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Preface

We are excited to organize our 11th conference on September 12th, 13th, and 14th, 2013 at *the Institute of Economics, Ural Branch of Russian Academy of Sciences* in Ekaterinburg, Russia. We are honored to have received top-tier papers from distinguished scholars from all over the world. We regret that we were unable to accept more papers than we have. In the conference, 134 papers were presented and 205 colleagues from 38 countries attended the conference.

This conference proceeding includes selected full papers from the 11th EBES Conference – Ekaterinburg. In this proceeding you will find a snapshot of topics that are presented in the conference. As expected, our conference has been an intellectual hub for academic discussion for our colleagues in the areas of economics, finance, and business. Participants found an excellent opportunity for presenting new research, exchanging information and discussing current issues. We believe that this conference proceeding and our future conferences will improve further the development of knowledge in our fields.

Distinguished researchers, **Alexandr I. Tatarkin**, **Murat Cetinkaya**, and **Christos Kollias** joined the conference as keynote speakers. *Alexandr I. Tatarkin* is a professor of economics and director of *the Institute of Economics, the Ural Branch of Russian Academy of Sciences*. Professor Tatarkin is also a member of the *Russian Academy of Sciences* and many national and international scientific institutions. His main fields of interest are regional economics and innovation development and he has many publications in national & international journals. *Murat Cetinkaya* serves as the Deputy Governor at the Central Bank of the Republic of Turkey (CBRT) and member of the Monetary Policy Committee. Before joining the CBRT, he worked in the finance sector in Turkey for long years. He held top management positions in Albaraka Turk Participation Bank**,** Halkbank**,** Halk Securities**,** and Kuveyt Turk Participation Bank Inc. He was appointed as Deputy Governor of the Central Bank of the Republic of Turkey on June 29, 2012. *Christos Kollias* is a professor of applied economics at the *University of Thessaly* in Greece. He has published over fifty papers in journals and collective volumes on defence and peace economics, defence policy, and applied macroeconomics. He serves as the European/rest of world editor of the journal of the *Defence and Peace Economics* and on the editorial board of the journals of the *European Review of Economics* and *Finance* and *Review of Economic Theory,* and is co-editing the book series *Science and Society* (in Greek).

I would like to thank to all presenters, participants, board members, and keynote speakers and looking forward to seeing you all again at the upcoming EBES conferences.

Best regards,

Ender Demir, PhD
Conference Coordinator

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CONCENTRATION AND PROFITABILITY IN TURKISH BANKING INDUSTRY

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Abstract: The aim of this study is to (i) examine the degree of concentration and (ii) analyze the relation between concentration, bank size and profitability for Turkish banking industry. The empirical study includes the deposit banks. As a proxy for concentration CR3, CR5, CR10 and Herfindahl Hirschman Index are used. Our results indicate an unconcentrated banking sector in Turkey. After analyzing concentration, we investigate the relationship between concentration and profitability for Turkish banking system. To analyze the effect of the level of concentration on the profitability, profit ratios are regressed on different measures of concentration, bank-specific characteristics and macroeconomic determinants. All measures are calculated using accounting data obtained from annual reports of the banks, from the financial statements published by Banking Regulation and Supervision Agency (BRSA) and The Banks Association of Turkey (BAT). The empirical results show that concentration affects bank profitability positively but measures of concentration have not statistically significant estimated coefficients in our models.

Keywords: Bank, Concentration, Profitability

1. INTRODUCTION

Turkish banking sector is classified under three functional groups as deposit banks, participation banks, development and investment banks pursuant. Deposit banks are authorized to accept deposit and extend loans, participation banks are authorized to collect funds by special and participation accounts and extend loans. Development and investment banks perform the duties granted to them upon special laws and are authorized to extend loans excluding accepting deposit or participation fund. As of 2010, 92.6% of the sector's asset size is composed of deposit banks, while 4.3% of participation banks and 3.1% of development and investment banks (BRSA, 2011). Our study includes the deposit banks because of the available data from 2003 to 2012. Another reason for the initiation of the study in 2003 is the effects of the financial crisis 2000-2001 in Turkey. After the crises, received a severe economic impact to the banking sector and restructuring process has been implemented within the framework of the programme. Weak banks were taken over by the Savings Deposits Insurance Fund of Turkey (SDIF) and excluded from the banking system. In this process, banks' capital structure has been strengthened and embarked on bank mergers and the banks return to their primary duties is provided. Some of the banks were re-capitalized or merged, or both, while some were actually sold and the number of foreign banks has been increased (Ozatay and Sak, 2003). There have been fundamental changes in the behavior of banks with more emphasis on profitability in recent period.

It is particularly important for emerging countries to ensure that the banking system is stable and efficient. A profitable banking system is likely to absorb negative shocks, thus, maintaining the stability of the financial system. The market structure matters for the bank's power in setting interest rates that can directly affect its performance. A positive statistical

relationship between measures of market structure, such as concentration or market share, and profitability has been reported by many banking studies (Mirzaei *et al.* 2013).

In this context, it is aimed to analyze the relation between concentration, bank size and profitability for Turkish banking industry. We use k bank concentration ratios and the Herfindahl – Hirschman index in terms of assets, deposits and credit portfolios to test the degree of concentration in Turkish banking industry. The return on assets ratio (ROA) and the return on equity ratio (ROE) are the used to determine the profitabilities of the banks. To analyze the effect of the level of concentration and bank size on the profitability these ratios are regressed on different measures of concentration, market structure, bank-specific characteristics and macroeconomic determinants.

The paper is structured as follows. Section 2 provides a selective review of previous theoretical and empirical literature on the determinants of bank profitability and concentration–profitability relationship. Section 3 describes the data set, estimation techniques and empirical model. Section 4 presents the estimation results and the paper ends with some concluding remarks.

2. REVIEW OF LITERATURE

The literature concerning the concentration–profitability relationship falls into two broad approaches: the Market Power (MP) and Efficiency Structure (ES) paradigms. These have very different understandings of the direction of causality between concentration and profitability. In a MP paradigm, the direction of causality runs from the market structure of an industry to its behavior, which affects its performance. A concentrated structure is conducive to the use of market power in ways that may enhance banks' profitability. An ES paradigm, by contrast, would see causality as running from individual firms' efficiency to their market share and profitability (Tregenna, 2009).

Studies on the performance of banks have also started with the application of the MP and ES theories. There are three distinct approaches within the MP theory; the Structure-Conduct-Performance (SCP) Hypothesis, the Relative- Market-Power Hypothesis (RMP), and the Scale-Efficiency version of the Efficient-Structure Hypothesis. The SCP Hypothesis states that banks set prices that are less favorable to consumers in more concentrated markets because of an imperfect competition. The RMP Hypothesis suggests that only banks with large market shares and well-differentiated products can exercise market power in pricing these products and earn supernormal profits. Finally, under the Scale-Efficiency version of the ES Theory, all banks have equally good management and technology (the same X-efficiency), but some banks simply produce at more efficient scales than others. Under the scale efficiency version of the ES Hypothesis, the more efficient banks gain market share exactly through their increased efficiency, eventually also resulting in high concentration, but without the collusive effect of SCP (Shepherd, 1982; Lambson, 1987). The ES theory includes two hypotheses; the X-efficiency and scale efficiency hypotheses. The X-efficiency hypothesis argues that banks with better management and practices control costs and raise profit, moving the bank closer to the best-practice, lower bound cost curve. The scale-efficiency hypothesis argues some banks achieve better scale of operation and, thus, lower costs. Lower costs lead to higher profit and faster growth for the scale-efficient banks (Jeon and Miller, 2005).

