Van Der Dennen 1985). Generally foreign phobia includes "otherization". *"Other may be distinguished on any of a number of dimensions: in terms of skin color or other biological characteristics, their institutions (economic, political, family), cultural patterns (norms, values, rituals), their territory or the place they live, their orientations to one's collective "self", the history of one collective "self" compared to the other."* (Burns et al., 2001). This "otherization" can occur naturally or by institutional characterization. At this point, cultural acculturation, which states that having minimum contact with foreigners (segregation), adaptation to the host culture and complete participation in host life community (assimilation), exclusion and integration in order to protect one's own cultural values, should not be ignored (Florack et al., 2003).

Xenophobia is a type of attitude based on sentimental and behavioral prejudice. It is founded upon nativism and depends on fear and bias, and has a multi dimensional structure. It is related to ethno-centrism with regards to the national superiority and the hostility towards other countries (Yakushko, 2009). Foreign phobia appears as neglecting non-natives from birth (Georg and van der Tuin, 2008). Leyens et al. (2000) stated that having more humanly attitudes to those in his or her group becomes really important. Those who are loyally bound to their groups tend to exclude people outside the group (Guimond and Dambrun, 2002). Foreign phobia focuses on nativism and there is a hostile attitude and behavior against non natives (Yakushko, 2009). Foreign phobia is central to right wing fundamentalism and right wing thoughts and strengthens intolerance and increases the tendency to use violence (Hermann, 1997).

IV. COSMOPOLITANISM SCALES

There are several scales reported in the literature which measures the structure of cosmopolitanism. The local cosmopolitanism scale developed by Dye (1963) tries to distinguish cosmopolitans from local people. Jennings (1966) takes the orientation of people into account while Robinson and Zill (1997) are focused on cultural issues. The basic research issue is the presence of validity problems with all of three scales. Earle and Cvetkovich (1997) developed cosmopolitanism in the framework of risk management, which is not suitable for marketing applications. In Jain and Etgar's scale (1977) cosmopolitanism is measured by the use of key features of retail innovators. CYMYC scale developed by Cannon et al. (1994) is the only scale which attempts to functionalize cosmopolitanism in the framework of marketing. The authors later investigated the validity of CYMYC scale on various international samples including Korean, Ukrainian and Turkish consumers. In these different international samples the number of factors varied between two to four with eleven to twenty items for the model (Riefler and Diamantapoulos, 2009).

The qualitative analysis of the scale items reveal three basic dimensions of CYMYC scale; protection of current situation of consumer (ex. I don't like experimenting with things I don't enjoy), proximity to others (ex. I like to have contact with people from different cultures) and attitudes towards foreigners (ex. Foreigners often leave me uncomfortable). From this point of view we assume the concept of xenophobia in our study is covering all these dimensions.

Consumers, who scored highly on this scale are likely to try cultural diversity and are open to other cultures and their cultural products (Klein et al 1998). The related scale was tested with different samples to confirm validation (Yoon et al. 1996; Yoon 1998). Yoon et al. (1996)

typologically evaluated consumers as pure-local and pure-cosmopolitan. Cannon and Yaprak (2002) defined this typology based on purchasing criteria as global cosmopolitans and local cosmopolitans. Global cosmopolitans reject local culture and make purchases according to global standards while local cosmopolitans make purchases according to local standards.

Table 1 presents a summary of different scales reviewed, compared and utilized in the process of developing a consumer cosmopolitan scale for this research.

TABLE 1- LITERATURE SUMMARY FOR DIFFERENT SCALES RELATED TO CONSUMER COSMOPOLITANISM CONCEPTUALIZATION

SCALE	Author(s)	Main Conceptualization
Consumer Animosity	Klein, 1998	Anger, hate dislike and unforgiveness towards some countries.
Economic Nationalism	Baughn and Yaprak,1996	Consumer behavior priority depends on home country industries.
Nationalism Scale	Kosterman and Feschbach, 1989	Priority for home country expediency benefits
Patriotism Scale	Kosterman and Feschbach, 1989	Establish a bond of loyalty for ones country,
Economic Threat Perception	Watts(1996)	Foreigner threat for economic development.
Economic Threat Scale	Sharma et al. (1995)	Competition from foreign companies and the effect on economic development.
Integrated Threat Theory	Stephan et al., 2000	Foreigners are threat to the home country.
Universal Orientation Scale	Phillips ST; Ziller RC(1997)	Similarity between people and not their differences
Consumer Affinity	Oberecker et al. 2008	Establish a relationship outside of the country.
Xenophilia Scale	Perlmutter 1954	Sympathetic to foreigners and strangers.
Social Dominance Orientation Scale	Pratto et al. 1994	The effect of equality between people within the country
Consumer World-Mindness Scale	Nijssen and Douglas 2008	Bias and prejudice towards foreign products and tendency to try foreign products
Subtle and Blatant Prejudice Scale	Pettigrew and Meertens, 1995	Openness and prejudicial or hidden attitudes towards foreigners.

Source: Authors

V. METHODOLOGY

The research was divided into two main phases. In the first phase a literature research was conducted to determine consumer cosmopolitanism attitudinal measures based on interviews with various academic experts. These experts were selected based on their demonstrated interest in the area of international marketing and political science. Based on this qualitative research thirty-one preliminary attitudinal measures - items were identified. These thirty-one attitudinal measurements were presented to five colleagues. Each colleague evaluated the original pool of variables for readability, conceptual significance, and consumer cosmopolitanism in existing academic literature. Any variable that was characterized by experts as failing to meet these standards was removed from the item pool. The variables were eliminated due to unclear wording, poor grammar, superfluous and redundant phrasing and/or not relating to consumer cosmopolitanism concept. Based on this evaluation, the item pool was reduced from thirty-one to fifteen variables.

In the second phase, a quantitative survey was conducted. This survey was based on random sampling and analyzed by the principal components of factor analysis (PCA), and Confirmatory Factor Analysis (CFA). Then three measurement models were tested and compared for uni-dimensionality, multi-dimensionality(first order) and second order.

A. Survey and Participants

The first part of the survey consisted of respondent demographic information. The second part assessed constructs included in the model. All measures for these constructs used in this study were derived from first phase of the research methodology and the previous studies mentioned in the literature review. A five-point Likert Scale (5=strongly agree through l=strongly disagree) was used for this part of the survey.

The data for this study was collected from face to face interviews with 484 respondents. Participants were residents of capital city of Ankara, Turkey. Ankara is a metropolitan city of four million residents surrounded by eight districts containing rural, small town, and suburban jurisdictions (Cankaya Municipality, 2010). A large number of participants were young (less than 30 years old), university students, or professional government employees. It is worth noting that the characteristics of this sample reflect the demographic characteristics of the city.

To provide a better insight concerning the participants, respondent demographic variables including age gender, income, education, urbanization level, and foreign language proficiency were recorded. Detailed participant demographic data is seen in Table 2.Gender composition consists of fifty four percent male respondents versus forty six percent females. Eighty five percent of the respondents are in the age range of 17-26. Seventy five percent of respondents had at least a bachelor degree or more. Eleven percent of the respondents had monthly household incomes less than 1000 TL (Turkish Lira, 1 TL= 1.75 USD), fifteen percent between 4501-6000TL, and approximately eight percent with monthly incomes over 6000TL. In terms of urbanization, a majority of the respondents (sixty three percent) resided in metropolitan areas. With regard to foreign language proficiency, beginners accounted for nine percent, elementary: 22 percent, intermediate: 35 percent and upper intermediate: 27 percent and advanced: 7 percent.

TABLE 2 - PARTICIPANT DEMOGRAPHICS

Age	Frequency	Percent	**Income (TL) (*)**	Frequency	Percent
17-20	201	42	Below 1000	51	11
21-26	206	43	1001-1500	118	24
27-35	31	6	1501-3000	141	29
36-45	25	5	3001-4500	63	13
46-55	17	4	4501-6000	72	15
55 +	4	1	Above 6000	39	8
Gender			**Urbanization Classes**		
Female	223	46	Rural	17	4
Male	261	54	Small Town	11	2
			Suburb	71	15
			City	82	17
			Metropolis	303	63
Education			**Foreign Language Proficiency**		
Elementary	27	6	Complete Beginner	43	9
High School	90	19	Elementary	107	22
Bachelor degree or more	367	75	Intermediate	167	35
			Upper Intermediate	132	27
			Advanced	35	7

(*) 1 US dollar=1.75TL
Source: Authors

B. Exploratory Factor Analysis for Consumer Cosmopolitanism

An exploratory factor analysis was carried out to identify the constructs of the consumer cosmopolitanism scale. The principal components of factor analysis (PCA), varimax orthogonal rotation were employed to reduce 15 scale items to a more focused set of dimensions and identify possible independent variables. Selection criteria for the variables were: eigenvalues greater than 1.0; and Cattell's scree test. The Kaiser-Meyer-Olkin (KMO) measure of sampling

adequacy was 0.945, which suggests that the data were suitable for factor analysis. We conducted a principal components analysis (PCA) with orthogonal rotation to identify the number of factors to be extracted. PCA yielded three factors with eigenvalues greater than 1. The scree test also indicated a substantial eigenvalue discontinuity for factor 3. On the basis of these findings, we extracted three factors. Items with factor loadings of less than 0.50 were not included in factor groups as factors. The three-factor orthogonal solution accounted for 51 percent of the variance in the data. These three factors include 15 variables, with each factor explained below (Table 3).

Table 3 summarizes the results of the exploratory factor analysis. Common method bias was examined using Harman's one factor test and was found to be inconsistent. Before applying factor analysis Cronbach's alpha was employed to investigate the reliability of the factors. The results of exploratory factor analysis revealed values of Cronbach's alpha were higher or equal 0.70. A satisfactory value of alpha is greater than 0.6 (Malhotra, 2002, and Hair, 1998). Also according to Nunnaly (1978), a Cronbach's Alpha score of 0.70 or higher is considered to show proof of internal consistency. As shown in the Table 3, acceptable reliability is demonstrated for each of the factors: .692, .759 and .736.Three factor dimensions were held in this condition and the explained total variance was greater than 50%.

C. Measurement Model

Confirmatory factor analysis and then structural model were conducted on the consumer cosmopolitanism scale in order to develop the best measurement model. Three models were tested: uni-dimensionality, three factor models correlated and second order model (all three factors were loaded to one dimension as consumer cosmopolitanism construct). All results of the CFA indicate that second order factor model has a good fit level between three models (Table 4). As seen in table 4, for the second-order consumer cosmopolitanism model, the measures of fit were same to the values of the first-order model. The second order model was preferred over the first order model by examining target coefficient (Marsh and Hocevar,1985; Lala et al.2009), which interpreted as the percent of variation in the first-order factors that can be explained by the second-order construct (Doll et al., 1995, p.181). The T coefficient for comparing the first and second order models was 1.00 (177/177) that means the second order explains 100% of the co-variances between first order factors. Furthermore support for the second-order factor model was found in the magnitude and the significance of the estimated parameters (Roy 2008, Sam, 2010); the loadings of the each of the first-order factors onto the second order factor of consumer cosmopolitanism were high, respectively .88, .90 and .89 and three factors loaded significantly on latent variable as a second-order. This magnitude level of the factor loadings also supported to approve the second order factor model for consumer cosmopolitanism. Furthermore, the second-order model would be more conforming with conceptualization of consumer cosmopolitanism construct. Collectively, these results (fit indexes, target coefficient and magnitude of factor loadings and conceptualization) approved the validity of a second-order model to design consumer cosmopolitanism construct.

TABLE 3 - FACTOR LOADINGS BASED ON A PRINCIPLE COMPONENTS ANALYSIS WITH VARIMAX ROTATION FOR 15 ITEMS (N = 484)

Scale Items	Factor 1 Cultural Acceptance	Factor 2 Diversity	Factor 3 One-World Consciousness
It is more important for oneself to her/his contribution to the world than which country he/she lives in. *CONT*			.717
I believe that world is a common nation of humanity.*NAHUM*			.617
Humanistic principles and consciousness are more important than which country I live in. *HUMCON*			.717
Every person should be treated as equal.*EQUAL*			.489
Every person must reinforce their own experiences and learn things with other cultures.*EXPER*	.515		
I belong to the world.*BELONG*	.704		
It needs to learning from a culture not insult it. *INSULT*	.460		
People should learn from a culture rather than insult it. *UNDERS*	.668		
I believe that every country can develop by seeing differences as a wealth of their country.*WEALTH*	.523		
I believe in equal distance to every culture. *DISTAN*	.659		
I believe that every different cultural experience develops me. *CULEXP*		.734	
The most important thing is to make an intra-congruency of differences. *CONGR*		.647	
Every person has to balance their own values with the world. *BALANC*		.523	
Interaction with differences is more important than stereotypes and habits. *INTERAC*		.652	
To experience multiculturalism is a useful attribute. MULTI		.594	
% Variance	18	17	16
Cronbach's alpha	.692	.759	.736

Source: Authors' calculation

TABLE 4 - INDEPENDENT CFA FOR CONSUMER COSMOPOLITANISM

	RMSEA	GFI	CFI	NFI	$\chi 2$/df	RMRS
Uni-dimensionality	0.07	.98	.99	.97	312/90	.04
Three-factor model	0.04	.99	1.00	.98	177/87	.03
Three-factor and one second order factor model	0.04	.99	1.00	.98	177/87	.03

Source: Authors' calculation

The constructs of the general model are unobservable (latent) variables: global openness, consumer cosmopolitanism and consumer xenophobia. The latent variables and their related observable variables used in the structural model are shown in Table 4. Figure 1 outlines the design of the model in this study. The factors: cultural acceptance, diversity and one-world consciousness found in the previous section represent consumer cosmopolitanism.

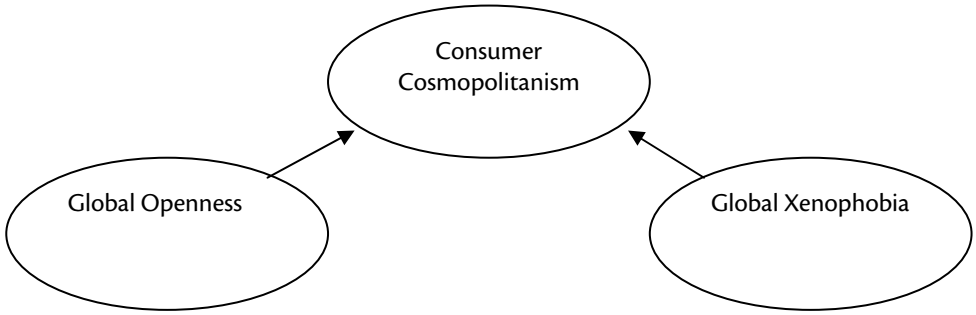

Figure 1: General Model of Consumer Cosmopolitanism

Source: Authors

Next, the relationships among the constructs were analyzed using structural equation modeling (SEM) James et. al. (1982) two-step approach. The first step involved analyzing measurement models to assess psychometric elements. The second step was to define the structural model by specifying direct and indirect relations among the latent variables. In this stage, the general measurement model was tested with three constructs (GLOP, CONCOS and XENO) and then construct, convergent and discriminant validities were evaluated. All fit indices and other criteria are at expected levels. (GFI=.97; CFI=.97; FI=.95, NNFI=.96; SRMR=.05; RMSR=.06; Chi-square/df =3.2). These results indicate good construct validity. Convergent validity was evaluated by analyzing the AVE (average variance extracted) values for the construct, especially CONCOS. It should be noted that convergent validity is based on the correlation between responses obtained by maximally different methods of measuring the same construct (Peter, 1981).

TABLE 5 - LATENT VARIABLES OF THE GENERAL MODEL

Global Openness (**GLOP)** (Suh and Kwon,2002)***(Latent Variable)***
G1. It is necessary to make an effort to understand other cultures' perspectives and integrate them into my own way of thinking
G2. Living and working in a foreign country may be an influential developmental experience of my own life.
G3. I have a real interest in other cultures or nations.
G4. I enjoy being with people from other countries to learn their unique views and approaches.
Consumer Xenophobia (**XENOP)*(Latent Variable)***
X1. I hate foreign products and brands
X2. I feel a deep dislike toward foreign products and brands.
X3. My country should not have trade agreements with foreign countries.
X4. If I had the chance, I would destroy all foreign products and brands.
X5. Foreign products should be eliminated from the country.
Consumer Cosmopolitanism (**CONCOS**)***(Latent Variable)***
Factor 1.Cultural acceptance
Factor 2.Diversity
Factor 3.One- World Consciousness

Source: Authors

The average variance extracted (AVE) as suggested by Fornell and Larcker (1981), Hair et al. (1998), and Chau and Lai (2003) was used to assess convergent validity. Higher variance extracted values denote that the indicators are truly representative of the latent construct. Guidelines suggest that the average variance extracted value should exceed 0.50 for a construct (Hair et al., 1998; Bagozzi and Yi, 1988). AVE values of construct ranged from 0.98 to 0.99, exceeding the 0.50 threshold value. As such, the convergent validity was not a problem (see Table 6).

To assess the discriminant validity, the average variance extracted (AVE) for each construct must be greater than the squared correlations between the construct and all other constructs in the model. There is high discriminant validity between each pair of constructs. The discriminant validity matrix can be seen in Table 7.

TABLE 6 - CONFIRMATORY FACTOR ANALYSIS OF CONSTRUCTS

Construct	Variables	Standardized Loadings	Item Reliability	Composite Reliability	AVE
Concos			.80	.78	.58
	F1	.79			
	F2	.99			
	F3	.87			
Glop			.75	.73	.76
	G1	.69			
	G2	.70			
	G3	.83			
	G4	.64			
Xenop			.90	.80	.65
	X1	.72			
	X2	.80			
	X3	.88			
	X4	.87			
	X5	.77			

*All factor loadings are significant at p=0.05.
a Composite reliability $(\sum \text{Standardized loadings})^2 / [(\sum \text{Standardized loadings})^2 + \sum ej]$.
b Average variance extracted (AVE) = $\sum(\text{Standardized loadings}^2) / [\sum(\text{standardized loadings}^2) + \sum ej]$, where ej is the measurement error

Source: Authors

TABLE 7 - DISCRIMINANT VALIDITY MATRIX

	Concos	Glop	Xenop
Concos	**(.58)**		
Glop	.10	**(.76)**	
Xenop	.56	.12	**(.65)**
Parentheses are AVE values			

Source: Authors

VI. MODEL TESTING

A structural model was then developed. The latent model exhibits acceptable fit with a chi-square/d.f= 3.17 and an insignificant *p*-value, indicating that the data fits the model. The standardized RMR is 0.08, while both GFI and CFI exceed the recommended 0.90 level, thus indicating that the data acceptably fits the model. As expected, the Concos construct had a negative effect on xenophobia and positive effect on global openness as expected.

TABLE 8: STRUCTURAL MODEL

			Standardized Coefficient	t-value
Concos	→	Xeno	-.13	14.80
Concos	→	Glop	.74	41.03
CFI= .97; GFI=.97; AGFI=.97; RMRS= .06; NFI=.94; AIC= 890.44; RMSEA=. 06 Chi-square /df = 3.17(784/247)				

Source: Authors

VII. DISCUSSIONS

Cosmopolitanism relates closely to the principles of global openness and treating foreigners equally, while xenophobia is mainly based on ethnocentrism and not treating all foreigners equally. Cosmopolitanism acts according to the principles of diffusing openness into the world and treating foreigners equally, while xenophobia is based on out-group hostility. All the items were subjected to a factor analysis but it was not possible to carry out any multi dimensional conceptualization. Therefore, uni-dimensionality was accepted as the appropriate model. The reverse of the cosmopolitan scale items states the basic features of consumer cosmopolitanism. The first attitude is that the foreign products do not culturally colonize a country. The second attitude is that foreign brands and products do not cause any cultural erosion. Instead the existence of foreign products is seen as an element for the development of the country.

The additional preposition based on the factors are: foreign goods do not effect life styles, they should be sold in domestic markets, are not a threatening factor, they must be viewed without bias, the consumption of foreign products may make the consumer happy, the multiculterism is more important than native cultures and it should not be ignores, the use of foreign names for domestic brands is not an issue, foreigners must be treated tactfully and the use of foreign products does not mean that consumers are obliged to purchase them. The findings also indicate that cosmopolitanism features are in good accordance with the statements appreciating other cultures, an ironical alienation from the local culture, giving importance to the integrity of the cultures (Turner, 2002). Globalization does not facilitate the mutual understanding of cultures but provides a view point to understand the differences between various cultures (Held, 2003). Cosmopolitan consumerism is unprejudiced in its understanding of the differences between cultures.

When aesthetic cosmopolitanism (i.e. the desire to experience the other cultures traditions) is taken into account it becomes apparent that cosmopolitan consumers are trying to merge the differences with other cultures into their own (Regev, 2007). This suggests that cosmopolitan consumers develop a liking towards foreign products. When the cosmopolitan scale items are examined from a more general point of view, it is apparent that cosmopolitan consumers adopt a general openness to foreign products, do not view them as a treating and think that they are harmonious with domestic products. Cosmopolitan consumers do not exclude foreign products and they see them as culturally enhancing due to their global perspective. The scale items which differentiate consumer cosmopolitanism from general cosmopolitanism were well defined in terms practical contribution. When cosmopolitanism is evaluated with respect to consumers, attitudes towards foreign products become more apparent. However, if the opposite of these scale items is used sharper attitudes beyond ethnocentrism will be better understood.

Some of the limitations of this study were the relatively small sample size and the demographic characteristics as being very young and highly educated. Therefore these issues as well as links with other possible cosmopolitan measurement scales should be addressed in future research.

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RAZVOJ I POTVRĐIVANJE SKALE KOZMOPOLITIZMA POTROŠAČA: POTPUNA SUPROTNOST OD KSENOFOBIČNIH STAVOVA

Sažetak: Potrošačkikozmopolitizamsedefinira kaosvjetsko građanstvo, otvorenainterakcijasa strancimai potpuna suprotnostodksenofobičnihstavova. Iakoje suprotno odetnocentrizma potrošača, do danas, kozmopolitizam se prvenstvenodoživljava kaovrlina nedoživljavanja stranaca kao prijetnje, neimanja osjećaja mržnje premastrancima te obuhvaćakulturnu raznolikost. Temeljem navedenekonceptualizacije, naš glavnicilj jerazvoj i testiranjealternativnepilot skale zakozmopolitizam potrošača. Petnaest jedinica skale je razvijeno kaorezultat pregleda literaturei konzultacijas akademskimstručnjacima. Istraživanje je obuhvaćalo 484osobe u Turskoj. Eksploratornafaktorskaanaliza pokazala jeda sujedinice skale grupiraneu trifaktora. Za mjerenjevaljanostiove skale kozmopolitizmapotrošača, potvrdnafaktorska analiza(CFA) je pokazala da je faktorski model drugoga reda racionalnije konfiguracije zamjerenje s ciljem utvrđivanja kozmopolitizma potrošačas trifaktora.

Ključne riječi: Kozmopolitizam potrošača, ksenofobični stavovi

EKONOMSKA ISTRAŽIVANJA-ECONOMIC RESERACH
ISSN 1331-677X print

2013 Volume 26(1): 155-170

IMMIGRATION-TRADE LINKS: EVIDENCE FROM PORTUGAL

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ARTICLE INFO

Article data:
- Received: 5 January 2012
- Accepted: 28 June 2012

JEL classification: C33, F11, F12, F22

Keywords:

- Gravity model
- Immigration
-Immigration skills
-Immigrant entrepreneurs
- Intra-industry trade

ABSTRACT

This article tests the relation between immigration and Portuguese bilateral trade, considering the twenty-seven European partners (EU27). Using a static and dynamic panel data analysis, the results show that the stock of immigrants has a positive effect on Portuguese exports, imports and bilateral intra-industry trade (IIT). These results suggest that immigration affects all types of trade in a positive way. The findings also suggest that the increase of immigrant entrepreneurs reinforce the positive effect on exports and on IIT. The dynamic results confirm the positive effect of the immigration stock on horizontal and vertical IIT.

Reference to this paper should be made as follows: Faustino, H. C., ; Peixoto, J. 2013. Immigration –Trade Links: Evidence from Portugal, *Ekonomska istraživanja – Economic Research 26(1): 155-170.*

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I. INTRODUCTION

Globalization today offers diaspora communities new opportunities for international business, by exploiting their international social networks. Due to these social and ethnic networks, the transaction costs have decreased and immigration has contributed to the increase of both types of international trade: inter-industry trade and intra-industry trade (IIT). The immigrants' preferences for products from their country of origin may also result in increased trade, primarily in host-country imports, and the trade in differentiated products. According to the trade theory, the reduction in transaction costs increases trade. However, the link between migration and trade has not been formalized by the trade theory.The factor proportions theory (Heckscher-Ohlin model) considers that factors are immobile between countries and that international trade is a perfect substitute for international factor immobility (Samuelson theorem for factor prices equalization). According to this theory, immigration and trade are substitutes. The new trade theory, based on monopolistic competition and product differentiation (Helpman and Krugman, 1985), provides arguments for a complementary relationship between immigration and IIT through the trade transaction costs reduction and immigrants' preferences. Despite these theoretical problems, the empirical studies that test the hypothesis of a positive correlation between immigration and trade have increased in the last decade, using ad hoc processes as a gravitational approach extended to include explanatory variables arising from the traditional and the new trade theories. These empirical studies provide empirical evidence of the links between inter- and intra-industry trade and immigration, proposing new hypotheses to the trade theory (see, for example, Gould,1994; Helliwell, 1997; Rauch, 1999,2001; Girma and Yu, 2002; Blanes and Martin-Montaner,2006;White 2007;White and Tadesse,2008; Tadesse and White 2010; Prettner and Kunst, 2009; Vobecká, 2010; Karagoz, 2011).

In Portugal the econometric studies relating the effects of immigration on trade are also very recent (see, for example, Faustino and Leitão, 2008a, 2008b; Faustino and Peixoto, 2009; Leitão et al., 2010; Faustino and Proença, 2011). Other economic effects of immigration have also been studied, using different methodologies. The available studies respect to the impact of immigration over the Portuguese economy, firms, entrepreneurship, labour market, national accounts and social security, among others (Almeida and Silva, 2007; Oliveira, 2008; Peixoto, 2008; Peixoto et al., 2011; Cabral and Duarte, 2011).

Research on immigration in Portugal was vast in recent decades, following the surge in inflows that the country witnessed after the mid-1970s. In a few years Portugal went from residual immigration to a considerable immigrant stock. In 2010 oficial statistics registered a total of 457,306 foreigners living in the country, corresponding to 4.3% of the total population, and 793,314 foreign-born individuals, corresponding to 7.5% of the total population (Statistical National Institute). The largest proportions came from the Portuguese ex-colonies in Africa (maninly Cape Verde, Angola and Guinea Bissau), Brazil, Eastern Europe (mainly Ukraine and Moldova) and the European Union (United Kingdom and, recently, Romania). The bulk of the inflows occurred until the mid-2000s, before the impact of the recent world economic crisis and Portuguese economic woes, which apparently inverted the migratory balance (Peixoto, 2011; Peixoto and Iorio, 2011).

In this paper, we analyze the impact of immigration on Portuguese trade, making the distinction between inter- and intra-industry trade. The purpose of this paper is to test for the impact of the immigration stock, as well as other immigration-related variables, on Portuguese exports (X) and imports (M) and on Portuguese IIT by types (horizontal IIT and vertical IIT), controlling the effects of other socio-economic factors, like economic dimensions, price indexes,

distance and regional integration. Since we do not seek to estimate the determinants of inter-industry or intra-industry trade, only applied trade theory is required in order to gain an understanding of the link between immigration and trade flows and to justify the expected sign of the explanatory variables' coefficients.

General relationships between immigration and international trade require aggregated data and the use of econometric models. This paper uses a static and dynamic panel data analysis and considers the trade between Portugal and each European partner-country (EU-27) for the period 1995-2006. Data on Portuguese immigration respect to the same period (1995-2006), before the impact of the woldwide economic crisis. Given its wider availability, data on immigration is based on the criterion of country of citizenship, meaning that "immigrants" in this paper must be taken as foreigners living in the country (although for the most part having migrated recently.

In static panel data models, Pooled OLS, fixed -effects (FE) and random- effects (RE) estimators are used (see, for example, Surugiu et al., 2011 and Leitão 2011).The *F*-statistic tests the null hypothesis of the same specific effects for all countries. If this hypothesis is rejected, we could not use the OLS estimator. The Hausman test can be used to test the null hypothesis that random effects and fixed effects are both consistent, but only RE is efficient under the alternative hypothesis that only the FE estimator is consistent.Usually, the empirical studies apply the FE estimates for purposes of comparison with the dynamic model.

However, in the static models some problems can arise, namely, serial correlation, heteroskedasticity and endogeneity of some explanatory variables. The solution for these econometric problems was found by Arellano and Bond (1991), Arellano and Bover (1995) and Blundell and Bond (1998, 2000), who developed the first-differenced and the GMM system estimators (see, for example, Cameron and Tivedi, 2009; Roodman, 2006). This paper will apply the system GMM estimator because these estimates are more reliable than those obtained by the first-differenced estimator (see, Faustino and Leitão, 2007).

Following the previous studies, and considering that there is an immigrant preference for home-country products and that the additional information brought by immigrants is relevant to both consumer goods and producer goods, we expect to find a positive effect of immigration on imports and exports and on intra-industry trade (IIT). Furthermore, if we consider that the immigrant stock includes skilled immigrants and immigrant entrepreneurs, this may reinforce the positive effect on exports and on IIT.
Estimation results confirm the hypothesis that the immigration stock has a positive effect on Portugueseexports, imports and intra-industry trade. The dynamic estimates also confirm that immigration has a positive effect on all kinds of IIT. The remainder of the paper is organized as follows. The next section describes the theoretical background to the relationship between immigration and trade. Section 3 presents the empirical model. Section 4 reveals the econometric results. The final section concludes.

II. THE RELATIONSHIP BETWEEN IMMIGRATION AND TRADE: THE GRAVITY EQUATION

There is a debate as to whether the migration of labor and international trade should be considered a substitute or a complement. In the Heckscher-Ohlin (HO) model, and under the assumption that specialization is incomplete, the factor price equalization theorem, also known as the Heckscher-Ohlin-Samuelson (HOS) theorem, provides strong evidence that trade in final goods essentially substitutes for movements of factors between countries, leading to an increase in the price of the abundant factor and a fall in the price of the scarce factor among the trading partners, until relative (and absolute) factor prices are equal. Thus, under the HO assumptions,

trade and labor mobility are substitutes. In other words, the trading of goods substitutes for the trading of people. When a country imports labor-intensive goods, it is equal to "importing" labor from these countries and this "mechanism" leads to the equalization of wage rates across countries, even if labor is internationally immobile. Immigration and imports of labor-intensive goods are substitutes. In the same way, exporting labor-intensive goods corresponds to "exporting" labor. The question is, what happens if the migration flows are introduced into the HO model? Unfortunately, as is mentioned by Borjas (1989) international trade theory and empirical studies have almost totally ignored the effects of labor migration on trade flows.The HO trade model is an inter-industry trade type model. When we consider IIT, the reality can be rather different and we can find a complementary, rather than a substitute relationship between trade and international factor movements. In this case, trade and immigration can complement each other. We can think about market imperfections, namely, information asymmetries and their effect on consumption preferences and intra-industry trade.

According to different authors, immigrants can influence bilateral trade flows in two ways. The first is associated with the notion that the immigrants bring with them a preference for home-country products (preference channel). The second expresses the idea that immigration can reduce transaction costs between the home and host countries, through social andethnic networks or information mechanisms (transaction cost reduction channel).

Rauch (1999) proposes a network view of trade in differentiated products, in which immigration can lead to a reduction in trade transaction costs. He uses a gravity model of international trade to test if proximity and common language/colonial ties are more important to differentiated products than to homogeneous products. The specialization in differentiated goods generates the force of gravity and this specialization can be a result of an Armington structure of demand.The core explanatory variables to explain bilateral trade in the gravity model are measures of the economic size of trading partners (positive or gravitational effects) and the distance between them (a negative effect or counter-force). The gravity equation can be thought of as a kind of short-hand representation of supply (exports of a country to the world market) and demand forces (imports of a country), with stimulating or restraining elements (tariff barriers, distance, culture, other socio-economic factors). Despite the theoretical problems, the gravity equation describes very well the bilateral trade flows as a function of the economic sizes and distance between trade partners, working successfully in the empirical studies on developed and developing countries.Feenstra et al. (2001) proved that a wide range of theories are consistent with a gravity-type equation.

Designating as Tij the trade flows between countries i e j (exports from i to j and exports from j to i), or any trade index that depicts bilateral trade; Yi e Yj for the GDP of each of the two countries (Y can also be considered as per capita); D for the geographic distance, the gravitational equation can be expressed in economic terms as follows:

$$T_{ij} = G\frac{Y_i^{\propto} Y_j^{\beta}}{D_{ij}^{\partial}} \quad (1)$$

G is the gravitational constant, which will be represented by the constant in the econometric model.Applying logarithms, we obtain the following linear relation, in which the coefficients of the explanatory variables represent the elasticities:

$$LnT_{ij} = LnG + \propto LnY_i + \beta LnY_j - \partial LnD_{ij} \quad (2)$$

Based on Anderson (1979), Bergstrand (1985, 1989), and Feenstra et al. (2001) the empirical gravity model may include variables based on alternative theories of trade. The gravity model that will be specified and estimated is an extension of this basic gravity equation in log-linear form, augmented for a number of explanatory variables relevant for bilateral trade flows.

III. THE EMPIRICAL MODEL AND DATA SOURCE

The sources of the data on the explanatory variables were the WorldBank, World DevelopmentIndicators and Serviços de Fronteiras, Ministério da Administração Interna (Portuguese Border Services Administration, Ministry of the Interior). The source used for the dependent variables was INE – the Portuguese National Institute of Statistics (Trade Statistics).

A. Dependent variables

For trade, we use five alternative measures: the exports (X), the imports (M), the intra-industry trade index (IIT), the vertical IIT index (VIIT) and the horizontal IIT index (HIIT).

The Grubel and Lloyd IIT index

The Grubel and Lloyd (1975) index is employed as a measure for IIT between Portugal, given as country i, and European partner j. To avoid problems of statistical aggregation, the data is at the 5-digit level of the SITC classification.

$$IIT_i = \frac{\sum_{j=1}^{n} \left(X_{ij} + M_{ij}\right) - \sum_{j=1}^{n} \left|X_{ij} - M_{ij}\right|}{\sum_{j=1}^{n} \left(X_{ij} + M_{ij}\right)} \tag{3}$$

The HIIT and VIIT indexes

To separate horizontal from vertical intra-industry trade, the Grubel and Lloyd index and the methodology of Abd-el-Rahaman (1991), and Greenaway et al. (1994) are used. Relative unit values of exports and imports are used to disentangle total IIT into total HIIT (RH) vis-à-vis total VIIT (RV). We use a unit value dispersion of 15 per cent. Moreover, we must consider:

$$HII_i = \frac{RH_i}{\sum_{j=1}^{n} \left(X_{ij} + M_{ij}\right)} \tag{4}$$

$$VIIT_i = \frac{RV_i}{\sum_{j=1}^{n} \left(X_{ij} + M_{ij}\right)} \tag{5}$$

The HIIT and VIIT indexes are also calculated with the desegregation of 5-digit Portuguese Economic Activity Classification from INE - Trade Statistics.

Because IIT is an index varying between zero and one, we apply a logistic transformation to IIT, HIIT and VIIT (see Hummels and Levinsohn, 1995)Logistic IIT = Ln IIT/ (1-IIT). The same formula is applied for HIIT and VIIT.

B. Explanatory variables and expected signs

The explanatory variables set in most empirical models that use the gravity equation includes home and host countries' Gross Domestic Product (GDP), geodesic distance between the capital cities of home and host countries, factor endowments differences and immigration related variables.

The paper uses the following explanatory variables in logs:[a]

- IPK is the price index of the European partner-country k. It is expected that an increase in IPK increases (decreases) Portuguese exports (imports). The effect of this explanatory variable on IIT is ambiguous. It is expected that the changes in IPK do not have any influence on the HIIT index because this type of trade is more determined by other product characteristics than price. The effect on VIIT is ambiguous because we have differentiated products of high and low quality. So, in the three intra-industry equations, the expected sign is a matter of empirical evidence;
- DIST is the geographical distance between Portugal and the partner-country. Distance serves to proxy for transport costs. According to the gravitational model, a negative signis expected for all models (see Greenaway et al., 1994;
- MinGDP is the lower value of GDP per capita (PPP, in current international dollars) between Portugal and the European partner. This variable is included to control for relative size effects. According to Helpman (1987) and Hummels and Levinshon (1995), a positive sign is expected;
- MaxGDP is the higher value of GDP per capita (PPP, in current international dollars) between Portugal and the European partner. This variable is also included to control for relative size effects. A negative sign is expected (Helpman, 1987; Hummels and Levinshon, 1995);
- STOCK is the stock of immigrants in Portugal by partner-country. A positive effect of immigration is expected on imports and on exports. The expected effect on IIT, HIIT and VIT is positive. Blanes (2005) found a positive sign for the IIT model;
- -MIHQW is the percentage of highly qualified immigrants employed in manufacturing industry (MI). A positive sign is expected for the coefficient of this variable, on the basis of the hypothesis that an increase in the level of qualification of immigrant workers will increase the products' quality and differentiation, and hence will boost all types of intra-industry trade, as well as exports. With regard to imports, the positive effect may be the result of increased purchasing power of these immigrants, combined with their preferences from their country of origin;
- MIENT is the percentage of immigrant employers (entrepreneurs) operating in manufacturing industry. A positive sign is expected for the coefficient of this variable, based on the hypothesis

[a]We also considered the variables "absolute difference in per-capita GDP, PPP, between Portugal and the European trading partner" and "absolute differences in physical capital endowments, proxied by the absolute difference in electric power consumption, between Portugal and the partner country", but these variables were not statistically significant. So, we replaced them by two other control variables: MINGDP and MAXGDP. These results are available from the authors upon request. BedassaTadesse and Roger White (2011) also considered as explanatory variables the changes in the terms os trade, the home and host country population sizes and home and host country economic remoteness.

that increases in the number of immigrant employers will reinforce the ethnic and commercial networks, thereby contributing to the reduction of transaction costs;

- EU15 is a dummy variable that equals 1 if the partner-countrybelongs to the EU15 and 0 otherwise (i.e. if the partner-country is one of the 12 countries that became members of the European Union in 2004, thus forming the EU27). The expected sign is a matter of empirical evidence.

C. EMPIRICAL SPECIFICATION

To analyze the changes in Portuguese exports, imports and IIT indexes as a function of change in immigration variables, we utilize five regression equations with identical predictors. The models test our main hypothesis of a positive effect of the immigration stock on imports, exports and IIT indexes. The general econometric model can be specified as follows:

The Static Model

$$F_{ijt} = \beta_0 + X'_{ijt}\beta_1 + \eta_j + \delta_t + \varepsilon_{ijt} \quad j = 1, \dots, n \;\; t = 1, \dots, T \tag{6}$$

Where F_{ijt} stands either for Portuguese exports, imports and IIT indexes; X is a set of country-specific explanatory variables. It includes a dummy variable and variables that measure the stock of immigrants from country j residing in Portugal (country i) during year t as well as the weight of immigrants that are qualified and entrepreneurs in manufacturing industry; η_j corresponds to a country´s effect; δt captures a common deterministic trend; ε_{jt} is a random disturbance assumed to be normal, independent and identically distributed (IID) with E (ε_{ijt}) =0 and Var (ε_{ijt}) = σ^2 >0 .

In a situation in which the set of explanatory variables includes a constant variable, as distance and dummy variables, we can not use the fixed-effects estimator because the process of transformation of variables eliminates the variables that are constant. An alternative would be to use the OLS plus time dummies estimator (see, Wooldridge, 2006).

All variables except the dummy variable enter the equation in natural logarithms. In this way, we are able to estimate the elasticities. The coefficients of the immigration variables capture all channels through which the immigrants affect trade. We do not include the unobserved time-invariant country-specific effects, since this would remove some relevant variables that do not vary along the time and that are important to the robustness of the results. We control for time effects by including a time dummy variable (year).

The Dynamic Model

The econometric model (1) can be rewritten in the following dynamic representation:

$$F_{ijt} = \beta_0 + \rho F_{ij,t-1} + X'_{ijt}\beta_1 + \eta_j + \delta_t + \varepsilon_{ijt} \tag{7}$$

Where X_{ijt} is a vector of current and lagged values of additional explanatory variables.

IV. ESTIMATION RESULTS

A. Static analysis

To examine the relationship between trade and immigration, controlling for other explanatory factors, we estimated five OLS regressions, with time dummies. We used the same explanatory variables in all equations.

The results in Table 1 are consistent with the hypothesis of a positive correlation between immigration and trade. The explanatory variable, IMI (stock of immigrants in logs) is highly statistically significant (1% level) in the five equations. The results are very robust to different measures of the dependent variable. The trade-immigration elasticities are all positive: 0.624 for the export equation, 0.560 for the import equation, 0.435 for the IIT equation, 0.756 for the HIIT equation and 0.346 for the VIIT equation. The only result that is unexpected is the magnitude of the IMI coefficient in the export equation. We found a stronger impact of immigration volume upon exports than upon imports. Comparing export-immigration and import-immigration elasticities, we can conclude that the immigration coming from the EU27 has led to increased trade and a positive trade balance. Therefore, we must hypothesize that the Portuguese manufactured goods had alreadyincorporated specific tastes originating in the immigrants' home countries. So, the additional information provided by immigrants was relevant to consumer and producer goods and this led to an increase in exports and imports between immigrants' host and home countries. However, this merits further investigation, using a dynamic analysis to avoid endogeneity problems.When we consider intra-industry trade (IIT) as a dependent variable, the results are in accordance with expectations. The effect of the stock of immigrants on IIT is positive and remains positive when we consider IIT by types (HIIT and VIIT). These results confirm the hypothesis that the immigrants' information mechanism reduces the trade transaction costs in differentiated products and has a positive effect on all types of intra-industry trade, but the effect on HIIT is stronger than the effect on VIIT. When the stock of immigrants increases by 10%, this induces an increase of 4.35% in IIT, an increase of 7.56% in HIIT and an increase of 3.46% in VIIT. With regard to the other two immigrant-related variables, the results show that the increase of MIHQW (highly qualified immigrants in manufacturing industry, in per cent) has a positive effect on IIT and VIIT and the increase in MIENT (immigrant entrepeneurs in manufacturing industry, in per cent) has a positive effect on Portuguese exports and IIT. The results suggest that an increase of 10% in MIHQW increases the IIT by 23.62% and the VIIT by 25.83%, whereas an increase of 10% in MIENT induces an 11.13% increase in Portuguese exports and a 10.54% increase in IIT.Considering that the variable DIST (distance in logs) can be used as a proxy for trade transaction costs and capture part of these costs, the introduction of this variable in all regressions controls for this effect. The results demonstrate that this variable has the correct sign in all equations and is statistically insignificant in all five equations. When we have controlled for per-capita income differences and factor-endowment differences, these variables are revealed to be statistically insignificant. Therefore, we did not incorporate these country-specific characteristics in the estimated equations. The dummy variable EU15 is statistically significant and the coefficient is negative for the three intra-industry equations, providing evidence that the effect of immigration on Portuguese intra-industry trade is greater for the trade between Portugal and its12 new European partner-countries than for the trade with the other countries, i.e., the older EU partners.

TABLE 1 - STATIC ESTIMATES

Variables	Exports	Imports	IIT	HIIT	VIIT	Expected Sign
IPK	-0.0008	-0.005	0.0008	0.003	0.0009	(+) ; (-)
	(-0.57)	(-2.87)***	(0.41)	(1.21)	(0.44)	
DIST	-1.44	-0.43	-0.564	-0.20	-0.28	(-)
	(-1.42)	(-0.29)	(-0.43)	(-0.12)	(-0.17)	
MINGDP	3.18	2.32	3.37	5.29	2.91	(+)
	(5.57)***	(3.27)***	(4.67)***	(4.98)***	(3.79)***	
MAXGDP	-0.95	1.74	-1.58	-4.99	-0.99	(-)
	(-1.4)	(1.69)*	(-2.53)**	(-5.0)***	(-1.4)	
STOCK	0.64	0.56	0.435	0.756	0.346	(+)
	(6.64)***	(4.93)***	(4.78)***	(5.11)***	(3.37)***	
MIHQW	1.192	0.819	2.362	0.465	2.583	(+)
	(1.28)	(0.76)	(2.61)**	(0.34)	(2.5)**	
MIENT	1.113	-0.698	1.054	2.822	0.565	(+)
	(1.88)*	(-0.78)	(1.67)*	(0.34)	(0.76)	
EU15	0.13	-0.47	-1.24	-1.2	-1.0	(+) ; (-)
	(0.24)	(-0.78)	(-2.63)**	(-2.61)**	(-1.73)*	
C	-1.1	-21.4	-18.2	-14.9	-20.5	
Adj. R^2	0.89	0.86	0.58	0.54	0.47	
N	67	67	67	67	67	

OLS estimations including time dummy variables.T-statistics (heteroskedasticity corrected) are in round brackets. ***/**/* are statistically significant, respectively at the 1%, 5% and 10% levels. The variables X, M, MINGDP, MAXGDP, DIST and STOCK are in logs. The variables IIT, HIIT and VIIT are in the logistic form.

Source: Research results.

B. Dynamic analysis

Table 2 presents the dynamic estimations for exports, imports and IIT by types.[b] The immigration stock variable now appears to have a lesser effect on trade. The trade-immigration elasticities remain positive, but the values of these elasticities are statistically significant only for differentiated products. The effect of immigration on exports and imports is not statistically significant. The immigration still has a positive effect on IIT, HIIT and VIIT. A 10% increase in immigration induces a 6.02% increase in IIT, whereas HIIT increases by 13.71% and VIIT increases by 4.08% .This is in accordance with the expectations and confirms the traditional static panel data analysis. The first and largest impact is on HIIT, as in the static analysis. These results suggest

[b]The GMM system estimates that we report were computed using DPD for Ox (see, Jurgen Doornik, M. Arellano and S. Bond , 2002; Doornik, 2009)

that the immigrants' networks are more likely to increase trade in horizontal differentiated products: products that are closed substitutes and have great substitution elasticity. Thus, we can say that immigration and trade in differentiated products is still a positive sum game: the export industries of differentiated products and immigrants both win. Regarding the other two immigrant-related variables, the results show that the MIHQW variable (highly-qualified immigrants in manufacturing industry) has a positive and significant effect on exports, IIT and VIIT, while MIENT (immigrant entrepeneurs in manufacturing industry, in per cent) has no statistically significant effect on any type of trade. When MIHQW increases by 10%, this induces an 8.49% increase in Portuguese exports, an increase of 28.94% in IIT and of 28.2% in VIIT.As in the static model, we control for country size, distance and price index effects and introduce a dummy variable to separate the effect of the older EU15 partners from the 12 newer EU partners. The main difference in relation to the static model is the absolute values of the trade-immigration elasticities in intra-industry equations. Comparing with the static results, we note that on dealing with endogeneity concerns, the dynamic results present higher trade-immigration elasticities in all three intra-industry equations. The sign of the coefficients remains positive. Comparing the static values with the dynamic values we have, respectively, 0.435 versus 0.602 in IIT equation; 0.752 versus 1.371 in the HIIT equation and 0.346 versus 0.408 in the VIIT equation. The dynamic models, export–immigration elasticity and import-immigration elasticity are not statistically significant. These results were not expected and suggest that we need further empirical studies in order to compare the results.

TABLE 2 - DYNAMIC ESTIMATES

Variables	Exports	Imports	IIT	HIIT	VIIT	Expected
Xt-1,Mt-1,IITt-	0.79 (8.92)***	0.44 (3.14)***	0.06 (0.62)	-0.40 (4.57)***	0.17 (1.33)	(+)
IPK	5.0 e-07	-0.0005	0.0007	0.0082	0.165	(+);(-)
	(0.002)	(-0.78)	(1.89)*	(7.75)***	(1.33)	
IPKt-1	-0.00046	-0.0017	-0.18	-0.78	-0.0002	(+); (-)
DIST	0.475	1.30	1.25	5.82	0.76	(-)
	(0.78)	(0.66)	(0.64)	(1.53)	(0.36)	
MINGDP	-0.10	-0.38	11.69	-19.51	-5.60	(+)
	(-0.04)	(-0.07)	(-2.13)**	(-3.2)***	(-0.99)	
MINGDPt-1	0.14	-0.38	-11.69	-19.51	-5.60	(+)
	(0.06)	(-0.77)	(-2.13)**	(-3.2)***	(-0.99)	
MAXGDP	1.61	-2.21	-9.33	-24.9	-8.77	(-)
	(0.38)	(-0.23)	(-1.05)	(-1.22)	(-0.78)	
MAXGDPt-1	-1.80	4.12	7.90	18.0	8.16	(-)
	(-0.45)	(0.42)	(0.82)	(0.82)	(0.69)	
STOCK	0.079	0.09	0.602	1.371	0.408	(+)
	(1.24)	(0.658)	(6.03)***	(9.95)***	(3.70)***	
MIHQW	0.849	0.023	2.89	1.69	2.82	(+)
	(3.02)***	(0.026)	(3.75)***	(0.92)	(3.85)***	
MIENT	0.40	-0.102	0.254	1.04	0.402	(+)
	(1.15)	(-0.31)	(0.212)	(0.327)	(0.35)	
EU15	0.27	0.034	-0.93	-1.28	-0.24	(+) ; (-)
	(0.75)	(0.038)	(-1.45)	(-1.12)	(-0.25)	
C	3.22	-17.34	-14.38	-34.72	-11.26	
Yr2002	-0.06	-0.58	-0.83	-2.09	-0.63	
	(-0.31)	(-1.51)	(-1.75)	(-2.51)	(-1.16)	
Yr2003	-0.10	-0.80	-1.07	-2.30	-0.80	
	(-0.56)	(-1.63)	(-1.94)	(-2.48)	(-1.36)	
Yr2004	-0.15	-0.66	-0.84	-1.45	-0.62	
	(-1.07)	(-2.05)	(-2.34)	(-2.15)	(-1.64)	
Yr2005	-0.07	-0.65	-0.79	-0.87	-0.82	
	(-0.44)	(-1.47)	(-1.76)	(-1.27)	(-1.69)	
WALD(JS)	5.52[0.0]	2.3[0.0]	497[0.0]	3032[0.0]	1538[0.0]	
M1	-1.745	-0.783	-1.145	0.379	-0.937	
	[0.081]	[0.433]	[0.252]	[0.704]	[0.349]	
M2	0.212	-0.587	-0.098	-0.371	-0.357	
	[0.081]	[0.557]	[0.992]	[0.71]	[0.721]	
SARGAN	9.9[1.0]	0.97[1.0]	-9.6[1.0]	3.07[1.0]	7.2[1.0]	
	Df=62	Df=62	Df=62	Df=62	Df=62	
N	67	67	67	67	67	
PARAMETERS	17	17	17	17	17	

T-statistics (heteroskedasticity corrected) are in round brackets. ***/**/*- are statistically significant, respectively, at the 1%, 5% and 10% levels. P-values are in square brackets..M1 and M2 are tests for first-order and second–order serial correlation in the first-differenced residuals, asymptotically distributed as N(0,1) under the null hypothesis of no serial correlation (based on the efficient two-step GMM estimator). W_{JS} is the Wald statistic of joint significance of independent variables. Sargan is a test of the over-identifying restrictions, asymptotically distributed as χ^2 under the null of instruments' validity (with two-step estimator). As the instruments are valid and there are no second-order serial correlations, all of the five models are valid. Instruments for differenced equation: Gmm (Dependent variable,3,5), Gmm (IPK,3,5), Gmm (MaxGDP,3,5). Instruments for level equation: GmmLevel (Dependent variable,2,1), GmmLevel (IPK,2,1), GmmLevel (MaxGDP,2,1). Number of groups = 25. Number of instruments=51.
Source: Research results

V. CONCLUSION

This paper has tested the impact of the immigration stock and immigrant characteristics on Portuguese exports and imports and Portuguese intra-industry trade. The estimated effects of the immigration stock on exports and imports are both positive. A 10% increase in immigration stock induces a 6.24% increase in exports, a 5.6% increase in imports and an increase of 4.35% in intra-industry trade. These findings suggest that immigration leads to the reduction of trade transaction costs and increases all types of intra-industry trade. Comparing our static results with those of Blanes (2005), we note that both found a positive relationship between immigration and IIT. Our results also show that this positive effect applied for the two types of IIT (HIIT and VIIT). A 10% increase in the immigration stock induces a 7.56% increase in HIIT and an increase of 3.46% in VIIT. The dynamic panel data analysis also confirmed this positive relationship between the immigration stock and all types of IIT. In the dynamic analysis a 10% increase in the immigration stock induces an increase of 6.02% in IIT, an increase of 13.71% in HIIT and an increase of 4.08% in VIIT. These findings are in line with other empirical studies conducted in Portugal (see, Faustino and Leitão, 2008; Leitão et al., 2010) and in other countries (see, for example, Mundra, 2005; White, 2007).

In the static panel data analysis, when we consider the variables MIHQW (the weight of highly-qualified immigrants in manufacturing industry) and MIENT (the weight of immigrants who are entrepreneurs in manufacturing industry), the paper concludes that the increase in MIHQW has a positive and significant effect on IIT and VIIT and the increase in MIENT has a significant and positive effect on IIT. In the dynamic panel data models, only the MIHQW variable is statistically significant and an increase in this variable has a positive effect on exports, IIT and VIIT.

Although the consideration of various other immigrant skills and characteristics did not provide significant results, it is important to stress some aspects of this paper. First, the paper examines the impact of immigration on all trade flows: exports, imports and intra-industry trade, by types.Second, the dynamic panel data analysis, providing more reliable results, confirms the main static panel data findings, in particular, the positive effect on Portuguese intra-industry trade. Third, the results permit us to conclude that immigrant entrepreneurs could be a vehicle that contributes to the decrease of trade transaction costs and could stimulate Portuguese exports and intra-industry trade. Fourth, the results suggest that the additional information brought by immigrants is equally relevant to consumer goods and producer goods. The positive effect on exports and imports confirms this hypothesis.In the static model, we concluded that immigration strengthens exports more than imports. In the dynamic model, the effect of immigration on exports and imports is not statistically significant. Fifth, some of the control variables, such as relative factor economic dimension and price index, are found to be statistically significant and the results are more robust with the introduction of these country-specific characteristics variables.Sixth, the paper introduces a dummy variable for the 15 oldest European Union member-countries (EU15). The introduction of this control variable also improved the specification model. The results suggest that when immigrants to Portugal come from an EU15 partner-country, the effects on intra-industry trade are lower than they are in relation to those from other EU countries (the 12 newer countries that make up the EU27). Finally, our findings suggest that Portuguese industries need not fear a liberal immigration policy: both host and source countries can gain. Free trade and freedom of labor migration do not constitute a zero sum game. What is of most relevance for immigration policy is the immigrants' skills and immigrant entrepreneurship.The immigration policy should guarantee a sustained inflow, support immigrants' entrepreneurship and be more open to accepting immigrants' qualifications.

The consideration of the other immigrant-related variables, such asgender ratio, education, immigrant professional status and other information from micro data, was not found to be statistically significant. In future research, the analysis may alsobe extended to include immigrants arriving from less-developed countries. Cultural or historic colonial ties and common language are important determinants proposed by various authors.

ACKNOWLEDGEMENT

We are grateful to the Editor and the anonymous referee for many helpfull comments. We alsowish to thank the Immigration Observatory of the High Commission for Immigration and Inter-Cultural Dialoge for funding the project on which this paper is based. Appreciation is also expressed to Catarina Reis Oliveira for her most helpful comments ona broader version of the paper, and to Patrícia Baptista, who contributed to the research tasks.

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VEZE IMIGRACIJE I TRGOVINE: DOKAZI IZ PORTUGALA

Sažetak: Ovaj članak testira vezu između imigracije i portugalske bilateralne trgovine, razmatrajući 27 europskih partnera (EU27). Koristeći statičku i dinamičku analizu panelnih podataka, rezultati pokazuju da ukupan broj imigranata ima pozitivni učinak na portugalski izvoz, uvoz i bilateralnu unutar-industrijsku trgovinu (IIT). Rezultati sugeriraju da imigracija utječe na sve vrste trgovine na pozitivan način. U statičkom modelu, 10% povećanja imigracije dovodi do 6,24% povećanja izvoza, 5,6% povećanja uvoza i 4,35% povećanja IIT. Rezultati također upućuju na to da povećanje broja imigranata poduzetnika osnažuje pozitivni učinak na izvoz i IIT. Dinamički rezultati potvrđuju pozitivni učinak ukupne imigracije na horizontalnu i vertikalnu IIT.

Ključne riječi: izvoz, uvoz, unutar-industrijska trgovina, imigracija, vještina imigranata, poduzetnici imigranti, gravitacijski model

EKONOMSKA ISTRAŽIVANJA-ECONOMIC RESEARCH
ISSN 1331-677X print

2013 Volume 26(1): 171-182

MONEY, INCOME, AND CAUSALITY: AN EXAMINATION FOR THE TURKISH ECONOMY

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ARTICLE INFO

Article data:
- Received: 5 January 2012
- Accepted: 28 June 2012

JEL classification: C32, C63, E51

Keywords:
- Money-income Causality
- Monetary Endogeneity
- MWALD test
- Leveraged Bootstrap Simulation
- Toda-Yamamoto

ABSTRACT

This paper examines the direction of causality between money and income for the Turkish economy using quarterly data over the period of 1987 to 2011. A vector autoregression model consisting of the real gross domestic product, the broad money supply, the three months deposit rate as short-term interest rate, and the consumer price index is constructed to implement causality tests. Also, a leveraged bootstrapped simulation technique is used when conducting causality tests in order to make the results more robust. The empirical results suggest a bidirectional causation between the two variables and that monetary aggregates may provide relevant information in the implementation of monetary policy.

Reference to this paper should be made as follows: Bozoklu, Ş. 2013. Money, Income, and Causality: An Examination for the Turkish Economy, *Ekonomska istraživanja – Economic Research 26(1):171-182.*

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I. INTRODUCTION

The relationship between money and income has important implications for both theoretical and empirical models in monetary economics. Whether or not monetary (income) changes help to predict changes in income (money) has been an ongoing debate among researchers and policy makers, as understanding the direction of the causality may improve the efficiency of policy rule stipulated by the monetary authority. Theoretical explanations concerning direction of causality can be divided into two categories, the first of which asserts that causality runs from money to income, and the second of which claims that causality follows in the opposite direction.

Among the first category, Monetarists believe that changes in monetary growth are responsible for the divergence of income from its trend level —in other words, monetary changes lead to changes in income. Monetarists, therefore, suggest that a rule characterized by a constant growth of money supply must be used to stabilize income fluctuations (Friedman, 1959). The modern view of (short-run) monetary non-neutrality as expressed by the new-Classical economics, which emphasizes imperfect information between economic agents, is the other explanation for direction of causality from monetary changes to income fluctuations (Lucas, 1972; Barro, 1976). The new-Classics claims that anticipated monetary policy has no lasting effects on real income when economic participants form expectations rationally, and only unexpected movements in money stock are the driving forces behind business cycles (Lucas, 1975; Sargent and Wallace, 1975). In addition, the sticky-wage or sticky-price models of the new-Keynesians can be attributed to this category (Gray, 1976; Fisher 1977; Taylor, 1980). The new-Keynesians claim that, whether anticipated or not, the demand management policy proxies, such as discretionary government expenditures, tax cuts, and monetary policies, determine real income. Despite varying theoretical propositions, the new-Keynesians hold a general opinion regarding the non-neutrality of stabilization policy (Gordon, 1982; Demary, 1984). Consequently, all views in the first category suggest that the direction of causality runs from money to income.

The traditional Keynesians, by contrast, argue that money does not play any significant role in changing income. In fact, changes in income cause changes in money stocks through demand for money, implying a unidirectional causality from income to money. Keynesians, therefore, doubt that controlling money supply will reduce fluctuations in income. Furthermore, the post-Keynesians assert that money supply is determined endogenously via the asset–liability management decisions of commercial banks, the portfolio decisions of the non-bank public, and the demand for bank loans. Thus, according to the traditional and post-Keynesian approaches, the amount of money supplied is dependent on the interaction of the private sector's demand to hold money and also the ability and willingness of banks to extend credit (Palley, 1994). As a result, the Keynesian theory predicts that causality runs from income to money, and not the exogenous notion that money creates income. The Real Business Cycle (RBC) theory argues that observed historical correlation between money and income is because the money supply endogenously responds to rather than leads to fluctuations in income (Kydland and Prescott, 1982). The banking sector responds to increased demand for transactions by creating more inside money, so that money supply becomes both endogenous and a function of income, which is determined exogenously by technological shocks and changes in productivity, energy prices, government spending, and taxes (Long and Plosser, 1983). The new Neoclassical Synthesis (NNS) combines the new-Classical and new-Keynesian elements within a dynamic stochastic general equilibrium framework popularized by the RBC approach. The NNS approach suggests money to be endogenous, treating money stock as residual based on the demand for money, and proposes that supply shocks are random, as posited by the RBC theory. In addition, actual and expected rates of inflation are independent of such supply shocks. The inflation can be controlled through interest rate policy, but cannot be controlled through money stock (Goodfriend and King, 1997).

Consequently, all views in the second category suggest that the direction of causality runs from income to money.

The aim of this study is to examine the causal relationship between money and income for the Turkish economy. The Granger causality approach of Toda and Yamamoto (1995) and its extension, developed by Hacker and Hatemi-J (2006), which uses the leveraged bootstrap simulation approach that performs well when the sample size is relatively small, is employed for the empirical section. The remainder of this article is organized as follows: Section 2 reviews previous empirical studies on the money-income relationship, Section 3 describes the data set and econometric methodology and also presents estimation results, while conclusions and policy implications are presented in Section 4.

II. SELECTIVE LITERATURE REVIEW

The link between money and income has long been the subject of investigation, much of which is supportive of a systematic link to the United States prior to the 1980s, as indicated by Friedman and Schwartz (1963), Andersen and Jordan (1968), and later by Sims (1972). The pioneering work of Friedman and Schwartz (1963) finds that money prominently affects income, and Andersen and Jordan (1968), using the St. Louis equation, suggest that monetary policy, measured as the rate of growth of nominal money, explains fluctuations in income. As it is difficult to distinguish cause from effect using historical correlation patterns, Sims (1972) offers a testing procedure that depends on the basic regression, including income as the dependent variable, and lagged income with money as explanatory variables. Using postwar the United States data, Sims (1972) asserts that there is strong evidence that money creates income because money lags improve forecasts of income, and forecasts of money cannot be improved using income lags. However, considering the possible effects of variables other than money and income, Sims (1980) proposes a vector autoregression (VAR) framework and reveals that the direction of causality vanishes when a short-term interest rate is included as a control variable. If interest rate is dropped from the data, however, the explanatory power of money rises significantly (a phenomenon often referred to as *Sims' puzzle*). After Sims (1980), most empirical studies involved VAR models, to analyze the causal relationship between money and income. This causation depends, among other things, on the choice of variables included in the model, the method used to transform the data, the specification of the trend term, and the sample period under consideration.

The sensitivity of causality tests to the sample period, whether or not the variables are modeled as log-level, growth rate, trend stationary, or difference stationary, is documented by many studies. Eichenbaum and Singleton (1986), for example, emphasize that a causal role for money in a detrended level specification is much weaker in a sample that excludes the 1980s than if the 1980s are included. If attention is restricted to a sample period that ends before the 1980s, causality tests support the argument that money causes income. They also show that there are sharp reductions in the importance of money when the tests are performed using log differences of the variables rather than log levels with a time trend. Christiano and Ljungquist (1988) argue in favor of using log-level variables, because they find that the power of the tests on growth variables is very low. Using bootstrap simulations, they find significant Granger causality from money to income within a bivariate VAR model. Stock and Watson (1989) claim that money growth is stationary around a linear time trend and, when detrended money growth is used in testing money-income causality, the results are in fact robust to the empirical specification, to the sample period and to whether or not interest rates are included in the set of explanatory variables. Accordingly, removing deterministic trends from the growth rate of the money supply enhances the explanatory power of money in output autoregressions, while the use of log-differenced data results in money playing only a small role in explaining output

fluctuations. To solve this *trend puzzle*, Serletis and King (1994), following Stock and Watson (1989), investigate whether money growth rates can be characterized by deterministic time trends, and whether or not removing these trends significantly affects statistical inference for both the United States and Canada. They find evidence that, for both countries, the broader measures of money appear to have strong negative deterministic trends, but that removing these trends does not appear to sharpen the statistical inference linking money growth to output growth. Friedman and Kuttner (1993) reexamine the study of Stock and Watson (1989) and assert that money-income causality results are not robust to two changes: first, when the sample is extended to 1990, money is statistically insignificant using Stock and Watson's specification, and, second, if the treasury bill rate is replaced with the commercial paper rate, then money offers little explanatory power, even when Stock and Watson's sample period (1960–1985) is used. Hatemi-J and Irandoust (2006) study the relationship between money and income using the leveraged bootstrapped simulation technique to determine the direction of the causality for Denmark, Japan, Sweden, and the United States. Their results indicate that money might be a major factor for the sources of income fluctuations and that Granger causality is unidirectional running from money to output in all the sample countries except for Sweden for which the direction of causality is bidirectional.

III. DATA AND ECONOMETRIC TECHNIQUES

In this section, we briefly describe the time series characteristics of the data and the methods employed to test the direction of causality in the money-income relationship. The data obtained from International Financial Statistics database[a] include the quarterly observation of the real gross domestic product *(RGDP)*, the broad money supply *(M2)*, the three months deposit rate as short-term interest rate *(TMDR)*, and the consumer price index *(CPI)* for the Turkish economy. All data are seasonally adjusted and expressed in natural logarithmic form, except for the interest rate. The sample period covers 1998q1 to 2011q2. To begin, we first examine the stationarity properties of the variables via unit root tests of Ng and Perron (2001), who propose several modifications to existing unit root tests in order to improve their size and power. They present the following tests: MZ_α and MZ_t which are the modified versions of Z_α and Z_t tests of Phillips (1987) and Phillips and Perron (1988), the MSB which is related to Bhargava (1986) R_1 test; and finally, the MPT test which is a modified version of Point Optimal Test of Elliot et al. (1996). Furthermore, Ng and Perron (2001) suggest a modifed information criterion that controls for sample size and the generalized least squares method for detrending the data in order to improve the power of the tests.

The optimal lag order of VAR model (p) is determined using the information criterion developed by Hatemi-J (2003 and 2008), which performs well if the variables are integrated. The Hatemi-J Information Criterion (HJC) that minimizes the following equation is calculated as follows:

$$HJC = \ln\left(\det \widehat{\Omega}_s\right) + j\left(\frac{n^2 \ln T + 2n^2 \ln(\ln T)}{2T}\right), \; j = 0,\ldots,p \qquad (1)$$

where $\det \widehat{\Omega}_s$ is the determinant of the estimated variance–covariance matrix of the error terms in the VAR model for the lag order j, n is the number of variables and T is the number of

[a] http://elibrary-data.imf.org/

observations used to estimate the VAR model. The notation *ln* indicates natural logarithms. The optimal lag order is the one that minimizes the equation (1).

A variable Granger causes another variable, if including it in the information set will improve the forecast of the second variable. The VAR models are generally utilized to test for Granger causality, which is sensitive to the values of nuisance parameters in finite samples. Therefore, it is possible that misleading inferences could be made about the issue of causality. For this reason, we use the Toda and Yamamoto (1995) (TY) procedure, which has the advantage of implementing, regardless of whether the processes are integrated or even cointegrated. TY suggests a modification of the Wald test that is robust to the presence of unit roots in the underlying data set. The basic idea of this approach is to artificially augment the correct p with d extra lags, where d is the maximum likely order of integration of the series in the system. The asymptotic chi-squared (χ^2) distributed Modified Wald (MWALD) test is applied to the first p -VAR coefficient matrix, while the coefficient matrices of the last d lagged vectors in the model are ignored. Therefore, the TY approach enables the proposed MWALD statistic to test restrictions on these p coefficient matrices, using the standard asymptotic theory.
To implement the TY causality test, we estimate the following augmented-VAR framework with the lag length, $(p+d)$:

$$y_t = \alpha + A_{t-1}y_{t-1} + \ldots + A_p y_{t-p} + \ldots + A_{p+d}y_{t-p-d} + \varepsilon_t \qquad (2)$$

where y_t , α and ε_t m -dimension vectors and A_p is a $n \times n$ matrix of parameters for lag p . The residuals ε_t are assumed to be normally distributed and white noise. We partition y_t in two sub-vectors, y_t^1 and y_t^2 :

$$y_t = \begin{bmatrix} y_t^1 \\ y_t^2 \end{bmatrix} = \begin{bmatrix} \alpha_1 \\ \alpha_2 \end{bmatrix} + \begin{bmatrix} A_{11,1} & A_{12,1} \\ A_{21,1} & A_{22,1} \end{bmatrix} \times \begin{bmatrix} y_{t-1}^1 \\ y_{t-1}^2 \end{bmatrix} + \ldots + \begin{bmatrix} A_{11,p} & A_{12,p} \\ A_{21,p} & A_{22,p} \end{bmatrix} \times \begin{bmatrix} y_{t-p}^1 \\ y_{t-p}^2 \end{bmatrix}$$

$$+ \begin{bmatrix} A_{11,p+d} & A_{12,p+d} \\ A_{21,p+d} & A_{22,p+d} \end{bmatrix} \times \begin{bmatrix} y_{t-p-d}^1 \\ y_{t-p-d}^2 \end{bmatrix} + \begin{bmatrix} \xi_{1t} \\ \xi_{2t} \end{bmatrix} \qquad (3)$$

where p is the optimal lag order in the VAR system. From Equation (3), it follows that y_t^2 does not Granger-cause y_t^1 if $A_{12,p} = 0 \forall_p$ holds and y_t^1 does not Granger-cause y_t^2 if $A_{21,p} \neq 0 \forall_p$ holds. The residuals ξ_{1t} and ξ_{2t} are assumed to be spherically distributed and white noise.

It should be pointed out that the parameters for the extra lag(s), d , are unrestricted under the null hypothesis and that these unrestricted parameters ensure that the asymptotical distribution theory can be applied when the test for causality between the integrated variables is conducted. We make use of the following notations in order to describe the TY test statistic in a compact way:

$$Y := (y_1, ..., y_T) \qquad (n \times T) \text{ matrix,}$$

$$D := (\alpha, A_1, ..., A_{p+d}) \quad (n \times (1 + n(p \times d))) \text{ matrix}$$

$$W_t := \begin{bmatrix} 1 \\ y_t \\ y_{t-1} \\ \vdots \\ y_{t-p-d+1} \end{bmatrix} \qquad ((1 + n(p+d)) \times 1) \text{ matrix,}$$

$$W_t := (W_0, ..., W_{T-1}) \qquad ((1 + n(p+d)) \times T) \text{ matrix,}$$

and

$$\delta := (\varepsilon_1, ..., \varepsilon_T) \qquad (n \times T) \text{ matrix.}$$

These definitions allow us to write the augmented VAR $(p+d)$ model in a simple form as follows:

$$Y = DW + \delta \tag{4}$$

The $(n \times T)$ matrix of the estimated residuals from the unrestricted and restricted regression can be denoted by $\hat{\phi}_U$ and $\hat{\phi}_R$. The matrix of the cross products of these residuals can now be defined as $S_U = \hat{\phi}'_U \hat{\phi}_U$ and $S_R = \hat{\phi}'_R \hat{\phi}_R$, respectively. The MWALD test statistics proposed by TY can be written as the following:

$$MWALD = (T - p) \times \frac{(S_R - S_U)}{S_U} \tag{5}$$

In a nutshell, the MWALD testing procedure should occur as follows: 1) determine the maximum order of integration $(d_{\max})$ of the data and the lag length (p) of the VAR model; 2) estimate the $(p+d)$ th-order VAR model and finally; 3) test restrictions on the first p coefficient matrices, ignoring the last d -lagged vectors in the model.

Hacker and Hatemi-J (2006) show that this modified test performs well only if the data is normally distributed and go on to develop a leveraged bootstrap test that is not sensitive to non-normality and time-varying volatility. In addition, the leveraged bootstrap test approach performs well when the sample size is relatively small. In this study, the residuals-based bootstrapping approach will be adopted to compute the critical values for the MWALD test with the empirical distribution. To carry out the bootstrap simulations, we estimate the regression, using Equation (4), with the restriction for the null hypothesis of no Granger causality imposed.

We rescale the estimated raw residuals $(\hat{\delta})$ with the leverages approach to ensure constant variance and compute the adjusted residuals $(\hat{\delta} - \overline{\delta})$ to ensure that the mean of the adjusted residuals is zero. For each bootstrap simulation, we generate the simulated data, Y_t^*, based on the coefficient estimates from this regression, $\hat{D}$, ($\hat{\alpha}$, $\hat{A}_1,...,\hat{A}_p$); the original data, Z, $(y_{t-1},...,y_{t-p})$; and the bootstrapped residuals $\hat{\delta}^*$:

$$Y_t^* = \hat{D}Z + \hat{\delta}_t^* \tag{6}$$

where $\hat{D}$ is estimated from the following equation:

$$\hat{D} = YZ'(ZZ')^{-1} \tag{7}$$

It should be pointed out that the bootstrap residuals are based on T random draws with replacement from the regression's modified residuals, each with equal probability of $1/T$.

We perform bootstrap simulation to calculate the MWALD test statistic and derive the bootstrap critical values from the MWALD statistics distribution. The next step is to calculate the MWALD statistic using the original data. If the actual MWALD test statistic is greater than bootstrap critical values, then the null hypothesis of non-Granger causality will be rejected; otherwise, we failed to reject the null hypothesis.

IV. ESTIMATION RESULTS

The first step in our empirical analysis is to test for unit roots using the Ng and Perron (2001) test. The results of these unit root test are presented in Table 1, which shows that the variables contain a unit root, except for the consumer price index.

Table 1. THE RESULTS OF NG-PERRON UNIT ROOT TESTS

H_0:I(1) vs H_1:I(0)	MZ_α	MZ_t	MSB	MPT
CPI (6)	-27.626*	-3.651*	0.132*	3.681*
M2 (5)	-11.187	-2.282	0.204	8.562
RGDP (1)	-8.781	-2.072	0.236	10.460
TMDR (3)	-9.368	-2.113	0.225	9.935
H_0:I(2) vs H_1:I(1)	MZ_α	MZ_t	MSB	MPT
M2 (0)	-19.348**	-3.064**	0.158**	4.988**
RGDP(0)	-24.683*	-3.486*	0.141*	3.851*
TMDR (1)	-35.197 *	-4.187 *	0.118 *	0.718 *

Notes: *The lag lengths in the Ng-Perron tests were selected using spectral GLS-detrended based on Schwarz Bayesian Information Criterion. The deterministic trend components were selected by a procedure suggested by Hacker and Hatemi-J (2010). (.) indicates the number of lags. The critical values are -23.8, -3.42, 0.143, 4.03 at the 1% level and -17.3, -2.91, 0.168, 5.48 at the 5% level for MZa, MZt, MSB and MPT tests respectively. * and ** denotes the stationarity of the related variable at the 1% and 5% significance levels.*
Source: Research results

We select the optimal lag of the VAR model (p) one, based on minimizing equation (1), and the augmentation lag (d) one since each variable contains one unit root. The test for multivariate normality is carried out using the Doornik and Hansen (2008) test. The estimated p -value for this test is 0.002, which means the null hypothesis of normality can be strongly rejected. Also, a multivariate test for multivariate autoregressive conditional heteroskedasticity (ARCH) effects, developed by Hacker and Hatemi-J (2005), indicates that estimated p -value for this test is less than 0.004, which implies that the null hypothesis of no multivariate ARCH effects can be rejected at any conventional significance level. Therefore, it is essential to make use of the bootstrap method in order to draw accurate inferences from the causality tests. The outcome of the bootstrapped causality test with leverage adjustments is presented in Table 2.

Table 2. THE RESULTS OF MWALD TESTS

Null Hypothesis	MWALD statistic	1% bootstrap critical value	5% bootstrap critical value	10% bootstrap critical value
RGDP $\not\rightarrow$ M2	18.384*	12.435	7.812	6.413
M2 $\not\rightarrow$ RGDP	8.411***	12.673	8.573	6.978

Notes: *The null hypothesis (A $\not\rightarrow$ B) implies that A does not Granger cause B. * and *** denotes the rejection of the null hypothesis of non-causality at the 1% and 10% significance levels.*
Source: Research results

The results show that a bidirectional causality exists between money and income, which is consistent with Badarudin et al. (2009) and Işık and Kahyaoglu (2010), confirming monetary endogeneity in Turkey. Furthermore, changes in broad money supply (M2) explain income fluctuations in Turkey, as stated by Hafer and Kutan (2002). The bidirectional causality may arise from non-linearities existing in the data, as argued by Holmes and Hutton (1992) and Sephton (1995), who propound that changes in money affect non-linearly income.

V. CONCLUSION

The purpose of this study is to contribute to the empirical investigation of the money-income nexus, emphasizing the fundamental role of causality testing. As the asymptotic critical values are not valid for causality tests if the variables are integrated and/or the assumption of normality is not fulfilled, we utilize an alternative methodology based on the leveraged bootstrapped simulation technique to calculate critical values. The results indicate that monetary aggregates still could help forecasting real income, at least to some extent in the Turkish economy, and money is not neutral in its effect—it is endogenous to a great extent. However, none of these results provides a compulsory reason to assign a prominent role to monetary aggregates in the practice of monetary policy. An inflation-targeting central bank, such as Central Bank of Turkey, should benefit from all of the sources of information available to it in implementing and judging the interest rate policy that should be consistent with its inflation target. Monetary aggregates may provide relevant information in judging the economy's state and hence the appropriate instrument setting, but this doesn't mean that monetary policy has to make a target for them. As a result, interest rate is an appropriate policy instrument in economies where monetary endogeneity exists.

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NOVAC, PRIHOD I KAUZALNOST: ISPITIVANJE TURSKE EKONOMIJE

Sažetak: Ovaj rad istražuje smjer kauzalnosti između novca i dohotka u turskoj ekonomiji koristeći kvartalne podatke za period od 1987. do 2011. Vektorski autoregresijski model koji sadržava realni bruto domaći proizvod, opskrbu novcem u širem smislu, tromjesečnu stopu depozita kao kratkoročnu kamatu i potrošački cjenovni indeks sastavljen je u svrhu provođenja testova kauzalnosti. Osim toga, „leveraged bootstrap" simulacijska tehnika je korištena pri provođenju testova kauzalnosti kako bi rezultati bili robustniji. Empirijski rezultati sugeriraju postojanje dvosmjerne kauzalnosti između dvije varijable te da novčani agregati mogu pružiti relevantne informacije za implementaciju monetarne politike.

Ključne riječi: kauzalnost novca i prihoda, monetarna endogenost, MWALD test, leveraged bootstrap" simulacija, Toda-Yamamoto

SVEUČILIŠTE JURJA DOBRILE U PULI
ODJEL ZA EKONOMIJU I TURIZAM
DR. MIJO MIRKOVIĆ
UTEMELJEN 1998.

EKONOMSKA ISTRAŽIVANJA-ECONOMIC RESERACH
ISSN 1331-677X print

2013 Volume 26 (1): 183-202

IMPLEMENTATION OF IT GOVERNANCE STANDARDS AND BUSINESS CONTINUITY MANAGEMENT IN TRANSITION ECONOMIES: THE CASE OF BANKING SECTOR IN CROATIA AND BOSNIA-HERZEGOVINA

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ARTICLE INFO

Article data:
- Received: 4 February 2012
- Accepted: 8 July 2012

JEL classification:

Keywords:
- Business continuity management
- IT governance
- IT risk
- IT audit
- Downtime

ABSTRACT

Over the past decade business continuity management (BCM) has been treated mainly from either technology or planning perspective. This paper goes a step further and considers BCM from the IT governance view. In addition, the standards and legislation activities that help in that sense are evaluated. Implementation of industry best practices standards and processes such as ITIL and CobiT combined with other IT-related solutions can deliver substantial risk reduction and reduce business risks and result with reduced system downtime. The cases of the implementations of main information technology (IT) standards in the banking sector of Croatia and Bosnia-Herzegovina from those two perspectives are explored.