The empirical evidence in the existing literature on the relationship between bank concentration and profitability is mixed. Smirlock (1985) investigates interrelationship between profits, market share and concentration for 2,700 banks. The results of the analyses suggest that the link is between market share and profitability and that, once this is controlled for, there is no discernible positive relationship between concentration and profitability.

Tregenna (2009) analyses the effects of structure on profitability by using panel data to test the effects of concentration, market power, bank size and operational efficiency on profitability. Robust evidence is found that concentration increases bank profitability. Jeon and Miller (2005) examine the relationship between several measures of U.S bank concentration at the state level and the average performance of banks within that state. They find a robust positive correlation between bank concentration in a state and the average return on equity within that state. Moreover, the linkage runs from increasing bank concentration to increasing bank profitability, and not the reverse. Their study shows that the market power, rather than the efficient-structure, hypotheses holds for the U.S. banking industry during the last quarter of the 20th century. The results of Behname's (2012) study on the banks in the OPEC countries show that scale efficiency have positive and significant effect on profitability but, concentration decreases profitability. Genchev (2012) investigates Bulgarian banking sector and finds positive and statistically significant relationship between market share and profitability. The results confirm that there is no statistically significant relationship between the concentration and profitability. Bhatti and Hussein (2010) examine the relationship between market structure and performance in the banking sector. Investigating the effect of changes in the market structure on profitability is based on the SCP and ES hypotheses. They have used concentration ratio (CR) to SCP hypothesis and market share to measure efficient-structure ES hypothesis. Using regression analysis, they have found a positive relationship of concentration ratio (CR) with profitability and they conclude that there is a positive relationship between profitability and concentration. Berger (1995) enters the debate between market-power and efficient-structure explanations of the profit-structure relationship in banking by including direct measures of X-efficiency and scale efficiency in his study. He finds that none of the hypotheses are overwhelmingly important in explaining bank profits, suggesting that alternative theories be pursued. Goddard *et al.* (2004) investigate the profitability of European banks during the 1990s using cross-sectional, pooled cross-sectional time-series and dynamic panel models. Models for the determinants of profitability incorporate size, diversification, risk and ownership type, as well as dynamic effects. Despite intensifying competition they find significant persistence of abnormal profit from year to year. The results show that the evidence for any consistent or systematic size – profitability relationship is relatively weak, the relationship between the importance of off-balance-sheet business in a bank's portfolio and profitability is positive for the UK, but either neutral or negative elsewhere and the relationship between the capital–assets ratio and profitability is positive. Goldberg and Rai (1996) do not find a positive and significant relationship between concentration and profitability for a sample of banks across 11 European countries over a four year period, 1988-91. However, they find evidence to support one of the two versions of the efficient-structure hypothesis for banks located in countries with low concentration of banks.

3. DATA AND METHODOLGY

The major sources of bank-level data for this study are balance-sheet and income-statement information derived from the annual reports of the banks, from the financial statements published by BRSA and BAT. For the empirical tests we use, 11 variables derived from 28 banks financial statements with ten years data from 2003 to 2012. The sample is comprised of 3,025 observations.

Measurement of concentration is important for banks conduction in the banking industry. There are different measures to find concentration level. We analyze the degree of concentration by using *k* bank concentration ratio (CR3-CR5-CR10) and the Herfindahl – Hirschman index in terms of assets, deposits and credit portfolios.

The most widely applied measure of concentration in the empirical literature is *"k* bank concentration ratio''. It is calculated by summing only over the market shares of *k* largest banks in banking industry:

$$CR_k = \sum_i^k = 1\, S_i \quad (1)$$

where, S_i - the market share of the bank i and *k* – leading banks in the market. This technique is an important one to examine influence of major banks, thus, this ratio can be computed for the largest two (CR2), three (CR3) and five (CR5) bank's total assets, total deposits, and credit portfolios. The index ranges between 0 and 1. The ratio is 0 when there infinite number of equally sized small banks and in the case of monopoly ratio equal to 1. The index provides information only about shifts in market shares between the top n banks and the remaining small banks, but does not capture changes in distribution within these two groups. Moreover, it ignores the structural changes in the part of the industry which is not included in concentration ratio and also neglects the competitive influence of small banks on the decisions of the large banks in the market (Bikker and Haaf, 2000; Alegria and Schaeck, 2006).

The Herfindahl-Hirschman Index (HHI) is a popular measurement of concentration level in studies. This index is used by the Department of Justice and Federal Trade Commissions of the United States of America to measure concentration level in the market. HHI index is calculated as below which is the sum of the squares of banks market shares: The Herfindahl index (also known as Herfindahl-Hirschman index, HHI) is estimated as follows:

$$HHI = \sum_i^n = 1\ S_i^2 \quad (2)$$

where, n- number of banks in the market, *i*- an individual bank and s_i market share of an individual bank. The index might be calculated for the bank's total assets, total deposits and for the credit portfolios. Contrary to the *k* bank concentration ratio, in the calculation of HHI, all banks in the market are taken into account. HHI stresses the importance of larger banks by giving them a higher weight than smaller banks. If whole percentages are used, the index ranges from 0 to 1. According to the accepted standards if calculated index is below 0.01 (or 100) market is highly competitive, if index is between 0.01(100) and 0.15 (1,500) market is unconcentrated, the index between 0.15 to 0.25 (1,500 to 2,500) indicates moderate concentration but the banking system is approaching the monopolistic market structure and if the level of concentration is more than 0.25 (2,500) market is characterized as monopolistic competition.

After analyzing concentration, we investigate the empirical relationship between concentration and profitability for Turkish banking system during the 2003-2012 period. To analyze the effect of the level of concentration in Turkish banking system on the profitability of banks, profit ratios are regressed on different measures market structure, bank-specific characteristics and macroeconomic determinants. We estimate regressions using a pooled sample of 3,025 observations, 30 deposit banks with ten years of data. *The regression models are* represented by the *following* equations;

$$\pi_{i,t}^{\boldsymbol{ROA}} = \beta_0 + \beta_1 CR5_t + \beta_2 HHI_t + \beta_3 TAl_{i,t} + \beta_4 TIA_{i,t} + \beta_5 CAD_{i,t} + \beta_6\, OER_{i,t} + \beta_7 ASGDP_t + \beta_8 IRCPI_t + \beta_9 GPPGR_t + \varepsilon_{i,t} \quad (3)$$

$$\pi_{i,t}^{\boldsymbol{ROE}} = \beta_0 + \beta_1 CR5_t + \beta_2 HHI_t + \beta_3 TAl_{i,t} + \beta_4 TIA_{i,t} + \beta_5 CAD_{i,t} + \beta_6\, OER_{i,t} + \beta_7 ASGDP_t + \beta_8 IRCPI_t + \beta_9 GPPGR_t + \varepsilon_{i,t} \quad (4)$$

where we use ROA and ROE as profitability measures.

- $\pi_{i,t}^{ROA}$ is the profitability of bank *i* in the year *t* using measure return on assets. ROA measures profitability of the bank in using its assets to generate net income.
- $\pi_{i,t}^{ROE}$ is the profitability of bank *i* in the year *t* using measure return on equity. ROE measures profitability of the bank at generating profits from every unit of shareholders' equity. Higher values of ROA and ROE show that the bank is more profitable.

Concentration and bank profitability have been found to be positively related in a number of empirical studies, and these findings have been interpreted by structuralists as evidence that their position is correct (Whalen, 1987). If the coefficient of the bank concentration values are significant in our study, the structuralists is supported who suggest that high market concentration levels increase profits. We measure the market structure in the Turkish banking industry by CR5 and HHI.