Reference to this paper should be made as follows: Spremić, M., ; Bajgorić, N.; Turulja, L. 2012. Implementation of IT governance standards and business continuity management in transition economies: The case of banking sector in Croatia and Bosnia-Herzegovina, *Ekonomska istraživanja – Economic Research 26(1): 183-202.*

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I. INTRODUCTION

Recently, with advances in Internet technologies and e-business, the need for achieving "a near 100%" level of application availability was brought up yet again. Consequently, the term of "business continuity management (BCM)" was coined up and became a significant part of organizational information management. Most of today's businesses are under pressure to keep their information systems (IS) running on "24/7/365" basis and ensure data and applications' continuous availability. Business continuity (BC) strategy has become No1 item for both CEO's and CIO's priority lists. According to the Forrester Report (2009), almost 80% of respondents reported that their firms have had to provide proof of BC readiness. Fast, continuous, reliable data access and data availability, are just a few of the objectives of contemporary business.

Business continuity, business continuance, business resilience, high availability, fault/disaster tolerance, is just a few of the terms that are used in modern business. Business continuity today relies on continuous computing technologies that are aimed at providing an efficient operating environment for "always-on" computing which is in turn technological prerequisite for "always-on" business. Simply put, implementation of continuous computing technologies provides a platform for "keeping business in business" as business-critical applications are installed on enterprise servers; these servers are run by server operating systems, with all of them backed-up by data storage systems and supported by several fault-tolerant and disaster-tolerant technologies.

Today's business is simply bound to its information system (IS) and dependent on information technology (IT). In addition to standard business risks, the dependence on IT platforms produces the IT-based business risks as well. Identifying the IT-related threats has become an important part of managing information resources in an organization. Moreover, it has to be considered as a threat that may cause problems to a business just like any other threat (physical, natural, commercial, competition). Businesses apply several approaches in order to avoid (reduce, mitigate, manage) the IT-related risks and other business risks. There exist several standards and recommendations that specify the desired methods for managing information resources. In addition to standards prescribed by international standardization agencies, various national standards and recommendations and best practices of various private companies are used.

The objective of this paper is to reveal how IT governance standards can be implemented in general and in the banking sector in SEE countries within the framework of business continuity management. This research includes cases from banking sector in two SEE countries: Croatia and Bosnia-Herzegovina (BandH). However, the research framework and lessons learned may provide some ground for the generalization of this research topic for other countries, those in the SEE region and in general.

II. LITERATURE REVIEW AND RESEARCH MODEL

Business continuity management as a separate IT-discipline emerged 15 years ago. Business continuity has been treated as both IT and managerial issue particularly after the e-business boom and the "9/11" event. Business continuity is achieved by implementing continuous computing IT platforms having high availability ratios.

According to IDC (2006), high availability systems are defined as having 99% or more uptime. IDC defined a set of different availability scenarios according to availability ratio, annual downtime, user tolerance to downtime with regard to several continuous computing technologies that are available today:

TABLE 1 - IDC CLASSIFICATION OF AVAILABILITY SCENARIOS

	Availability	Average Annual Downtime	User Tolerance to Downtime
Fault Tolerant	99,999%	5 minutes	None
Continuous Availability			
Cluster	99,9%	8 hours	Business Interruption
High Availability		45 minutes	Lost Transaction
Stand-alone GP or	99,5%	43 hours	Tomorrow is Okay
Blade Server w/RAID		23 minutes	

Source: Adapted from IDC, 2006

Business continuity institute (http://www.thebci.org) defined business continuity management as a holistic management process that identifies potential impacts that threaten an organization and provides a framework for building resilience with the capability for an effective response that safeguards the interests of its key stakeholders, reputation and value creating activities. Its primary objective is to allow the executives to continue to manage their business under adverse conditions, by the introduction of appropriate resilience strategies, recovery objectives, business continuity and crisis management plans in collaboration with, or as a key component of, an integrated risk management initiative.

Recent research papers on BCM focus either on frameworks or separate technologies that are used in order to improve the availability levels. Vatanasombut et al. (2008) argue that the proliferation of Internet has not only allowed businesses to offer their products and services through Web-based applications, but it has also undermined their ability to retain their customers. Lump et al. (2008) provide an overview of the state-of-the-art architectures for continuous availability concepts as high-availability (HA) clustering on distributed platforms and on the mainframe. They present aspects of service management, including the use and orchestration of process-based (ITIL) systems management tasks within disaster recovery (DR) scenarios. Melton and Trahan (2009) argue that critical risks demand critical attention. Hiles (2004) estimated that IS downtime puts direct losses on brokerage operations at $4.5 million per hour, banking industry $2.1 million per hour, e-commerce operations $113.000. Botha and Von Solms (2004) proposed a cyclic approach to business continuity planning. Gibb and Buchanan (2006) defined a framework for the design, implementation and monitoring of a business continuity management program within the context of an information strategy. Pitt and Goyal (2004) see BCM as a tool for facilities management. Walker (2006) considers outsourcing options for business continuity. King (2003) introduced a term of "Business Continuity Culture" and underscored the fact that "If you fail to plan, you will be planning to fail". Williamson (2007) found that in business continuity planning, financial organizations are ahead of other types of businesses. Bertrand (2005) researches the relationships between business continuity and mission-critical applications. Gerber and Solms (2005) emphasize the need for a holistic approach that should include a carefully planned security policy, the use of technology and well-trained staff. Finch (2004) revealed that large companies' exposure to risk increased by inter-organisational networking and that having small and medium enterprises (SMEs) as partners in the supply chain management (SCM) further increased the risk exposure.

Kuhn and Sutton (2010) explored the alternative architectures for continuous auditing by focusing on identifying the strengths and weaknesses of each architectural form of enterprise resource planning (ERP) implementation. Kadlec (2010) reports on the IT DR planning practices

of 154 banks in the United States. Arduini and Morabito (2010) argue that the financial sector sees business continuity not only as a technical or risk management issue, but as a driver towards any discussion on mergers and acquisitions. Spremic (2008, 2009) argued about the role of IT governance concept, especially in applying the IT risk management procedures at executive levels. As the organizations are becoming increasingly dependent upon IT in order to achieve their corporate objectives and meet their business needs, the necessity for implementing widely applicable IT governance best practices standards and methodologies, offering high quality services is evident. The issue of managing the IT risks becomes less and less a technical problem, and more and more the problem of the whole organization that is a 'business problem' and many companies nowadays formally nominate executive directors for such activities. Therefore, it is highly recommendable that BC strategy becomes a part of IT governance procedures and that companies have a BC manager that is outside the IT department. DeHaes and Grembergen (2009) suggest that there is a clear relationship between the use of IT governance practices and better business/IT alignment.

All these works deal with BCM either from managerial or organizational perspective. However, they lack some guidelines for a comprehensive approach in implementing numerous so-called continuous computing technologies and IT-standards and compliance regulations that can provide an integrated platform for business continuity. Business continuity management consists of strategies, policies, activities and measures that business undertakes in order to survive when some sort of catastrophic event occurs. Even though it represents a managerial activity, at the end, business continuity in information age relies on high-ratios of application/data availability, reliability and scalability that should be provided by server operating environment. A systemic model used in this paper is given in Figure 1.

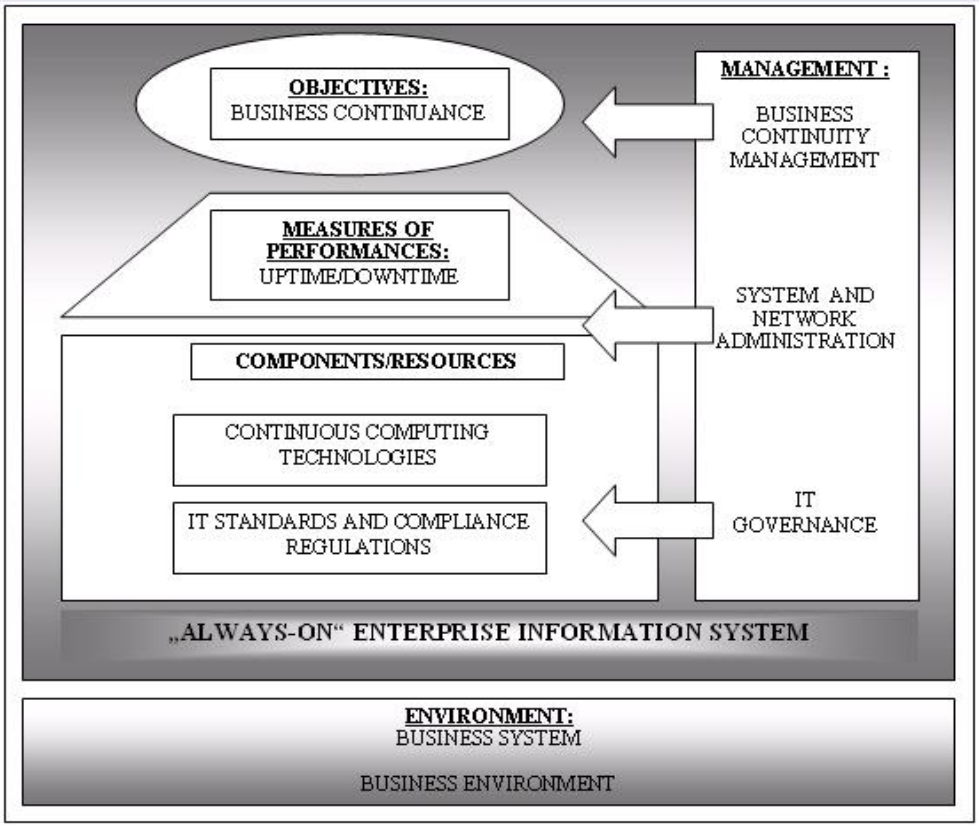

FIGURE 1. SYSTEMIC MODEL OF BUSINESS CONTINUITY AND IT GOVERNANCE
Source: Authors

The model is based on Churchman's systems approach (1968) which defines the system by using the following five dimensions: i) Objectives and measures of performances, ii) environment, iii) resources, iv) components, v) management. It considers the relations between IT governance standards and business continuity within the concept of continuous computing technologies that can be applied in order to enhance applications' availability ratios and hence the whole business continuance. The implementation of these standards in banking sector of two SEE countries (Croatia and Bosnia-Herzegovina) is considered as a case.

As can be seen from this figure, IT governance is considered as part of management dimension of the Churchman's systemic model, together with business continuity management and system administration. In most cases, implementation of the IT standards and compliance regulations is done by forcing organizations to implement several continuous computing technologies such as remote backup, recovery, mirroring. This model is further explained in section 6.

III. BUSINESS CONTINUITY MANAGEMENT AND IT GOVERNANCE

The IT governance relates to IT practices of boards and senior managers. The question is whether IT structures, processes, mechanisms and IT decisions are made in the interest of shareholders and other stakeholders, or primarily in the executives' interests. IT governance closely relates to

corporate governance, the structure of the IT organization and its objectives and alignment to the business objectives. The primary focus of IT governance is on the responsibility of the board and executive management to control formulation and the implementation of IT strategy, to ensure the alignment of IT and business, to identify metrics for measuring business value of IT and to manage IT risks in an effective way (Spremic, 2009). IT governance is the process for controlling an organization's IT resources, including information and communication systems and technology (Hunton, 2004). It is an integral part of enterprise governance and consists of the leadership and organizational structures and processes that ensure that the organization's IT sustains and extends the organization's strategies and objectives. Van Grembergen (2005) defined IT governance as the organizational capacity exercised by the Board, executive management and IT management to control the formulation and implementation of IT strategy and in this way ensure the fusion of business and IT.

A good, or rather, inevitable approach for managing IT risks includes thorough audit and quality assessment of all aspects of IS and IT, including hardware, software, data, networks, organization and key business processes. The primary goal of the information system audit (IT/IS audit) is to identify the key business processes that depend on IT, to systematically and carefully examine their IT control efficiency, to identify key risk areas and constantly measure the risk level, to warn about possible failures, as well as to offer suggestions to the executive management how to improve current IT risk management practices (Spremic et al, 2008).

A. Possible strategies for BC risk responses

Once the organization has identified, classified and assessed IT risks, risk owners and 'affected' process owners are to be identified, appropriate responses should be developed and specific cost-effective controls over those risks should be designed. Responses to BC risk may include following strategies:

- Acceptance – the organization chooses to live with the risk and to constantly monitor its level (gravity and impact on the business and business processes),
- Reduction – the organization takes steps to reduce the impact (gravity) or the probability of the risk occurrence,
- Avoidance – the organization chooses to fully or partially avoid the risk,
- Sharing – the organization transfers the risk by, for example, purchasing insurance, outsourcing risk management services, or engaging in partnership(s) regarding the risk management process to fully or partly cover risk exposure (especially in business continuity and disaster recovery plans).

Strategies for IT risks responses usually mean that specific IT controls need to be implemented and their efficiency constantly monitored. Control activities are the policies, procedures and practices that are put into place so that business objectives are achieved and risk mitigation strategies are carried out. Control activities are developed to specifically address each control objective to mitigate the risks identified. An IT control objective is a statement of the desired result or purpose to be achieved by implementing control procedures in a particular IT activity. The IS audit activities usually include the examination of the IT control efficiency. When doing so, IS auditors commonly perform test of IT controls using specific metrics (for example, RTO, RPO for business continuity process) and maturity models. Common metrics for testing the efficiency of business continuity plan can be:

- MTBF (mean time between failures) represents an important system characteristic, which help to quantify the suitability of a system for a potential application. MTBF is the measure

of the systems' functionality and service level. MTBF is often connected to the mean time to repair (MTTR).

- Availability represents the percentage of time when system is operational (for example, 99% availability is meant that the system downtime is 3,65 days per year, while 99,99% availability rate means that the downtime is 52 minutes per year).
- First fix rate - measures the percentage of incidents that successfully restored on the first fox attempt. It is leading indicator of system availability and MTTR.
- RTO (recovery time objective) - the period of time within which systems, services, applications or functions must be recovered after an outage. It is maximum tolerable length of time that an IT infrastructure can be down after a failure or disaster occurs.
- RPO (recovery point objective) – the maximum amount of data loss an organization can sustain during an event. It is also the point in time (prior to outage) in which systems and data must be restored to.

B. IT governance methodologies and frameworks that supports BCM

All kinds of risks that are related to information technologies and their potential threats to business should be a part of an integrated risk management on organizational level. Risk management is an ongoing process designed to assess the likelihood of an adverse event occurring, implement measures to reduce the risk that such an event will occur and ensure the organization can respond in such a ways to minimize the consequences of the event.

Today's business is constantly under a pressure not only from customers, suppliers and competitors but from regulatory requirements as well. Implementing IT governance and IS audit frameworks may help organizations manage IT risk level, especially BC risks. Various groups have developed world-wide known IT governance guidelines, standards and regulations that specify the best methods for managing IT functions of a company. In addition to standards prescribed by international standardization agencies, various national standards and recommendations and best practices of various companies are used. These standards and frameworks are:

- COBIT (control objectives for information and related technology) issued by ISACA (information systems audit and control association) created as a framework for establishing control of the relationship of IT processes and business requirements and represent basic IT governance framework.
- ITIL (information technology infrastructure library) is a collection of best-practice solutions achieved in practice of managing IT services issued by the British Office of Government Commerce.
- NFPA 1600 (www.nfpa.org). NFPA 1600 is the Standard on Disaster/Emergency Management and Business Continuity Programs, was prepared by the Technical Committee on Emergency Management and Business Continuity.
- ISO/IEC 27000:2005 (The Code of Practice for Information Security Management) – the series of international standards (ISO 27000 – ISO 27008) associated with managing information security.
- ISO/IEC TR 1335 (Guidelines for the Management of IT Security) is a technical document that includes information and instructions on IT security, both from management aspect and from implementation aspect.
- ISO/IEC 15408 (Security Techniques—Evaluation Criteria for IT Security) is used as reference for review and certification of IT products and services.

- Risk management standard (IRM) as a result of the efforts made by the major risk management associations in the UK including the IRM, AIRMIC and ALARM.
- TickIt was issued by the British standards institute and is use for review and certification of software quality management systems.
- COSO internal control—integrated framework was issued by COSO and includes a framework whose application will improve the process of financial reporting through improved internal control processes.
- BS 25999 business continuity standard, BS 25777 information and communication technology standard.

According to IDC's White Paper (2009), by adopting industry best practices (for example ITIL, CobiT) and updating IT infrastructure, companies can lower annual downtime by up to 85%, greatly reducing interruptions to daily data processing and access, supporting business continuity, and containing operational costs.

One of the greatest risks that IT can introduce to banking is inadequate use of capabilities offered by the constant improvement process taking place in this area, and consequently reduce the bank's competitive power. Therefore, from the risk management point of view, it is necessary to view IT operations as a whole, and information security management as a part of that whole. Bielski (2008) states that some think of business continuity as doing what is necessary to set up a "shadow" organization that will take you from incident response through various phases of recovery. Winniford et al. (2009) pointed out that, there still exists ongoing debate as to the exact scope and overlap of several concepts such as ITSM, ITIL, SLM, CobiT and BSM. Pollard and Cater-Steel (2010) identified three critical success factors for successful ITIL implementations: Creating an ITIL-friendly culture, process as a priority, and customer-focused metrics. McNaughton et al. (2010) proposed a holistic evaluation framework for evaluating the extent to which ITIL best practices are successful in supporting business processes. Marten et al. (2010) studied the correlation between IT governance maturity and IT governance performance, while Spremic (2012) analised the IT governance maturity in banking sector in Croatia. Martinez and Williams (2010), Harindranath (2008), Foo and Witkowska (2008), Stanovnik and Kos (2007) considered several aspects of ICT in transition/emerging countries.

Business Continuity Institute (http://www.thebci.org) published in August 2010 a document on "BCM Legislation, Regulations and Standards" for a certain number of countries. According to this report, among the EU countries, only UK has defined full legislations regarding BCM. Other countries have partial regulations or standards on BCM, while Italy has no even a standard Netherlands has only an exact translation of ASIS Standard SPC.1-2009 - Organizational Resilience.

Bonin (2004) studied banking sector in four south-eastern European countries with each of them showing a different path in terms of privatization: Slovenia, Croatia, Bulgaria and Romania. Kraft (2004) conducted a study of challenges and accomplishments in banking reforms in south-eastern Europe. The challenges that the countries faced are as follows: A poor legal framework, an undeveloped market security, as well as a non-bank financial institution. Depending on country, these questions have been treated by some regulations on risk management. In Albania, for example, regulation on liquidity risk defined what contingency plan needs to contain. In other countries as well, there exists a similar situation, with more and less specified regulations only on contingency plans. However, as majority of banks operating in the SEE countries are originally from EU, the Contingency Plans are governed by the rules of a parent bank.

Various BCM and crisis management standards have been introduced over the last few years. Majority of these standards are countrywide, but the regulations are mandated by the central banks which means, that they specifies rules for the BCM in financial services. Table 2 depicts regulations and authorities for controlling their implementation in selected countries.

TABLE 2 - REGULATIONS AND AUTHORITIES FOR BCM PROCEDURES

Country	Regulation	Authority	Summary
Australia	APS 232	Australian Prudential Regulatory Authority (APRA)	APRA regulation for BCM in financial services firm
Bahamas	PU 19-0406 Supervisory and Regulatory Guidelines for BCM	The Central Bank of Bahamas	Apply to all commercial banks operating in the Bahamas, based upon Basel II
Brazil	NBR 15999-1 and NBR ISO/IEC 24672	ABNT	Straight translation of the BS 25999 and ISO 24672 standards
Canada	IDA By-Law 17.19 BCP	OSC (Ontario Securities Commission)	Establishing and maintaining BCP for financial services firms
China	a) HKMA BCP supervisory policy TM-G-2 b) IT Security Guidelines	a) Hong Kong Monetary Authority (HKMA) b) IT Services Dept. – The Government of Hong Kong Special Admin region	a) supervisory policies, minimum standards authorised institutions are expected to attain b) general concepts relating to IT Security
Croatia	a) Act on Credit Institutions b) Rules on adequate governance of IT	Croatian National Bank (CNB)	Set up a minimum control measures for proper IT Governance in banks and financial institutions. External and internal IS auditing mandated, reports provided to CNB.
EU Countries	High Level Principles for BC Basel II	Basel Committee on Banking Supervision	Principles that should be used internationally by financial regulators, addresses operational risk
India	India BCP	Reserve Bank of India (RBI) Securities and Exchange Board of India (SEBI) Bombay Stock Exchange (BSE)	Enforced by audit, requires need for BCP documentation and testing for least annually
Indonesia	Regulation No 9/15/PBI/2007, Indonesia BCP	Bank Indonesia	Implementation of Risk Management in the use of IT by commercial banks. Requires internal IS auditing
Japan	Manual for the Development of BCP in financial institutions BC at Bank of Japan	FISC (The Centre for Financial Industry Information System) BOJ (Bank of Japan)	Audit matter, corporate – wide testing at least annually
Malaysia	BNM/RH/GLO13-3 Guidelines on Management of IT	Central Bank of Malaysia	Enforces minimum BCM requirements, auditing mandatory

Continued from previous page

Russia	242-P	Bank of Russia	Banking internal control
Singapore	MAS BCM Guidelines Singapore Exchange BCM rules	MAS (Monetary authority of Singapore) SGX (Singapore Exchange)	7 guiding principles on executive responsibilities for BCM (testing BCP, setting RTO, etc.)
Switzerland	SFBC 06/6 SBA Self-Regulation	SFBC (Swiss Federal Banking Commission) SBA (Swiss Bankers Association)	Supervision of internal control and IS auditing Guidelines for BCM
Thailand	Thailand BCP	Bank of Thailand/Securities and Exchange Commission	Best practices for BC and DR in telecommunication industry
UK	BC Practice Guide BS 25999-1:2006 BS 25999-2:2007 BS 25777:2008 IT Service Continuity	FSA (Finance Services Auth.) Bank of England British Standards Institution	Guidance on BCM req. FSA based its BCM inspection on 7 Basel Forum principles
USA	Sarbanes-Oxley act SEC act ANSI/ARMA 5-2003 NYSE rule 446 etc.	PCAOB (Public Company Accounting Oversight Board)đ SEC (Securities and Exchange Commission) ANSI (American National Standards Institute)	Setting requirements for establishing sound BCM procedures, auditing needed.

Source: Research results

IV. NATIONAL REGULATIONS FOR BCM ACTIVITIES: CASE OF THE REPUBLIC OF CROATIA

The most common reason for conducting information system auditing is based on regulatory requirements. In the Republic of Croatia the regulatory framework for information system auditing was prescribed by Croatian National Bank. The main objective of the obligatory regulations is to effectively manage the level of operational risks, namely IT associated risk in credit institutions (banks, insurance, etc.). The Act about credit institutions and the Decision about appropriate management of information system are the cornerstones of the information system auditing regulation that obliged every credit institution to perform internal and especially external assessment of IT risks and to prepare a report for the regulator as well as for company's Board. The regulatory itself is concerned to a framework and scope of testing IT controls in order to be able to assess the level of specific IT risks. Regulatory framework prescribed the 18 areas which define the scope of every information system audit in the credit institutions in Croatia. These areas are as follows:

1. Managing information system security
2. Managing the risks associated to information systems
3. Managing logical and physical access rights
4. Managing the information systems assets
5. Managing operating and system records
6. Managing back-up and archive

7. Managing the relationships to service providers and outsourcers
8. Managing the relationships to hardware vendors
9. Managing the information system development
10. Managing physical security
11. Managing passwords
12. Configurations management
13. Change management
14. Business Continuity planning
15. Disaster Recovery plan
16. Managing incidents and problems
17. Antivirus policy
18. Documentation and internal acts associated to information systems

According to the regulatory framework, the board of every credit institution in Croatia is responsible for mitigating risks associated to every single area and to effectively manage the level of the acceptable IT risk. Some detailed and precise regulatory responsibilities include:

- To nominate the member of the Board who is responsible for managing and controlling information system
- To define information system strategy (due to 01.07.2008)
- To define clear and precise responsibilities for managing information system (01.01.2009)
- To nominate the autonomous CISO function (Chief Information Security Officer) (01.01.2009)
- To nominate the IT governance Committee (01.07.2008)
- To define the information system risk management methodology and processes (01.07.2009)
- To assess information system risks and to reduce them to acceptable level (01.07.2009)
- To classify and protect information (01.10.2009)
- Internal audit is responsible to conduct information system audits (01.01.2009)
- Board is responsible to establish the process of business continuity planning and management (01.07.2010)
- Board is responsible to create the business impact analysis, to accept the business continuity plan, to accept the disaster recovery plan and to test their functionality and effectiveness (01.07.2010)
- Board is responsible for establishing appropriate incident management process (01.07.2009)
- Board is responsible for establishing the process of data recovery which will be stored on the alternative location (01.10.2010).

In Croatia, internal and external IS auditing are conducted according to this framework, while Croatian National Bank monitors the whole process and fosters credit institutions to implement IS auditors' recommendation and secure the quality of IS audits. The main objective of such a strong regulation is to strengthen the maturity of IT governance processes in credit institutions. Some results of such approach may be the fact that all credit institutions in Croatia have a CISO (Chief Information Security Officer) as an autonomous person nominated for managing IS security. All of them are conducting IS auditing procedures and every single commercial bank operating in Croatia has to have BCP and DRP integrated into risk management process and IT governance policies.

Very strict and rigorous IT governance regulations in Croatia enforce that IS management is on very mature level in almost all commercial banks operating in the country. Consequently,

BCM practices are on very high level, meaning that every single commercial bank operating in Croatia has a BC strategy, BC plan and DR plan. Majority of them identified key IT control metrics for BCM (RTO, RPO) according to the business impact analysis. Also, majority of commercial banks operating in Croatia has a DR site and modern data replication systems. This is particularly interesting having in mind their ownership structure. Largest banks operating in Croatia are owned by banks with head offices in nearby countries (Italy, Austria, France, Germany), while in the same time, very strict regulations are meant that IT governance and BCM practices in their Croatian subsidiaries are much stronger than in parent companies. We can conclude that IT governance and BCM practices in the Republic of Croatia are much better than in majority EU countries. Therefore, such a regulation may be the model not just for nearby countries, but for the broader region (CEE region). The possible results of executive management activities in managing IT risk are presented in Table 3. IT governance and information system audit activities give a set of clear guidelines on how to manage IT risk for selected business process.

TABLE 3 - THE OUTCOME OF IT GOVERNANCE AND RISK MANAGEMENT IMPLEMENTATION

Key business process	Sales order (e-orders)
IT risk	System disruption
IT risk level	High – critical, Loss of data, corporate risk
Potential loss (BIA) (per day)	500.000 €
IT Risk Response Strategy	Immediate action, risk level reduction
IT (governance) goal	Number of hours lost per user per month due to unplanned outages
IT Control	CobiT 4.1 (*DS4, DS5*) ITIL *BCM* ISO 27001 (*10, 11, 4*)
Key Metrics – IT Control Efficiency	Availability >= 99,96% RTO < 3h RPO < 3h First Fix Rate > 90% MTTR < 30 minutes MTBF < 20 minutes
Detailed IT Metrics	• Percent of available service level agreements (SLAs) met • Number of business-critical processes relying on IT that are not covered by IT continuity plan • Percent of tests that achieve recovery objectives • Frequency of service interruption of critical systems
Responsible Person (Owner)	XY

Source: Research results

V. NATIONAL REGULATIONS FOR BCM ACTIVITIES: THE CASE OF BOSNIA-HERZEGOVINA

In Bosnia-Herzegovina (BandH) there are two mutually compatible banking sectors that follow its constitutional system based on two entities. In both entities (FBandH and RS) there exists independent Banking Agency dealing with supervision of banks' activities. Central Bank of Bosnia-Herzegovina (CBBH) coordinates the activities of the two Banking Agencies. CBBH prescribed minimum standards with regard to IT with the "Decision on the minimum computer configurations and the reserve location for the gyro clearing", as well as the "Decision on reserve ways of conducting gross settlement in real time" (GSRT). These decisions were made on November 19, 2004 and came into force on January 1, 2005. In January 2012 new regulatory provisions came into the force, but there were no time to investigate its usage.

According to these decisions, all commercial banks are required to make their own procedures for payment transactions in exceptional circumstances, in order to maintain continuity of payment transactions of the whole banking sector. However, Central Bank of BandH considered the issues of business continuity only in the area of payment transactions, without specifying details on how to achieve it. All banks are required to provide backup performance of payments in extraordinary circumstances, preferably in their own isolated location, or contract with another commercial bank. When it comes to backup site for payment transactions, CBBH prescribed only minimal computer configuration required for payment transactions under difficult circumstances, without specifying details about the isolated location. The aim of these decisions was not only to enable the continuity of payment transactions of individual banks, but to prevent endangering the entire banking payments sector. Business continuity is viewed as an aspect of the bank's operational risk management and it is defined by the "decision on minimum standards for operational risk in banks" in 2008. The banks are asked to provide daily backups, have safe backup location, as well as a plan for emergency situation aiming at ensuring business continuity. Bank is required to test its business continuity plan at least once a year. The decision itself in the creation of a business continuity plan lists only four items that must be represented, without any detailed specification of minimum standards that should be adhered during processes of writing and implementing a business continuity plan.

Maintaining business continuity of banks' activities in BandH is defined in a very poor way. Banking Agency of Federation of Bosnia and Herzegovina, namely the "Department of Banking Supervision" is in the process of preparing "Decisions on IT supervision" which would further specify the details about maintaining business continuity. It is expected that this decision will be completed and delivered to the banks by the end of this year. Smaller banks in general keep backup copies of data in one of its branches and business continuity in emergency circumstances is not fully defined. Banks with headquarters from EU have already completely defined and implemented their business continuity plans. Since the legal regulations in this field in BandH are not fully implemented, the banks are mostly working on the implementation of BCP solutions on the basis of the experience of neighboring countries, mainly Croatia, and legal regulations from the parent banks' countries. This is particularly the case when talking about several aspects of facility management and technology management in terms of a separate location for emergency situations. All banks were required to have a business continuity plan by the end 2008. As details about maintaining business continuity are not specified, we can see different ways of maintaining business continuity in BandH banking sector, and it depends on bank size, amount of capital and the origin of the bank.

VI. FRAMEWORK FOR IMPLEMENTATION OF BCM AND IT GOVERNANCE STANDARDS

By imposing the IT standards and regulations, the governments ask the banks to implement several methods of risk management. However, implementing these standards only is not enough in regard to business continuance of the banks. Business continuity today relies on a set of continuous computing technologies that provide an efficient operating environment for "always-on business". Continuous computing technologies that have to be considered for an efficient and effective implementation according to the model presented in Figure 1 include the following major technologies (Figure 2):

- Servers or server configurations. Having in mind the dominance of the client-server architecture in modern computing, the role of server configurations has become crucial from the business continuity perspective. Server processors and server configurations are designed, configured and implemented in order to enhance availability ratios.
- Server operating systems. Server platforms are run by server operating systems. Server operating systems are expected to provide high ratios in terms of availability, reliability, and scalability for server configurations running business-critical applications.
- Serverware solutions. In addition to the core server operating system, server operating system vendors include (bundle) several modules in order to enhance the capabilities of their operating systems called serverware solutions.
- System administration knowledge and skills. IT skilled and experienced system administrator can resolve many problems that occur on operating system level which is very important in reducing the time of system recovery. The same applies for network administrators as well.
- Server-based fault-tolerance and disaster-tolerance technologies. If an IT platform uses fault-tolerant technology, system can continue to operate even in case of some component's failure.
- Server clustering is used in order to resolve the problems of heavy workload and improve scalability performances of server configurations.
- Data Storage and Backup solutions. Technologies used for data storage, data backup and data recovery play crucial role in data management in the form of a secondary layer, in addition to primary data storage (hard disk).
- Redundant units such as a RAID disks, network cards, modems, switches, routers, are used in order to reduce (minimize) downtime in a way that redundant components are purchased, stored and used to replace the broken ones.
- Networking and security technologies. In case of any kind of glitch on data communication platform, be it network card, modem, router, broken communication line, as a result, the system is unable to transfer data. Therefore, network downtime caused by any kind of glitch is also considered as crucial problem in modern computing.
- Advanced technologies include technologies such as snapshoot mirroring, data vaulting, virtual tape backup, online backup, etc.

Implementation of all these continuous computing technologies together with IT standards and regulations provides an integrated operating platform for "keeping business in business" of modern banking sector as well, as banks' business-critical applications are: i) Installed on enterprise servers, ii) run by server operating systems, iii) supported by serverware components, iv) backed-up by storage/backup solutions, v) administered by system administrators and so on. In most cases, most of these continuous computing technologies are implemented as a result of imposing the IT standards and regulations by either government or

international institutions. These standards and regulations provide a framework for implementing these technologies.

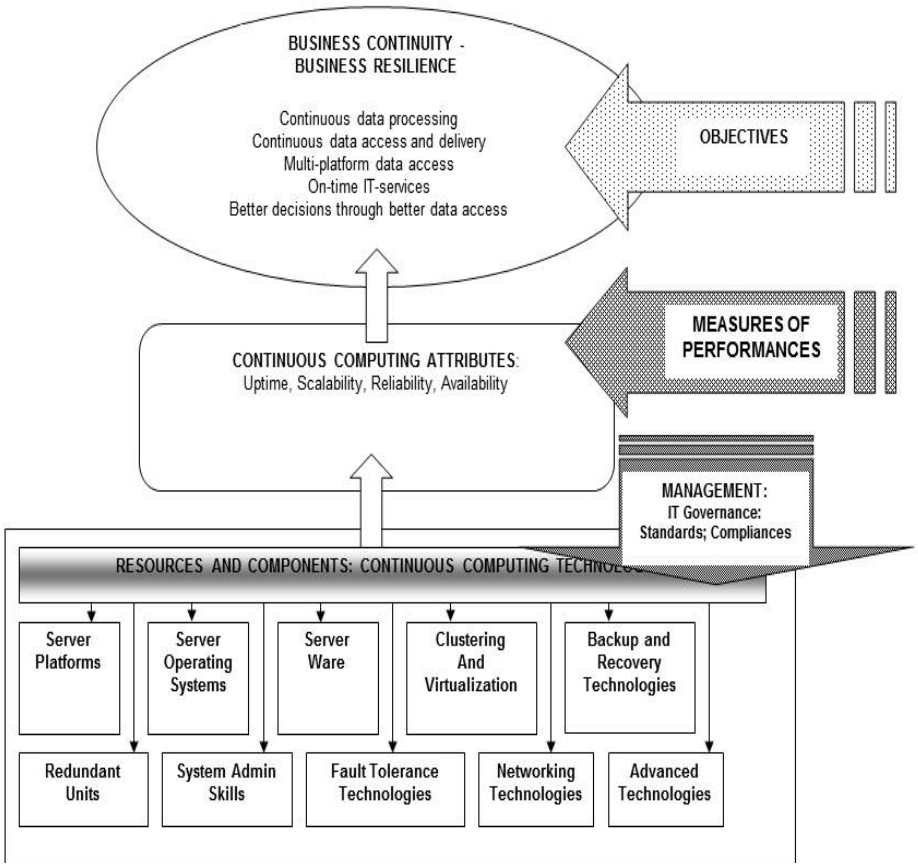

FIGURE 2. A SYSTEMIC MODEL OF BUSINESS CONTINUITY, CONTINUOUS COMPUTING TECHNOLOGIES AND IT REGULATIONS

Source: Authors' Model

VII. IMPLICATION FOR RESEARCHERS AND MANAGERS

In this paper we presented a systemic model of business continuity and continuous computing technologies which comprises the IT governance principles, namely IT regulation. Previous researches in this field were mainly associated to technological and managerial side of business continuity. We tried to fill the research gap by providing a research material which argues about the IT governance side of business continuity activities and its influence on growing business executives' interest on the matter. Therefore, after discussing theoretical background and analyzing literature review we construct, or rather comprehend our research model with the IT governance layer. As business continuity has been seen as one of main driver of operation risk, many businesses and industries was forced to develop efficient control countermeasures. Therefore, business continuity issues are no longer technological related problems and need

understanding and expertise of business executive level. IT governance methods and principles needs to be implemented namely in the form of developing solid and efficient control countermeasures in order to be able to manage risks associated to business continuity. By implementing IT governance principles, a company will develop a set of high level key risk indicators (such as RTO, RPO, availability rate, MTBF which are explained in further details in the paper). Such activities have to be initiated and managed by business executive's level and mainly driven by IT governance issues (regulations, compliance, risk management, business / IT alignment, etc.). Therefore, we hope that strong theoretical background provided in the paper, together with expert insight from real-word case studies would be of the researchers and managers interest.

VIII. CONCLUSIONS AND LESSONS LEARNED - FINDINGS FROM THE CASE STUDY

The findings obtained in the form of practical gains and recommendations can be summarized as follows:

- Both theoretical and conceptual considerations from the introductory sections and results from cases suggest a need to consider several IT-governance aspects when developing and implementing BC solutions in the banking sector and in general.
- The process of implementing BC and IT governance standards should be considered in a systematic way including both continuous computing technologies and IT standards and regulations.
- Information security is not only responsibility of the IT department, but it also includes many non-technological aspects: business continuity management, physical security and fraud risks. This proves that information security is a part of the integrated risk management process as a whole on company level whose structure has been explained in the risk management section. Therefore, the implementation of focused IT governance approach is of particular importance for managing IT risks.
- Two most frequently standard requirements for banking sector prescribed by the governments such as remote backup location and contingency plan should be only part of the integrated BC solution presented in this work.
- IT governance standards and regulations are considered in the form of a specific managerial action aimed at implementing continuous computing technologies for enhancing availability ratios of enterprise information systems.
- An enterprise information system must be managed from business continuity perspective in a way that it includes managerial and system administration activities related to managing the integration of business continuity drivers.
- The case study about Croatian IS auditing regulation framework shows that implementation of IT governance policies may reduce the level of IT risks and foster quality of IS environment. This is especially important when dealing with strategic IT risks such as BC and DR risks. In this light, the IT governance model for managing these risks is proposed and explained.
- As banking sectors in Croatia, BandH and other SEE countries are mostly based on the existence of EU-originated banks operating under Basel II, SOX and other standards, this sector is seen as one of the most developed in terms of BC/IT governance compliance in SEE countries. However, still a lot has to be done in the process of implementing integrated BC solutions. One possible model is explained in this work.

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PRIMJENA IT STANDARDA UPRAVLJANJA I UPRAVLJANJE KONTINUITETOM POSLOVANJA U TRANZICIJSKIM EKONOMIJAMA: SLUČAJ BANKARSKOG SEKTORA U HRVATSKOJ I BOSNI I HERCEGOVINI

Sažetak: Tijekom proteklog desetljeća upravljanje kontinuitetom poslovanja se razmatralo uglavnom iz perspektive tehnologije ili planiranja. Ovaj rad ide korak naprijed i razmatra upravljanje kontinuitetom poslovanja sa stajališta IT upravljanja. Osim toga, ocjenjuju se i standardi te legislativa usmjerena poboljšanju stanja. Primjena najboljih sektorskih standarda i procesa kao što su ITIL i CobiT u kombinaciji s drugim IT rješenjima može dovesti do znatnog smanjenja rizika te smanjiti rizik poslovanja i time rezultirati smanjenjem nedostupnosti sustava. Istražuju se slučajevi primjene glavnih standarda informacijske tehnologije u bankarskom sektoru Hrvatske i Bosne i Hercegovine sagledani iz ove dvije perpektive.

Ključne riječi: upravljanje kontinuitetom poslovanja, IT upravljanje, IT rizici, IT revizija, nedostupnost, dostupnost

SVEUČILIŠTE JURJA DOBRILE U PULI
ODJEL ZA EKONOMIJU I TURIZAM
DR. MIJO MIRKOVIĆ
UTEMELJEN 1960.

EKONOMSKA ISTRAŽIVANJA-ECONOMIC RESERACH
ISSN 1331-677X print

2013 Volume 26(1): 203-224

BANKS AND INSURANCE COMPANIES EFFICIENCY INDICATORS IN THE PERIOD OF FINANCIAL CRISIS: THE CASE OF THE REPUBLIC OF CROATIA*

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* The preliminary results of this research were presented on the 9th International Conference on Data Envelopment Analysis, held in Thessaloniki (Greece) in August 2011, under the title DEA approach vs accounting approach as a measure of efficiency of financial institutions in the Republic of Croatia.

ARTICLE INFO

Article data:
- Received: 19 December 2012
- Accepted: 19 September 2012

JEL classification: G21, G22, C6

Keywords:
- banks
- insurance companies
- efficiency
- dataenvelopment analysis
- accounting ratios

ABSTRACT

The main goal of the paper is to identify and to compare the efficiency measurement results of banks and insurance companies using Data Envelopment Analysis (DEA) and accounting indicators in the period before and after the onset of recent financial and economic crises in the Republic of Croatia. This research is important because it observes and compares the results of those two efficiency measurement methods which former researches did not encompass. The research includes the banking industry and the insurance sector in the Republic of Croatia due to their relatively high asset share of about 83% in total financial sector asset. The main difference in results between DEA approach and accounting approach was remarked in sense of accounting approach efficiency measurement scores lag in the crisis period. DEA efficiency scores had the lowest values in the year 2007 for insurance industry and for banks in 2008 but with visible lower values already in 2007. The lowest ROA and ROE accounting ratios in the year 2009 could be explained by the fact that although financial institutions operate more efficiently in the crisis period in sense of expense and income results, accounting ratios cannot achieve as good scores as in period of a boom, due to the deteriorated market conditions, and more reserved business policy.

Reference to this paper should be made as follows: Jurčević, B.; Mihelja Žaja, M..2013. Banks and insurance companies' efficiency indicators in the period of financial crisis: the case of the Republic of Croatia, *Ekonomska istraživanja – Economic Research 26(1): 203-224.*

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I. INTRODUCTION

Financial institutions operating efficiency measurement is based on data from financial statements and on market efficiency indicators. Financial statements are the main source of accounting information used in the financial institutions' operating efficiency measurement through the analysis of relations between specific values, commonly accepted as efficiency indicators. The most significant drivers of banks' profitability are earnings, efficiency, risk-taking and leverage. Financial ratios as indicators of banks' and insurance companies' efficiency are divided into four main groups: accounting indicators of relations in the balance sheet, accounting indicators of relations in the profit and loss account, accounting profitability indicators and market profitability indicators, i.e. investment indicators.[1] In that manner, the most significant ratios as accounting efficiency/profitability indicators calculated for banks and insurance companies are Return on Assets (ROA) and Return on Equity (ROE). Accounting ratios in general are easier to calculate due to the fact that they are calculated using the information from financial statements: net profit or profit before taxes, total or average asset, total or average equity, total income, total expenditure, etc. ROA and ROE as efficiency indicators have some disadvantages in the sense of operating efficiency measurement, but we find that those disadvantages can be removed by data envelopment analysis (DEA) efficiency measurement approach.

The Republic of Croatia, as well as all "emerging" Europe economies, before the onset of the global financial and economic crisis in 2008, was recording high growth rates, driven by aggressive banks lending activities (i.e. credit boom) because of easy access of foreign owned banks to financing from their parent banks. About 90% of Croatian banks are foreign owned. Due to the fact that Croatian financial institutions and market are still relatively "closed" in the sense of investments on foreign financial markets and in advanced financial instruments, recent global financial crises did not directly affect Croatian economy and financial sector. Although financial institutions in the Republic of Croatia did not have a direct exposure through their investments, the spill over effect of the crisis and slowing down of the banks' credit activity, which was remarkable especially in the year 2009, caused a deep recession and until today Croatian economy did not recover. Slowdown of banks' credit activity and negative trends on the capital market, affected negatively on the economic growth and financial institutions business' activity results as well as on efficiency/profitability indicators. Efficiency measurement results before and after the onset of the financial crisis could be difficult to evaluate and to compare due to several reasons. It can be subject to debate whether the financial institution business performance is more efficient in a boom or a recession period. It could be argued that bank efficiency could suffer during a credit boom, as temporarily high bank profitability relaxes incentives to save costs, but intense competition during a boom may increase bank efficiency.[2] The same could be concluded for the insurance companies.

DEA efficiency measurement approach has been extensively used to assess school efficiency (Norman and Stocker, 1991; Thanassoulis and Dunstan, 1994; Soteriou, Karahanna, Papanastasiou, and Diakourakis, 1998), hospitals efficiency (Jacobs, Smith and Street, 2006), public sector and not-for-profit settings (Sljepčević, 2009), efficiency of banks (Berger and Humphrey, 1997; Kraft, Tirtiroglu, 1998; Jemrić and Vujčić, 2002; Fries and Taci, 2005); insurance

[1]LajošŽager and others, Financial statements analysis (In Croatian) (Zagreb: Masmedia, 2009)
[2]GeorgeAnayiotos, Hovhannes Toroyan, and Athanasios Vamvakidis, "The efficiency of emerging Europe's banking sector before and after the recent economic crisis," Financial Theory and Practice 34, no. 3 (2010): 248.

companies efficiency (Cummins and Weiss, 1998; Mahlberg and Url, 2000; Davosir Pongrac, 2006), etc.

Anayiotos, Toroyan and Vamvakidis (2010) made a research using DEA approach for analysis of emerging Europe's banking sector efficiency (sample of 125 large banks from 14 emerging European countries), before and after the recent economic crisis. The results of their research suggest that DEA efficiency scores before crisis were strongly linked to the country's level of development, but also that banks efficiency suffered in the period before crisis when credit activity expanded, although efficiency scores increased. Foreign owned banks are more efficient than domestic banks, but less than their mother banks.[3]Poghosyan and Kumbhakar (2010) find that foreign ownership increase banks' efficiency only in less developed countries, and pointed direct correlation of the cost efficiency of banks in 20 emerging European countries during 1993-2004 with progress in economic reforms, economic stability, capital regulation and market structure in the banking sector.[4]

Fries and Taci (2004) find using DEA approach, on sample of 289 banks in 15 East European countries for the years 1994-2001, that banking sectors in which foreign owned banks have a larger share of total assets operate with lower expenses and that progress in banking reform has a non-linear association with cost efficiency. An average-sized bank in the sample operated at a point that is close to constant returns to scale, while smaller banks operated with significant unrealised economies of scale. They concluded that consolidation of smaller banks in the region would contribute to greater cost efficiency in banking, private banks are more cost efficient than state-owned banks, but privatised banks with majority foreign ownership are the most efficient and those with domestic ownership are the least.[5]In case of Croatian banking sector for the period 1995-2000, smaller banks are globally efficient, but large banks are locally efficient; foreign owned banks are on average the most efficient, and new banks are more efficient than the old ones.[6] The rehabilitation process in the large state-owned banks improved their efficiency but also contributed to a substantional decrease in interest rate spreads and thus a more competitive environment in the banking market.[7] Greater macroeconomic stability and competition in the banking sector from foreign banks' entry, as well as development of the supportive institutions, promote cost efficiency.

Numerous papers have also been written on the subject of the insurance companies' efficiency. The most cited authors in this field are Cummins and Weiss. In their papers they determine relative efficiency of insurance industry in Italy, Spain, but mostly in the USA. For output measurement they implement modified version of value added approach, and for input variables they use labour and capital which they take as factors of production for insurers. Cummins and Weiss (1998) and Cummins and Misas (2006) in their papers analyse the effect of single European market on the relative technical efficiency of insurance companies in Italy and

[3]Anayiotos, Toroyan and Vamvakidis, "The efficiency of emerging Europe's banking sector before and after the recent economic crisis," 247-267.
TigranPoghosyan, and ArsenPoghosyan, "Foreign bank entry, bank efficiency and market power in Central and Eastern European Countries," Economics of Transition18, no. 3 (2010)
[4]Anayiotos, Toroyan and Vamvakidis, "The efficiency of emerging Europe's banking sector before and after the recent economic crisis," 248.
[5] Steven Fries and Anita Taci, "Cost efficiency of banks in transition: Evidence from 289 banks in 15 post-communist countries," Journal of Banking and Finance 29, no. 1 (2005): 79.
[6] IgorJemrić and Boris Vujčić, Efficiency of Banks in Croatia: A DEA Approach,WP – 7 (Zagreb: CNB, 2002), 17.
[7]Ibid.

Spain. Besides them, Mahlberg and Url (1998, 2000) observed how a single market will affect the insurance industry in Austria and Germany by determining relative technical efficiency and the Malmquist index of total productivity.

In this paper, we utilize the mathematical programming technique of data envelopment analysis for the purpose of measuring relative operating efficiency of financial institutions: commercial banks and insurance companies, and we compare DEA scores with certain financial ratios that represent accounting efficiency indicators in the periods before and after recent financial and economic crises in the Republic of Croatia. The main goal of the paper is to identify the signs and the effects of crisis through efficiency indicators and to see if there are differences in the results of those two efficiency measurement approaches. The objective of this paper is to investigate the performance of financial institutions during the crisis. The research includes commercial banks and insurance companies as decision making units (DMUs) due to their relatively high asset share of about 83% in total Croatian financial sector asset.[8]

II. METHODOLOGY

There are a few common approaches on the financial institutions' efficiency measurement. The first approach on efficiency measurement is using ratio analysis among several financial institutions by using numerous accounting ratios, which can measure the overall financial soundness of the financial institutions and the operating efficiency of its management. Those ratios promise to provide valuable information about the financial institutions financial performance when compared to previous periods. The main weakness of ratio analysis is that there is a lack of agreement on the relative importance of various types of input and output. For example, a bank may appear to be performing well even if it is poorly managed on certain of these dimensions, as long as it compensates by performing particularly well on other dimensions.[9] Furthermore, the accounting ratios also fail to observe more outputs with more inputs and fail to consider the value of management actions and investment decisions that will affect future as opposed to current performance.[10] Accounting ratios are short-run measures and may be inappropriate for describing the actual efficiency of a bank in the long run.[11]

Accounting ratios ROA and ROE are the most important banks' and insurance companies' operating efficiency/profitability indicators. ROA as accounting indicator of bank's and insurance company's operating efficiency is calculated as the profit before taxes divided by total asset[12], and it is the most important single ratio in comparing the efficiency and operating performance of the observed financial institutions as it indicates the returns generated from the assets financed by them.[13] ROA can be observed also as a measure of bank's management quality. ROE is a bank's and insurance company's efficiency indicator calculated as the net profit after

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[8]Croatian Financial Services Supervisory Agency (CFSSA), *official data*(2010);
Croatian National Bank (CNB), *official data,* (2010)

[9]LukaNeralić, "About some uses of DEA in banking sector," (In Croatian), Ekonomija – Časopiszaekonomskuteoriju I politiku 3, no. 2 (1996): 493-515.;
DavidH. Sherman and Franklin Gold, "Bank Branch Operating Efficiency. Evaluation with Data Envelopment Analysis," Journal of Banking and Finance 9, no. 2 (1985): 297-315.

[10]Neralić, "About some uses of DEA in banking sector," 493-515.

[11]Muhittin Oral and RehaYolalan, "Empirical Study on Measuring Operating Efficiency and Profitability of Bank Branches," European Journal of Operational Research 46, no. 3 (1990): 282-294.

[12]Žager and others, Financial statements analysis, 305.

[13]KyriakiKosmidou and others, "A multivariate analysis of the financial characteristics of foreign and domestic banks in the UK," Omega 34, no. 2 (2006): 189-195.

taxes divided by the shareholder's equity. ROE measures the return on investment made by equity investors.[14] In other words, ROE measures how much profit (in %) is earned by the unit of shareholder's equity. ROA is a commonly used accounting ratio as a key measure of bank's operating efficiency, while Berger (1995) characterized both ROA and ROE, as standards in bank research. Commonly accepted efficiency frontier is a value of ROA at least 1% and ROE at least 15% in the period of a boom, while in the recession period each bank with value of ROE at least 10% is considered to be efficient. In consolidated statements for Croatian banking sector, ratios Return on Average Assets (ROAA) and Return on Average Equity (ROAE) are calculated and observed. They take into account the average values of assets/equity instead of the total values as in case of ROA and ROE calculation. In that sense, ROAA represents pre-tax profit as a percentage of average assets, while ROAE represents the after-tax profit as a percentage of average equity. The total income and expense ratio as total business efficiency (i.e. cost efficiency) indicator is the main in the group of accounting indicators of relations in the profit and loss accounts.[15] For the purpose of this research, in case of banking sector efficiency, ROAA and ROAE indicators are observed, as well as some other selected data and indicators calculated on the basis of information from financial statements, such as interest rate spread and cost to income ratio. The interest rate spread is calculated as the difference between interest income earned on average interest-bearing assets and interest expense incurred on average interest-bearing liabilities.[16] Cost to income ratio is calculated as a share of bank's operating expenses in net income. Operating expenses include general administrative expenses and amortization. Due to the fact that inputs and outputs in DEA approach efficiency measurement include expenses and income data, the latter two indicators, which also use expenses and income data in calculation, are valuable source of information for a more complete conclusion about banks performance efficiency.

When supervising the operations of insurance companies the following indicators are used: claims ratio, expense ratio, combined ratio and return on investment. Claims ratio is the proportionate relationship of claims paid, changes in the provision for claims and changes of other technical provisions to net earned premiums expressed as a percentage. Expense ratio is the proportionate relationship of operating expenses (acquisition and administrative expenses) and other technical charges to gross written premium reduced by premiums assigned to reinsurance expressed as a percentage. The usual range of the value of the expense ratio for the insurance sector is 20-30%.Combined ratio is calculated by adding the claims ratio to expense ratio and indicates the profitability of operations before including income from investments. Return on investment is the proportionate relationship of the net income from investments to balance of investments expressed as a percentage. Security of funds invested is extremely important for the insurance sector because insurance companies acting as financial institutions accumulate substantial financial funds, and when calculating insurance premium, future investment result is taken into account, therefore allowing the premium needed for payment of insured event and coverage of expenses for conducting business activities to be reduced for that amount. Based on the information from balance sheets and profit and loss accounts, solvency (solvency margin) and profitability indicators are calculated as well. Solvency indicator (solvency margin) is used for expression of capital adequacy, i.e. valuation of the insurer's capital and guarantee capital with

[14]Žager and others, Financial statements, 305.;
Kosmidou and others, "A multivariate analysis of the financial characteristics of foreign and domestic banks in the UK," 189-195.
[15]Žager and others, Financial statements analysis, 303.
[16] Croatian National Bank (CNB), *official data*, 2010.

respect to the size of its business, and it depends on adequacy of technical provisions which must be sufficient for a full coverage of the liabilities of the insurance company under the insurance contracts in force. The definition of capital adequacy specifies that insurance company must maintain, at all times, the capital level adequate to both the volume and the lines of insurance written, as well as to the nature of risks to which it is exposed. The profitability indicators imply on the effects of asset and liability management on the business result and the most important indicators that were already explained in the previous section are ROA and ROE.[17]

The second approach in the efficiency measurement is the parametric programming approach which has generally been concerned with the production or expense function base. It is focused on estimating the characteristics of the function and measuring economies of scale assuming all DMUs were operating efficiently. Parametric efficiency measurement approaches include Stochastic Frontier Approach (SFA), Thick Frontier Approach (TFA), Distribution Free Approach (DFA).[18] The analysis in this paper does not include parametric programming approach in the efficiency measurement.

The third approach uses DMUs efficiency frontiers to construct measures of efficiency and can be labelled as a non-parametric programming approach. This approach considers how much total efficiency in the financial sector can be improved, and ranks the efficiency scores of DMUs. This efficiency measurement derives from analysing empirical observations obtained from DMUs to define productive units which are characterized by common multiple outputs and common designated inputs.[19] DEA is a linear programming non-parametric approach and enjoys a number of advantages over other traditional parametric efficiency measurement approaches. Also, disadvantages of the accounting approach efficiency measurement and improvement mentioned in the previous section can be removed by DEA approach. If we want to calculate the indicator of business performance that will represent the efficiency of organizational unit within a financial institution, then we have to use input and output ratio. Thus, if we want to calculate the efficiency measure that will take into account more inputs and outputs, it is necessary to make a selection of those that will be included in the calculation and assign them certain weight in order to determine unique efficiency measure. The methodology that enables this is data envelopment analysis. Unlike statistical methods that derive estimations on the basis of average production unit, DEA is an extreme point method in which each decision making unit is compared only with the best one. For the observed inputs and outputs of the DMUs, it is assumed that connection between them exists, but the shape of that connection is not defined, what is the case with statistical methods.

The foundation for the development of data envelopment analysis was given by Farrell in 1957 in the paper „The Measurement of Productive Efficiency". He introduced the concepts of technical, pricing and total efficiency, at the same time differentiating the measurement of input efficiency and output efficiency. Total efficiency implies how much costs achieved are higher than minimal and it encompasses two components: technical efficiency and alocative efficiency. Technical efficiency reflects the DMUs possibility to produce maximal output by using a given set of inputs. On the other hand, alocative efficiency reflects the DMUs possibility to use inputs in optimal proportion in respect to the input price. Given the Farrell's assumptions, the methods

[17] Croatian Financial Services Supervisory Agency (CFSSA), *official data*, 2006.

[18] Allen N.Berger and David B. Humphrey, "Efficiency of financial institutions: International survey and directions for future research," European Journal of Operational Research 98, no. 2 (1997): 184.

[19] AbrahamCharnes, William W. Cooper, and Edwardo Rhodes, "Measuring the Efficiency of Decision Making Units," European Journal of Operational Research 2, no. 6 (1978): 429-444.

for measuring efficiency were elaborated. One of them was Data envelopment analysis that measures relative efficiency of DMUs by constructing empirical efficiency margin or production possibilities frontier on the basis of data about used inputs and achieved output of all units.

The DEA approach, based on Farrell assumptions, first was described by Charnes, Cooper and Rhodes (1978) who applied a mathematical planning model (CCR model) to measure the efficiency frontier based on the concept of Pareto optimum. Originally, DEA was intended for use in public sector and not-for-profit settings where cost minimization or profit maximization may not apply. DEA is most useful in cases where accounting and financial ratios are of little value, multiple outputs are produced through the transformation of multiple inputs, and the input-output transformation relationships are not known.[20] The results of DEA can help DMUs to improve their business results. The disadvantage of using DEA as a tool of detecting the relative efficiency is sensitivity in sense of how much can we change the data of observed effective DMU to keep it effective. The main goal of sensitivity analysis is to identify the level of input and output data change to keep effective DMU still effective but only if changes are in default limits. The basic idea of DEA is to identify the most efficient DMU among all DMUs, where the set of best practice or frontier observations are those for which no other DMU or linear combination of units has as much or more of every output (given inputs) or as little or less of every input (given outputs) (.[21] The most efficient DMU is called a Pareto-optimal unit and is considered the standard for comparison for all other DMUs.

Isoquant (linear curve, efficiency line) combines efficiency points (extreme points of convex set, unit output) that are possible to achieve with unequal combination of inputs and demonstrates that in one point, in getting unit output, it is not possible to decrease neither of the inputs by the unit of outputs without increasing the other.

Points that are outside the efficiency line signify that there is an inefficient usage of resources for getting the unit output. Point that is on the efficiency line does not ensure efficiency in the DEA sense because that is necessary but not sufficient condition of efficiency since some input can be decreased without of increasing other input and hence objectify unit output (Neralić, 1996, 493-496).[22]

Different DEA models as a result give different types of relative efficiency. CCR model, that assumes constant returns to scale, as a result gives global technical efficiency. BCC model assumes variable returns to scale and as a result gives pure local technical efficiency. The proportion of given results determines efficiency in respect to the returns to scale. If the DMU is perfectly efficient by both models, then its efficiency in respect to the returns to scale is the highest.

[20]Ibid.

[21] Berger and Humphrey, "Efficiency of financial institutions: International survey and directions for future research," 177.

[22]Neralić, "About some uses of DEA in banking sector," 493-496.

A. Charnes-Cooper-Rhodes model (CCR model) - input oriented

The assessment of relative efficiency of the observed decision making unit can be acquired by solving following problem of fractional linear programming:[23]

$$max\ \theta = \frac{u_1 y_{10} + u_2 y_{20} + \cdots + u_s y_{s0}}{v_1 x_{10} + v_2 x_{20} + \cdots + v_m x_{m0}} \tag{1}$$

with restrictions:

$$\frac{u_1 y_{1j} + u_2 y_{2j} + \cdots + u_s y_{sj}}{v_1 x_{1j} + v_2 x_{2j} + \cdots + v_m x_{mj}} \leq 1, \quad (j = 1,2, \ldots, n)$$

$$v_1, v_2, \ldots, v_m \geq 0$$
$$u_1, u_2, \ldots, u_s \geq 0 \tag{2}$$

Equivalent linear model is:

$$max\ \theta = \mu_1 y_{10} + \cdots + \mu_s y_{s0} \tag{3}$$

with restrictions:

$$v_1 x_{10} + \cdots + v_m x_{m0} = 1$$
$$\mu_1 y_{1j} + \cdots + \mu_s y_{sj} \leq v_1 x_{1j} + \cdots + v_m x_{mj}\ (j = 1, \ldots, n)$$
$$v_1, v_2, \ldots, v_m \geq 0$$
$$\mu_1, \mu_2, \ldots, \mu_s \geq 0 \tag{4}$$

where x represents inputs and y represents outputs.

An optimal solution to this linear problem is (θ^*, v*, u*), where v and u represent input and output weight vectors.

The definition of CCR-efficiency is:[24]

1. DMU0 is CCR-efficient if $\theta^*=1$ and there exist at least one optimal (v*, u*) with v*>0 and u* >0.
2. Otherwise DMU0 is CCR – inefficient.

The dual problem of linear programming problem is expressed with a real variable θ as follows:[25]

$$min\theta \tag{5}$$

[23] William W. Cooper, Lawrence M. Seiford and Kaoru Tone, Data Envelopment Analysis, A Comprehensive Text with Models, Applications, References and DEA-Solver Software (Boston: Kluwer Academic Publishers, 2000), 23.

[24] Ibid., 24.
[25] Ibid., 43.

subject to:

$$\begin{aligned} \theta x_0 - X\lambda &\geq 0 \\ Y\lambda &\geq y_0 \\ \lambda &\geq 0 \end{aligned} \qquad (6)$$

Dual linear problem has a feasible solution θ=1, λ0=1, λj=0 (j≠0). Hence the optimal θ, denoted θ*, is not greater than 1. On the other hand, due to the nonzero assumption for the data, the constraint forces λ (optimal values of variables of dual model) to be nonzero. Putting this all together, we have u<θ≤1.[26] DMUs for which the θ*<1 are relatively inefficient and those for which θ*=1 are relatively efficient having their virtual input-output combination points lying on the frontier.

When θ*<1 it can be said that (X λ, Y λ) outperforms (θx0, y0) and with regard to this property we must define input excess $s^- \in \mathbb{R}^m$ and output shortfalls $s^+ \in \mathbb{R}^s$ and identify them as „slack" vectors by:[27]

$$s^- = \theta x_0 - X\lambda, \quad s^+ = Y\lambda - y_0 \qquad (7)$$

in order to find possible input excesses and output shortfalls, we solve the two phase linear programming problem.

In the first phase θ is minimized and in the second phase the sum of input excesses and output shortfalls is maximized by using optimal value θ* of the goal function from the first phase that represents CCR efficiency. The main goal of the second phase is to find the solution that maximizes the sum of input excesses and output shortfalls while keeping θ=θ*. In the second phase the following problem of linear programming is solved:[28]

$$max\varpi = es^- + es^+ \qquad (8)$$

$$s^- = \theta^* x_0 - X\lambda \qquad (9)$$

$$s^+ = Y\lambda - y_0 \qquad (10)$$

$$\lambda \geq 0, \quad s^- \geq 0, \quad s^+ \geq 0$$

where e = (1,1,...,1) a vector of ones so that $es^- \sum_{i=1}^{m} s_i^-$ and $es^+ \sum_{r=1}^{s} s_r^+$.

An optimal solution (λ*, s-*, s+*) of the second phase is called the max-slack solution and if it satisfies s-* = 0 and s+* = 0, then it is called zero-slack.

[26] Ibid.
[27] Ibid., 44.
[28] Ibid.

If an optimal solution (θ^*,λ^*, s^{-*}, s^{+*}) of the two linear programming problems, explained above, satisfies $\theta^*=1$ and is zero-slack ($s^{-*} = 0$ i $s^{+*} = 0$), then DMU is called CCR-efficient. Otherwise, the DMU is called CCR-inefficient, because the conditions that $\theta^*=1$ and all slacks are zero, must both be satisfied if full efficiency is to be attained.[29]

B. Charnes-Cooper-Rhodes model (CCR model) - output oriented

CCR model output oriented is defined as follows:

$$max\eta \tag{11}$$

with restrictions:

$$\begin{aligned} x_0 - X\mu &\geq 0 \\ \eta y_0 - Y\mu &\leq 0 \\ \mu &\geq 0 \end{aligned} \tag{12}$$

Optimal solution to the output oriented model can be acquired directly from the optimal solution to the input oriented model in the following manner:

$$\lambda^* = \mu^*/\eta^* \qquad\qquad \theta^* = 1/\eta^*$$

From the above follows that DMU is efficient according to CCR input oriented model, if and only if it is efficient pursuant to CCR output oriented model. By solving CCR output oriented model that assumes constant returns to scale, we get global technical efficiency.

C. Banker-Charnes-Cooper model (BCC model) - input oriented

BCC input oriented model evaluates DMUs efficiency by solving the following linear envelope problem:

$$min\theta_B \tag{13}$$

with restrictions:

$$\begin{aligned} &\theta_B x_0 - X\lambda \geq 0 \\ &Y\lambda \geq y_0 \\ &\textstyle\sum \lambda_j = 1 \\ &\lambda_j \geq 0 \end{aligned} \tag{14}$$

where θ_B is scalar.

[29] Ibid., 45.

BCC input oriented model differs from CCR model of the same orientation only in additional restriction $\sum \lambda_j = 1$. Since there is a restriction that λj ≥ 0 for all j, the condition of convexity is imposed on the allowable ways that n of DMU can be combined. Also, since every inefficient DMU is closer to its BCC projection than to its CCR projection, BCC-efficiency can be achieved easier, and the number of efficient DMUs with BCC model is never lower than those with CCR model regardless of the orientation.

Cooper, Seiford and Tone (2006) define BCC efficiency in the following manner: if the optimal solution (θ_B^*, λ^*, s^{-*}, s^{+*}) to BCC model attained with the two phase algorithm satisfies $\theta_B^* = 1$ and there are no additional variables ($s^* = 0$, $s^{+*} = 0$), then DMU_0 is called BCC-efficient, otherwise it is BCC-inefficient.[30]

D. Banker-Charnes-Cooper model (BCC model)- output oriented

Output oriented BCC model is defined:

$$max \eta_B \tag{15}$$

with restrictions:

$$\begin{aligned} X\lambda &\leq x_0 \\ \eta_B y_0 - Y\lambda &\leq 0 \\ \sum \lambda &= 1 \\ \lambda &\geq 0 \end{aligned} \tag{16}$$

Relative efficiency that is obtained as a result of solving BCC model that assumes variable returns to scale is local pure technical efficiency.

III. DATA AND EMPIRICAL APPROACH

Data Envelopment Analysis approach in this paper is used to measure the relative efficiency of the banks and insurance companies operating in the Croatian financial market in the period before and after the onset of the financial crisis. The sample involves 30 banks and 19 insurance companies operating in the Republic of Croatia over the period 2005-2010, separately observed and analysed due to specific business activity they conduct and it is not appropriate to compare their efficiency measurement scores. Few banks and insurance companies were excluded from the sample used for DEA approach due to changes in both sectors and no availability of data. As it was pointed out in the introduction, the research includes the banking industry and the insurance sector in the Republic of Croatia due to their relatively high asset share of about 83% in total Croatian financial sector asset. As a statistical basis for input and output data as well as for accounting indicators data, financial statements of the commercial banks and insurance companies, official data of the Croatian National Bank (CNB), the Financial Agency (FA) and the Croatian Financial Services Supervisory Agency (CFSSA) were used.

[30]Ibid., 88.

About 90% of Croatian banks are foreign owned, measured as a share of total banking sector asset. 15 banks in total are foreign owned, 17 privately held domestic banks and 2 state owned banks. Concentration level in Croatian banking sector is extremely high, asset share of the four (two) largest banks was about 65% (42) of total banking sector asset which amounted 391.6 billion HRK at the end of 2010.[31]

In 2010 on Croatian financial market operated 28 insurance and reinsurance companies that provided life and non-life services, and 18 of them were foreign owned. Total written premium in the same year was around 9 billion HRK and more than 50% of that amount was written by three insurance companies. 73% of that premium refers to non-life insurance since the largest part of it consists of automobile liability insurance that is obligatory.[32]

The characteristics of the data and knowing the type of yield for the analysed process are crucial when selecting which type of DEA model to use. Due to the fact that this paper includes financial institutions, i.e., banks and insurance companies, and that we could not determine with certainty is the yield constant or variable, the DEA analysis will include both CCR and BCC output oriented models.

For the purpose of DEA commercial banks relative efficiency estimation, all data were taken from banks' financial statements. For each j-th DMU (i.e. for each bank) the input data (x_{ij}) were:

Input 1, (x_{1j}) → interest expenses

Input 2, (x_{2j}) → non - interest expenses

Input 3, (x_{3j}) → other expenses (labour-related and capital-related administrative expenses and other expenses from bank's business activity)

Output data (y_{ij}):

Output 1, (y_{1j}) → interest incomes

Output 2, (y_{2j}) → non-interest incomes

Output 3, (y_{3j}) → other incomes from business activity

The main business activity of banks assumes collection of deposits, lending transactions and payment operations. From those activities main groups of incomes and expenses arise. Interest income category assumes income from interests earned in bank's lending activities and related revenues, non-interest income include incomes from fees and commissions and other related revenues, and the last category are other incomes from business activity. On the other side, expenses from bank's business activity include: interest expenses that arise from deposits collection activity and related expenses, non–interest expenses that include expenses on fees and commissions and other related expenses, and the category other expenses which includes: labour-related administrative expenses (costs of employees), capital-related administrative expenses (amortization, office supplies, etc.) and other expenses from banks business activity.

The role of insurance companies on the financial market is complex. On the one side they underwrite and collect premiums for risks undertaken what is followed by claim payout or

[31] Croatian National Bank (CNB), *official data*, 2010.

[32] Croatian Financial Services Supervisory Agency (CFSSA), *official data*, 2010.

payoff of sum insured, and on the other side they invest available reserves and mathematical provision from which they collect profit. That is why for inputs and outputs were selected items from the profit and loss accounts which, as flow variables, express the changes of certain variables and are expressed as a value and not quantity.

For the purpose of DEA insurance companies' relative efficiency estimation, all data were taken from insurance companies' financial statements. For each j-th DMU (i.e. for insurance company) the input data (x_{ij}) were:

Input 1, (x_{1j}) → net operating expenses

Input 2, (x_{2j}) → investment costs

Input 3, (x_{3j}) → claims incurred

Output data (y_{ij}):

Output 1, (y_{1j}) → earned premiums

Output 2, (y_{2j}) → investment income

The DEA efficiency scores for banking sector and insurance industry were primarily compared with ROA and ROE efficiency indicators. For the banks, ROAA (Return on Average Assets) and ROAE (Return on Average Equity) are being rather observed as commonly accepted accounting efficiency/profitability indicators, shown in the official statements. For the purpose of this research, banks' accounting efficiency indicators: interest rate spread and cost to income ratio, were also observed and compared with DEA scores. As it was explained in the second part of this paper, insurance companies have some specific accounting indicators that are characterized with their specific activity. Their basic incomes are premiums but also large part of their income comes from investment activities. Indicators that depict these relations are called combined ratio which is composed of claims ratio and expense ratio and return on investment.

Accounting ratios for banks were calculated on the basis of information from banks' financial statements and the Financial Agency (FA) official statements or data were taken from the CNB official statements. Accounting ratios for insurance companies' are calculated on the basis of information from insurance companies' financial statements and the FA official statements or data were taken from the CFSSA official statements.

IV. THE RESULTS OF BANKS' AND INSURANCE COMPANIES' EFFICIENCY IN THE REPUBLIC OF CROATIA IN THE PERIOD 2005 – 2010

The results of DEA efficiency analysis that are acquired from CCR and BCC output oriented models by using software package DEA-Solver-Pro are shown in the next few tables, as well as accounting approach efficiency indicators, i.e. accounting ratios and selected data from financial statements.

TABLE 1 - CROATIAN COMMERCIAL BANKS EFFICIENCY MEASUREMENT SUMMARY RESULTS

	2005	2006	2007	2008	2009	2010
Accounting approach						
Total no. of banks	34	33	33	34	34	33
ROAA (%)	1.65	1.50	1.57	1.60	1.13	1.19
ROAE (%))	15.06	12.41	10.93	9.91	6.40	7.22
Interest rate spread (%)	3.00	2.80	2.60	2.60	2.20	2.70
CIR (%)	54.40	54.90	52.10	52.40	49.50	48.00
Total asset, millions HRK	260,300	304,600	345,100	370,100	378,400	391,600
Profit before taxes, millions HRK	4,030	4,236	5,105	5,805	4,216	4,530
Net Profit, millions HRK	3,248	3,395	4,067	4,612	3,278	3,766
Net income, millions HRK	9,985	10,913	12,677	14,370	15,295	15,685
Net interest income, millions HRK	7,005	7,691	8,554	9,958	9,551	10,908
Net non-interest income, millions HRK	2,980	3,222	4,129	4,412	5,744	4,777
DEA approach						
CCR – model						
No. of DMUs	30	30	30	30	30	30
No. of efficient DMUs	14	12	12	10	15	12
Average relative efficiency	0.945	0.943	0.916	0.908	0.924	0.903
Standard Deviation	0.079	0.074	0.092	0.106	0.103	0.112
No. of DMUs with efficiency lower than average	11	10	13	13	12	14
BCC – model						
No. of DMUs	30	30	30	30	30	30
No. of efficient DMUs	22	23	18	18	17	17
Average relative efficiency	0.965	0.983	0.947	0.957	0.958	0.936
Standard Deviation	0.073	0.049	0.079	0.065	0.057	0.094
No. of DMUs with efficiency lower than average	7	4	9	10	12	12

Source: Authors' calculation and CNB, official data

TABLE 2 - CROATIAN INSURANCE SECTOR EFFICIENCY MEASUREMENT SUMMARY RESULTS

	2005	2006	2007	2008	2009	2010
Accounting approach						
Total no. of insurance comp.	25	22	25	29	30	28
Claims ratio (%)	70.50	70.83	73.93	68.42	69.77	67.59
Expense ratio (%)	37.75	39.44	40.21	39.38	44.50	44.27
Combined ratio (%)	108.25	110.28	114.10	107.80	114.27	111.86
Return on investment (%)	3.88	4.49	5.65	1.88	4.83	4.57
Debt ratio	0.84	0.80	0.79	0.82	0.81	0.81
ROE (%)	9.94	8.71	7.63	0.22	0.12	5.30
ROA (%)	1.44	1.58	1.48	0.04	0.02	0.94
DEA approach						
CCR – model						
No. of DMUs	18	19	19	19	19	17
No. of efficient DMUs	7	9	9	5	11	9
Average relative efficiency	0.741	0.795	0.747	0.926	0.953	0.896
Standard Deviation	0.227	0.245	0.247	0.066	0.086	0.124
No. of DMUs with efficiency lower than average	10	7	10	9	4	7
BCC – model						
No. of DMUs	18	19	19	19	19	17
No. of efficient DMUs	12	13	13	11	15	15
Average relative efficiency	0.922	0.911	0.906	0.961	0.972	0.984
Standard Deviation	0.120	0.154	0.153	0.055	0.071	0.063
No. of DMUs with efficiency lower than average	5	5	5	7	3	1

Source: Authors' calculation and CNB, official data

The results of DEA approach in the table 1 and shown in the graph 1 (for the CCR model), point to a decrease in average efficiency of banks already in the year 2007, and a further decline accompanied during the year 2008 when the lowest efficiency score was accomplished, but in the year 2009 the increase in average relative efficiency was lesser. Same results were accomplished when observing the number of efficient DMUs, whit only 10 efficient DMUs in 2008. Results in

the number of efficient DMUs and average relative efficiency scores for the BCC model are better due to the fact that BCC model is based on variable returns to scale (VRS). CCR model based on constant returns to scale (CRS) is better when observing efficiency of financial institutions because under VRS most large banks, for example, might appear fully efficient, possibly because of the lack of truly comparable efficient banks (Berg, Hjalmarsson and Suominen, 1993; Anayiotos, Toroyan and Vamvakidis, 2010).[33] Lower DEA efficiency results were again accomplished in 2010 as a result of deteriorated financial market conditions.

On the other side, ROAA and ROAE accounting profitability ratios, shown in the table 1 and graph 2, for the banks were the lowest in the year 2009: after decrease in 2006, ROAA had grew until 2009, decline accompanied the year 2009 and slow recovery was accomplished in the year 2010. Significant ROAA indicator decrease by 0.5 percentage points at the end of 2009 compared to the end of 2008 is explained by stronger fall in pre-tax profit by 26.5%. The same could be concluded for ROAE indicator, a stronger fall in after –tax profit of 28.9% caused a decrease by 3.5 percentage points. Interest rate spread efficiency indicator was as well the lowest in 2009, while net interest income recorded small decrease in 2009 (increase in all other years). Cost to income ratio recorded decrease in all observed years when compared to the previous year. On the other side, the net non-interest income had the highest value in 2010. That can be explained by the fact that banks during the crisis and recession are trying to compensate losses in interest income when slowing credit activity with higher earnings on fees and commissions, i.e. non-interest income. The decrease in net income of banks resulted in bank efforts to slow down the growth of their costs, which caused the decrease of cost to income ratio in 2009. The interest rate spread was the lowest in 2009 what can be explained by the fact that average interest expenses had the growth dynamics almost similar to that from previous five years, while average interest income by the unit of interest-bearing assets remained almost at the same level as at the end of 2008. This indicates that the average interest income earned by the unit of interest-bearing assets has remained at the high levels observed in the previous five years.[34]

The average efficiency of insurance companies achieved in the observed period was 0.833 according to CCR model, and 0.934 according to BCC model as it is shown in table 2 and graph 1. This means that if average insurance company wants to be on the efficiency frontier it has to use 83.25%, that is 93.43%, of inputs that it currently uses and it will produce the same amount of output. According to the CCR model, shown in table 2, the lowest average efficiency was achieved in the year 2005 while in the year 2007 it was at the approximately at the same level. In these years more than 50% DMUs were inefficient, while 10 insurance companies had relative efficiency lower than average. The best result of relative efficiency was achieved in the year 2009 and was 0.953. The same year 11, of observed 19, insurers were efficient. The similar results were obtained with BCC model where the lowest average efficiency was in the year 2007 and was 0.906, what is higher than with CCR. In that year 11 insurance companies were relatively efficient while 7 of inefficient had relative efficiency lower than average. As was the case with CCR model, the best result of relative efficiency was achieved in the year 2009 when 18 insurance companies were efficient. The data for the last observed year, 2010, indicate lower scores using DEA.

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[33]Sanford V.Berg, and others, "Banking Efficiency in the Nordic Countries," Journal of Banking and Finance 17, no. 2-3 (1993): 371-388.;
Anayiotos, Toroyan and Vamvakidis, "The efficiency of emerging Europe's banking sector before and after the recent economic crisis," 247-267.

[34] Croatian National Bank (CNB), *official data*, 2010.

When we look at the accounting ratios we can see that claims ratio was outside the boundaries in the year 2007, i.e. the year of the crises (table 2 and graph 2). After that it started to return to the level that is normal for the insurance industry, which is 50-70%. The expense ratio had upward trend in the first three observed years what can be explained by the fact that in the same period business expenditures grew faster than calculated premium. After they declined negligibly in the 2008, in the year 2009 again was registered relatively high value of expense ratio since the framework for this ratio is 20-30% for insurance business. The highest value of the return on investment was registered in the 2007 at the level of 5.65% what is consequence of the growth in the value of investments on the financial market. The impact of the crises can be seen in the following year when this ratio dropped significantly to the 1.88%. ROA was the highest in the period before crises, in the year 2006, when it started to decline and then reached the value of 0.02% in the year 2009. ROE had the highest point in the year 2005 after which it started to decline to the lowest point in the year 2009. Contrary to the result of DEA, accounting ratios ROA and ROE indicate significant improvement in 2010.