- $CR5_t$ is the total assets of five largest banks as a share of the total assets of all deposits banks in the country in *t* time.
- HHI is a measure of the size of the banks in relation to the industry and an indicator of the amount of competition among them

The following variables are used to measure the bank size and bank-specific characteristics.

- $TAlog_{i,t}$, the natural log of total assets of bank *i* in the year *t*, is the first bank-spesific determinant used as control variable. We predict the bigger banks have more advantages in terms of profitability than their smaller counterparts. It is expected that asset size affect profitability positively.
- The second and third bank-spesific control variables are; $TIA_{i,t}$ ''total investment assets as a percentage of total assets of the bank *i* in *t* time'' and $CAD_{i,t}$ ''cash and dues from banks as a percentage of total assets of the bank *i* in *t* time''. We estimate that risk free assets and riskless assets have positive effects on profitability. But liquidity is expected to have negative effects on profitability of the banks.
- The last bank-specific determinant is the measure of the operational efficiciency of the bank. $OER_{i,t}$ is calculated as the total other expenses to net income of the bank *i* in the year *t*. It is expected that operational inefficiency has a negative impact on profitability.

To control for the external factors, we include the following variables to our regression. Banks profitability is expected to be sensitive to macroeconomic variables.

- $ASGDP_t$ is the percentage of the total assets of Turkish deposit banks to Gross Domestic Product of the country in *t* time.
- $IRCPI_t$ is the inflation rate of the country calculated by using the consumer price index.
- $GPPGR_t\ is$ the annual gross domestic product growth rate of the country for the year *t*.

The last variable, $\varepsilon_{i,t}$, is error term for bank *i* in year *t*, assumed to follow normal regression assumptions. Descriptive statistics for variables used in the estimations are provided in Table 1.

Table 1: Descriptive statistics

	Obs.	Mean	Std. Dev.	Minimum	Maximum
Performance Measures					
ROA	275	0.023	0.031	(0.124)	0.352
ROE	275	0.135	0.116	(0.9486)	0.406
Market structure					
CR5	275	0.643	0.016	0.612	0.66
HHI	275	0.103	0.002	0.099	0.063
Bank spesific characteristics					
TA/	275	22,402	0.202	15,333	25,983
TIA	275	0.326	0.184	0.043	0.911
CAD	275	0.191	0,150	0,032	0,747
OER	275	0.006	0.013	(0.004)	0.144
External factors					
ASGDP	275	0.684	0.124	0.504	0.871
IRCPI	275	0.103	0.002	6.160	10.450
GDPGR	275	15.042	0.744	0.213	29.761

We empirically investigate relationship between concentration, banks size and profitability for Turkish banking system during the 2003-2012 period by applying multiple OLS regression technique. A multiple OLS regression is concerned with the relationship between a dependent variable and a series of *m* independent variables. The multiple regression allows the analyst to control for the multiple factors that simultaneously affect a dependent variable. The multiple regression equation produces an (*m+1*) dimensional surface. The following represents the relationships between $y_{i,t}$ and $x_{j,i,t}$based on a multiple linear regression involving *m* independent variables:

$$y_{i,t} = \beta_0 + \beta_1 x_{1,i,t} + \beta_2 x_{2,i,t} + \ldots\ldots + \beta_m x_{m,i,t} + \varepsilon_{i,t} \quad (5)$$

Coefficient β_0 is the vertical intercept. The m coefficients β_1 to β_m are slope coefficients; each coefficient β_j for *j>0* represents the change in $y_{i,t}$ induced by a change in variable $x_{j,i,t}$ holding all other variables constant.

Considering the specific features characterizing each variable, it is not quite suitable to use panel estimation methods with no effects. For this reason, we also resort to fixed effects (FE) and random effects (RE) estimates for our OLS regression.

If we consider our model as:

$$y_{i,t} = \beta_m x_{m,i,t} + \varepsilon_{i,t} \quad (6)$$

where the structure of the error term is:

$$\varepsilon i,t = \alpha + \eta\, i,t \quad (7)$$

That is, the disturbance term is decomposed in two parts: The second part, $\eta i,t$, corresponds to the common stochastic error term in classical linear regression models. There are two explicit assumptions: First, $\eta i,t$, is assumed to be uncorrelated with $x i,t$, and it is furthermore assumed to vary unsystematically across individuals and time. In particular:

$$E(\eta i,t \mid x) = 0$$
$$E(\eta i,t \;, \eta j,s \mid x) = 0 \quad (8)$$

for all $t \neq s$ or $i \neq j$.

The first part of the decomposed error term, α_i, is the so-called individual-specific effect. In contrast to the remaining disturbance the common assumption is that α_i varies across individuals but is constant over time. The crucial assumption that distinguishes the fixed effects model from the random effects model is whether α_i may or may not be correlated with the set of explanatory variables, $x_{i,t}$:

- random effects model: α_i is uncorrelated with $x_{i,t}$,
- fixed effects model: α_i is correlated with $x_{i,t}$

That is, in the fixed effects model, the α_i are assumed to be *n* unknown parameters that are to be estimated, while in the random effects case, the α_i are treated as drawings from a distribution with mean μ and variance σ_α^2 which are independent from the explanatory variables in $x_{i,t}$ (Heineck, 2004).

The generally accepted way of choosing between fixed and random effects is running a Hausman test designed to detect violation of the random effects modeling assumption that the explanatory variables are orthogonal to the unit effects. If there is no correlation between the independent variable(s) and the unit effects, then estimates of β in the fixed effects model (β_{FE}) should be similar to estimates of β in the random effects model (β_{RE}). The Hausman test statistic H is a measure of the difference between the two estimates:

$$H = (\beta_{RE} - \beta_{FE})'[\,VAR\beta_{RE} - VAR\beta_{FE}]^{-1} (\beta_{RE} - \beta_{FE}) \quad (9)$$

Under the null hypothesis of orthogonality, H is distributed chi-square with degrees of freedom equal to the number of regressors in the model. A finding that $p < 0,05$ is taken as evidence that, at conventional levels of significance, the two models are different enough to reject the null hypothesis, and hence to reject the random effects model in favor of the fixed effects model. If the Hausman test does not indicate a significant difference ($p > 0,05$), however, it does not necessarily follow that the random effects estimator is safely free from bias, and therefore to be preferred over the fixed effects estimator(Linzer and Clark,2012).

4. RESULTS

In Table 2, the evolution of CR3, CR5, CR10 and HHI based on deposit, loans and total assets between 2000 and 2012 are presented. The percentages of CR10 verify that the leading ten commercial banks in the country account for the majority of the market share in each category. CR5 indicator shows a highly concentrated market for all three variables. CR3 percentages indicate moderate concentration. It is commonly accepted that Herfindahl indices between 0.01 and 0.15 indicate unconcentrated market. Hence the HHI measures on deposit, loans and total assets are below 0.15. Turkey's banking sector is characterized as unconcentrated. But, CR10 indicator point out that the top-ten banks maintain their aggregate market share and not leaving much room for smaller banks to grow.