By comparing the results of DEA and accounting approach for banks and insurance companies it can be concluded that they exhibit similar trend (graph 3). DEA approach shows the signs of crises earlier than accounting approach for both branches of financial business.

V. CONCLUSION AND FURTHER RESEARCH

We used Data Envelopment Analysis approach to measure the relative efficiency of the banks and insurance companies in the Croatian financial market in the period before and after the financial crisis (2005-2010), for DMUs for which relatively reliable financial statements are available. The sample in this study involves 30 banks and 19 insurance companies operating in the Republic of Croatia during the period 2005-2010. We compared the results of DEA approach to accounting ratios to identify the signs and the effects of crises and to see if there are differences in the results of those two efficiency measurement approaches.

We can conclude that better DEA approach efficiency results as well as accounting ratios before the recent crisis were influenced by boom period in Croatian financial sector. The main difference in results between those two approaches was remarked in sense of accounting approach efficiency measurement scores lag after 2008, i.e. after the onset of the financial crisis. DEA efficiency scores had the lowest values in the year 2007 for insurance industry and for banks in 2008 but with visible lower values already in 2007 when comparing to previous years. On the other hand, accounting ratios had the lowest values in 2009. DEA scores in 2008 and 2009 indicated that there should be improvement in accounting ratios, and as can be seen, this occurred in 2010. According to this results we can conclude that DEA approach indicate the signs of crises earlier than accounting approach. The results suggest that intense competition during a boom may increase bank efficiency according to DEA scores and decrease in early stages of crisis but also remarkable recovery already in the next period due to incentive to save or to cut expenses as much as it is possible to prevent loses during the crisis or to achieve at least the same or better profitability results in post crisis period. The lowest ROA and ROE accounting ratios in the year 2009 could be explained by the fact that although financial institutions operate more efficiently in the crisis period in sense of expense and income results, accounting ratios cannot achieve as good scores as in period of a boom, due to the deteriorated market conditions, and more reserved business policy.

The solutions to relative efficiency that can be obtained with DEA approach are very useful to researchers, executives and managers due to the specific characteristics of this method. First of all, every DMU is characterized with one result of relative efficiency. It is possible to

process more inputs and outputs at the same time whereat every input and output can be expressed in different measurement unit. The model itself suggests improvements to inefficient units that are based on accomplished results of the units which operate efficiently. And the last, but not the least important, the advantage of DEA method versus statistical methods is the fact that we do not have to know explicit relation between inputs and outputs.

Further research could classify banks and insurance companies into more groups depending on if they are "large", "medium" or "small" in terms of asset size of DMUs as a percentage in total assets of all banks or insurance industry asset, and compare the efficiency scores of each one of these groups with the results of other groups, and with total average efficiency scores. The result of this multigroup classification in addition to more variables and more advanced methods could be an even more powerful analytical tool for the determination of the key factors of the efficiency of banks and insurance companies operating in the Republic of Croatia, comparing to accounting efficiency indicators. The multigroup classification approach, including approach used in this study, could be applied also in other countries, as well as classification of banks and insurance companies into groups depending on ownership, and comparison the gained scores with accounting ratio analysis results.

VI. APPENDIX

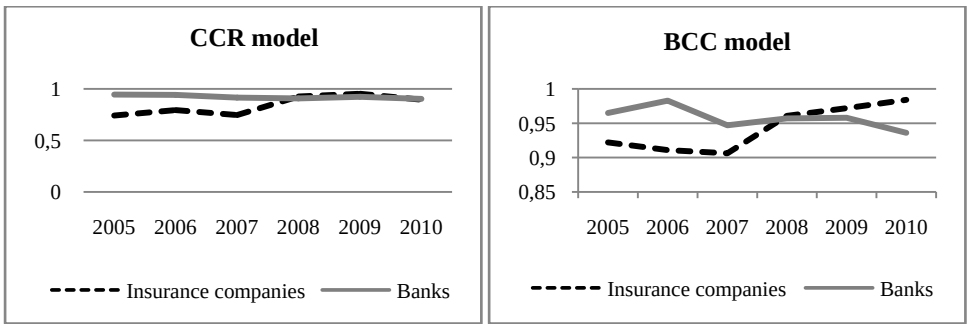

FIGURE 1. DEA EFFICIENCY SCORES

Source: Author's calculation

Graph 2.

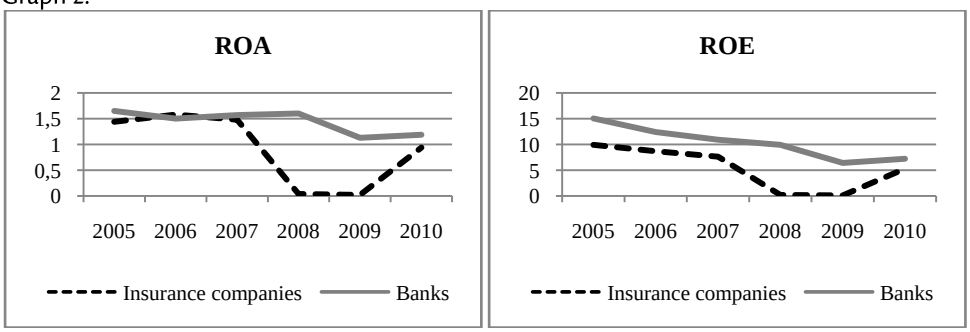

FIGURE 2. ACCOUNTING EFFICIENCY INDICATORS

Source: Author's calculation

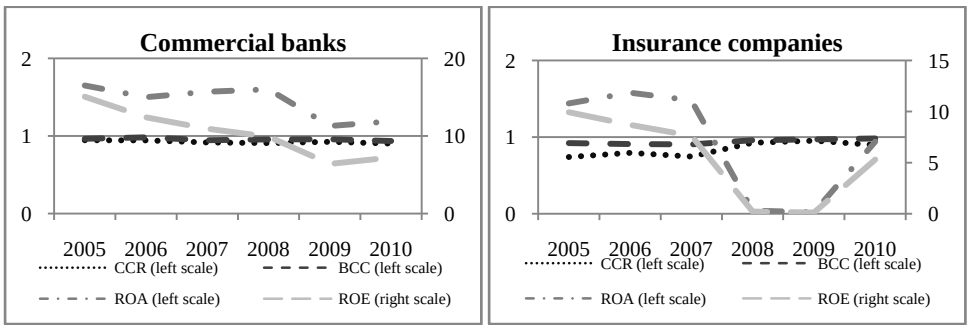

FIGURE 3. DEA APPROACH VS. ACCOUNTING APPROACH EFFICIENCY SCORES

Source: Author's calculation

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POKAZATELJI EFIKASNOSTI BANAKA I OSIGURAVAJUĆIH DRUŠTAVA U RAZDOBLJU FINANCIJSKE KRIZE: SLUČAJ REPUBLIKE HRVATSKE

Sažetak: Glavni cilj rada je identifikacija i usporedba rezultata mjerenja efikasnosti banaka i osiguravajućih društava primjenom matematičke analize omeđivanja podataka (AOMP) i računovodstvenih pokazatelja u razdoblju prije i nakon izbijanja financijske i ekonomske krize u Republici Hrvatskoj. Ovakav pristup u istraživanju je od iznimne važnosti jer omogućava praćenje i usporedbu rezultata navedenih metoda mjerenja efikasnosti na način koji prijašnja istraživanja nisu obuhvatila. Istraživanje obuhvaća bankovnu i osigurateljnu industriju u Republici Hrvatskoj zbog relativno visokog udjela njihove aktive od 83% u aktivi ukupnog financijskog sektora. Računovodstveni pristup daje rezultate koji su pokazali određeni vremenski odmak u odnosu na rezultate dobivene metodom AOPM u promatranom razdoblju. Rezultati mjerenja efikasnosti dobiveni metodom AOMP pokazali su najniže vrijednosti za 2007. godinu kod osigurateljne industrije i za 2008. godinu kod banaka iako su i za banke značajno niže vrijednosti vidljive već u 2007. godini. S druge strane računovodstveni pokazatelji efikasnosti, ROA i ROE, najniže vrijednosti pokazuju s određenim odmakom, tek u 2009. godini. Trend kašnjenja je zamjetan i u ostalim promatranim godinama. Takav trend je moguće objasniti nastojanjem financijskih institucija da posluju efikasnije u razdoblju krize promatrano kroz troškove i prihode, dok računovodstveni pokazatelji ne mogu postići tako dobre rezultate u razdoblju krize kao u razdoblju ekspanzije zbog nepovoljnijih uvjeta na tržištu i restriktivnije poslovne politike.

Ključne riječi: banke, osiguravajuća društva, efikasnost, analiza omeđivanja podataka, računovodstvenipokazatelji

SVEUČILIŠTE JURJA DOBRILE U PULI
ODJEL ZA EKONOMIJU I TURIZAM
"DR. MIJO MIRKOVIĆ"
UTEMELJEN 1998.

EKONOMSKA ISTRAŽIVANJA-ECONOMIC RESERACH
ISSN 1331-677X print

2013 Volume 26 (1): 225-242

ASSESSMENT OF THE MOST SIGNIFICANT IMPACTS OF ENVIRONMENT ON THE CHANGES IN COMPANY COST STRUCTURE

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ARTICLE INFO

Article data:
- Received: 26 October 2011
- Accepted: 29 March 2012

JEL classification: M41, O1, P45, N5

Keywords:
- environmentalimpact
- changes in business indicators
- cost structure
- profit planning

ABSTRACT

Companies are operating as integral parts of their environment, and thus, they depend on it, as well as on the changes that occur in the environment. They are usually unable to control environmental impacts, so they need to develop a system which can partially reduce these impacts; they need to adjust and synchronize with changes. Due to the development of this mechanism, companies could adapt their business activities to the most of the impacts from the environment, providing thereby the highest profit at the end of the fiscal year. The purpose of this paper is to point out the principles of designing a model that could enable the enterprise to assess the most important impacts from the environment, quantifying their influence on its cost structure. Decisions about necessary changes in system operations should be based on the results of calculations in order to achieve the results as defined in the dynamic plan, or control them within satisfying limits.

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I. INTRODUCTION

Nowadays, the companies' operating environment has become increasingly unstable[1]. Changes in the environment are regular, with the tendency of increasing its frequency and intensity as well[2]. Thus, the degree of overall uncertainty is becoming higher, making the business conditions more difficult and complicated, and therefore result in an increasingly fierce struggle for survival on the market. Due to the uncertainty of the environment companies should look in possible alternative directions of their further development in order to respond immediately to the challenges they are facing. Numerous studies have shown that variable uncertainties in the environment require a higher degree of flexibility[3]. Adjustments to operating conditions can be transient or long-lasting – lasting sometimes for years or even decades[4]. Changes in the environment are mostly rapid, transferring momentarily to the business process and resulting with a high degree of unpredictability. There are three types of uncertainty in general business environment emphasized in the literature on this subject: economic, political and technological uncertainty. *Economic uncertainty* (or macroeconomic instability) refers to the phenomenon of inflation (a type of uncertainty that is always present in the operation of financial markets), the drop in demand due to the appearance of competition, the uncontrolled growth[5], as well as the exchange rate volatility. Another form of uncertainty in the environment is *political uncertainty*. Various, fundamentally different forms, may appear in this group – all with the same final result. This type of uncertainty is characterized by broader processes which relate to the change of political system (typically simultaneously followed by the change of the economic system), instability of the political system within a unified economic system (frequent changes in government structures), or frequent changes in business conditions which result from changes in government structures and changes of economic and political views. For example, periods of increased legislation uncertainty imply a reduced level of business investments[6]. Increased political uncertainty leads to lower foreign and private investments from the enterprise's parent country. The process can also be the opposite: a high degree of economic uncertainty could lead to political uncertainty as well. Hence, these two forms of uncertainty (economic and political) can be cumulative and interdependent[7]. *Technological innovations*, related to the development of both the product design and the manufacturing technology, is another form of uncertainty. Due to the potentials of new technology, which are not fully recognized, technological uncertainty can contribute to economic uncertainty[8]. Shorter product life cycle resulting from the appearance of new structural forms of the same products, and their higher

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structural/technological performance, the replacement of products with new ones of completely different design and properties, the high level of reduction in time needed for converting ideas into a product, the concentration of staff and equipment in development/ research centers, the automation and the increase of batches are only some of the challenges of the new era of technological development within the IT revolution, globalization and prevailing large technological systems. These technological systems have gained strength to the degree that in many cases they run not only economic but political systems as well. The system of control and the flow of power gradually have altered its direction from politics ⇒ economics to economics ⇒ politics. As the result of the aforementioned processes, several structurally different forms of instability are introduced, and conveyed towards the smaller economic systems (also often towards the larger systems), which is confirmed by the continuous process of change in ownership over the large economic systems in the oil and automotive industry, industry of electronics and control systems, telecommunications, banking, insurance, etc. Therefore, it can be concluded that production systems, as well as other business systems, are unprotected against the influence of the environment in any business condition. Indeed, the increased level of development of society implies an increased level of environmental impact, making the survival on the market more challenging. In economically and politically under-developed systems, sales and manufacturing markets are also underdeveloped and thus, the system instability is rather weak, similar to what it was at the time of socialism, in times of planned economy, which was controlled from a single administrative/political center[9]. Today, in the developed countries, such or similar systems do not exist. Thus, the struggle on the sales market is increasingly fierce, and besides major domestic manufacturers there are manufacturers from highly developed countries, as well as those from the emerging economies (China, Turkey, India and the others). Having in mind that companies are operating in a constantly changing environment, they need to be able to adapt to these changes[10]. For example, the level of production is unaffected only by the elements of demand, but it also depends on internal influences that do not necessarily have anything to do with external influences. A decrease in production may also appear in completely stable environmental conditions if the organization of production at the projected level is hindered as the result of internal weaknesses, e.g. the equipment is poorly maintained, the delivery of raw materials is not contracted in a timely manner, which leads to energy short-supply, workers' dissatisfaction, system break down, etc.

II. MATHEMATICAL EXPRESSION OF COST STRUCTURE ELEMENTS IN CORRELATION WITH THE IMPACTS FROM THE ENVIRONMENT

There are an exceptionally large number of variables both in the environment and in the company that need to be considered in order to provide an overall picture of the current position of the company[11]. Due to the increasing number of elements in the environment, companies need to define the impact of each of the observed elements on their operation and assess the degree of impact, i.e. the intensity of impact on their operation[12]. Since every company

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[12]Maria Oltra and Luisa Flor. "The moderating effect of business strategy on the relationship between operations strategy and firms' results". International Journal of Operations and Production Management 30 no.6 (2010):615.

is a world itself it is clearly impossible to define general numerical value as 'influence coefficient' for all the companies; even for companies with the same product line. Hence, on the basis of general philosophy of impact of individual elements on the operation, in addition to the identification and evaluation of importance of individual correction coefficients, each company should be able to define them more precisely[13]. Thus, it would be useful to set up a mathematical model to define the assessment processes of environment impact towards business operations[14]. Prior to its application, it is necessary to specify the values of influence parameters which could be classified into three categories: a) *Data describing the current situation* - a group of internal corporate data, b) *Relationships between variables* that alter with changes, c) *Forecasts of future conditions*, which cannot be a precisely defined data. In developing a mathematical model, the uncertainty component has to be taken into account. The basic aim of the business plan development is defining the criteria according to which main principles and business guidelines will be established during the business year in order for the profit to reach either projected or reduced level, or at least to be kept above the minimum projected profit[15]. Since the business plan is developed prior to the beginning of financial, most often calendar year, the indisputable fact is that it is very hard to predict all business conditions, intensity of external and internal changes and influence on business plan realization in a company during a year. Developed business plan of a production system and its adaptability to the altered business conditions represent the guidelines for making adequate corrections to the business system and distribution of resources exploited by the production system. Considering the fact that only successful companies exist on the market, it can be concluded that every production system should have: optimal system of company's organization in all its functions, system of rational production with minimal expenses, efficient maintenance system, efficient and rational financial function, development of a company (product, technology, production, infrastructure) in accordance with market requirements, technology development and financial potentials. In order for the above mentioned five basic principles to be realized successfully, it is necessary to provide the required conditions. The realization of the following is planned: production structure and capacity, supply of production material, maintenance, development of products or technology, investments and others. They are all included in financial plan, which unifies them. Generally accepted business philosophy in the contemporary economic world is subjected to realization of a profit since it enables further operation and expansion of the business system. The development does not exist for itself alone or imagined profit. The true development has a real goal: achieving higher profit and gaining advantage on the market in comparison to the competition[16]. This goal is applied to all functions in the company: organizational, production, maintenance, supply-purchasing, financial and others. The basic problem in the process of defining the business principles during a business year is to provide balance between aims of the management and actual business system capacity and assessed business conditions. Since it is difficult to anticipate all possible changes of conditions with high accuracy under unstable business conditions, business plan can be defined only as initial framework, it can be susceptible to changes in accordance with changes of various external and internal influences. Moreover, it can provide the company's management with the

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possible guidelines in the business in order to stop, reduce or improve negative trends in the profit fall and/or some other business indicator. This paper focuses on flexible business plan that enables input on changes, according to which the influence on profit is then automatically calculated, some business elements are corrected so that characteristics of the system with so called feedback can be obtained. The difference between total incomes (I) and total expenditure (E) represents the profit of the business system (P)[17]. I and E are directly exposed to external and internal influences, which reduces the planned profit (P). The profit level is calculated by the computer. Depending on the external and internal character of the *"influences"* and the obtained profit value (P), correction coefficients are introduced as feedback which number and numerical value are in the function of the type of the change and average annual achieved profit K = f (P). Total process – profit calculation and correction coefficients is conducted automatically, while the changes made in accordance with criteria defined by the model are recorded manually. *Model* can be developed and applied to business only if it has already been present in the company or if *thesystem of realized/planned feedback flow* has been introduced. This system represents permanent monitoring and comparison of the realized variables with the planned ones, as well as the analysis of the planned parameter deviations. Feedback system implies that it is necessary to monitor the changes of all marked external and/or internal influences and make corrections to the developed plans according to those changes. Model application provides the success and multiple benefits to the company with regard to additional control which is most often conducted in the companies. When the planned process is finished and standard deviation is determined, additional control provides information on the achieved business results[18]. This further leads to the reactive behaviour which will enable the use of earlier experience in order for the activities to be improved in the future. The value of feedback model lies in the proactive behaviour in the business management in the company. Deviations are identified at the moment of occurrence of the event which influences the change in business and not after the planned period. Every change is inserted into the program of the plan for business conditions as a feedback-input parameter. The influence on the business results is calculated by the set mathematical model and the obtained value is compared and adjusted with the previous variable. It can be a short-term correction but after entering the critical zone it is repeated until minimal profit is achieved. Therefore, a mathematical model set in such a way is called *'model of business plan feedback*'. The basic concept of the business plan feedback model comprises few interrelated units: financial business plan, correction coefficient of business elements which structure and value depend on the level and characteristics of a change, mathematical expression for profit calculation, and. Model of graphical presentation of the profit in the function of change intensity of 'El influence' and time of the occurrence.

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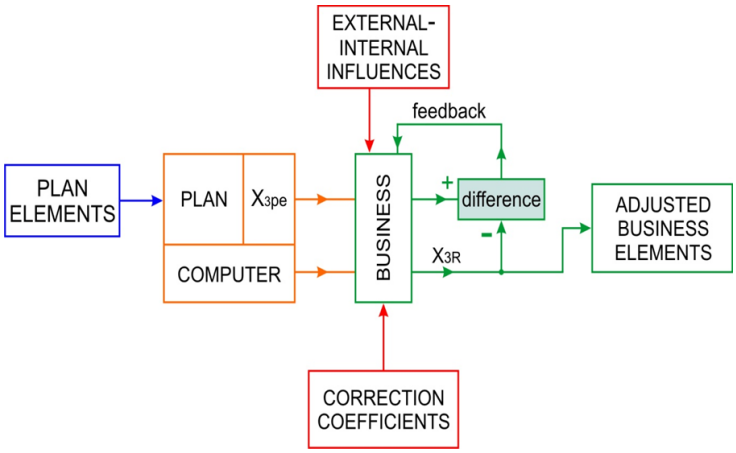

FIGURE 1. MECHANISM FOR BUSINESS FEEDBACK PLAN

Source: Authors

Given that the accurate prediction of future events is difficult and almost impossible task, the company is constantly facing certain business risks. While researching the principles for setting the model, the focus is on the financial dimension of success, as expressed by the income and expenditure in the periodic income statement, restored for reporting, interpreting and evaluating the economic success. There is a variety of different business impacts[19]: a) impacts of external origin – inflation, exchange rate changes, reduced sales volumes, increased energy prices, cutback in product prices, increased transportation costs, increased contributions and taxes, increased operating costs, increased interest rates on loans, etc. and b) impacts of internal origin – increased wages, reduced production, increased indebtedness, inadequate operation of the maintenance service, unplanned machine failures, etc. These external and internal influences almost never operate individually and in isolation from other influences[20]; instead, they usually operate simultaneously, in a group or individually – phase-shifted. Furthermore, the degree of impact on business operations is unequal as well. The combination of different number of impacts of varying levels and intensity on business activity would yield with thousands of different groups of influence. Therefore, for the purpose of this paper, the minimum number of individual impacts has been specified with the most significant reflections on the operation cost structure. The activities of these impacts can be combined and expressed (quantified) numerically. The most important impacts with maximum speed and intensity are reduced sales volume and/or change (decrease) in product prices, increased labor costs, energy prices and/or prices of raw materials, and changes in exchange rates. The main assumption when calculating the impact on business activity is based on the following generally accepted principle of business system and profit calculation: the operating profit (P) is equal to the difference of total incomes (I) and operating expenses (E). Consequently, it is necessary to set up a general mathematical model for calculating the operation with general coefficients for each individual impact. On the basis of numerically defined coefficients, this model is the basis for profit calculation of each

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[20]Shaker Zahra and Donald Neubaum. "Competitive environment, technology strategy and company performance".Proceedings of the Decision Science Institute AnnualMeeting, (1996):1267.

individual case[21]. If there is a possibility for the impact or the influential element itself to appear during the operation, it is necessary to assess its effect and respond depending on the intensity of its influence. The model should be simple and open to: the number of elements of the operation structure, the expansion of the number of operation elements influenced by the impact, as well as the change in numerical assessment of the impact[22]. Due to the introduction of mathematical model with a unified system of notation, the elements of operation are classified as in Table 1.

TABLE 1 – FRAMEWORK OF THE COST STRUCTURE

I_1	**TOTAL INCOMES**	$I_1 + I_2 + I_3$		
I_1	Incomes from the domestic market		I_3	Other incomes
I_2	Incomes from the foreign market			
E_2	**TOTAL EXPENSES**		$E_1 + E_2 + E_3 + E_4$	
E_1	***BUSINESS EXPENSES***	$X_{211} + X_{212} + X_{213} + X_{214} + X_{215} + X_{216} + X_{217} + X_{218} + X_{219}$		
E_{11}	Raw materials - domestic market		E_{16}	Energy and fuel costs
E_{12}	Raw materials - foreign market		E_{17}	Transportation costs
E_{13}	Manufacturing services		E_{18}	Maintenance costs
E_{14}	Wages		E_{19}	Non-manufacturing services
E_{15}	Depreciation			
E_2	***INVESTMENTS***	$E_{21} + E_{22}$		
E_{21}	Investment maintenance	E_{22}	Procurement of new equipment and construction of facilities	
E_3	***FINANCIAL EXPENSES***	$E_{31} + E_{32} + E_{33} + E_{34}$		
E_{31}	Loan expenses		E_{33}	Banking services
E_{32}	Interest expenses		E_{34}	Other financial expenses
E_4	***OTHER EXPENSES***	$E_{41} + E_{42} + E_{43} + E_{44} + E_{45}$		
E_{41}	Product development expenses		E_{44}	Procurement of consumables
E_{42}	Marketing and advertising expenses		E_{45}	Other expenses
E_{43}	Business trip expenses			
P	**PROFIT**	**I – E**		

Source: Author's calculation

Accordingly, it is possible to derive the equation for profit calculation in the general configuration, with the correction coefficients (k_{xyz}) introduced with each business segment (Equation 2.1):

$$\boldsymbol{P = I - E} \tag{1}$$

Where: P – profit, I – incomes, and E – expenditures.

The change of the influential element of the environment leads to the adequate changes in costs and such a change has been defined in the model by correction coefficient (k_{xyz}) for every individual element of the cost structure.

[21]Andrea Ivanisevic and others. „Principles of Business Systems Design with a Feedback in the Function of an Environmental Impact Plan and Set Goals". XV International Conference of Industrial Systems, (2011):398.

[22]Andrea Ivanisevic. „Razvoj sistema za planiranje, praćenje i usklađivanje poslovanja industrijskog sistema u skladu sa promenama u okruženju" (Ph.D diss., Univerzitet u Novom Sadu, Fakultet tehničkih nauka Novi Sad, 2011).

External influences from the environment as well as internal influences can cause each of the currently active business segments to be changed depending on the intensity of the influence as well as on the specific company's structure. Therefore, correction coefficient (k_{xyz}) – equations *(2.2) and (2.3)* have to be introduced in the basic formula in every business segment:

$$P = \sum_{i=1}^{4} I_{1i}k_{1i} - \left(\sum_{i=1}^{9} E_{1i}k_{21i} + \sum_{i=1}^{2} E_{2i}k_{22i} + \sum_{i=1}^{4} E_{3i}k_{23i} + \sum_{i=1}^{5} E_{4i}k_{24i}\right) \quad (2)$$

The value of eachcoefficient(k_{xyz}) is calculatedbased on the natureof the impactand the specific, economic andbusinesscharacteristics (x) of each companyin particular:

$$k_{XYZ} = 1 \pm \frac{Y\%}{100} \cdot x \quad (3)$$

Where: Y – the value of change; x – the impact coefficient of change.

In addition to changes in business conditions, and various internal and external influences, changes in business conditions during the different annual cross-sections appear as an element of impact. This element varies, and during the year it does not change uniformly. Therefore, the calculation has to include the time-variable, which is described by the formula in a given cross-section (i) and which calculates the influence of the impact on annual basis:

$$P_{Gi} = \frac{P_{G(i-1)} \cdot m}{m_G} + \frac{P_{Gi} \cdot (12-m)}{m_G} \quad (4)$$

where: i – the cross section based on which the annual profit is calculated; m – the number of months of operation preceding the i-th cross-section; m_G = 12 (the number of annual months); P_{Gi} – the level of calculated profit in the i-th cross-section of change in EI conditions; $P_{G(i-1)}$ – the level of calculated profit in the previous cross-section.

III. MATEMATHICAL EXPRESSIONS OF INDIVIDUAL IMPACTS ON THE OPERATION

Reduction in sales volume can be caused by: a) reduced demand-drop in standard of living; b) reduced competition ability of the company; c) hindrance in technological development; d) opening the domestic market to foreign companies; e) problems related to the product placement in foreign market, etc. The final result of the reduced sales volume is the reduced profit in the first phase followed by the loss (in case that the reduction in sales continued) and finally bankruptcy–company's liquidation. The aim of this mathematical expression is to determine to what degree the reduced sales volume affects the profit reduction during a business year. Apart from the reduced profit, the reduced sales volume had other negative effects as well, such as: increase in inventory of finished products and raw materials, increased production costs, more current assets employed due to the increased production costs and other. These elements can have a significant influence on the reduction of the company's profit. Mathematical expression (3.1) was set in accordance with the following parameters:

- Drop in sale led to the decrease of incomes from domestic and foreign markets
- Fall in sale resulted in the reduction of inventory of raw materials from domestic and foreign markets, as well as the reduction of production (cooperative) services
- Fall in sale also had influence on the reduction in the supply of energy-generating products and transportation costs

Reduction in sales volume on profit is calculated according to the following formula:

$$P = \sum_{i=1}^{2} I_{1i} k_{1i} + I_3 - \left(\sum_{i=1}^{2} E_{1i} k_{21i} + \sum_{i=3}^{6} E_1 + \sum_{i=7}^{9} E_{1i} k_{21i} + i{=}12E2ik22i{+}i{=}14E3ik23i{+}i{=}15E4ik24i \right) \quad (5)$$

The main cause for lowering the prices was the reduced demand for products due to: economic crisis (low purchasing power), new domestic or foreign manufacturers, hindrance in product development or other reasons. The other reason may also be 'disuse of product' which is caused by replacing the product of existing construction-technological concept with the other one that has the same purpose but completely different technological concept (e.g. changes in TV construction and design, development of digital technology in photography, etc.). A drop in prices can be caused by the increased production volume (opening of new markets, increased sale), which was not analyzed in this paper even though its simulation was possible. The aim of the mathematical expression (3.2) is to analyze the influence that reduced prices can have on company's business during a year with no changes in the production volume. The following parameters were set:

- Change in prices reduces the incomes from domestic and foreign markets but it does not reduce the costs of raw material supply or any other costs.

Change in the product price is calculated according to the following formula:

$$P = \sum_{i=1}^{2} I_i k_{1i} + I_3 - \left(\sum_{i=1}^{9} E_{1i} + E_2 + \sum_{i=1}^{2} E_{3i} + E_4\right) \quad (6)$$

Mathematic expression 3.3 was set with the aim of analyzing the company's operation so that the future business results could be evaluated, whereat the growth in personal earnings was observed through the change in parameters of personal earnings.

A labour cost is calculated according to the following formula:

$$P = \sum_{i=1}^{2} I_i - \left(\sum_{i=1}^{9} E_{1i} + E_2 + \sum_{i=1}^{2} E_{3i} + E_4\right) \quad (7)$$

Mathematical expression 3.4 was set with the aim of analyzing company's operation so that future business results could be evaluated whereat the increased energy prices were observed through the change in the following parameters: fuel and energy costs and transportation costs.

Increased energy prices are calculated according to the following formula:

$$P = \sum_{i=1}^{2} I_i - \left(\sum_{i=1}^{5} E_{1i} + \sum_{i=6}^{7} E_{1i}\, k_{21i} + \sum_{i=8}^{9} E_{1i} + E_2 + \sum_{i=1}^{2} E_{3i} + E_4\right) \quad (8)$$

Mathematical expression 3.5 was set with the aim of analyzing company's operation so that future results could be evaluated, whereat the increased raw material prices were observed through the change in the following parameters: raw materials from domestic and foreign markets.

Increased raw material costs are calculated according to the following formula:

$$P = \sum_{i=1}^{2} I_i - \left(\sum_{i=1}^{3} E_i k_{21i} + \sum_{i=4}^{9} E_{1i} + E_2 + \sum_{i=1}^{2} E_{3i} + E_4\right) \quad (9)$$

The change in exchange rate represents the external impact on company's business. The influence of change in relations between domestic and foreign currencies (EURO, DOLLAR, SFR,

etc.) has different impacts on the company's business and they depend on the numerous elements such as:

- Relation between product placement in domestic and foreign markets,
- Relation between raw material supply from domestic and foreign markets,
- Indebtedness level and loan requirements.

It is obvious that different impacts cannot be included into a unique already given mathematical expression so it needs to be open for new entries. The reflection of changes in exchange rate on the company's business is also clear: lower value of domestic currency is good for the export oriented companies but it has negative impact on the companies which are mostly oriented to domestic market. Therefore, the general mathematical expression can be set in accordance with the following parameters:

- There are elements of change in the company's business that follow the change in the exchange rate in such a way that incomes from domestic market represent 'positive influence' while the raw material supply from the foreign market and loan repayment represent 'negative influence'.
- In case that bigger change in the exchange rate occurs, some elements of business will become more sensitive. Those elements are shown in the formula 3.6 and they are: raw material supply from domestic market, energy supply costs and transportation costs. In that case those elements are not affected directly but through an external supplier.

Changes in exchange rates are calculated according to the following formula:

$$P = I_1 + I_2 k_{12} - \left(\sum_{i=1}^{2} E_{1i} k_{21i} + \sum_{i=3}^{5} E_{1i} + \sum_{i=6}^{7} E_{1i}\, k_{21i} + \right.$$
$$\left. i{=}89E1i{+}E2{+}E31k231{+}E32{+}E24 \right. \qquad (10)$$

IV. CHANGES IN COST STRUCTURE DUE TO EXCHANGE RATE DEPRECIATION ON THE EXAMPLE OF REPRESENTATIVE COMPANY – A REVIEW ON SERBIA

Due to the increased competition on the import market and on the market of imported substitutive products, the degree of impact of exchange rate is lower. The existing competition has forced the importers and domestic manufacturers to sacrifice a part of their profit in order to outlive the competition. On the other hand, due to the existence of the so-called import lobby, these impacts are significantly intensified. If the prices are formed in Euros, the transmission is complete; if they are formed in RSD, the transmission may not be complete and depends on the competition and direction of changes in exchange rates. In order to address the issue of quantification of the impact of exchange rate changes on cost structure of the selected representative Serbian enterprise, it is necessary to consider the general business conditions in Serbia, with particularly significant adverse influence of external/internal impacts such as: the unstable RSD - EU exchange rate, U.S. dollar/SCFR exchange rate, increasingly poor market, stronger foreign competition without protection mechanism provided by the government, high inflation rate, latent discontent of the workers due to unbalanced ratio of wages and the costs of living, reflections of the energy crisis and constant increase of energy prices and transportation costs, potential risk of reduced production and forced reduction of product prices, regardless to the declining value of dinar and continuous rapid inflation trends, negative business environment for manufacturing systems (taxes, state budget, a high-level general consumption, reductions in the number of employees, etc..), high indebtedness, high interest rates, rapid jump of Euro, high mutual debts, etc. The export accounts for 27% of GDP, covering less than half of Serbian import,

and thus it is the lowest in the region. In addition to this quantitative aspect, the qualitative aspect is also unfavorable, making metals and food accounting for 40% of total exports, mainly in unprocessed form. Appreciation of real exchange rate is often cited as the factor which continuously de-stimulates the export sector but stimulates import activities. The Serbian economy is largely dependent on import inputs[23]. The presented model as the basis for calculation of environmental impacts on business operations may be applied as stated for various impact categories (Equation 3.1-3.6). This paper presents the calculation of the impact of changes in exchange rates within the defined cost structure (Table 1) during three financial year (2008. 2009 and 2010), always with the same starting annual business plan, on the representative model of the projected enterprise (Ivanisevic, 2011), which operation is ranging within the limits as expressed by MU (monetary units – the basic cash value adopted for this survey). The economic structure of the enterprise is the following: *It is a manufacturing enterprise with 40 employees; the total revenue is generated on the local market I_1 = 1000 MU ("monetary units") and on the foreign market I_2 = 200 MU (according to the version **V1**); I_1 = 1200 MU (according to the version **V2**); total expenditures are distributed as follows: raw materials from the domestic market E_{11} = 210 MU and from the foreign market E_{12} = 200 MU; manufacturing services E_{13} = 80 MU; personal wages E_{14} = 260 MU; depreciation E_{15} = 25 MU; fuel and energy costs E_{16} = 60 MU; transportation costs E_{17} = 50 MU; maintenance costs E_{18} = 55 MU; non-manufacturing services E_{19} = 45 MU; other costs E_{18} = 30 MU; investment and development E_2 = 25 MU; loan costs E_{31} = 50 MU; other financial expenses E_{34} = 60 MU; planned profit: P = 50 MU.* According to the report of the National Bank of Serbia, during the three analyzed years, the exchange rate changed monthly (Table 2, Figures 1 and 2), from the initial value of 1 EU = 81.246 RSD (on 01/01/2008) to the value of 1 EU = 106.993 RSD (on 31/12/2010). During this period, the value of the RSD against the Euro has fluctuated, with the lowest value of 1EU = 76.089 RSD recorded in September 2008.

TABLE 2 – CHANGES IN THE EXCHANGE RATE IN 2008, 2009 AND 2010, ACCORDING TO THE REPORT BY NBS

Year	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII
2008	88,19	81,47	82,68	82,02	79,93	80,75	79,12	77,84	76,08	76,32	83,97	87,77
2009	85,56	95,45	94,75	94,74	94,17	94,76	93,45	93,04	93,11	93,30	93,11	94,41
2010	96,16	97,43	98,92	99,73	99,04	102,50	104,08	105,34	105,28	105,56	106,44	106,99

Source: http://www.nbs.rs

The impact of exchange rate changes on the business was calculated according toEquation2.2notingthat the correction coefficients are defined in relation to the estimated level of impact for the projected enterprise .For the described calculation, the value of "impact coefficient" k_{xyz} was adopted at the following levels:

$k_{12} = k_{211} = k_{2124} = k_{234} = 1.0 \cdot$% ER; $k_{211} = k_{213} = k_{217} = k_{218} = k_{219} = k_{212} = 0.2 \cdot$%ER; $k_{216} = 0.8 \cdot$%ER; $k_{235} = 0.3. \cdot$%ER,

where: % ER -changes on the exchange rate in the current month expressed in percentage. The results of operations during the three financial years 2008,2009 and 2010are shown graphically inFigures2and 3.

[23]Branislav Maric. „Prikaz nove grafičke metode za utvrđivanje korigovane vrednosti interne stope rentabilnosti". Ekonomski pregled 8 no.9 (1991):463.

The values of the coefficients K_{xyz} are defined on the basis of production system assessment with the projected operations; for any other application of the model, different values of the coefficients are defined by the company management, in accordance with the structure and the specific characteristics of operation and under actual business conditions. It should be also noted that changes of operation elements are linear and proportional in accordance with the changes in the exchange rate, which is not feasible in practice. For example, in practice, workers' wages change in leaps, not linearly and automatically as in the function of exchange rate(increase or decrease).As a rule, if the balance sheet is positive, personal wages are never reduced with the reduction of exchange rate(with the strengthening of RSD). On the other hand, wages are increased in leaps, depending not only on exchange rate, but also on inflation trends. The author shave opted for this approach(proportional impact on all elements of business) in order to simplify the model presentation, as well as unbalanced approach in selecting the criteria influencing the elements of operation of the projected enterprise, and the fact that the model is open, with the possibility of remodeling in accordance with users specific needs and business conditions.