Table 2: Concentration Indices

	Deposits				Loans				Total Assets			
	CR3	CR5	CR10	HHI	CR3	CR5	CR10	HHI	CR3	CR5	CR10	HHI
2012	0.41	0.62	0.91	0.10	0.39	0.60	0.90	0.10	0.41	0.64	0.91	0.10
2011	0.44	0.65	0.92	0.11	0.39	0.60	0.91	0.10	0.43	0.65	0.91	0.11
2010	0.46	0.67	0.92	0.11	0.39	0.60	0.91	0.10	0.45	0.67	0.92	0.11
2009	0.45	0.66	0.91	0.11	0.41	0.61	0.90	0.09	0.44	0.67	0.91	0.11
2008	0.46	0.67	0.96	0.11	0.43	0.63	0.92	0.10	0.43	0.66	0.91	0.10
2007	0.47	0.69	0.94	0.12	0.44	0.65	0.92	0.10	0.45	0.69	0.93	0.11
2006	0.48	0.68	0.95	0.12	0.47	0.66	0.93	0.11	0.49	0.70	0.94	0.12
2005	0.50	0.67	0.96	0.12	0.46	0.67	0.93	0.11	0.51	0.70	0.94	0.12
2004	0.50	0.69	0.95	0.12	0.44	0.67	0.93	0.11	0.50	0.69	0.94	0.12
2003	0.50	0.70	0.95	0.13	0.43	0.68	0.93	0.11	0.51	0.71	0.95	0.13

Figure 1 demonstrates the trends of *k* bank concentration ratios and HHI index based on total deposits of the Turkish banking system in the period 2003-2012. CR3, CR5 and CR10 have parallel trends which point out that the total assets market shares of the biggest three, five and ten banks change approximately at the same rate. Trends of CR, CR5 and CR10 are relatively stable between 2009 and 2012.

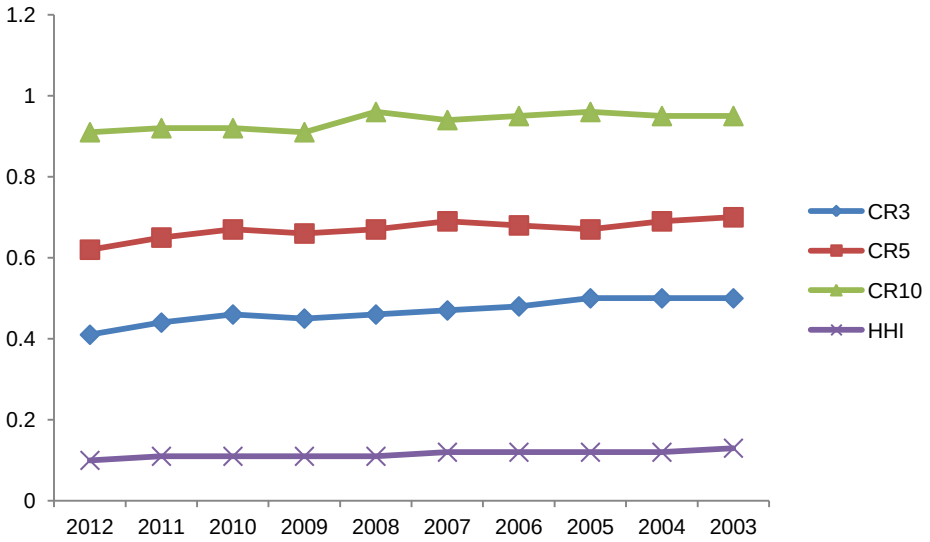

Figure 1: Progress in deposits concentration indices

Figure 2 shows the loan concentration indices according to C3, C5, CR10 and HHI. C3, C5 and CR10 are in downward trend. HHI is stable from 2007 to 2012.

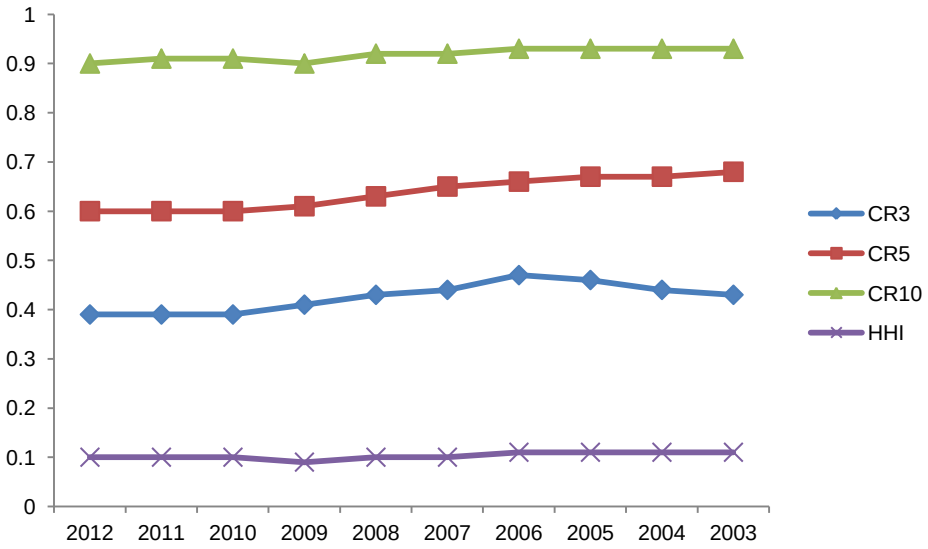

Figure 2: Progress in loans concentration indices

In Figure 3, the evolutions of C3, C5, CR10 and HHI on total assets between 2003 and 2012 are presented. Similar to the loan concentration indices HHI is stable during the period and *k* bank concentration ratios are in downward trend. The share of first three biggest banks is stable after 2008.

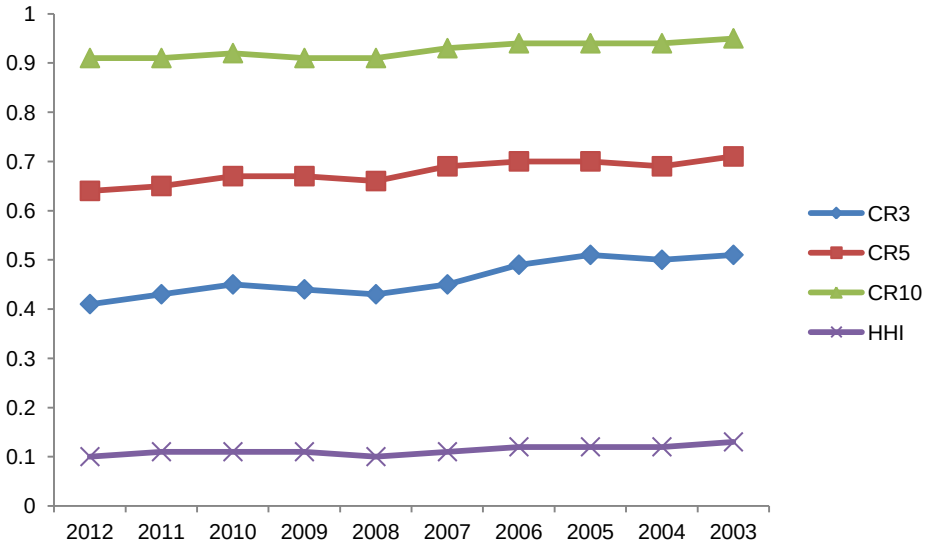

Figure 3: Progress in total assets concentration indices

Before carrying out the regressions of our models, a correlation matrix is used to ensure that none of the explanatory variables are highly correlated to each other. Table 3 demonstrates the degree of correlation among the variables. Schindler and Cooper (2009) suggested that a correlation above 0.8 between explanatory variables should be corrected for. The maximum correlation of 0.58 is found between HHI and CR5. The matrix shows that, there is no strong correlation between variables.

Table 3: Correlation matrix

	ROA	ROE	CR5	HHI	TAI	TIA	CAD	OER	ASGDP	IRCPI	GDPGR
ROA	1.00										
ROE	0.49	1.00									
CR5	(0.05)	0.029	1.00								
HHI	0.11	0.022	0.58	1.00							
TAI	(0.05)	0.37	0.14	0.01	1.00						
TIA	0.29	0.20	(0.08)	0.07	(0.02)	1.00					
CAD	0.22	(0.13)	(0.08)	0.18	(0.44)	(0.13)	1.00				
OER	(0.18)	(0.29)	0.02	0,04	(0.18)	(0.05)	(0.08)	1.00			
ASGDP	(0.10)	(0.09)	0.54	0,01	0.20	(0.12)	(0.19)	0.01	1.00		
IRCPI	(0.06)	(0.07)	(0.44)	(0.65)	(0.04)	(0.05)	(0.18)	(0.03)	(0.10)	1.00	
GDPGR	(0.15)	(0.04)	(0.38)	0.33	(0.10)	(0.13)	0.28	0.05	(0.57)	(0.52)	1.00

We further used Hausman test for deciding between fixed and random effects. The results, presented in table 4, show that our regressions are fixed effect.

Table 4: Hausman test results

Model	K	H	FE or RE
Model 1 (ROA)	9	142.51 Prob>chi2 = 0.00	FE
Model 2 (ROE)	9	119.27 Prob>chi2 = 0.01	FE

FE estimations and specification test results are presented in Table 5. The estimation results show that there are individual effects, since the relevant F-statistics are significant. The R-sq values are low. The R-sq statistics from the OLS specifications are generally found low in the related literature(Tregenna, 2009).

Table: 5 FE Estimations and specification test results

	Model 1 ROA			Model 2 ROE		
Variables	**Coefficient**	**t-Statistic**	**Prob.**	**Coefficient**	**t-Statistic**	**Prob.**
CR5	0.288	1.01	0.313	1.287	0.80	0.425
HHI	0.539	0.39	0.699	0.592	0.49	0.621
TAI	0.018	3.09	0.002*	0.024	1.27	0.000*
TIA	0.009	0.53	0.599	0.096	-0.48	0.629
CAD	0.098	5.82	0.000*	0.079	1,39	0.166
OER	-0.274	-2.11	0.036**	-0.154	-2.80	0.006*
ASGDP	0.076	2.65	0.009*	0.220	2.30	0.022**
ICPPI	0.003	1.35	0.178	0.012	1.33	0.186
GDPGR	0.001	1.14	0.257	0.000	-0.38	0.705
R-sq	0.27			0.35		
F test	3.31		0.000*	2.83		0.036**

Note: (***), (**) and (*) indicate significance levels respectively at 1%, 5% and 10%.

- Table 5 reports the empirical results of the estimation of models. The empirical results show that concentration affects bank profitability positively but the measures of concentration have not statistically significant estimated coefficients in both models.

- The regression coefficients Ta*l* are positive and statistically significant at the p=0.01 level, indicates that the banks with larger asset sizes have also higher profitability rates.
- One of the bank-specific variables is TIA. The results show that there is positive but not significiant relationship between the degree of investment assets and bank profitability.
- The coefficient of the ‘‘cash and dues from the banks as a percentage of total assets’’ variable (CAD) is positive and highly significant, reflecting the return on assets of Turkish deposit banks. Its affect on return on equity is also positive but not significant.
- The estimated coefficients on operational efficiency (OER) are negative and statistically significant. This suggests that the degree of operational efficiency explains the profitability of Turkish banks.
- The percentage of the total assets of banks to GDP constitutes a positive significant indicator of profitability.
- The macroeconomic factors; inflation rate and the growth rate of GDP, are not significant factors in profit margin for the deposit banks in Turkey.

5. CONCLUSION

In this paper we analyzed the relation between concentration, bank size and profitability for Turkish banking industry. The empirical study included the deposit banks. The major sources of bank-level data for this study are balance-sheet and income-statement information derived from the annual reports of the banks, from the financial statements published by BRSA and BAT. For the empirical tests we ten years data from 2003 to 2012.

As a proxy for concentration CR3, CR5, CR10 and Herfindahl Hirschman Index based on deposit, loans and total assets between 2000 and 2012 were used. CR5 indicator shows highly concentrated market for all three variables. CR3 percentages indicate moderate concentration. HHI measures on deposit, loans and total assets are below 0.15 which points out an unconcentrated market. But, CR10 indicator points out that the top-ten banks maintain their aggregate market share and not leaving much room for smaller banks to grow.

After analyzing concentration, we investigated the relationship between concentration and profitability for Turkish banking system. To analyze the effect of the level of concentration on the profitability, two profit ratios, ROA and ROE were regressed on different measures of concentration, bank-specific characteristics and macroeconomic determinants. The empirical results of our study show that concentration affects bank profitability positively in accordance with SCP hypothesis but the effect of industry concentration on bank profitability is found insignificant. Therefore, this result is not in line with theoretical considerations according to which concentration is related to profitability.

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RELATIONAL GOVERNANCE ON RELATIONSHIP QUALITY AND RETAILERS' PERCEIVED PERFORMANCE IN THE TAIWANESE AUTOMOBILE INDUSTRY

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Abstract: Relational governance is generally believed to lead to the development of long-term relationships and an increased emphasis on cooperation among channel participants. Relational governance complements such adaptive limits of contracts by fostering a continuance of the exchange and entrusting both parties with mutually agreeable outcomes. After a review of the relevant literature, the purpose of this study is to conceptually and empirically examine how the adoption of perceived market uncertainty, customer orientation, and service innovativeness by product suppliers (manufacturers) affects their use of relational governance mechanisms in the context of automobile distribution channels, and to explore the effect of relational governance on retailers' perceived performance, taking relationship quality (retailer trust and relationship satisfaction) as the intervening construct. We formulated 7 hypotheses. Data were collected from 262 usable questionnaires completed by retailers in the Taiwanese automobile industry. All hypotheses were verified with data from a sample of the respondents by using a structural equation model. Finally, this study concludes with a discussion on managerial implications and provides suggestions for future research.

Keywords: Relational Governance, Perceived Market Uncertainty, Customer Orientation, Service Innovativeness, Perceived Performance

1. INTRODUCTION

Product suppliers (manufacturers) must contend with increased competition by evaluating and integrating the resources and capabilities of their retailers and customers to create superior value and competitive advantage. Product suppliers increasingly worry that their marketing practices might have considerable positive or negative effects on their retailer relationships and customer attitudes (Ganesan *et al.* 2009). Weitz and Jap (1995) argued that relational exchanges in channel relationships involve using interfirm governance mechanisms. They noted that firms rely less on power to coordinate interfirm activities in marketing channels. When contracts become increasingly customized, managers choose relational governance to increase the odds of continuance, and thereby further safeguard specific investments from premature and costly termination (Poppo and Zenger, 2002). These governance mechanisms have an effect on manufacturers' ability to adapt flexibly to uncertainty in the channel relationship (Wathne and Heide, 2004).

The governance of inter-firm exchanges has become increasingly bilateral or relational (Lusch and Brown, 1996). Interfirm governance mechanisms employed in distribution channels reduce opportunism and improve cooperation and coordination among channel members (Zhuang and Zhang, 2011). A review of related literature indicates that scant empirical studies have investigated how relational governance influences the use of interfirm governance mechanisms in distribution channels or considered the attitudes and opinions of

retailers. To fill this research gap, we build a conceptual framework for obtaining retailer-perceived performance, and conceptualize the key elements and their associations in the proposed framework. In this study, we construct and design scales suitable for measuring relationship quality, retailer-perceived performance, and retailer opinions regarding relational governance, based on the measurements and dimensions of the literature and considering the characteristics of the supplier-retailer relationship in the motor vehicle industry. Relative to the literature, we make three primary contributions to the channel literature. We enhance understanding of (a) the antecedents of relational governance, (b) the influence of relational governance on relationship quality, and (c) the influence of relationship quality on retailer-perceived performance.