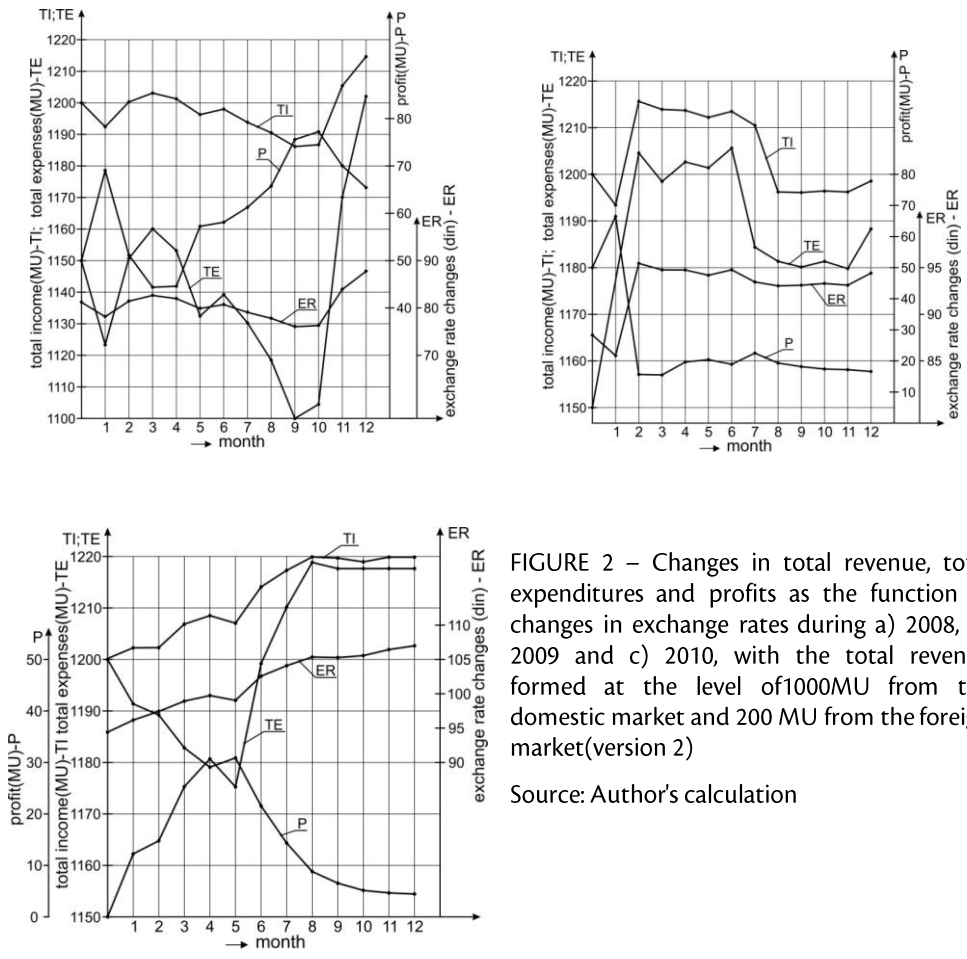

FIGURE 2 – Changes in total revenue, total expenditures and profits as the function of changes in exchange rates during a) 2008, b) 2009 and c) 2010, with the total revenue formed at the level of1000MU from the domestic market and 200 MU from the foreign market(version 2)

Source: Author's calculation

It is necessary to note that in the above example, the impact of exchange rate changes towards operations was calculated only as an individual element of environmental impact. In actual

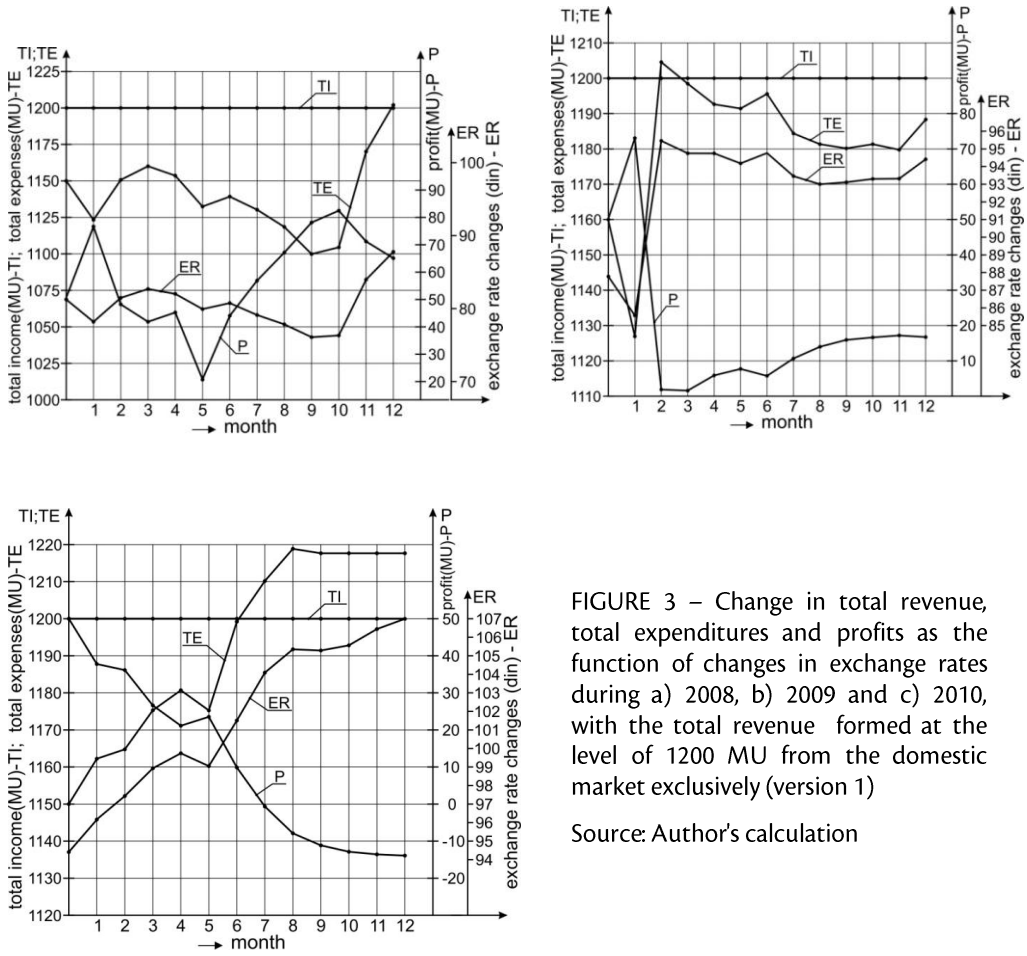

FIGURE 3 – Change in total revenue, total expenditures and profits as the function of changes in exchange rates during a) 2008, b) 2009 and c) 2010, with the total revenue formed at the level of 1200 MU from the domestic market exclusively (version 1)

Source: Author's calculation

conditions, as previously stated, the company operations depend on a whole range of influential elements that can act individually, but most often they act in combination. Indeed, the problem of operation is analyzed through combining elements[24]; however, to illustrate the model, only a single segment of business calculation, the impact of exchange rate changes has been shown. The same procedure can be used when calculating the influence of other impacts on the business. Based on the calculation results, the influence of any impact on business activity can be examined

[24]Andrea Ivanisevic. „Razvoj sistema za planiranje, praćenje i usklađivanje poslovanja industrijskog sistema u skladu sa promenama u okruženju" (Ph.D diss., Univerzitet u Novom Sadu, Fakultet tehničkih nauka Novi Sad, 2011).

for any temporal cross-section. The influence of the impact can also be projected for the future, calculating the projection of operations and preparing the enterprise for future operations.

V. CONCLUSIONS

The basic characteristics of the environment where manufacturing companies are operating today are the following: the processes of globalization – the dominance of large companies, highly developed product design and automated manufacturing technologies, manufacturing in huge batches, market saturated with products, shortened life time of products of defined characteristics, continuous emergence of new structural forms, reduction in difference of sales and production prices, increased labor costs and others. The company which is unable to adapt to the above influences shuts down or often becomes a part of larger production system. The company operation depends primarily on external impacts of political, economic or technological origin; however, the impacts within the technological system should not be neglected. They need to be completely eliminated, enabling the company to adjust to the external impacts. For the calculation of external and internal impacts on the operations a mathematical model has been defined. It is tested and can be adjusted to the specific characteristics of operation of individual enterprises. There is a need to introduce a feedback system in the business operations, as an extension to the mechanism of changes that is determined by the measured value of the environmental impact or the impact of internal origin

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Web source: http://www.nbs.rs

APPENDIX

TABLE – Calculation of the impact of exchange rate for the selected month – June 2010

		x	k_{xyz}	May 2010	June 2010
	Exchange rate 1 EUR = din			99.047	102.507
	Increase				+3.49%
I	**TOTAL INCOMES**			**1207.05**	**1214.09**
I_1	From the domestic market			1000.00	**1000.00**
I_2	From the foreign market	1.0 of %	+1.0349	207.05	214.09
E	**TOTAL EXPENSES**			1175.26	1199.19
E_1	**BUSINESS EXPENSES**			818.6	836.84
E_{11}	Raw materials from the domestic market	0.2 of %	+1.006	211.47	212.74
E_{12}	Raw materials from the foreign market	1.0 of %	+1.0349	207.05	214.09
E_{13}	Manufacturing services	0.2 of %	+1.006	80.56	81.04
E_{14}	Wages –total	1.0 of %	+1.0349	269.17	278.32
E_{16}	Energy and fuel costs	0.8 of %	+1.027	62.24	63.92
E_{17}	Transportation costs	0.5 of %	+1.0175	51.10	51.97
E_{18}	Maintenance costs	0.2 of %	+1.006	55.38	55.71
E_{19}	Non-manufacturing services	0.2 of %	+1.006	45.31	45.58
E_2	**INVESTMENTS**	0.2 of %		50.35	50.65
E_3	**FINANCIAL EXPENSES**			112.42	114.78
E_{31}	Loan expenses	1.0 of %	+1.0349	51.76	53.52
E_{34}	Other financial expenses	0.3 of %	+1.010	60.66	61.26
E_4	**OTHER EXPENSES**	0.2 of %		30.21	30.39
P	**PROFIT**			**31.79**	**14.90**
P_{Gi}	**Calculated** - annual based profit, time variable			**30.78**	**21.55**

Source: Author's calculation

The correction coefficient is calculated according to the following equation

$$k_{XYZ} = 1 \pm \frac{Y\%}{100} \cdot x$$

The adopted coefficient x for the projected enterprise:

$+x_{12} = x_{212} = x_{214} = x_{231} = 1.0 \cdot$ % ER; $x_{211} = x_{213} = x_{218} = x_{219} = x_{22} = x_{23} = 0.2 \cdot$ %CER; $x_{216} = 0.8 \cdot$ %CER; $x_{217} = 0.5 \cdot$ %CER; $x_{234} = 0.3 \cdot$ %CER.

Calculation of the correction coefficient:

$k_{12} = k_{212} = k_{214} = k_{231} = 1 + 3,\frac{49}{100} \cdot 1.0 = 1.0349$, and

$k_{211} = k_{213} = k_{218} = k_{219} = k_{22} = k_{23} = 1.006; \quad k_{216} = 1.027; \quad k_{217} = 1.0175; \quad k_{234} = 1.010.$

$\boldsymbol{P} = I_1 + I_2 \cdot 1.0349 - [E_{11} \cdot 1.006 + E_{12} \cdot 1.0349 + E_{13} \cdot 1.006 + E_{14} \cdot 1.0349 + E_{16} \cdot 1.027 + E_{17} \cdot 1.0175 + E_{18} \cdot 1.006 + E_{19} \cdot 1.006 + E_2 \cdot 1.006 + E_{31} \cdot 1.0349 + E_{34} \cdot 1.010 + E_4 \cdot 1.006]$

$\boldsymbol{P} = 1000.00 + 207.05 \cdot 1.0349 - [211.47 \cdot 1.006 + 207.05 \cdot 1.0349 + 80.56 \cdot 1.006 + 269.17 \cdot 1.0349 + 62.24 \cdot 1.027 + 51.1 \cdot 1.0175 + 55.38 \cdot 1.006 + 45.31 \cdot 1.006 + 50.35 \cdot 1.006 + 51.76 \cdot 1.0349 + 60.66 \cdot 1.010 + 30.21 \cdot 1.006] = 14.9 \; MU$

$\boldsymbol{P} = 14.9 \; MU$ – profit as calculated based on temporal cross section

The calculated profit based on average annual level on the basis of time variable:

$$P_{Gi} = \frac{P_{G(i-1)} \cdot m}{m_G} + \frac{P_{Gi} \cdot (12-m)}{m_G}$$

$$P_{Gi} = \frac{30{,}88 \cdot 5}{12} + \frac{14{,}9 \cdot (12-5)}{12} = 21.55 \; MU$$

VALORIZACIJA NAJVAŽNIJIH UTJECAJA OKOLINE NA PROMJENE TROŠKOVNE STRUKTURE PODUZEĆA

Sažetak: Poduzeće posluje kao sastavni dio okoline i nalazi se u zavisnom položaju, kako u odnosu prema sâmoj okolini, tako i u odnosu na promjene unutar nje. Poduzeće najčešće nije u mogućnosti djelovati na utjecaje iz okoline pa mora razviti sustav kojim će ih djelomično neutralizirati, prilagođavati im se i usklađivati se s promjenama i novonastalim uvjetima. Razvijanjem jednog ovakvog mehanizma poduzeće treba prilagoditi svoje poslovanje najvećem broju utjecaja iz okoline i tako na kraju poslovne godine osigurati najveću moguću dobit. Ovim radom želi se ukazati na načela projektiranja modela koji bi valorizirao najvažnije utjecaje okoline i kvalificirao njihov utjecaj na troškovnu strukturu poduzeća. Na osnovi rezultata proračuna donosile bi se odluke o potrebnim izmjenama u sustavu poslovanja kako bi se rezultati postigli u okvirima koji su definirani dinamičnim planom ili, ako to nije ostvarivo, održali u području zadovoljavajućih granica.

Ključne riječi: utjecaj okoline, promjene poslovnih indikatora, troškovna struktura, planiranje dobiti.

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SVEUČILIŠTE JURJA DOBRILE U PULI
ODJEL ZA EKONOMIJU I TURIZAM
"DR. MIJO MIRKOVIĆ"
UTEMELJEN 1960.

EKONOMSKA ISTRAŽIVANJA-ECONOMIC RESERACH
ISSN 1331-677X print

2013 Volume 26 (1): 243-256

MAKING OF THE SOCIAL WORLD: A RETROSPECT

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ARTICLE INFO

Article data:
- Received: 26 March 2012
- Accepted: 20 October 2012

JEL classification: A14

Keywords:
- Adam Smith
- Civilization
- homo economicus
- Neighbourhood
- Society

ABSTRACT

Human history has come a long way. Our modern world is knitted into a web of different social institutions that play an important role in our daily life. Sociologists have long been studying these social structures, but the economists have long ignored the social framework in which the 'rational man' strives to achieve and protect his self-interests. This paper analyses in retrospect the development of social structures from human civilization to the *homo economicus*. It also tries to highlight the role of community in socio-economic development.

Reference to this paper should be made as follows: Sharma, S. 2013. Making of the Social World: A Retrospect, *Ekonomska istraživanja – Economic Research 26 (1): 243-256.*

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I. INTRODUCTION

In sociological studies scholars have frequently been using terms such as 'civilization', 'society', 'community', 'culture', 'neighborhood', 'family' and the similar(Bauman, 2001a: pp. 1) . These terms have meaning, depth of expression and their content. The following discussion tries to reflect upon these constituents of human society in their historical, sociological and economic perspective. The paper focuses upon the role of 'civilization' and 'community' in the historical evolution and development of society. It also examines some of the views related to the concept of *economic man*.

Mentioned organizational forms have, right from the beginning of the history of modern human being, played a dominant role in the making of the social world. Our social world revolves around the human beings, and different social organizational forms have emerged in the course of long human history. In the following pages let us have a glance in retrospect on all these social forms.

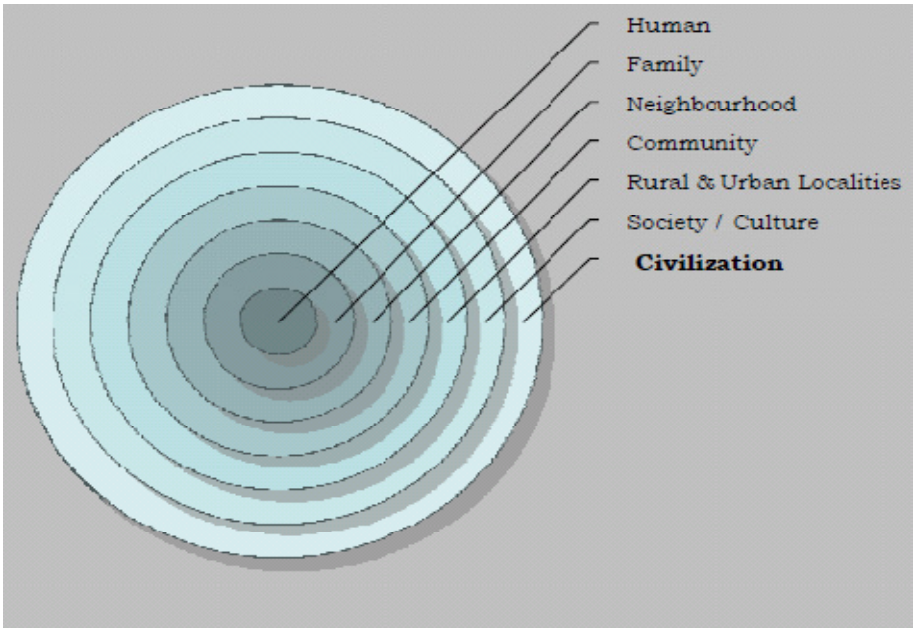

FIGURE 1. THE STRUCTURE OF THE SOCIAL WORLD

Source: authors

II. CIVILIZATION

Let us begin with the history of development of human society. It is the history of communities and their development, of growth of intrinsic human desire to live together and socialize. The growth path of this process began from the institution of family and it has reached stage what we call a global society today. Every landscape bears the traces of a continuous and cumulative labour, generation after generation contributing to this process until humanity itself has been transformed by what may be called 'the decisive shaping of self by self'.

Recorded history of civilization provides definite proofs of this fact. To discuss civilization is not only to discuss space, topography, vegetation, animal species, natural advantages etc. but

also the human efforts agriculture, stock-breeding, food, shelter, clothing, communication, industry and the similar.

To take inherent advantages every civilization is born of immediate opportunities rapidly exploited. Thus in the dawn of time, the river civilizations flourished in the Old World[1]. A similar group of civilizations developed in Northern Europe, around the Baltic and the North Sea. However, much of the West today is grouped together around the ocean as the Roman world of former times around the Mediterranean. These classic instances reveal above all the prime importance of communication as well as the human achievements in face of challenges and responses. Responses to natural challenges continually freed humanity from its environment and at the same time subjected to the resultant solutions (Toynbee, 1987).

Cultural traits of these civilizations spread through communication and imports as no cultural frontier is ever totally closed (e.g. casting process, the compass, gunpowder, the technique for tempering steel, a complete or fragmentary philosophical system, a cult or a religion). In the past cultural influences came in small bits, but today the spread speed is vertiginous. The industrial civilization that originated in Europe became global in the 20th century.

Civilization and society are two inseparable ideas. The concept of 'society' implies a wealth of content: its values, ideals, habits and tastes, its tensions and conflicts. If a society stirs and changes, the civilization based on it stirs changes too.

Every society, every civilization depends on economic, technological, biological and demographic conditions. For long, people were humanity's sole resource for building a civilization by sheer brawn and brain. Therefore, an increase in population helped the growth of civilization. As the population grew faster than the economy (by the end of 16th century), the result was famines, decline of incomes, popular uprisings and grim periods of slump: until epidemics and starvation brutally thinned out the population. This vicious circle was broken by the industrial revolution.

Economic life never stops fluctuating, prosperity and slump being its regular features. Societies and civilizations feel its effects. Whether it is a slump or a boom, economic activity almost always produces a surplus. The spending of such surpluses has been one of the indispensable characteristics for luxury in civilizations giving birth to capitalism and wealth. But, luxury in the past was a privilege of the selected few in the society. From the point of the much maligned 19th century, the century of newly rich and the triumphant *bourgeoisie*, was the harbinger of a new destiny for civilizations and human personality. Development of education, access to culture, social progress had largely contributed in shaping the civilization of today. These are of full significance for the future. The great problem of the future will be to create a mass civilization of high quality, which is unthinkable without substantially large surpluses devoted to the well-being of the society.

Almost all civilizations are pervaded or submerged by religion. They draw from it the most powerful motives in their particular psychology. However, since the development of the Greek thought, the tendency of the Western civilization has been towards rationalism and hence away from the religious life. Religion is the strongest feature of civilization. In India, for instance, all actions derive their form and their justification from the religious life, not from reasoning. By comparison, the West seems forgetful of the Christian sources. But, rather than stress the break

[1] e.g. Chinese civilization along the Yellow River, Indus Valley civilization, Sumerians and Babylonians on the Euphrates and the Tigris; Egyptians on the Nile etc.

that rationalism has supposedly made between religion and culture, it is more to the point to consider the coexistence of laicism, science and religion and the serene or stormy dialogue in which, despite appearances, they have always been engaged. Christianity is an essential reality in Western life. Ethical rules, attitudes to life and death, the concept of work, the value of effort, may seem to have nothing to do with Christian feeling, yet all derive from it nevertheless.

No existing civilization can be truly understood without understanding the path that it has followed the values it has cherished, and experiences it has undergone.

Civilizations continually borrow from their neighbours, even if they re-interpret and assimilate what they have adopted. Yet a civilization may stubbornly reject a particular import from outside. Just as a civilization may welcome or refuse elements from another civilization, so it may accept or reject survivals from its own past. It does so slowly, and almost always unconsciously or partly so. The process is so slow that contemporaries never notice it. Each time, the rejection – and the occasional acceptance of alternatives – takes centuries, with prohibitions, obstacles and healing processes which are often difficult and imperfect and always very prolonged. But, society gradually transforms itself.

A civilization is neither a given economy nor a given society, but something that persists through a series of economies or societies, barely susceptible to gradual change.

III. SOCIETY

Though scholars are sometimes inclined to call civilization as society, we would, however, like to differentiate between the two. To us, civilization seems a rather broader view of society. Human society, in general, is characterized by mutual relationships between individuals who share a distinctive culture and institutions governed by their own norms and values. More broadly, a society may be described as an economic, social, or industrialinfrastructure.

Dictating a society's attitudes, guiding its choices, confirming its prejudices and directing its actions, is very much a fact of civilization. A society's reactions to the events of the day, to the pressure upon it, to the decision it must face, are less a matter of logic or self-interest than the response to an unexpressed and often inexpressible compulsion arising from the collective unconscious. Basic values and psychological structures are the features that civilization can least easily communicate one to another. Habits of mind survive the passage of time, change little or very slowly.

Based on subsistence means, social scientists have differentiated between hunter-gatherer societies, nomadic pastoral societies, horticulturalist or simple farming societies, and intensive agricultural societies. In twentieth century, industrial and post-industrial societies are referred to be qualitatively different from the former (Lenski, 1974). Adam Smith (1776) considered that a

> *'Society may subsist among different men, from a sense of its utility without any mutual love or affection, if only they refrain from doing injury to each other'.*

IV. CULTURE

In current usage, the term culture[2] is used to distinguish life in one group from that in another group. Shortly, culture is the large-scale context of a given society. The term first began to take its

[2]The etymology of the modern term *culture* has a classical origin. In English, the word 'culture" is based on a term used by Cicero in his *Tusculan Disputations*, where he wrote of a cultivation of the soul or *cultura animi*, thereby using an agricultural metaphor to describe the development of a philosophical soul, which was understood teleologically as the one natural highest possible ideal for human development. Samuel Pufendorf took over this metaphor in a modern context, meaning something similar, but no longer assuming that philosophy is man's natural perfection. His use, and that

current usage by the Europeans in the 18th and 19th centuries. It acquires most of its later modern meanings in the writings of the 18th-century German thinkers, who on various levels developing Rousseau's criticism of modernliberalism and enlightenment made distinction between *culture* and *civilization*. Two separate meanings of culture emerge from this period – culture as the people-spirit having a unique identity, and culture as cultivation of inwardness or free individuality. The first meaning is predominant in our current use of the term, although the second still plays a large role in what we think culture should achieve, namely the full *expression* of the unique of *authentic* self.

V. COMMUNITY

Community serves as a link between the civilization and individual/family. It is an organizational form on the social ladder and has its rules, values and ethics that play an important role in socio-economic development of *society* as a whole. Members of a community are individuals and their families that co-habit in neighbourhoods, cherishing some common goals in realization of these they do behave rationally serving at the same time their own self-interest. Economics has always played a significant role in the development of every human civilization in history, so it does in ours today. Ours is a global civilization and the modern day economics is its part and parcel.

All civilizations have grown out of communities. Historically speaking, in between 2500-1750 BC different communities have lived in hutments and villages around the world. These communities slowly grew into towns and cities that later assumed statehood and became the so called city states and later some of them Empires, in ancient China, India, Mesopotamia, Sumer, Egypt, Canaan and Greece.

As far as notion of community is concerned, perhaps, the best illustration is provided by Aristotle in his *Politics* (1962). According to Aristotle, the family is the primitive community that exists for the sake of life for the supply of men's every day wants, and when, according to him, several families join together and something more than the mere supply of daily needs are aimed at, the village comes into existence. When, however, several villages are joined together to form a larger community it is *nearly or quite self-sufficing*, there comes into existence the State. The State comes into existence for the bare ends of life, but it continues in existence for the sake of good life. The State exists for an end, the same being the supreme good of man. As a community it differs from family and village not merely quantitatively but qualitatively and specifically. It is only in the State that man can live the good life in any full sense, and since the good life is man's natural end, the State must be called a natural society[3].

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of many writers after him 'refers to all the ways in which human beings overcome their original barbarism, and through artifice, become fully human'.

[3] His horizon was more or less bounded by the confines of the Greek City-States, and he had little idea of nation s and empires (in spite of his contacts with Alexander the Great); but all the same his mind penetrated to the essence and function of the state better than laissez faire theorists of the British School. Accordingly, to him, "*The State is a creature of nature, and that man is by nature a political animal,*" and "*He who is unable to live in society, or who has no need because he is sufficient for himself, must be either a beast or a god*".

The Platonic-Aristotelian view of the State as exercising the positive function of serving the end of man, the leading of good life or the acquisition of happiness, and as being *natura prior* to the individual and the family has been of great influence in subsequent thought[4].

Since the late XIX century, the use of the term community has remained to some extent associated with the hope and the wish of reviving once more the closer, warmer, more harmonious type of bonds between people vaguely attributed to past ages. There are a number of competing definitions of community. Some focus on community as a geographical area; some on a group of people living in a particular place; and others which looked to community as an area of common life. Beyond this there are issues around the way 'community' appears in political discourse. While for some it might mean a little more than a glorified reworking of the market, for others, it may be a powerful organizing ideal (Hoggett, 1997: pp. 5)

It will be useful to begin by noting that community can be approached as a value. As such it may well be used to bring together a number of elements: e.g. solidarity, commitment, mutuality and trust. Community can also be approached as a descriptive category or set of variables[5].

Territorial or place community can be seen as where people have something in common, and this shared element is understood geographically. Another way of naming this is as 'locality'. In 'interest' or 'elective' communities people share a common characteristic other than place. They are linked together by factors such as religious belief, sexual orientation, occupation or ethnic origin. Development in what might be called the sociology of identity and selfhood have played an important role in 'opening out the conceptual space within which non-place forms of community can be understood' (Hoggett, op. cit. pp. 7). From communion point of view, we can approach this first as a sense of attachment to a place, group or idea or as a profound meeting or encounter – not just with other people, but also with God and creation. There is, of course, a strong possibility that these different ways of approaching community will also overlap in particular instances.

According to Cohen's work around belonging and attachment is a great help in this respect. He argues that communities are best approached as *communities of meaning*. In other words, *community* plays a crucial symbolic role in generating 'people's sense of belonging' (Crow and Allan, op. cit.). The reality of community, Cohen argues, lies in its members' perception of the vitality of its culture (a significant element of this is what Putnam calls *social capital*). Cohen argues that *community* involves two related suggestions that the members of a group have something in common with each other; and the thing held in common distinguishes them in a significant way from the members of other possible groups (Cohen 1985: 12). Community, thus, implies both similarity and difference. It is a relational idea: 'the opposition of one community to others or to other social entities'. This leads us to the question of boundary – what marks the beginning and end of a community?

Cohen's argument is that boundaries may be marked on a map, or in law, or by physical features. Some may be religious or linguistic. However, not all boundaries are so obvious. As such they may be seen in very different ways, not only by people on either side, but also by people on the same side. An obvious example of this is the sorts of ritual people connect with in terms of religious observance, for example, the rites of worship, the objects and actions involved.

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[4] Among the Christian medieval thinkers it was naturally tampered by the importance they rightly attached to individual and family and, by the fact that they accepted another *perfect society*, the Church whose end is higher than that of the State.

[5] For further discussion on this point see Frazer (1999).

Another way of looking at community is that people live close to one another does not necessarily mean that they have much to do with each other. There may be little interaction between neighbours. It is the nature of the relationships between people and the social networks of which they are a part that is often seen as one of the more significant aspects of 'community'.

When people are asked about what 'community' means to them, they would perhaps respond by saying that 'For most of us, our deepest sense of belonging is to our most intimate social networks, especially family and friends. Beyond that perimeter lie work, church, neighbourhood, civic life, and an assortment of other *weak ties* (Putnam, 2000: pp. 274). As well as helping us to build a sense of self and individuality, such informal relationships 'also enable us to navigate our way around the demands and contingencies of everyday living'. (Allan, 1996).

The nature of the networks within in particular place or grouping is, thus, of fundamental importance when making judgments about communities – and the extent to which people can flourish within them. Humans are social beings. Connection and interaction both widen and deepen what we can achieve, and makes possible our individual character.

There are strong forces working against the formation and existence of local social systems. The various forces linked to globalization have led to significant shifts in the locus of power, local and national governments have become increasingly market-driven. Not only that government can no longer *manage* their national economies, but in order to hold to power they must increasingly manoeuvre national politics in such ways as to adapt them to the pressures of global market forces. This has resulted in a growing centralization in key areas of policymaking in many countries and an ever increasing presence of commercial entities in local services with the obvious consequence of an erosion of democracy and the notion of public goods.

The socio-economic impact of this movement is that people have been reduced to consumers of services and an associated move towards individualization from more collective concerns. In this situation, as Bauman (2001b: pp. 3) has commented,

> "*we may well look longingly at the notion of community - it is the 'kind of world which is not, regrettably, available to us – but which we would dearly love to inhabit and which we hope to repossess*".

However, in a world where market ideologies have become dominant and infused all areas of life, we have increasingly lost a sense of working together to make change.
Whether people are disposed to engage with one another is dependent upon the norms of a particular society or community. To judge the quality of life within a particular community we, need to explore what shared expectations there are about the way people should behave – and whether different individuals take these on. Three linked qualities appear with some regularity in discussions of communal life: tolerance, reciprocity and trust.
In modern context, community is less an attribute of some functions or interests and an integral whole which is organic in structure, limited in size, concrete in context, substantive in syntax. One can not therefore glibly talk of community development as a political slogan because it involves development of not merely material but moral, ethical, intellectual and psychological. (Baker, 1986: pp. 126).

After the fall of the Roman Empire, cities and towns were consisted of a very different order of people from the first inhabitants of the ancient republics of Greece and Italy. The latter were composed mainly of the proprietors of lands, among whom the public territory was originally divided, and who found it convenient to build their houses in the neighbourhood of one another, and to surround them with a wall for the sake of common defence. After the fall of

the Empire, on the contrary, the land owners seem generally to have lived in fortified castles on their own estates, and in the midst of their own tenants and dependants. The towns were chiefly inhabited by traders and mechanics that seem in those days to have been servile condition. The privileges which we find granted by ancient charters to the inhabitants of some of the principal towns in Europe sufficiently show what they were before those grants.

But how servile so ever may have been originally the condition of the inhabitants of the towns, it appears evident that they arrived at liberty and independency much earlier than the occupiers of land in the country.

In countries such as Italy and Switzerland, the sovereign came to lose the whole of his authority, the cities generally became independent and conquered all the nobility in their neighbourhood; obliging them to pull down their castles in the countryside, and to live, like other inhabitants, in the city. It is from this period, according to French antiquarians, that we are to date the existence of institution like the magistrates and council of cities in France[6]. The Italian republic-cities, between the 12th and 16th century, arose and perished. In countries such as France and England, where the authority of the sovereign, though frequently low, never was destroyed all together, the cities had no opportunity of becoming entirely independent. They became however so considerable that the sovereign called upon them to send their representatives to the councils of kingdom.

Order and good government, and along with them the liberty and security of individuals, were, in this manner, established in cities at a time when the occupiers of land in the country were exposed to every sort of violence. On the contrary, when they are secure of enjoying the fruits of their industry, they naturally exert it to better their condition. The trading cities of Italy (Venice, Genoa, and Pisa) seem to have been the first in Europe which were raised by commerce to a considerable degree of opulence. The inhabitants of trading cities, by importing the improved manufactures and luxuries of richer countries, afforded some food to the vanity of great proprietors, who eagerly purchased them with great quantities of the rude produce of their own lands.

In modern times, in western societies, especially in the US, the term 'community development' is used to denote activities of the people living in local groups or communities wherein they gather together over some common specialized interests through which they find democratic expression for their energy and inspiration. In the developing world the expression of the concept has grown beyond the borders of common specialised interests and is taken to mean the bringing out of the potentialities of a body of men living in the same locality from a latent to an active state.

Community building or organizing community based assets for to tackle the common problems has given birth to the idea of community development programmes launched in rural areas of countries in SE Asia and Africa.

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[6] David Hume in his *The History of England*, (1778, ii.118 in Liberty Fund, Indianapolis 1983) quotes from Brady's history, 'The Kings of France erected these communities to check the Insolencies of their great vassels, and to protect them from their over-grown dominion and *extravagant* power over them, that they reputed such cities and towns their own, where therewere such communities; and truely, for that the inhabitents were in a manner *freed* from the *dominion* of their Lord therby, and became immidiately *subject* to their Kings'. David Hume, however, adds that erecting of these communities was an invention of Lewis the Gross, in order to free the people from slavery under the lords, and to give them protection, by means of certain privileges and separate jurisdiction.

Some modern authors believe that in community development *reciprocity,intimacy* and *unanimity* are central. It is in the nature of the community development that it must come from within with in through the greatest possible participation of the people rather than compulsion and mediation with the needs of the region, nation and world (Roupp, 1953: pp. 20). The aim of community development is to develop relationship between groups and individuals that will enable them to act together in creating and maintaining facilities and agencies through which they may realize their highest values in the common welfare of all members of the community. The emphasis here is upon the fact that main objectives of such activities are to (a) obtain consciousness of community identity, (b) meet unmet wants, (c) obtain social participation as a means of specialization, (d) gain social control, (e) coordinate groups and activities, (f) preserve the community from undesirable influences, (g) cooperate with the communities and agencies to attain common ends, (h) establish means of obtaining consensus, and (i) develop local leadership (Sanderson and Polson, 1950: pp. 50, 76).

Historically, human communities have relied on two principles – social stickiness and household economics. In every day economic life of every human being the basic driving force has always been his/family/s wellbeing or self-interest. This very fact led to the formulation by Adam Smith of a fundamental economic thesis that, economic man or *homo economicus*, being as rational and narrowly self-interested actor who has the ability to make judgments toward his subjectively defined ends[7].

Although the term did not come into use until the 19th century (as it was first used by the critics of Mill's work (1848) on political economy), it is often associated with the ideas of Adam Smith and David Ricardo. From *The Wealth of Nations* (1776) Smith's famous quote reflect upon it,

> *"it is not from the benevolence of the butcher, the brewer, or the baker that we expect our dinner, but from their regard to their own interest."*

This suggests the same sort of rational, self-interested, labour-averse individual that later Mill proposed (although Smith in his *Theory of Moral Sentiments* did claim that individuals have sympathy for the well-being of others). J. S. Mill (1836), borrowing the idea from Adam Smith, writes:

> *"[Political economy] does not treat the whole of man's nature as modified by the social state, nor of the whole conduct of man in society. It is concerned with him solely as a being who desires to possess wealth, and who is capable of judging the comparative efficacy of means for obtaining that end." He goes on to write that he is proposing "an arbitrary definition of man, as a being who inevitably does that by which he may obtain the greatest amount of necessaries, conveniences, and luxuries, with the smallest quantity of labour and physical self-denial with which they can be obtained."*

However, let us not forget that Aristotle, much before Smith, in his *Politics* discussed the nature of self-interest by mentioning:

[7] Note that this view point stands in contrast to own view, which states that human beings are primarily motivated by the desire to be cooperative and to improve their environment.

> **"***Again, how immeasurably greater is the pleasure, when a man feels a thing to be his own; for surely the love of self is a feeling implanted by nature and not given in vain, although selfishness is rightly censured; this, however, is not the mere love of self, but the love of self in excess, like the miser's love of money; for all, or almost all, men love money and other such objects in a measure. And further, there is the greatest pleasure in doing a kindness or service to friends or guests or companions, which can only be rendered when a man has private property***". (**Aristotle (1962), *The Politics*, Book II, Part V).

A wave of economists in the late 19th century—Francis Edgeworth, William Stanley Jevons, Léon Walras, and Vilfredo Pareto—built mathematical models on these assumptions. In the 20th century, Lionel Robbins' rational choice theory came to dominate mainstream economics and the term *Economic Man* took on a more specific meaning of a person who acted rationally on complete knowledge out of self-interest and the desire for wealth.

VI. NEIGHBOURHOOD

Contemporary sociology, among others deals with issues of urbanization. As social life, over centuries, has undergone dramatic changes the inflow of new negatively perceived socio-economic problems such as inequalities, extreme poverty, social injustice, infringement of basic human rights, street crimes, slums, pollution etc. have broken the threads of traditional principle of community cohesion. Human sociality that origined in rural communities, with increased industrialization, urbanization and speedy economic development, has withered away. In this context, we must emphasize the significance of Wirth's thought (1938, 44, 1:1-24) highlighting the size, density of population and cultural characteristics of city life stresses the need to visualise a city as *social structure*. Wirth's implications of urban life are close to the idea of Toennies (1957) idea of *Gesellschaft*.

Neighbourhoods (localities) are constituent parts of a community. Generally speaking, a neighbourhood is a geographically localised community within a larger inhabited area. Researchers have not agreed on an exact definition. Neighbourhood is generally defined spatially as a specific geographic area and functionally as a set of social networks. Neighbourhoods, then, are the spatial units in which face-to-face social interactions occur – the personal settings and situations where residents seek to realise common values, socialise youth, and maintain effective social control. It is a geographically localised community within a larger inhabited area.

American philosopher Lewis Mumford (1968) defines,

> *"Neighbourhoods, in some primitive, inchoate fashion exist wherever human beings congregate, in permanent family dwellings; and many of the functions of the city tend to be distributed naturally—that is, without any theoretical preoccupation or political direction—into neighbourhoods"*.

Most of the earliest cities around the world have evidence for the presence of social neighbourhoods.

Neighbourhoods are typically generated by social interaction among people living near one another. In this sense they are local social units larger than households not directly under the control of city or state officials. In some pre-industrial urban traditions, basic municipal functions such as protection, social regulation of births and marriages, cleaning and upkeep are handled informally by neighbourhoods and not by urban governments. In addition to social

neighbourhoods, most ancient and historical cities also had administrative districts used by officials for taxation, record-keeping, and social control.

One factor contributing to neighbourhood distinctiveness and social cohesion in past cities was the role of rural to urban migration. This was a continual process in preindustrial cities, and migrants tended to move in with relatives and acquaintances from their rural past.

Neighbourhoods are universal, convenient, and always accessible, requires little specialised technical skill, and material costs are often low. Results are more likely to be visible and swift that is indicator of the success. Neighbourhood action usually involves others thus create or strengthen connections and relationships with other neighbours. But in addition to these benefits, considerable research indicates that strong and cohesive neighbourhoods and communities can serve as a buffer against various forms of adversity.

Two basic tenets of functioning of the community and neighbourhood are: cohesion and community action. Community's capacity to recognize its own problems and ability to mobilise itself to solve them requires commitment to collective action, resources, knowledge and skills. Community action is the key of community economic development which implies neighbourhood (locality) development, social policy and caring deprived or backward social groups (Mondros and Wilson, 1994). Social welfare schemes are seen as a mode of community organizing and economic development.

VII. FAMILY & HOUSEHOLD

A *family* can be defined as a group of people affiliated by consanguinity, affinity, or co-residence. One of the primary functions of the families is to produce and reproduce people, biologically and socially. However, producing children is not the only function of the family it is necessary for the formation of an economically productive household. Since ancient times, the *household* (Greek term *oikos*) has been considered as the basic unit in which economic production, consumption, inheritance, child rearing, and shelter are organized and carried out. In modern economics, the household is the basic unit of analysis in many social, micro- and macro- economic models. Though most economic models do not address whether the members of a household are a family in the traditional sense, yet government and policy discussions often treat the terms *household* and *family* as synonymousn. The household's existence strategy is basically based on the idea of division of labour between the members of a household. It is the deployment of their time between employment (including home-based self-employment), domestic production work (eg. vegitable gardening, handicrafts etc) and domestic consumption work to provide goods and services directly within the household, (eg. cooking, child–care etc). Household work strategies may vary over the life-cycle, or with the economic environment.