2. HYPOTHESES

This research is designed to extend the body of knowledge on channel management by examining the management of supplier-retailer relationships. One way it accomplishes this is through examining the phenomenon of relational governance, its components, and its link to retailer-perceived performance. Perceived market uncertainty, customer orientation, and service innovativeness are frequent antecedents to relationship outcomes and performance. We examine these antecedents as dimensions of relational governance. Although it is not a new phenomenon, the literature has not explicitly recognized relational governance until recently because of the lack of differentiation among inter-organizational relationship forms. Therefore, we formulate 7 hypotheses.

H_1: Retailer trust is positively related to retailer-perceived performance.
H_2: Relationship satisfaction is positively related to retailer-perceived performance.
H_3: Relational governance is positively related to retailer trust
H_4: Relational governance is positively related to relationship satisfaction
H_5: Perceived market uncertainty is positively related to relational governance.
H_6: Customer orientation is positively related to relational governance.
H_7: Service innovativeness is positively related to relational governance.

3. METHODS

3.1. Latent Variable Measurements

The statement items for measuring the latent variables in this research are listed in Table 1, and are mostly positive statements. The respondents were asked how much they disagree or agree with the statements using the 5-point Likert scale categorized as "*strongly disagree*," "*disagree*," "*neutral*," "*agree*," and "*strongly agree*."

3.2. Questionnaire Pre-testing and Revising

The preliminary survey was discussed with relevant personnel from automobile suppliers in the automobile industry, who recommended suitable retailers to discuss the survey. Then, we revised the survey to simplify the wording and to make it more understandable. To determine whether the retailers could understand the items, the revised survey was tested on retailers and revised again according to the respondent opinions before conducting the full-fledged survey.

3.3. Data

Data were collected using a survey of automobile retailers. To simplify the survey completion and return, we sent e-questionnaires to the retailers through e-mail, requesting them to assign a staff member to fill out the necessary information and answers, based on the survey contents.

Table 1: Research variables and measurements

Latent Variables	Measurements	
1.Retailer-perceived performance	V1	My company believes in a more disciplined approach to achieving company financial objectives.
	V2	My company believes in improving the ability to manage the company more effectively.
	V3	My company believes in achieving much more than expected by the product supplier.
2. Retailer trust	V4	My company believes that the product supplier has the professional capability for marketing affairs.
	V5	My company believes that the product supplier implements a marketing strategy has practical benefits.
	V6	My company believes that the product supplier helps to increase efficiency in purchasing and service.
3.Relationship satisfaction	V7	My company believes that our relationship with the supplier is of value to both parties.
	V8	My company believes that continuing a cooperative relationship with the supplier is compatible with long-term interests.
	V9	My company believes that continuing to invest in cooperative relationship facilities promotes a long-lasting relationship with the supplier.
4.Relational governance	V10	The product supplier defines the manner in which decisions and functions are assigned to the parties in a relationship.
	V11	The product supplier believes that future contingencies and consequential rights and responsibilities should be understood.
	V12	The product supplier believes in adapting the ongoing relationship to circumstances.
	V13	The product supplier believes in a certain degree of contractual performance.
	V14	The product supplier believes in allocating rewards to the parties based on the observed performance levels.
	V15	The product supplier believes in ensuring that contractual obligations are upheld.
5.Perceived market uncertainty	V16	The product supplier believes that the demand fluctuates drastically from week-to-week.
	V17	The product supplier maintains a weekly inventory of critical products to meet changing demands.
	V18	The product supplier believes that the volume and composition of demand are difficult to predict.
	V19	The product supplier believes that a failure to keep pace with changes in technology will increase the difficulty of remaining competitive.
6.Customer orientation	V20	The product supplier anticipates and responds to customers' evolving needs and wants.
	V21	The product supplier emphasizes the evaluation of formal and informal customer complaints.
	V22	The product supplier follows up with customers for quality and service feedback.
7.Service innovativeness	V23	The product supplier strategy is based on quality performance rather than price.
	V24	The product supplier places greater emphasis on innovation than on price.
	V25	The product supplier emphasizes launching new products quickly.

4. RESULTS

We sent surveys to 845 official websites of retailer in the Taiwanese automobile industry. This process yielded 283 returned surveys. The returned surveys were encoded and filed. After removing incomplete responses, the actual number of valid surveys was 262. The rate of return was 31%. Analyzing the number of employees and the annual turnover of the sample companies revealed that the respondents were mostly from small- and medium-sized enterprises. Thus, the samples were highly representative of the industry in Taiwan.

All constructs (latent variables) for relational governance mechanisms in automobile supplier-retailer relationships had a high reliability, with a Cronbach's *α* exceeding 0.7. The data reliability was acceptable.

4.1. Confirmatory Factor Analysis

We assessed the psychometric properties of the measures used in this research by using confirmatory factor analysis (CFA), and removed two complex variables, namely, items 11 and 19. The model fit also used the estimates of CFI, GFI, AGFI, NFI, NNFI, and RMR listed in Table 2. The results in Table 2 indicate a good fit to the data; the fit indices exceeded or approached 0.9, the estimated RMR was 0.0376, and AGFI exceeded 0.8.

Table 2: Summary of measurement statistics

χ^2	df	χ^2/df	GFI	AGFI	RMR	NFI	NNFI	CFI
401.8958	209	1.923	0.8864	0.8500	0.0376	0.8815	0.9256	0.9385

Notes: GFI= goodness of fit index; AGFI= GFI adjusted for degrees of freedom; RMR=root mean square residual; NFI= normed-fit index; NNFI= non-normed-fit index ; CFI= Bentler's comparative fit index .

The reliability of the measures was assessed using composite reliability and variance extracted estimates. The composite reliability of each construct exceeded 0.7 in this study, satisfying a minimal acceptable level. However, Fornell and Larcker (1981) suggested that variance extracted estimates should exceed 0.5, and all indices exceeded 0.5 in this study. Overall, the constructs in this model performed well. We assessed validity using the t values of the factor loadings. All indicator t values ranged from 6.4045 through 16.0526, indicating that all factor loadings were significant ($p < .001$). This fact supported the convergent validity of all indicators that effectively measured the same construct (Anderson and Gerbing, 1988).

4.2. Path analysis

We conducted theoretical model testing with path analysis, using SEM. The results are shown in Table 3 and Fig. 1. The CFI, GFI, NFI, and NNFI exceeded or approached 0.9, the estimated RMR was 0.0385, and the AGFI exceeded 0.8. The research model achieved a relatively good fit. All path coefficients in the current model were statistically significant and as hypothesized.