VIII. THE ECONOMIC MAN

The economic man or *homo economicus*[8] is seen as *rational* in the sense that well-being as defined by the utility function is optimized given perceived opportunities. That is, the individual seeks to attain very specific and predetermined goals to the greatest extent with the least possible cost. Only naïve applications of the *Homo economicus* model assume that this

[8]The use of the Latin form *homo economicus* is certainly long established. Joseph Persky in his (1995), 'Retrospectives: The Ethology of homo economicus', *The Journal of Economic Perspectives*, 9, 2: 221-231) traces it back to Pareto,Vilfredo (1906), *Manual of Political Economy*, but notes that it may even be older.

hypothetical individual knows what is best for his long-term physical and mental health and can be relied upon to always make the right decision for himself.[9]

Amartya Sen (1977) has argued there are grave pitfalls in assuming that rationality is limited to selfish rationality. He believes that Economics should build into its assumptions the notion that people can give credible commitments to a course of conduct. He demonstrates the absurdity with the narrowness of the assumptions by some economists with the following example of two strangers meeting on a street.

Homo economicus rests his choices on a consideration of his own personal *utility function*. Consequently, the *homo economicus* assumptions have been criticized not only by economists on the basis of logical arguments, but also on empirical grounds by cross-cultural comparison. Economic anthropologists[10] who have demonstrated that in traditional societies, choices people make regarding production and exchange of goods follow patterns of reciprocity which differ sharply from what the *homo economicus* model postulates. Such systems have been termed barter economy rather than market economy. Criticisms of the *homo economicus* model put forward from the standpoint of ethics usually refer to this traditional ethic of kinship-based reciprocity that held together traditional societies.

Economists like Veblen, Keynes, Simon, and many others belonging to the Austrian School criticise *Homo economicus* as an actor with too great of an understanding of macroeconomics and economic forecasting in his decision making. They stress uncertainty and bounded rationality in the making of economic decisions, rather than relying on the rational man who is fully informed of all circumstances impinging on his decisions. They argue that perfect knowledge never exists, which means that all economic activity implies risk.

Further research on this subject is being done in the fast growing field of experimental or behavioural economics. It, however, shows deviations from the traditionally-defined economic rationality. Some of the broader issues involved in this criticism are studied in *Decision Theory* of which *Rational Choice Theory* is only a subset. Other critics of the *Homo economicus* model of humanity point to the excessive emphasis on extrinsic motivation (rewards and punishments from the social environment) as opposed to intrinsic motivation. For example, it is difficult if not impossible to understand how *Homo economicus* would be a hero in war or would get inherent pleasure from craftsmanship. They argue that too much emphasis on rewards and punishments can "crowd out" intrinsic motivation.

Another weakness is highlighted by sociologists, who argue that *Homo economicus* ignores the origins of tastes and the parameters of the utility function by social influences, training, education, and the like. Such conflicts may lead to *irrational* behaviour involving inconsistencies and can occur as a result of habit, laziness, mimicry and simple obedience.

Economists tend to disagree with these critiques. *Free riders*, for example, would have a major negative impact on the provision of public goods. However, economists' supply and demand predictions might obtain even if only a significant minority of market participants act like *Homo economicus*. Yet others argue that *Homo economicus* is a reasonable approximation for behaviour within market institutions, since the individualized nature of human action in such

[9]As in social science in general, these assumptions are at best approximations. The term is often used derogatorily in academic literature, perhaps most commonly by sociologists, many of whom tend to prefer structural explanations to ones based on rational action by individuals.

[10] See for example works of Marshall Sahlins, (1972), *Stone Age Economics* (London: Routledge); Karl Polanyi, (1944), *The Great Transformation* (London: Beacon Press 2001); Marcel Mauss, (1924), *The Form and Reason for Exchange in Archaic Societies* (London: Routledge).

social settings encourages individualistic behaviour. Not only do market settings encourage the application of a simple cost/benefit calculus by individuals, but they reward and thus attract the more individualistic people. It can be difficult to apply social values (as opposed to following self-interest) in an extremely competitive market; a company that refuses to pollute (for example) may find itself bankrupt.

The more sophisticated economists are quite conscious of the empirical limitations of the *Homo economicus* model. In theory, the views of the critics can be combined with the *Homo economicus* model to attain a more accurate model.

IX. CONCLUSION

As is evident from the above discussion, the organizational structure of our world is knitted with historical, social, cultural, political and economic threads. It is unfortunate that scholars, except a few, have often looked at it from a narrow aspect depending upon their own professional interest and expertise. A multidisciplinary approach has always lacked. In context of our 21st century world, where the human relations have become much more complex in view of the current state of development of human society, a fresh approach is badly needed. Scholars and scientists must reconsider the position of human beings in context with new technologies, science, global economics, social relations and future prospects.

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STVARANJE DRUŠTVENOGA SVIJETA: RETROSPEKTIVA

Sažetak: Ljudska povijest je prešla dalek put. Naš moderni svijet isprepleten je mrežom različitih društvenih institucija koje imaju važnu ulogu u našem svakodnevnom životu. Sociolozi odavno proučavaju ove društvene strukture, ali ekonomisti su dugo ignorirali društveni okvir u kojemu 'racionalan čovjek' nastoji ostvariti i zaštititi svoje osobne interese. U radu se, u retrospektivi, analizira razvoj društvenih struktura od ljudske civilizacije do *homo economicusa*. Također se pokušava istaknuti uloga zajednice udruštveno-ekonomskoome razvoju.

Ključne riječi: Adam Smith, civilizacija, homo economicus, susjedstvo, društvo

EKONOMSKA ISTRAŽIVANJA-ECONOMIC RESERACH
ISSN 1331-677X print

2013 Volume 26(1): 257-276

BANKING INDUSTRY IN THE GLOBAL MARKET: FOREGROUNDS OF AN EVERLASTING EVOLUTION

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ARTICLE INFO

Article data:
- Received: 26 March 2011
- Accepted: 20 October 2011

JEL classification: G210

Keywords:
- Banks
- Financial Crisis
- Markets
- Asymmetries
- Regulation
- Asia.

ABSTRACT

The present financial crisis, starting in the year 2000 with the dot.com bubble break out, lately evolved into something very peculiar and different from any previous historical cyclical turmoil, as considered in our political economy models: Classical, Austrians, Keynesians Monetarist and post Keynesians. Such approaches cannot be seen as appropriate to explain an epochal change in the world economy but simple temporary economic disorders. The new age of turbulence, as Greenspan used to say Greenspan (2007), seems to require a central authority as a regulator of most financial flows and markets and a framework of new rules related to new financial products, new trading rules of markets and financial institutions, mostly banks and trading platforms to pursue the long hoped goal for economic growth in general stability background.Recently, the overlapping prevailing global market has shadowed most local markets and productions, as some low cost Asian Countries industrial production hubs have globally crowded out most western industrial areas.

Reference to this paper should be made as follows: Pines, M. 2013. Banking industry in the global market: Foregrounds of an everlasting evolution, *Ekonomska istraživanja – Economic Research 26(1): 257-276.*

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I. INTRODUCTION

Assuming a common general suggestive definition, the present financial and banking market crisis may look like the final effect of an unjustified global deregulation of financial markets, as originated in the USA trough the *Depositary Institution Deregulation and Monetary Control Act*passed in 1980, the *Garn-St. Germaine Depositary Institution Act*, deregulating the *Savings and Loan* industry in 1982, the*Gramm - Leach - Bliley Act 1999*, known also as *Commodity Futures Modernization Act*,a general unleashed control over banks and a widely spread abuse of management compensation trough generous stock options programs and common leveraged buy out and take over and by some management recurring misbehaviours.
On the other side, the market collapses in the years 2000, 2007 and 2008 and the last derivative toxic financial bubbles bursts and connected stigma might be seen as the outcome of all worsening economic scenarios or the unexpected final effect of very deep rooted series of mistakes, like a *tsunami* in an inexperienced phase of unrelenting global bubbles.

These events suggested large efforts towards:

1. the reshaping of regulatory agencies, the elimination of the national thrift charters and the promotion of new oversight councils and boards to evaluate systemic and local financial risks;
2. comprehensive regulation of financial markets, including increased transparency of derivatives trading (bringing them onto exchanges) and related banking activity;
3. consumer protection instruments reforms, including a new consumer protection agency and monitoring uniform standards for "plain vanilla" products, as well as strengthened investor protection acts;
4. tools for assessing financial crises, including a "resolution regime" complementing the existing Federal Deposit Insurance Corporation (FDIC) authority to allow for orderly winding down of bankrupt firms, and including a proposal that the Federal Reserve (the "Fed") might receive authorization from the Treasury for extensions of credit in "unusual or exigent circumstances";
5. various measures addressed to implement increasing international standards and cooperation, included in this section were proposals related to improved accounting and tightened regulation of credit rating agencies.

The pending inflationary risk, linked to the world new financial and monetary quantitative basis expansion, following the 1971 disclaimer of the gold standard, has not actually been offset and sterilized by the productivity and technological innovations, as commonly asserted during the nineties. Most of the times, prices have been under control by the inflow of low cost Eastern labour, competitive growing of quality technological standards and consequent swelling productions, pouring over western markets at low prices. These events have greatly increased trade, monetary transactions and linked contract settlements as well as all capital flows through a new network of large size banking institutions linked to the huge involved risks. Local side banks and banks out of the new Eastern business have developed residual financial side activity, as developed in recent years after a set of deregulatory instruments. Large availability of funds, easy credit, quantitative easing, have set the base of a huge worldwide indebtedness of both public administration and out crowded traditional western industrial facilities setting lower rating for both Countries and banks.

Within these angles a proper financial market adjustment and banks resizing must consider a preliminary necessary fine tuning of worldwide monetary policies, labour costs and standards and a reconsideration of the welfare State frameworks and structures as stratified during the cold war. A strict set of rules related to market instruments and trading specifications

alone, without considering the financial intermediaries might not be sufficient. Outside the free market price fixing mechanism there is only room for market abuse and manipulation. The present crisis is so far likely linked to some obsolete asymmetries between the welfare state framework and the modern free world markets, with some unsolved related monetary issues.

President Obama later added the *Volcker Rule* to this proposal in January 2010, the rule, which prohibits depository banks from proprietary trading (similar to the prohibition of combined investment and commercial banking in the '30 Glass – Steagall Act) which was passed only in the Senate bill, and trough the conference committee which enacted it in a weakened form that allowed banks to invest up to 3% of their Tier 1 capital in private equity and hedge funds, as well as trade for hedging purposes.

My deep belief is that what happened at the end of the last century causing the three bubbles bursts is not strictly related to some specific deregulation or financial institution or authority misconducts or criminal offense, neither to dangerous financial innovation, on the contrary, what happened begun in the year 1987 with the Greenspan large credit easing to stop the Dow Jones fall and became a monetary expansion phase which culminated with the technology, denominated *NASDAQ*, index rising from under 1,000 to 5,000 between 1995 and 2000. It was an unavoidable course linked to at least thirty years of monetary instability, contradictory remedies and rising uncontrolled public spending, in a new world of monetary euphoria, growth and prosperity, without any care about the potential consequences of a swelling Keynesian monetary *deficit spending*.

II. ECONOMIC INTEGRATIONS, COMPETITION AND COOPERATION

Present Financial Crisis, origins effects in a local versus global Framework

As traces of first banking activities are present in the Hammurabi's code, all trough any ancient society, even within the French revolution period, and the COMECON clearing agreements, history has shown with strong evidence the ascent of money and banking institutions which seem not to have any alternative in any modern social system based on the external exchange productions, except for the primordial nomadic populations.

Goal of this paper is to verify, even in present days, how the banking and the financial systems may evolve toward new patterns and guidelines, but the economic models cannot disregard the banking industry and its significance, even if deeply changing its profiles and structures and operational procedures.

In the 2008 fall the *Development Committee* of the World Bank meeting, chaired by the Italian Central Bank President Draghi, lately named *FinancialStability Board*,trying to work out some measures aimed to save the collapsing Western Economy, adopted the mission statement:

"*We are concerned by the impact of the turmoil in world financial markets and the continued high prices of fuel and food. We welcomed member countries' commitment to take comprehensive and cooperative measures to restore financial stability and the orderly functioning of credit markets*."

The literature emphasis has been focusing on banks, as deemed in their behavior the only determinants forces of present dangers and turmoil, not considering enough the underlying real economy issues, linked to the huge shift of the world financial order from the English speaking world communities to the Asian reemerging Countries, as changed after the monetary disorders following the demission of the gold exchange standard, announced by President Nixon on the 15th August 1971, Ferguson (2008).

The lasting turmoil in most world financial markets, called also euphemistically *banking or financial crisis*, has gradually been revealing itself as something definitely new and very different from any previous historical recession or depression as known and as described and studied in our classic and modern economy models: classics, neoclassic, Keynesians[1] and post Keynesians ones Hyman Minsky P, (1964), and, according to this analysis, this may not be just a financial or banking crisis in its real nature, or a global monetary crisis at all, which are simple collateral fallout effects, but the issue here is which are the remedies to such a deep discrepancy of work costs and the widening of the global occupation market on a world wide basis and its effects.

The present Western crisis stems out of a worldwide historical scenario and may be connected, in its mostly relevant fundamentals to some unsolved monetary issues as described by Robert Mundel in his delivery speech at his Stockholm Nobel price assignment Mundell, (1999) and to some recent social radical changes, starting with the reforms adopted during the seventies and, first of all, and as a generating determinant factor, first and only issue to be considered from the collapse of the Berlin wall in 1990, when the cold war ended and the global market was subsequently reactivated within a new competition scenario, with new free areas and values.

To better understand the recent events, we must reconsider the 1921 Genoa economic conference, addressed to the restoration of a *gold standard*, plan firmly supported by Ralph Hawtrey but strongly opposed by the young John Maynard Keynes, basically unsuccessful, which failure, according to Mundell, led to the second world war as a main underlying factor towards autarchy, custom barriers and spread worldwide nationalism Keynes, (1920).

The 20th Century's unsolved financial unrest starts with the FED foundation in 1913, enacted to save some major bankers, strong supporters of this project, hoping for a lender of last resort in the aftermath of the 1907 banking crash, and deepens during the first world war huge monetary base financing and during the second world war, two global wars in one single Century, according to Mundell, somehow both strictly related to those unsolved monetary instabilities.

The nineteenth century had shown a long lasting efficient international monetary system, as a result of the Vienna 1815 Congress and the aftermath of the British Empire with the sovereign gold pound prevailing after the Napoleonic wars, when a new world order was globally defined Kissinger (1994).

Such system was primarily based on the *gold standard*, operating under the Hume self adjusting price assumptions, which was unfortunately dissolved in the first World War monetary chaos, and its successive failed restoration attempts which, in the last century twenties and thirties years, might have triggered the great depression, most general national autarchies, the collapse of the world trade and, likely as foreseen in *The economicconsequence of the peace*, the second World WarKeynes (1920).

The new settlement arrangements and the *summary agreements adopted in July 22, 1944, at Bretton Woods*, as defined by the Secretary Mr. Harry Dexter White**,** definitely disclaimed by Nixon in 1971, relied in a new version of the gold standard, linked to the dollar policies of the Federal Reserve, alongside the simple self-governing discipline of gold itself. When the link to gold was ultimately severed in the seventies, the Federal Reserve System faced the greatest inflation ever in the United States, which spilled out over the rest of the world as unseen since the days of the Secession War, as shown by (Milton Friedman and Anna Schwarz, 1963) in their *Monetary history of United State*. Even so, as the last century was closing, an angle reconsidering its

[1]Hayman Minsky P.., Marcus Wallenberg, (1986), PAPERS ON INTERNATIONAL FINANCE, *The Global consequences of financial deregulation.*

monetary history created an entirely new framework of unresolved issues and questions about some of the advantages of the payment and monetary system with which the century had previously begun.

Last century can be divided into three different phases:

- the first phase, 1900 - 1933, is the story of the international gold standard demise, its breakdown during the war, its failed restoration strives in the 1920's and its termination in the early 1930's;
- the second epoch, 1934 - 1971, starts in the mist of the great depression from the devaluation of the dollar and the establishment of the new $35 gold price parity in the year 1933, which stops as the United States took the dollar off gold external convertibility for central banks, with the Nixon's announcement in *1971: "I have directed Secretary Connally to suspend temporarily the convertibility of the American dollar except in amounts and conditions determined to be in the interest of monetary stability and in the best interests of the United States"*;
- the third remaining part of the century, 1972 - 1999, is characterized by the consequent unavoidable arrival of the flexible exchange rates system, the subsequent outbreak of massive inflation and stagnation during the 1970's, the huge interest rates volatility, the hedging derivative innovation and the new supply - side economics in the 1980's. Finally, the return to some monetary stability, mostly based on the oil standard and the EMS plan. Since its conception in 1978, the European Monetary System (EMS) as outlined by the Luxembourg Prime Minister Pierre Werner was designed as a framework for monetary policy coordination to overcome the long lasting unsettled turmoil among European and World currencies.

Disillusioned by the uncertain attempts to restore a global monetary reform, likely due to cold war arguments, trough the Gold Commission appointed by President Carter and chaired by Donald Reagan in 1982, which minutes were not published, and by the devastating floating exchange rate system, the EMS founding fathers wanted to restore a system of fixed - but - adjustable exchange rates within most of the European Community, which finally brought to the issuance of the Euro at the end of the 1990's.

At Bretton Woods in New Hampshire, the gold reserve problem was eluded by the establishment of the new platform leading to the *gold-exchange standard*, supported by Harry Dexter White, from the U.S. Treasury Department, a necessary compromise between gold supporters and gold contrarians based on the circulation coverage by both gold and dollars. The IMF and the linked gold parities system lived up to its dismissal in August 1971. In that year the *gold standard* was unquestionably and unconditionally definitely abandoned and we entered the present cycle of ever growing financial and monetary turbulences, likely primary precondition to an *oil standard* and to the more or less efficient fine tuning of most of the monetary policies implemented by the issuing Central Banks.

III. THE PRESENT CRISIS, SPECIFIC CAUSES AND DETERMINANTS

The principal factors affecting the present financial crisis, the banking industry and the financial markets, start in the unpredicted 1987 October exceptional and sudden stock market crash, which leads to the Greenspan appointment at the FED, after an interest rates tightening along Paul Volker era. Greenspan has supported and justified, after expressing some younger point of view stressing the opposite, the loose monetary policy, in a new age dominated by the three following new major features:

- the second unavoidable world wide trade liberalization, which led to the *second globalization*, as collateral effect of the cold war conclusion in 1990 and the fall of the Berlin wall;
- the existing asymmetries in local social, work, taxing and regulatory frameworks and fundamentally asymmetric welfare standards, accounting rules, financial reporting and auditing practices, which eventually promoted the Asian large and sudden industrialization;
- the mass progressive reallocation of most industrial finishing productions on a world wide basis from regional local markets to the Eastern and far Eastern regions, pursuing the final target of a larger critical industrial size trough mass production, lowering costs in the global world competition, unquestionably prevailing over a single or minor areas trading approach, NAFTA, EU, ASEAN, EFTA, EU-CARICOM, CIFTA, ALADI and more similar trade agreements.

Just to stress some of these special determinant factors, promoting on a global basis unprecedented fair competition, we outline some Western countries unparalleled costs stemming from tight regulation about:

- labor protection stringent procedures, permanent growing compulsory training, updating requirements and new fiscal reporting duties;
- privacy strict protective widespread rules;
- financial transactions monitoring and reporting costly procedures;
- filings against illegal recycling activities;
- financial auditing and complex filing requirements;
- labor and enrolling preferred compulsory paths;
- unions strict political and social monitoring attitudes;
- labor permanent challenging negotiations;
- unavoidable dismissal rules and labor severance penalties.

Furthermore, the overlapping synergetic global logistic facilities became overcrowded while at same time they were downsizing any local market and production in a new dual market system. The rapidly industrializing hosting Asian countries were globally outperforming all the elsewhere local active producers and had as well self enlarged and rapidly grown on a planetary scope.

The out breaking US trade deficit, alone, jumped from $65 billion in 1993 to a more than $700 billion annual average from year 2005 to 2010, about 5 percent of GDP.

Today imports from the *Middle Kingdom*, or *Chinese Empire*, and the petroleum deficit, account for nearly the entire U.S. trade deficit. Chinese and Middle East exporters use their dollar proceeds from growing large trade surpluses to mainly buy U.S. treasuries, real estate and

industrial property worldwide. This global trend has been keeping long-term interest rates low, permitting Americans, as largely happened, to borrow *recklessly and sub primarily* on homes and commercial buildings and find support to public deficit spending. The Asian funds inflows and loose monetary policies have been inflating property values, stock prices and related derivatives in an enlarging swelling row of bubbles, meaning inflationary potentials not compensated by any Central bank action, but misrepresented as technology and productivity major factors offsetting inflation instead of effect of low Asian labor costs.

At any meeting, held every month by the US Senate Committee on Banking[2], Mr. Greenspan, when chairing the Fed, was assuring that *innovation and productivity* were providing price stability, while offsetting risk of inflationary consequences. Actually, the process was an enlarging crowding out of western more expensive industrial productions by less expensive Chinese and far Eastern reallocated industrial numeric controlled productions, restocking all over the world retail and wholesalers shelves at lower prices.

IV. THE UNDERLYING OUTSOURCING VOLUMES ANALYSIS.

The volume evidence of what said is easily supported and verified recalling the dynamic quantity of TEU (twenty equivalent unit) traffic trough same Asiatic harbors origins and its booming trend after the 9/11 attack. These data are yearly published by the *London Container Industry Review*, and assessed in millions of teu per year as handled by single Asian harbors considered with each one showing a turnover of more than two million teu per year:

TABLE 1 - OVERALL TEU TRAFFIC: FIRST 20 PORTS YEAR 2002

Geographic Area	Volume	Total (% of Total)
Aisa	84.951.148	65,89%
North Europe	22.448.422	17,41%
North America	14.381.242	11,15%
Middle East	4.194.264	3,25%
Mediterranean	2.954.571	2,29%
Total	128.929.647	100,00%

Source < www.ci-online.co.uk >

TABLE 2 - OVERALL TEU TRAFFIC: FIRST 20 PORTS YEAR 20011

Geographic Area	Volume	Total (% of Total)
Aisa	214.130.458	79,10%
North Europe	29.586.043	10,93%
North America	14.001.610	5,17%
Middle East	13.000.000	4,80%
Mediterranean	-	-
Total	270.718.111	100,00%

Source < www.ci-online.co.uk >

[2] <http://banking.senate.gov/public/index.cfm?FuseAction=Home.Home>

The Chinese trade balance financial surplus have systematically supported both American deficits, the external and the internal one, trough the systematic purchase of public debt treasuries and bonds while reallocating most of the excessive Chinese liquidity with North American banks, without an acceptable risk caring liquid reserves diversification.

American banks found, therefore, new ways and instruments to lend ever growing deposits against relatively small amounts of paid in capital, which should eventually provide their cushion against bad loans during forthcoming recessions. They wrote *credit default swaps* - insurance policies that were generally backed by few if any assets. Financial investments houses and banks placed swaps in a grand *Ponzi*[3] scheme that shall take a decade to completely unwind, just because producers were not investing and industrial output was progressively deteriorating and credit demand have been insufficient to match growing banks' fiduciary deposits.

At the beginning there was just the monetary crisis and bubbles, which started with the definitive repudiation of gold, which had always been an independent objective ceiling to money creation, as proclaimed in the year 1971 by President Nixon during the Vietnamese war. The circumstance was immediately followed by an impressive rising effect on gold prices, previously steady for almost forty years since 1933. The unresolved monetary issues led to a huge inflationary bubble up to Paul Volker, previously Secretary of the Treasury (1969-1974), nomination to chair the FED and trying to reduce the developing inflationary trends.

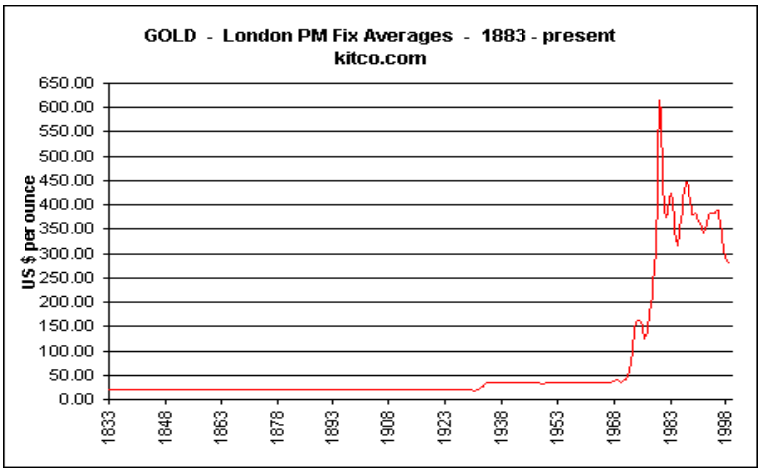


FIGURE 1. PRICE OF GOLD AS DAILY TRADED IN LONDON

Source <www.kitco.com>

From such an interruption of a long lasting unquestionable fixed price and prevailing foreign exchange stability, an interest rates symmetric trend was immediately discovered and driven out by market forces and policies intervention under same grounds.

[3] The scheme has been named after Charles Ponzi, who duped thousands of New England residents into investing in a postage stamp speculation scheme back in the 1920s.

In this period the derivative industry was founded and new products appear over the market as both hedging instruments and speculative vehicles, up to their final eruption in the last huge 2008 bubble.

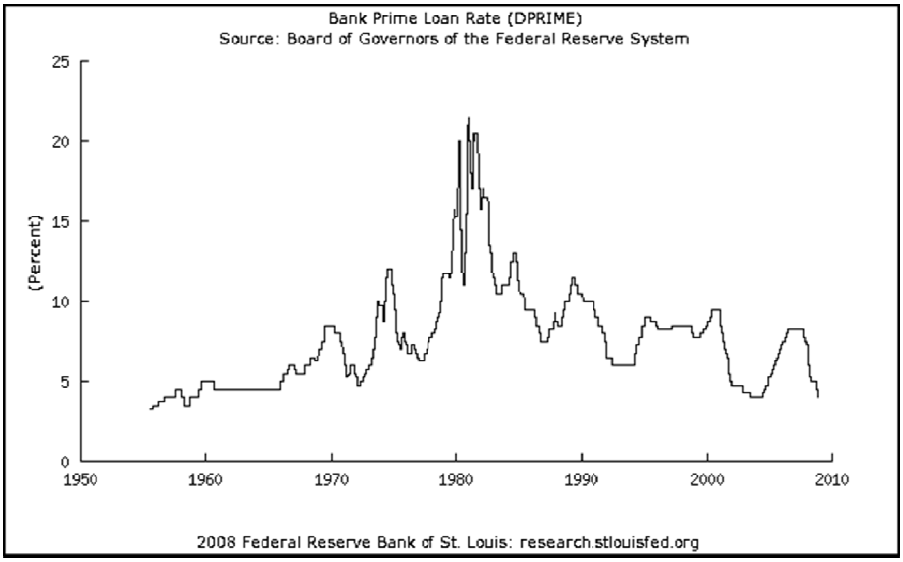


FIGURE 2. PRIME RATE LOAN RATE

Source: research.stlouisfed.org

The historical inflationary dynamic, experienced since 1913 – 1919 First World War monetary consequences, were prevailing closely reflecting both the deflationary and the inflationary policies, alternatively implemented during different monetary policy phases. The unsuccessful return to gold and the implementation of legal tender alternating periods in Europe during the thirties, finally terminated with the multilateral clearing system, mostly settled trough the new IBS Basel bank.

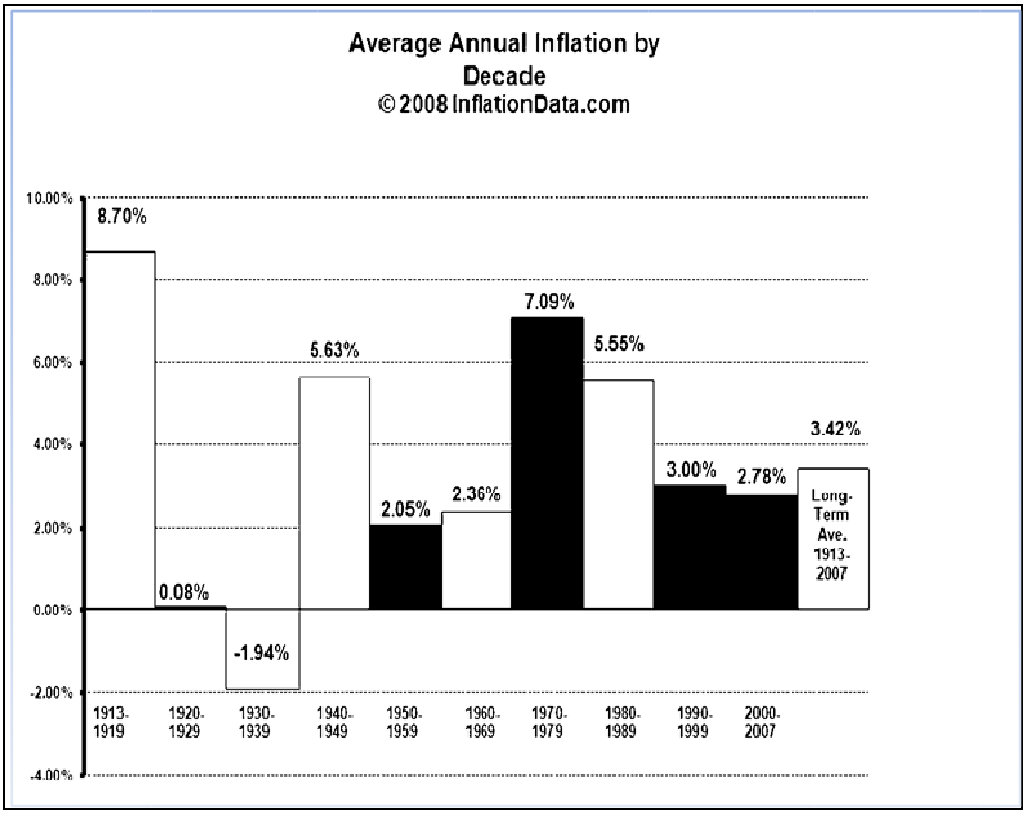


FIGURE 3. AVERAGE ANNUALE INFLATION BY DECADE

Source <http://inflationdata.com/Inflation/Inflation/DecadeInflation.asp>

Autarchy and the dismissal of the first globalization, through custom barriers, protectionism and nationalistic attitudes, with devastating military effects, trade obstructions have been definitely rejected after the 20th Century tragic events. In our current present scenarios, such events neither are evoked nor considered repeatable. A soft exit to the present monetary stalemate may be reconsidered through a set of guidelines targeting realistic available resources, global social welfare average standards, within a global enforcement of legal and institutional competitive market rules.

V. SOME UNRESOLVED MONETARY ISSUES

The economic case against possible trade protectionism is that it distorts incentives: each country produces necessarily goods in which it has a comparative disadvantage, and consumes too little of imported goods, under normal conditions that's the end of the general prosperity.

From an economic point of view, the final collapse of the monetary *Gold Standard* induced some consequent monetary market abuse in the late eighties, clearly perceived in the year 1987, with the second stock exchange collapse in the 20th century. The October crash was faced by the Fed trough a progressive lessening of the previous tight monetary policy, in connection with some tax, social welfare and reporting worsening conditions which started to

promote a slow but progressive migration of most Western productions towards the East Asian tigers countries, pursuing cheap manufacturing and labour costs. During this period, most of the international banks started to revise their growing projects and a new era was shifting banks form international to global, with new larger operational critical volumes and operational patterns. Since then, the connected price stability, notwithstanding the general monetary base increasing volumes, was seen as productivity expansion and technology progresses, both offsetting major monetary supply inflationary risks.

The unreliable efforts to exploit new form of money standards and payment systems: from *bancor* at Bretton Woods, to the *special drawing rights* in the seventies, to the Ecu or *European currency unit* in the eighties and lately trough the EMS to the *Euro*, while challenging Asian low wage countries competition was growing in the last Century's decades, have produced a real global imbalance in a world split between a progressively more industrialized expanding half hemisphere and a consuming but not competitive half, leading to the present economic crisis, to growing oil prices and to a set of general monetary imbalances.

The Americans made a historical plan for monetary reforms, including a world currency called the unitas already at Bretton Woods in 1944. President Franklin D. Roosevelt told U.S. Treasury Secretary Henry Morgenthau, Jr. to study instruments for an international currency to be implemented after World War II. Harry Dexter White from the U.S. Treasury finally formulated his planned return to gold.

In practice, up until the final collapse of the Bretton Woods system in 1971, gold itself newly performed this monetary stabilization role, when the U.S. dollar was valued and multilaterally traded among central bankers at pre war 35 dollars an ounce and all the other currencies were collateralized to either the U.S. dollar or directly to gold with an official intrinsic parity registered with the IMF.

The 1987 stock market collapse came surprisingly and unexpected for most of the specialist observers while a monetary reaction was unavoidably due to the prevailing loose monetary policies, on the contrary of what happened in 1929, when the planned return to gold was already in full gear.

FIGURE 4. STOCK MARKET INDEX YEAR 1987
Source: StockCharts.com

The consequences are now well known and may be seen in the following charts: which represent the shifts in monetary policies from loose and tight money, blowing bubbles which afterwards disintegrated down and collapses around most of the markets from year 1999 do year 2008 and likely will further continue to explode.

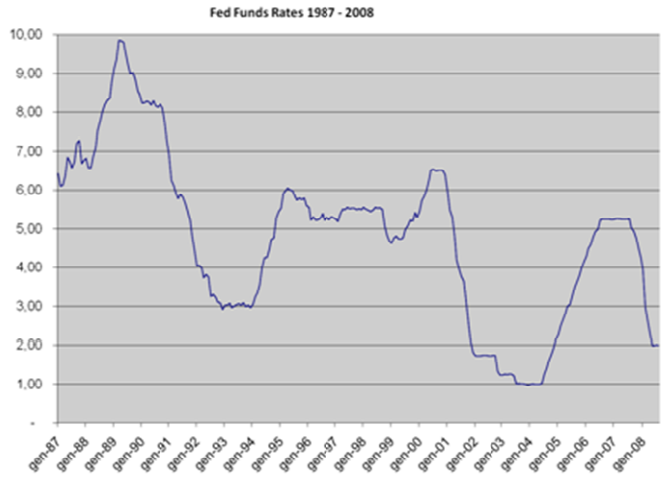


FIGURE 5. FED FUNDS RATES 1947 2008

The Fed funds slope reflects both the tightening monetary policy and the monetary cycles acting as monetary factors originating bubbles and their subsequent blast in the market. This development was not foreseen under the prediction of Greenspan's *soft landing,* assumed as a return to the true market price discovery function, after the monetary supply extravaganza would have been removed.

Actually, the Dow Jones reeached unprecedent and unthinkable levels and the inflation started to develop in the year 2004 in an imperfect market.

FIGURE 6. Down Jones index 1960 - 2008

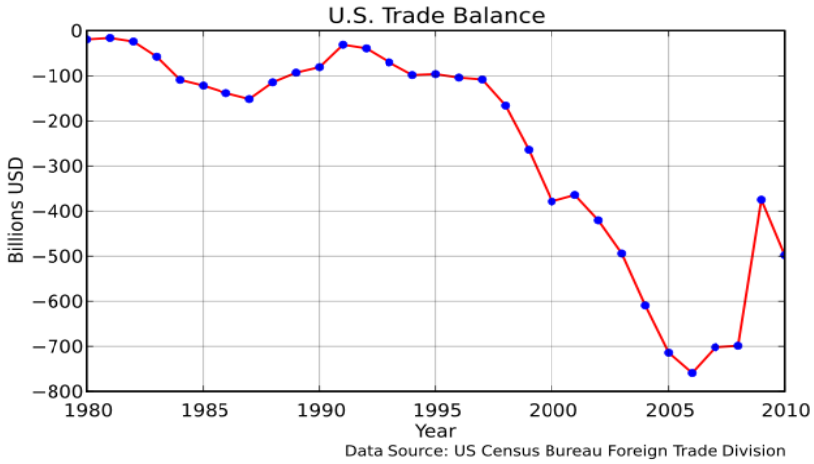


FIGURE 7. US TRADE BALANCE 1980 - 2010

Source <www.mwhhodgeshome.att.net/reserves.htm>

These figures reflect the huge growing of both internal and external US debts and the monetary effects on stock market, which are a clear and real sign of what was producing the loose monetary policy enforced in the system. Since then, the resulting effects appeared to look like:

• an unprecedented huge trade deficit with global exchange disruptions and world-wide financial turmoil: banking upsizing and refinancing by States and international financial institutions;

• a huge internal and external deficit, with unparalleled outstanding US liabilities to most of foreign Central Banks, especially the Bank of China, which is heading to over three trillion dollars;

• an energy dependency due to the self adjusting oil prices which reflect the gold price movements, almost pegged, while setting itself in a range of 5% to 10% of gold's price movements;

• a huge chance for global and international banks to enlarge their size, operational range and trading activities trough new global trading platforms, apart from usual trading facilities on the world scenario with new technologies, instruments and connections.

The idea to promote the Euro as a reserve currency and to strengthen the European economic presence in such a World scenario has faded as the Asian economies have been undertaking a cost competition that has been crowding out most of the western industrial productions, while hoarding huge amount of US currency supporting the internal and external US deficit at same moment.

The world financial activities and monetary base expansion has not been developing into an inflationary arena because of the productivity and technological asserted innovations but, on the contrary, mostly because of Eastern low labour costs, growing improving quality standards, large scale productions and their distribution all over the global markets.

VI. CONCLUSIONS - THE EXIT STRATEGY AND ITS ALTERNATIVE CHOICES, A NEW EVOLVING APPROACH

Within these angles, only complex continental agreements seem to be an exit strategy to face a challenging economic struggle in an open and integrated trade space, with appropriate new never seen before bank sizes, which require critical large fiduciary masses, asset diversification capable of huge synergies and, finally, levelling off the asymmetries in the global technological platforms.

As the flowing liquidity supplied by the Far Eastern growing economies on one side supported the internal US and on a growing scale some European deficit, the stemming credit potential due to such huge resources, after the repudiation of the *Glass and Steagall Act* and the adoption of the *Gramm - Leach - Bliley Act* in the year 1999, named *Commodity Futures Modernization Act*, backed by the Treasury Secretary Lawrence H. Summers, led on the other side, to the

- the technology companies bubble and their year 2000 collapse;
- the ENRON and WORLDCOM entering global banking activities on an intercontinental basis;
- aggressive subprime lending in the mortgage markets;
- the transfer of financial risks from global banks to third no banking parties, trough the sale of unprecedented quantities of CDS and all sort of derivatives which have swollen to uncontrolled OTC instruments;
- the emerging global banking structures, too big to fail, and a general attitude to take over most of bad banking liabilities trough tax payers funding;

Such new legislative instruments, were promoted by the Clinton banking industry deregulation, and caused the exceptional bubble eruption under the dot.com label first and the widespread

subprime lending and derivative global shifting of related risks within the banking industries there-after. Banks were progressively free to expand in the financial instruments market, while loosing confidence in progressive lacking new industrial reliable financing opportunities.

Indeed, the upsurge of new financial derivatives and finally the general slowing down in the industrial activities in the Western hemisphere, led the everlasting banking industry to the *sub prime* new swelling activity, and to the final fatal collapse of all the financial markets, when the Fed tried, unsuccessfully, to frame the inflationary symptoms in the year 2004 by raising the Fed interest rates.

The Fed choice led to the collapse of some major financial institutions in the year 2007. Afterwards, followed the fatal demise of both the *Federal National Mortgage Association* FanniMae, and the *Federal Home Loan Mortgage Corp* (FHLMC) Freddy Mac and spread troubles in most of the investment Banks since the year 2008.

Henry Paulson Jr. Treasury Secretary tried all the ways to find a solution on the multiple sides of banking institutional crisis, the toxic bonds issue, the bad banks segregation and the TARP (Troubled Assets Recovery Plan) programs, but there was not a single common agreement about what to do and when do it.

The World financial and political community has been organizing meeting at top level but every single session has been promoting a different explanation and a different strategy of very new and assorted problems, as emerging out of the such new situation..

Finally, Treasury Secretary Henry M. Paulson Jr. has adopted the solution of *the Troubled Assets Relief Program*, the TARP starting with a first $700 billion bailout. The frequent changes of direction have not only been embarrassing, they alsoupset the very markets this program was designed to ease and actually has instated the quantitative easing programs, that are waging over new potential bubbles.

The fact is that among so many choices, the Administration had not jet decided how to solve the unsolvable problem of an almost declared banking system failure, which was already history and probably couldn't be solved. Either you declare inconsistent the assets inscribed in the financials of a bank, or the equity inconsistent, or finally you declare that the banks don't exist any more since they are bankrupt showing negative equity.

The TARP program acquired strength under President Obama and Secretary Geithner with two further large quantitative easing, bringing the monetary base to unprecedented levels in a race against roaring deficits linked to the incoming economic recession.

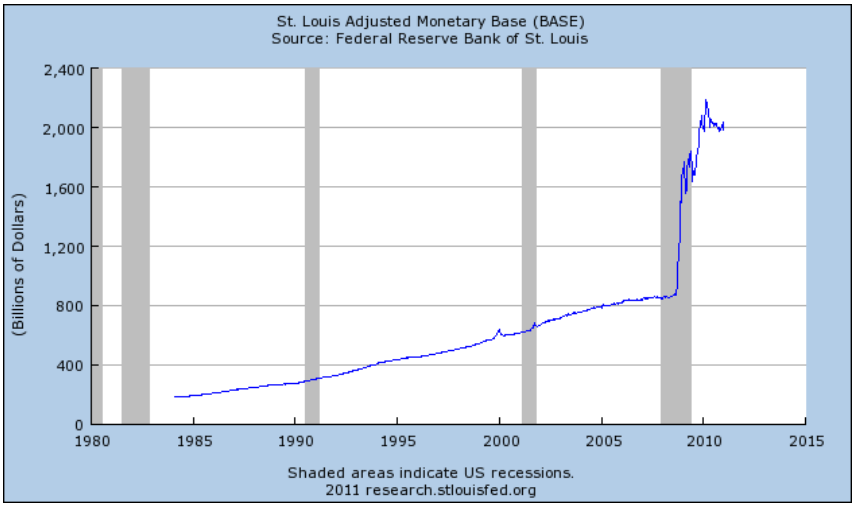


FIGURE 8. MONETARY BASE INCREASE 1980 - 2012

So, the music is now strong with the financial and banking industry but what really matters is the crisis with bank borrowers, either private mortgage borrowers, which are unemployed or firms that are unable to service their scheduled loan plans as the relocated producers are fighting toughly back from the far East on rebates and gadgets which are crowding out firms like General Motors, Ford, Chevrolet. These are not global market producers like Lexus or Tata, or have not relocated Eastward on proper time.

The Japanese liquidity trap has already shown the ineffective role of loose credit policy and inefficiency of all set of monetary remedies: it has been already a decade since the Japan trade marks have disappeared from western shelves with the Bank of Japan keeping interest rates on loans close to zero and the continental Europe has been facing a definitive debacle in its automotive, electronic and durables productions on similar grounds.

This real problem has turned now in a global unemployment risk and in an unique purchasing power in the hands of few oriental Central Banks to be likely spent in overtaking Western industrial complexes. China, Singapore, Korea, Japan and Taiwan, which have the largest vault of assets in the world history, are facing a dilemma in avoiding a general monetary collapse, which could lead to a disruptive inflationary wave, but meanwhile have become large buyers in the major stock exchanges trough most western large banks shifting money from one angle of the planet to the other in real time.

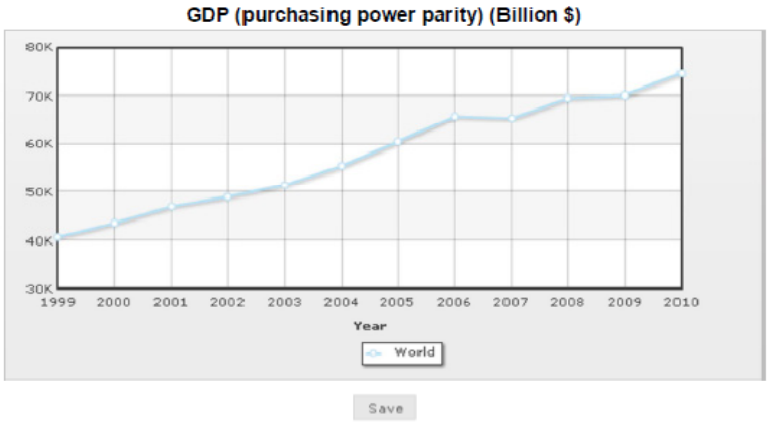
All has been stemming from a progressive two layers coexisting economy systems: a local split set of national and regional markets and a contextual huge global market, confronting each other. The final success lies in the volume synergy linked to the global market potentials and to a more flexible social infrastructure, which better face to a new age, where the global versus local markets economy has no solution in reinstalling trade barriers.

Joseph E. Stiglitz stressed out, a consequence of the recent crisis that might stem from the following principles arising from the last decade events Stiglitz (2010):

- markets are not self-regulating;
- market information is too huge to be handled;
- there is not enough tight policies to fight inflation;
- financial innovation has not been always successful.

His remarks may not be correct as most of the present financial disorder stems out of the market asymmetries which have been favouring the huge reallocation of world production Eastward and actually along some simple Smith's free market rules. Since the welfare State has been held up during the cold war as a remedy to avoid global dissemination of totalitarian regimes, reforms have developed social and political costs in Western world, affecting industrial and services production; the collapse of the Berlin wall has freed the basic of market competition all over the Eastern hemisphere, causing the greatest depression ever in the western area. At same time, starting from year 2000, the world total GDP has grown mostly in Asia bringing the total from 32 towards 90 tr.

Such an immense success of the Far Eastern new economies is the final proof that State intervention, mainly supported by legal tender monetary expansion (*fiat money and quantitative easing*) has showed once more not to be efficient. From an exchange rate point of view, the Chinese currency exchange rate value seems definitely irrelevant. From a competition point of view, as long as labour costs are freely adjustable to any price movement, not being fixed or under labour unions monitoring, cost production factors are easily adjustable to any exchange rate fluctuations in Asian markets. The elasticity in labour costs is potentially offsetting any foreign exchange variation at least in short terms..



Country	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
World	40,700	43,600	47,000	49,000	51,480	55,500	60,630	65,950	65,610	69,620	70,170	74,540

FIGURE 9. WORLD GDP FIGURES

Source <http://www.indexmundi.com/g/g.aspx?v=65&c=xx&l=en>

As can be easily seen, the world GDP has, actually, more than doubled from 32 trillion US$ at the beginning of the millenium to over 70 trillions today, in only eight years, since the year 2000 to year 2008, it has grown dramatically and more than ever in history before. From 32 to 74,54 trillion at the end of 2010, this period reflects one of the greatest world economic successful growth, if reconsidered from a quantitative global production point of view and is mostly linked to the facilities supplied by the successful global banking industry within the modern technology, allowing the electronic shifting at light speed of bills of lading, purchase orders and any sort of documentation in digitally, registered, stamped and signed species form a continent to the other.

As a consequence of the previous considerations and data, shown in all collected figures, the structure of the real economy is therefore not reflecting issues linked to the financial turmoil

over the trading markets, speculation not covered by hedging risk offsetting contracts, has produced losses as well as the sale or the purchase of coverage derivatives. From an economic point of view, the irrational uncovered risks taking on by savers and public entities, has reflected the final conclusion that risk is not avoidable, just transferrable, therefore only arbitragers and inside traders have not lost their capital.

I would stress that any form of regulation may not prevent losses, but may become a misleading approach if addressed to solve the underlying global monetary adjustments not yet sufficiently studied and understood, reforms pending unsolved since the 15th of August 1971.

From a geographical angle, the GDP has as well dramatically changed in its distribution trough countries, the following pictures, as reflected in the last edition of the *Economist* shows the likely source of next 10 tr. of new world GDP, the location reflects the actual growth, not properly definable a depression or even a recession on a world basis outlook.

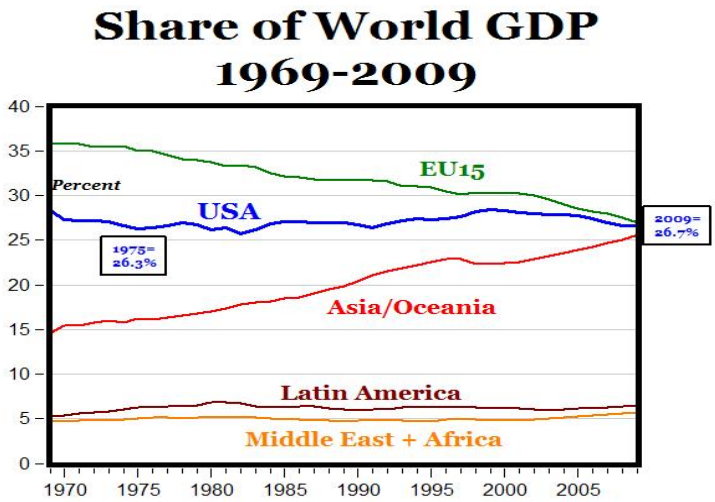


FIGURE 10. SHARE OF WORLD GDP BY WORLD BANK
Source: http://jccavalcanti.wordpress.com/2009/11/21/share-of-world-gdp-1969-2009/

From a global share point of view, while still a stable amount of the increasing GDP, is reported for North America, a growing share lies in Asia-Oceania, where it has been gaining space, the loosing area appears to be Europe. This gross deflated product figures reflect the global banks relocating strategies and merging operations from a national and international to a global point of view.

Putting emphasis over market patterns, short positions limits, derivative trading and risk assuming constraints, without a clear consideration of what happens in the real world economy, seems not be meeting much chances of success or, as it has already happened, avoid future losses and disruptions. Whenever the fundamentals of the economy reflect a gap between the real economy, or market forces and the financial connected transactions and banking activities, there will always be no coherent behaviour or what Keynes used to call euphoric exuberance, due to the immaterial side of human brain.

Most of the losses on financial markets and stock exchanges actually are developing in Western institutional markets and are likely due to the underlying real economy imbalances, both public and private.

This present evolution requires a review of some previous economic obsolete models:

- old industrial production technology;
- market restricted fragmentations and stems likely from a
- huge monetary crisis, as a consequence of the end of the cold war;
- the refusal of the gold standards guidelines discipline, as restored at Bretton Woods in 1944, but *temporary* repudiated in 1971 by President Nixon and
- the end of some affluent society patterns, collapsing within the welfare state sovereign colossal debts.

Such models must be reconsidered and set up in a global banking monitoring compatible new global angle. All the modern welfare political costs and inefficiencies are surfacing as a freer competition arises from the new Eastern, radically different, social relations.

Only a slow adjustment to the new global open markets behaviour and to the related unquestionable new standards prevailing in the world wide competition, under new critical corporations and new global banking functions as trading and market platforms, after a deep monetary reconsideration, restoring a vehicle able to stimulate savings and stable values, will bring new chances of economic stability and capital formation to the now recessing Western world areas, while new ones are dramatically remerging and taking over the old world.

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BANKARSKA INDUSTRIJA NA GLOBALNOM TRŽIŠTU: OSNOVNE KARAKTERISTIKE STALNE EVOLUCIJE

Sažetak: Trenutna financijska kriza koja je započela 2000. godine s pucanjem dot.com balona, kasnije je evoluirala u nešto vrlo specifično i različito od bilo kojeg prethodnog povijesnog cikličkog previranja, onako kako se obično navodi u našim političko ekonomskim modelima: klasičnim, austrijskim, Keynesovim monetarnim i post-Keynesovim. Takvi pristupi ipak nisu prikladni za objašnjavanje epohalne promjene u svjetskoj ekonomiji već samo privremenih ekonomskih previranja. Nova era turbulencija, kako je govorio Greenspan (GREENSPAN, 2007) , čini se da zahtijeva centralni autoritet koji bi bio regulator većine financijskih tokova i tržišta kao i okvir za nove zakone vezane za nove financijske proizvode, nova pravila tržišta i financijskih institucija, uglavnom banaka i platformi za trgovanje kako bi se radilo na dugo željenom cilju ekonomskog rasta u situaciji opće stabilnosti.

U posljednje vrijeme, preklapanje prevladavajućeg globalnog tržišta je zasjenilo većinu lokalnih tržišta i proizvodnji, nakon što su neki jeftini industrijski proizvodi azijskih zemalja globalno preplavili većinu zapadnih industrijskih područja.

Neizbježan inflatorni rizik povezan s novom svjetskom financijskom i monetarnom kvantitativnom ekspanzijom, nakon odricanja od zlatnog standarda 1971., nije zapravo neutraliziran i steriliziran od strane produktivnosti i tehnoloških inovacija kako se općenito tvrdilo u devedesetima. Cijene su uglavnom bile pod kontrolom radi pritoka jeftine radne snage s Istoka, konkurentnog rasta tehnoloških standarda kvalitete i posljedičnog bujanja proizvodnje koja se prelila na zapadna tržišta uz niske cijene. Ti su događaji uvelike povećali trgovinu, novčane transakcije i vezane nagodbe po ugovorima kao i sve tokove kapitala putem nove mreže velikih bankarskih institucija povezanih s ogromnim uključenim rizicima. Lokalne banke i banke izvan novih istočnih poslova razvile su rezidualne financijske prateće aktivnosti koje su se razvile posljednjih godina nakon niza deregulatornih instrumenata. Velika raspoloživost fondova, lako kreditiranje, kvantitativno ublažavanje, postavili su temelje ogromnoj svjetskoj prezaduženosti kako javne administracije tako i tradicionalnih zapadnjačkih industrijskih postrojenja donoseći niži rejting kako zemljama tako i bankama.

U tim okvirima, prava prilagodba financijskog tržišta i smanjivanje banaka moraju razmotriti potrebno preliminarno fino ugađanje svjetskih monetarnih politika, cijena i standarda rada te revidiranje okvira i struktura socijalne države onakvih kakvi su se stratificirali tokom hladnoga rata. Strogi skup pravila povezanih isključivo s tržišnim instrumentima i trgovinskim specifikacijama, bez uzimanja u obzir financijskih posrednika, mogao bi se pokazati nedovoljnim. Izvan mehanizma određivanja cijena na slobodnom tržištu ima mjesta samo za zloupotrebu tržišta i manipulaciju. Trenutna se kriza do sada može povezati s nekim zastarjelim asimetrijama između socijalne države i modernih slobodnih svjetskih tržišta, uz nekolicinu neriješenih povezanih monetarnih pitanja.

Ključne riječi: banke, financijska kriza, tržišta, asimetrije, regulacija, Azija

EKONOMSKA ISTRAŽIVANJA-ECONOMIC RESERACH
ISSN 1331-677X print

2013 Volume 26(1): 277-286

WHAT DETERMINES THE PROFITABILITY OF COMPANIES: CASE OF CROATIAN FOOD AND BEVERAGE INDUSTRY

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ARTICLE INFO

Article data:
- Received: 19 January 2012
- Accepted: 13 September 2012

JEL classification: D22, D40, L25, C33

Keywords:
- Profitability
- Structure and firm specific factor
- Food and beverage industry

ABSTRACT

A company's profitability has always attracted the attention of academics and practitioners interested in revealing the main factors that determine business success. Although profitability has been widely investigated in manufacturing industry as a whole, studies related to the individual sectors within this industry are fairly rare. This is especially true for the food and beverage industry. Accordingly, the aim of this paper was to investigate the factors that determine companies' profitability in the Croatian food and beverage industry during the period from 1999 to 2009. The results of the conducted dynamic panel analysis revealed negative and significant influence of company's debt ratio on profitability; and significant positive influence of company's size, concentration **ratio and past** performance on current profitability. Additionally, MES, risk, and asset turnover had no significant role in determining profitability.

Reference to this paper should be made as follows: Pervan, M.; Mlikota, M. 2013.What Determines the Profitability of Companies: Case of Croatian Food And Beverage Industry, *Ekonomska istraživanja – Economic Research 26(1): 277-286.*

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I. INTRODUCTION

Food and beverage industry is an important segment of every economy. According to the Croatian Chamber of Economy (CCE), food and beverage industry in 2009 participated with 21 percent in gross value added of Croatian manufacturing industry and employed about 47,000 people which is approximately 20 percent of the total employment in manufacturing industry. When compared with other segments of manufacturing industry, it can be stated that this industry employs the largest number of people and generates the highest value of total revenue. Unlike the other sectors of the Croatian economy that are stagnating or even declining over time, food and beverage industry has managed to maintain stability during the last decade. Accordingly, it is an area of strategic importance for the development of Croatian economy and society as a whole.

Taking into account that one of the main objectives of every company is profitability, it is obvious why determinants of companies' profitability have attracted the interest of academic research. In order to investigate the effects of firm-specific and industry-specific determinants on the firms' profitability we used dynamic panel data model and applied the GMM estimator proposed by Arellano and Bond (1991). The analysis was conducted for the period 1999-2009 and the results revealed that size, concentration and debt ratio have significant influence on company's profitability while minimum efficient scale, risk, and asset turnover had no significant role in determining profitability.

The paper will firstly present some of the main characteristics of Croatian food and beverage industry and then review the existing literature on determinants of firm's profitability. Subsequently it will discuss methodology and specification of variables as well as data source and the expected sign, followed by the results of the conducted analysis. The article concludes with the presentation of significant findings and a summary of the results.

II. CHARACTERISTICS OF CROATIAN FOOD AND BEVERAGE INDUSTRY

Food and beverage production is a very important activity for any country's economy, including Croatia. Each country tries (as far as possible independently) to meet the nutritional needs of its population with its own production and to minimize food import dependency. It was determined a long time ago that Croatia had significant natural, material and human resources as well as great potential for food production. This potential goes even above the level that meets the needs of its own population.[1]The importance of food and beverage industry in Croatia is reflected in the size, growth and performance of this industry relative to the other sectors within Croatian economy.

Food and beverage industry involves companies that mainly belong to the most successful Croatian companies and in comparison to other manufacturing industries it is exactly this industry that achieves the highest total revenue and employs the largest number of people.[2] According to the CCE, food and beverage industry participates with 18.63% in the total industry which means that it makes almost a fifth of the total industrial production, while its share in GDP is around 2.8%.[3] Furthermore, the value of food and beverage industry in Croatia is reflected in the fact that its export structure is dominated by products of food industry, rather than primary

[1]Mirna Leko-Šimić, "Prehrambena industrija u istočnoj Hrvatskoj- karakteristike problemi i perspektive", in Strategija razvitka poljoprivrede i prehrambene industrije istočne Hrvatske, ed. by Marijan Jakšić (Osijek: Međunarodni znanstveno-stručni skup,Hrvatska gospodarska komora, 1999), 181-182.

[2] Dušan Tomašević, Strateški odzivi i performanse poduzeća u mesnoj industriji hrvatske (Magistarski rad, Split: Ekonomski fakultet 2007), 87.

[3]Statistical Yearbook of the Republic of Croatia 2010., Central Bureau of Statistics.

agricultural produce. An additional characteristic of this industry making it important for the Croatian economy is its ownership structure which is still predominantly Croatian. All this makes the food and beverage industry, together with agriculture and tourism, one of the strategic sectors for the further development of Croatian economy.

III. PREVIOUS RESEARCH

Empirical researches that examine the impact of structural and firm-specific factors on the companies' performance were mainly conducted in the developed industrial countries, especially in the USA. Much less attention to this area was devoted in the less developed countries.[4] Furthermore, researches related to the structural factors (such as, for example, different indicators of concentration, measures reflecting economies of scale and other measures reflecting barriers to entry) where implemented on a wide range of industries at an earlier stage, but later studies of this kind were mostly related to individual sectors (banking, agriculture etc). The results of these studies varied.

Most studies conducted at the industry level showed a *positive* relationship between concentration (as a commonly used indicator of market structure) and profitability, for example, Bain (1951) and Weiss (1974). After Weiss some experts expanded their studies to include other countries. Among them, Neumann and others (1979) studied western Germany; Bhattacharya and Bloch (1997) analysed Australia, Hsu et al. (2008) investigated Taiwan, Bhandari (2010) studied India, Harrison and Rude (2004) explored Canada, Resende (2007) investigated Brazil, etc. They also found a positive relationship between various indicators of market structure and profitability. However, Porter (1974), Connolly and Hirschey (1984) and Srinivas and Kumar (2010) came up with contradictory results based on the data from the USA and India. The above mentioned authors have shown that this relationship can also be *negative* or *insignificant*. Mixed results were also obtained in the various analyses that examined the impact of different firm specific factors and their influence on companies' profitability. Recent empirical studies based on the data from different countries include such authors like Vijayakumar (2011), Ito and Fukao (2010), Goddard et al. (2005), Hassan et al. (2011), Seelanatha, L., (2011),Nunes et al. (2010),Fenny at al. (2005) and so on. There is little literature that deals with structural and firm-specific factors and their influence on companies' profitability at the level of developing countries (Hsu et al. (2008), Chang-Yang and Mahmood (2009),Ponikvar and Tajnikar (2011)), while only few studies deals with the food industry Vlacllvci an Oustapassidis (1998), Stiegert et al. (2009), Juhász, et al. (2008), Ahmad and Shamsudin (2008).

Studies of this kind are non existent for the Croatian food and beverage industry. Therefore, in order to contribute to the understanding of the determinants of profitability of companies operating in developing countries and to shed new insights on the factors that may influence on business success, in this study a model of profitability that incorporates the structural and firm specific factors is formulated and tested.

IV. MODEL SPECIFICATION AND VARIABLES

In order to investigate the way in which the profitability of the company is responding to structural changes and changes of other firm-specific factors, we constructed the profitability model in which we included different variables that are chosen on the basis of relevant theory and literature. In addition to theoretical considerations the choice of explanatory variables is

[4]Gurvinder S.Shergill and Maninder S. Sarkaria. "Market Structure and Financial Performance - An Indian Evidence With Enhanced Controls", The Indian Economic Journal 48, no. 2 (2011): 99.

based upon the availability of data. As the starting point, we formed the database by consolidating data derived from the basic financial statements[5] of each company operating in food and beverage industry in Croatia during the period from 1999 to 2009. Due to the lack of data (i.e. financial statements for the reference period) some companies could not be taken into consideration.

Regarding the statement that many of economic relations are dynamic in their nature and that past companies' performance may affect its future output decisions, a dynamic model (1) was estimated. This dynamic model uses GMM estimator proposed by Arellano and Bond (1991).

The general model estimated in our analysis can be presented as:

$$\pi_{it} = \alpha + \delta\pi_{i,t-1} + \sum_{f=1}^{F} \beta_f X_{it}^{f} + \sum_{s=1}^{S} \beta_s X_{it}^{s} + \varepsilon_{it} \qquad (1)$$

where π_{it} represents the profitability of a company *i* at time *t*, with *i*=1, ...,*N*, *t*=1,.., *T*; $\alpha$is a constant term,$\pi_{i,t-1}$ is the one-period lagged profitability, δisthe speed of adjustment to equilibrium, $X_{it}^{'}$'s are the explanatory variables (namely, X_{it}^{f} denotes firm-specific variables; X_{it}^{s} denotes structure i.e. industry-specific variables), $\varepsilon_{it}$is the disturbance, with ν_i the unobserved firm-specific effect and $u_{it}$the idiosyncratic error.

As a *dependent variable* reflecting companies' profitability, we employ EBITDA ratio. EBITDA was calculated as a sum of profit after taxes, cost of interest, income taxes and depreciation and the resulting value was divided by sales revenue.

The *independent variables* included in the model are *industry concentration* and the *minimum efficient size of a plant* (i.e. industry-specific variables), *size of the company*, *debt ratio* and *asset turnover ratio* (i.e. firm-specific variables). *Risk* is introduced in the model as a *control variable*.

Most studies trying to explain relationship between market structure and companies' profitability use *measuresof concentration* (concentration ratio – CR and/or Herfindahl-Hirschman index – HHI) as an approximation of industry structure because these parameters tend to embrace number and size distribution of companies within the industry. Taking into account the above, concentration ratio of three leading companies in the industry (CR_3) and Herfindahl-Hirschman index (HHI) was calculated (at the three digit level of NACE) and as a basis for calculation of these measures, sales revenue was used.[6]

Barriers to entry are those factors which allow established firms on the market to charge higher than competitive price and thus to achieve higher than competitive profits. Technology, as one of the factors that determine barriers to entry, often occurs in the form of *minimum efficient scale* – MES. It represents the size of the company at which long-run average costs are at the minimum. If an industry has a very large MES this may discourage new companies from entering the market and therefore it can be expected that the MES[7] will have positive impact on

[5]Basic financial statements used in this case are the balance sheet and income statement (profit and loss statement). Until 2007 these statements were obtained from the Financial Agency (FINA), while for 2008 and 2009 data were downloaded from the FINA web site http://www.fina.hr/Default.aspx

[6]HHI index has been calculated on the basis of market shares of large and medium-sized companies and other companies in the industry are assumed to have equal market shares.

[7] Simon Feeny, Mark N. Harris, and Mark Rogers, "A dynamic panel analysis of the profitability of Australian tax entities." *Empirical Economics* 30, no.1 (2005): 214.

profitability. In this study MES was calculated as an *average value of assets of companies controlling 50%* of the revenue at the three digit level of NACE.

Firm size (SIZE) is one of the variables that reflect firm-specific factors. Variable such as firm size might be important since it can be the source of economies and diseconomies of scale.[8] In this study, SIZEvariable is measured as the natural logarithm of the total assets of the company. Firm size can have a positive impact on profits in a manner that it can behave as a barrier to entry. Otherwise, if there is a negative relationship between profitability and assets, that implies an inefficient use of assets. Since previous researches show the presence of positive as well as negative impact of this variable on the profitability of the company, this study does not prejudice a priori a sign that the SIZE variable would have to take.

Debtof a company is the next variable that can have a significant influence on the profitability of the company. *Debt ratio*, calculated as the ratio of total liabilities to total assets, shows how much of companies' assets was funded by outside sources. This indicator shows the ability of the company to cover all its obligations to its creditors and investors. The higher the degree of debt the higher the risk of business, and it should not be greater than 50%.[9] The higher the degree of indebtedness, the greater amount of debt is used to generate the profit. Researches associated with the impact of debt on return of a company have also led to different results.[10]

Asset turnover may also have impact on the profitability of the company. Analysis of the relationship between income and assets is known as *analysis of turnover of total assets*. This coefficient is used to measure how many units of income come from one unit of assets of the company. Therefore, asset turnover ratio is used to measure the effectiveness of the operations. A high asset turnover ratio is preferable to the lower because the former is an indicator of the better operating performance. Additionally, a higher asset turnover ratio symbolizes greater shareholder wealth. However, an inverse relationship exists between profit margin and asset turnover ratio. For example, if the net profit margin is high, revenue or net sales will thus be low and this will result in lower asset turnover ratio.

We use *risk variable* as a control variable in the model. In industry research in USA, *variance of individual rates of return* is used as an index of risk.[11] According to the traditional theory that relates risk and rates of return, most stockholders tend to avoid risk and in order to take the higher risk they require a higher return ("risk premium") as a reward for taking on more risk. Thus, according to the *"risk premium hypothesis"* the risk and rate of return should be positively correlated.

V. RESULTS OF EMPIRICAL RESEARCH - DYNAMIC PANEL ANALYSIS

This analysis was conducted on the sample of *medium and large* Croatian companies that operated within the food and beverage industry during the period from 1999 to 2009. Companies whose data were not available during the period covered by this analysis as well as companies that were making losses and/or were in process of bankruptcy were excluded from the analysis.

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[8] David Besanko and Ronald R. Braeutigam, Microeconomics (Hoboken: John Willey & Sons, 2011): 231.
[9] Vinko Belak, Menadžersko računovodstvo (Zagreb: RRiF plus: 1995).
[10]Matarirano Obert and Fatoki Olawale, "Does debt really matter on the profitability of small firms? A perspective on small manufacturing firms in Bulawayo, Zimbabwe", African Journal of Business Management 4,no. 9 (2010):1709.
[11]Manfred, Neumann, Ingo Böbel, and Alfred Haid, "Profitability, Risk and Market Structure in West German Industries", The Journal of Industrial Economics 27, no. 3 (1979): 227.

Taking this into consideration, the total number of observations for all the selected industries in the observed period was 1059.

In order to estimate the earlier presented model of companies' profitability (1) GMM Arelano Bond estimator was applied. The first step in the model estimation was to test the validity of the instruments that were taken into consideration. Validity of instruments in the model was tested by using Sargan test. The value of Sargan test for over identification of the restrictions should be higher than 0.05 in order to exclude the possibility of exogenous instrumental variables. Namely, the optimal number of instruments must be selected in order that null hypothesis of Sargan test can be true without significant increase of bias estimator.[12]

TABLE 1 –RESULTS OF ESTIMATION OF DYNAMIC PANEL MODEL

Variables	Coefficient	P
$EBITDA_{t-1}$	0.0913527	0.017
SIZE	3.801991	0.059
CR_3	0.092698	0.083
MES	-0.000001	0.332
RISK	0.000866	0.837
DEBT	-0.135329	0.001
ASSET TURNOVER	-1.563447	0.220
Constant	-0.536151	0.015
Sargan test (p-value)	0.5512	
Arelano Bond (m1) (p-value)	0.1535	
Arelano Bond (m1) (p-value)	0.6446	

Source: Authors' calculation

The Table 1 indicates that there isno evidence of over-identifying restrictions because the value of Sargan test is 0.5512. In this case the null hypothesis (the selected instrumental variables are uncorrelated with the residuals) is not rejected, meaning that all conditions for the moment are satisfied and that all instruments in the model are accepted. Besides Sargan test two more tests where conducted.[13]These are first-order and second-order tests of autocorrelation of the first differenced residuals (tests m_1 and m_2). Neither one of these tests does not reject hypothesis of no autocorrelation of the first or second order (statistically insignificant p-value). According to all the performed tests it can be concluded that the estimated model satisfies all the diagnostic tests.

[12] A.C. Cameron and Trivedi P.K., Microeconometrics Using Stata (Revised Edition, A Stata Press Publication. Texas: StataCorp LP, College Station, 2010): 301.
[13]T.W. Anderson and Cheng Hsiao, "Estimation of Dynamic Models with Error Components," Journal of the American Statistical Association 76, no. 375 (1981): 598.

The estimated parameter of the independent lagged variable *(EBITDA$_{t-1}$)* shows that profitability of the company (within the food and beverage industry) from the previous period has positive and statistically significant influence on companies' profitability in the current year. This confirms the dynamic character of the model. Taking into account the interval of parameter δ, and watching the value of this parameter in model 1 which is closer to 0 than to 1 (i.e. 0.0913527), it is possible to conclude that this is a relatively competitive industry. This indicates the high speed of adjustment of profits to those in equilibrium. *Concentration* (approximated with CR_3 index) also shows positive and statistically significant influence on the profitability of a company. Having in mind the assumptions of the SCP theory according to which firms operating in a concentrated industry are likely to benefit from collusion, higher prices and therefore profits, it can be concluded that SCP theory is true in case of Croatian food and beverage industry. Almost identical values (in terms of statistical significance and strength/intensity of effect) are obtained when we introduce variable HHI as a variable of concentration instead of CR_3. Positive and statistically significant influence of variable *SIZE* on companies' profitability indicates the existence of economies of scale in food and beverage industry in Croatia. Considering this, large companies have advantage in comparison to small companies because they have lower operating costs as well as lower cost of production and also stronger bargaining power towards suppliers and distributors. Another variable in the estimated model has a statistically significant impact on the profitability of companies in food and beverage industry, and this is the *debt* variable. The negative sign of this variable indicates that a fall of enterprise profitability will occur if the ratio between total liabilities and total assets of a company increases. Expressed in terms of profitability of companies operating in the food and beverage industry, one might conclude that a high level of debt due to high interest payments and consequently increased enterprise risk, is leading to poor business results and to poor profitability. *MES* (representing barrier to entry) is not a statistically significant variable, meaning that in the Croatian food and beverage industry there are no indications of the existence of obstacles, expressed in terms of minimum efficient plant size that would discourage new companies to enter the industry. This is supported by the fact that during the period covered by this analysis the number of companies increased by almost 40%. Finally, with regards to statistical insignificance of the variables *risk* and *assets turnover* it can be concluded that these variables do not play a significant role in achieving the profitability of companies in Croatian food and beverage industry.

VI. CONCLUSION

Food and beverage industry is one of the strategically important sectors for the development of Croatian economy. This industry is among the few industries in Croatia that have managed to survive over time, have contributed to the total industrial production and are above all particularly successful. This industry is certainly significant in terms of production facilities, income that it generates and the number of employees in it. Structure of the food and beverage industry is dominated by a small group of large companies that occupy the largest share when we take into account employment and total income.

Food and beverage industry has undergone numerous changes in the period from 1999 to 2009. Many trends in surroundings have influenced the development of this industry. To analyze and investigate the structural and firm-specific factors that determine the success of a company we used dynamic panel analysis and applied the GMM estimator proposed by Arellano and Bond (1991). The research has shown that profitability of a company from the previous period (in this case observed over EBITDA indicator) has a statistically significant influence on profitability in the current period. Small value of this parameter indicates that profitability of competing firms is not persistent and that differences in profits among firms will disappear in the long run. Therefore

Croatian food and beverage industry can be described as a relatively competitive industry.Further, the study results indicated the existence of a positive relationship between industrial concentration and profitability of enterprises (assumptions of SCP paradigm are valid), which means that in industries characterized by high concentration companies are approaching to anti-competitive behaviour (i.e. collusion among large firms in the industry is present) which in turn weakness the market competition and ultimately leads to increase of profits. However, due to insignificant influence of barriers to entry in to the company's profitability, the results indicate that Croatian food and beverage industry is not protected by entry barriers that would prevent the entry of new firms into the market and thus further ensure high profits to the existing firms in the market. In addition to studying the influence of market structure on company profitability we also studied the impact of firm-specific factors on it. The results of the estimated model of profitability of a company show that asset turnover ratio has no statistical significance on profitability as opposed to the size and debt ratio. A negative sign of debt ratio variable indicates that a high level of debt due to high interest payments (and consequently increased enterprise risk) is leading to poor business results and to poor profitability. On the other side, a positive influence of a firm's size on its profitability may be due to the fact that large firms are more efficient on account of scale economies. Also, large firms may have more capital or favorable financing conditions i.e. small firms often suffer from borrowing constraints. Furthermore, large firms may use their reputation as an advantage or may have an advantage in negotiations with suppliers and channel members. Finally, large firms may have more market power that enables them to profitably raise the market price and consequently earn higher profits.

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ŠTO ODREĐUJE PROFITABILNOST PODUZEĆA: SLUČAJ INDUSTRIJE HRANE I PIĆA U HRVATSKOJ

Sažetak: Profitabilnost poduzeća je oduvijek privlačila pozornost brojnih znanstvenika i stručnjaka usmjerenih prema istraživanju glavnih faktora koji određuju poslovni uspjeh poduzeća. Iako je profitabilnost naširoko istraživana u prerađivačkoj industriji kao cjelini, studije vezane za pojedine sektore unutar ove industrije su iznimno rijetke. Ovo posebice vrijedi za industriju hrane i pića. Sukladno tome, cilj ovog rada bio je istražiti faktore koji determiniraju profitabilnost poduzeća koja su djelovala u hrvatskoj industriji hrane i pića tijekom vremenskog perioda od 1999 do 2009. Rezultati dinamičke panel analize otkrivaju negativan i statistički značajan utjecaj zaduženosti poduzeća na njegovu profitabilnost, te statistički značajan pozitivan utjecaj veličine poduzeća, industrijske koncentracije i uspješnost poslovanja iz prethodnog razdoblja na profitabilnost u tekućoj godini. Dodatno, rezultati istraživanja su pokazali kako MES, rizik i obrtaj imovine nemaju značajnu ulogu u određivanju profitabilnosti poduzeća.

Ključne riječi: profitabilnost, strukturi i poduzeću specifični faktori, industrija hrane i pića

EKONOMSKA ISTRAŽIVANJA-ECONOMIC RESERACH
ISSN 1331-677X print

2013 Volume 26(1):287-288

BOOK REVIEW

BRIAN BONIFACE, CHRIS COOPER AND ROBYN COOPER, WORLDWIDE DESTINATIONS: THE GEOGRAPHY OF TRAVEL AND TOURISM. LONDON AND NEW YORK: ROUTLEDGE, 2012.

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Worldwide Destinations: The geography of travel and tourism (2012) was published by Routledge (Taylor & Francis Group) in London and New York. The authors of the book are Brian Boniface, M.A., (University og Georgia) a tourism consultant; Chris Cooper, a professor and director at Christel DeHaan Tourism and Travel Research Institute, Nottingham Business School, the author of numerous books and scientific papers in the field of destination and knowledge management; Robyn Cooper, a graduate student at the University of Leicester.

This book deals with main geographical principles of travel and tourism and explores tourism resources, organization, demand and supply of every destination worldwide. The authors rich experience in the scientific and educational workfield make this work useful not only for students and scientists researching tourism, geography or tourism geography, but also a literature for everyone who is interested in learning new facts about places worldwide. This book is also like "the world at a glance". This is the sixth edition of this title, which has been updated with issues that have impacts on tourism such as demographic and climate changes, recreational preferences and the social impacts as well as an extended chapter on Asian tourism.

The book was written in English and it consists of two related parts which extend to 26 chapters in 610 pages. The first part of the book deals with the geographical principles of travel and tourism, focuses on main terms and major components of the tourism system, concepts and definitions of demand for tourism, the characteristics and management of tourism resources and relationship between climate, transport and tourism. The second part of the book deals with the tourism geography of every country in the world especially according to aspects such as demand, tourist attractions and trends. A great number of figures and tables help readers to understand the previously explained theoretical concept. The chapters include 26 case studies and a lot of discussion points, review questions and assignment that can encourage students (readers) in secondary research and wider reading. After the second part there is an Appendix in which the authors explain how to locate places on a world map, select alternative routes to a destination, interpret information and how to draw simple sketch maps. In the end of the book there are references and useful sources that will help students in comprehending the material or learning new things. These include list of books, reports, dictionaries, encyclopedias, statistical sources, journals and website. On the last pages there are selective place names and subjects listed by alphabet. The authors and publisher made a unique companion website for the sixth edition (www.routledge.com/cw/boniface) that includes interactive and multiple-choice questions for readers to test their own learning. The book has a less Euro-centric approach than previous editions since the authors gave more space to destinations especially in Asia, showing that traditional destination (in Europe and North America) have serious competitions in attracting tourism demand.

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The first part of the book, entitled *The Geographical Principles of Travel and Tourism* is divided into five chapters. The first chapter (*An introduction to the geography of travel and tourism*) defines the basic terms such as leisure, recreation and tourism and identify the three major components of the tourism system. The authors also explained the methods that are useful for measuring tourist flows. The next chapter titled *The geography of demand for tourism* explains the term tourism demand and the difference between effective and suppressed demand. For better understanding the demand for tourism it is necessary to spy influence of several factors (economic development, population factors, political influences and personal variables). The third chapter (*The geography of resources for tourism*) deals with main characteristics of tourism resources and methods for their classifying and evaluating. Tourism resources are intuitive at three scales: global, national and local. The authors distinguish the need for planning, marketing and sustainable tourism development. *Climate and tourism* is the title of the next chapter where the major elements of climate and their effects on various types of tourism are being analyzed. The last chapter in the first part titled *The geography of transport for travel and tourism* points out the close relationship between tourism and transport. The characteristics of each mode of transport and their contributions to tourism are also explained. Each chapter starts with learning objectives and ends with summary and assignments.

The second part of the book titled *The Regional Geography of Travel and Tourism* is divided into four sections: Europe, the Middle East and Africa, Asia and the Pacific and the Americas. The authors provide basic information about every country in terms of the demand for tourism (characteristics of domestic, outbound and inbound tourism), the supply of tourism (transport, available types of accommodation and organizations that are responsible for tourism promotion) and tourism resources that attract tourist or that are important for future tourism development. The final chapter outlines the *Tourism futures*. It discusses how the changes on market, destinations, transport, tourism sector and process of globalization will influence in shaping the future geography of travel and tourism.

Comparing theory and practices, book provides a framework for understanding most aspects of travel and tourism not just for academics, but also for not travel professionals. It is well-structured design, with clear style and global orientation so it can offer some real value to student learning. *Worldwide destinations: The geography of travel and tourism* contributes to better understanding other cultures which why this book is welcome worldwide.