Table 3: Summary of causal model statistics

χ^2	df	χ^2/df	GFI	AGFI	RMR	NFI	NNFI	CFI
411.8311	220	1.8720	0.8851	0.8558	0.0385	0.8785	0.9297	0.9389

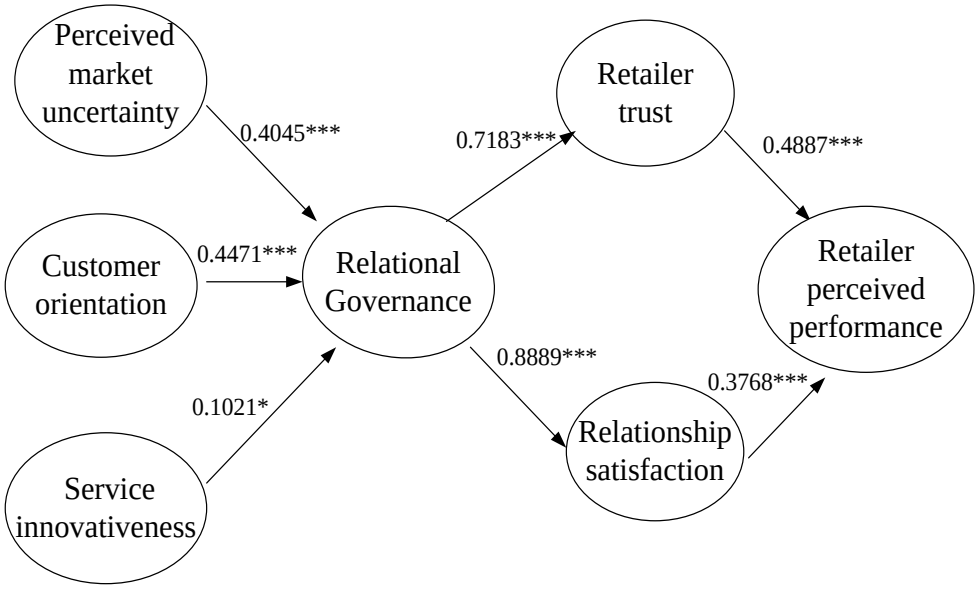

Figure 1: Testing results of the theoretical model

Note: Path coefficients are statistically significant *** denotes a significant value p < 0.01, ** denotes a significant value p < 0.05, * denotes a significant value p < 0.1)

5. CONCLUSIONS AND SUGGESTIONS

We examined the effects of relational governance on relationship quality and retailer-perceived performance based on the characteristics of the Taiwanese automobile industry and the theories from literature review. We chose the Taiwanese automobile industry retailers as the research object, to verify the influence of relational governance on relationship quality and retailer-perceived performance. The main contribution of this study is the integration of the means and concepts of relational governance, forming an excellent model to explain the receptiveness and perceived performance of retailers. Using evidence from the Taiwanese automobile industry, we examined the construct of relational governance in great detail, including operationalizing the construct, testing its components, and differentiating it from types of relationships. Understanding that companies manage a portfolio of various relationships, we investigated what situations drive relational governance.

This research surveys the relational governance effects of retailer-supplier relationships and tests the effects of factors unique to the automobile industry on relational governance. However, the factors affecting relational governance in other industries might differ. Therefore, future research can investigate industries with different characteristics, such as 3C retailers, clothing and accessory retailers, and convenience stores, and compare the differences in results. Casual relationships and dynamic changes are more difficult to describe accurately using cross-sectional data. Our research survey enquired about current relational governance, but did not examine the development stage of the supply chain partnership. Therefore, at different stages of relational governance, the benefits produced by various mechanisms differ, requiring that suppliers use various forms of management.

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STRESS-TESTING OF RETAIL AND CORPORATE SEGMENTS OF RUSSIAN CREDIT MARKET*

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Abstract: The objective of the paper is to investigate and compare risk patterns in retail and corporate segments and assess the potential impact of macroeconomic shocks on loan quality. Banks' monthly financial statements data for the period 2004 – 2012 are used. Firstly, we develop an indicator to measure institution's credit risk that reflects variance and average value of NPL corrected for loan loss reserves. It is used to compare the risk-return patterns of largest state-owned banks, and under our framework we identify how the strategies of various banks differ in retail and corporate loans, identifying 'safest' and 'riskiest' institutions. Secondly, loan growth and credit risk sensitivity to macroeconomic shocks is analyzed using vector autoregression. Macroeconomic shocks do not significantly increase NPL growth in corporate segment. However, inflation and investment growth have considerable impact on NPL growth in retail segment (which is however almost three times less than the corporate). Based on these findings we conclude that there is no reason to expect rampant rise in corporate loan defaults in response to exceptional sudden changes in macroeconomic environment in Russia, though further growth of corporate loan segment increases credit risk, while the opposite is true about the retail sector.

Keywords: Stress Testing, Credit Market, Russia, Non-Performing Loans, State Banks

1. INTRODUCTION

Global financial turmoil emphasises the importance of efficient monitoring of banking system stability and stress-testing is one of the most widely used tools in this area, which enables us to estimate the impact of macroeconomic shocks on financial sector. The recent economic crisis has clearly shown that financial stability can be significantly affected by macroeconomic environment in addition to bank-specific factors; hence the importance of efficient estimates of banking system vulnerability to real shocks is increasingly important.

Despite its acknowledged importance we are still on the way to a uniform methodology of system-wide stress-tests, though IMF has published a number of relevant recommendation documents (IMF, 2012; IMF, 2011b; Ong *et al*. 2010), which contains best practice principles', peculiarities of stress-testing in case of limited data availability for developing countries and other useful guidelines which should complement further practices in this field.

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In case of Russia IMF (2011a) pointed that the methodology of Russian Central Bank (RCB) in conducting stress-tests can be improved in order to implement more involved estimation techniques and to comply with Basel II recommendations on assessing credit risk. Recent foreign studies which perform stress-tests of Russian banking sector (e.g. Fungacova and Jakubik, 2012) usually implement up-to-date estimation methods but use generally accepted in European studies estimates of credit risk parameters in calculating expected loss given default may lead to erroneous results when applied to Russia. This study aims to fill the gap and provide a comprehensive set of up-to-date though easy-to-use techniques that can be used for assessing potential risks allowing the distinction between corporate and retail segments of Russian credit market.

Section 2 provides an overview of theory and practice of stress-testing including most recent recommendations and best practice principles with special attention to Russian experience. Section 3 contains discussion of general trends of growth and credit risk in corporate and retail segments of Russian credit market. Section 4 provides deals credit risk in several major state-controlled banks under the developed Credit Risk – Return Stability framework. Section 5 presents the results of stress tests derived from a comprehensive VAR model which estimates the relations between real and financial sectors. Section 6 concludes.

2. NOTES ON THEORY AND PRACTICE OF STRESS TESTING

2.1. Brief Introduction into Fundamentals of Stress Testing

Nowadays there is growing amount of literature on stress testing and this term may refer to very different practices. Here we are concerned with what IMF (2012) calls *Macroprudential/surveillance stress testing*, which is performed on system-wide level by country authorities and practitioners. System-wide stress tests can be broadly defined as a range of techniques used to assess the vulnerability of a financial system to 'exceptional but plausible' macroeconomic shocks (Blaschke *et al.* 2001).

An important distinction made between top-down and bottom-up tests. The bottom-up approach implies first performing individual stress tests for each of the financial institution and then aggregating results in order to perform a general test of the system as a whole. Top-down approach requires first aggregating data across individual banks and then performing a test based on the data. We follow the latter approach due to data availibility considerations.

It is difficult to establish a universal methodology, though Sorge (2004) reports typical stages of stress testing. Firstly, we need to identify the scope of analysis and potential risks and vulnerabilities of the system. Secondly, it is required to define shocks and design relevant scenarios, all assumptions should be listed. Thirdly, a researcher maps macro shocks to banks' balance sheets using an econometric model. Finally, we interpret results; second-round effects are analyzed and the limitations of the performed analysis should be carefully discussed. We now discuss each stage in more detail.

Another step towards uniformity was undertaken by IMF (2012) outlining general principles and guidelines for stress testing. It is noted that relevant institutions are selected, concerning size, substitutability and interconnectedness. Another important issue is feedback effects between financial and real economy sectors which are often left out of consideration. All material risks and buffers should be included and the viewpoint of different experts should be considered: supervisory authorities, commercial banks experts and academia representatives.

These principles are core for stress testing and should be kept in mind by any researcher working in this field. However, more specific instructions are needed concerning specific type of test for specific country; hence we proceed to discussion of particular tests in Russia.

2.2. Critical Review of Central Bank of Russia Stress Testing Practice

Russia is an example of a country with rather young financial system which experienced a difficult transition period in 1990s and is yet on its way to sustainable development. A key feature of Russian banking sector is dominance of state-controlled banks which accounted for 50-55% of credit market for the past 10 years. Central Bank of Russia (CBR) is the supervisory authority and the lender of last resort, which aims at financial stability and development, and stress testing is a crucial tool for CBR in its policy. Since 2003 the CBR has conducted aggregate top-down stress tests twice a year according to IMF and World Bank methodologies as Basel Commission on Banking Supervision requires supervisory authorities to perform stress testing exercises regularly (BCBS, 2009).

As for its methodology, according to the report on financial stability in 2011 (CBR, 2012), a macroeconomic model is used which is essentially a system of linear regressions which describes the relation between macro and financial system variables. For each credit institution it is calculated what impact the macro shock would have on balance sheet parameters. The results of stress testing are the estimated losses and expected need for recapitalization. Current time horizon is one year and all credit institutions are included in the sample.

Among strengths of CBR approach IMF (2011a) acknowledges that, firstly, it provides overwhelming coverage of the banking sector (the test covers all the banks in the system). Secondly, comprehensive coverage of the types of risks (in addition to credit risk, which is usually the sole focus of macro stress testing models, the CBR's model covers market (equity, exchange rate, and interest rate) risks and liquidity risks). Thirdly, it includes different macro-financial linkages, including various channels of feedback (second round) effects. Finally, the estimated core macro-financial linkages seem to be in line with actual experience and IMF estimates.

Several areas for improvements and recommendations are outlined as well (IMF, 2011a). Firstly, the number of banks included can be reduced for the goal of increased efficiency and more robust econometric performance. It is noticed that 250 banks, constituting 95 per cent of sector's assets, is a preferred representative sample size which enables to use more advanced econometric tools. Secondly, the time horizon could be extended to 2-3 years and beyond, as the model would enable to capture possibly long-lasting lagged effect of a severe shock (this suggestion should be treated with caution because emerging financial systems are more volatile and estimated coefficients of long-run effects are not likely to be robust). Thirdly, the current approach of CBR to construct a large system of equations estimated by OLS is subject to technical issues such as omitted variables and auto-correlated errors. IMF proposes to use smaller main macro model and a range of separate, satellite models (commonly applied estimation tools are VECM and VAR). Thirdly, credit risk modelling could be expanded to incorporate Basel II-type portfolio loss concepts (e.g. credit VaR) instead of using increases in NPL as a measure of credit quality (and assumed full provisioning for new NPLs).

2.3. Alternative Approaches to Stress Testing Russian Financial System

There are several academic papers and independent agencies' reports that implement more elaborative methodologies to stress test Russian financial system on aggregate level. An outstanding example of implementing up-to-date stress testing approach is a recent discussion paper of Bank of Finland Institute for Economies in Transition *Bank stress tests*

as an information device for emerging markets: The case of Russia by Fungacova and Jakubik (2012). Their methodology consists of five steps. Firstly, they create baseline and adverse macroeconomic scenarios. Secondly, stress parameters are forecasted through 'satellite' models. Thirdly, the projected via satellite models values are used to calculate credit, foreign exchange and interest rate risks for each bank. Fourthly, iterative interbank contagion is taken into consideration as follows. After losses are deducted from bank capital and post-shock capital adequacy ratios (CAR) are computed, the latter are mapped into bank-specific PD (using expert judgement) and they are used to determine the likelihood of institution's default on interbank liabilities. Finally, post-shock and post-contagion CARs are calculated and recapitalization costs are estimated on bank-specific level.

The results of tests suggest that Russian banking sector is rather sensitive to changes in the macroeconomic environment; high credit risk and cyclicality combined with the low level of financial intermediation dampen economic development under baseline scenario (Fungacova and Jakubik, 2012). In the baseline scenario CAR for 33.5% of banks included in the sample fall below the regulatory minimum of 10% and the total recapitalization costs would reach 0.6% GDP in 2011. Under the adverse scenario 40% of banks would need recapitalization equal to 0.8% of GDP – the results are comparable with the ones obtained by CBR though more precise.

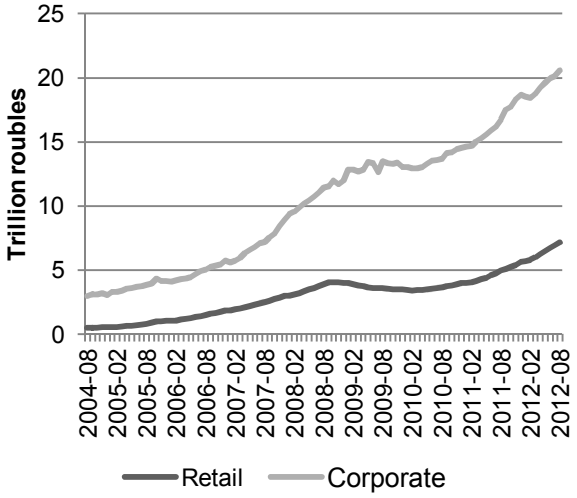
Generally, this paper provides a thorough analysis including careful separate treatment of risks and taking into account contagion effects. However, authors sacrifice overall model consistency for more robust results. Several technical assumptions are rather strong, e.g. the assumption that same growth rates of dependent variables in satellite models are applied to all banks and the assumptions that all banks behave as if they were complying with the Basel II framework, even if it is not fully implemented in Russia. Some necessary parameters such as LGD and EAD are set based on anecdotal evidence, as authors admit (Fungacova and Jakubik, 2012). Nevertheless, this paper is a good example of how modern stress test practices could be applied to Russia and should be considered as an important point for reference.

However, there is a an array of papers of Russian researchers conducting independent stress tests of domestic financial stability and the most notable institution in this field is Center for Macroeconomic Analysis and Short-term Forecasting (CMASF), which has recently produced a number of works in this field which combine deep knowledge of Russian banking sector practices with sophisticated estimation techniques used in stress testing and hence obtain reasonable outcomes worth discussing (Pestova, 2012; Solntsev *et al.* 2012). Based on internal macroeconomic model computed in CMASF expected need for capitalization is estimated under different scenarios using estimates obtained from cross-country data. In addition to macroeconomic scenarios Solntsev *et al.* (2012) analyses prudential scenarios which is very demanded in the light of current Basel II and Basel III implementation. However, the limitations of methodology is implementing average cross-country estimates for the case of Russia which is a potential source of inaccuracy in forecasts and lack of transparency as internal macroeconomic forecasting models are not disclosed. There is also no distinction between retail and corporate segments which are important as will be shown further.

Based on the papers dedicated to theory and practice of stress tests we now elaborate our own methodology. Taking into account IMF (2012) recommendations we begin by identifying general trends in banking sector of Russia and then focus on systematically important insitutions – state banks under our novel framework. Concerning the stress test itself the crucial distinctive feature of this paper is statistical approach used to attain higher objectivity as we do not use scenarios as shock events but consider a one standard deviation shock in the appropriate variable. This makes it difficult to compare results of this study with the papers discussed although it provides some novel insights discussed below.

3. OVERVIEW OF GENERAL TRENDS IN CORPORATE AND RETAIL SEGMENTS OF RUSSIAN CREDIT MARKET

Before we begin the analysis of risks vulnerability in each sector we briefly look at market size dynamics in corporate and retail segments of Russian credit market (we do not consider interbank sector due to its smaller size and the fact that most of the loans are short-termed and hence the ratio of non-performing loans is closed to zero).



Source: Author's calculations based on Mobile

Figure 1: Size of credit market segments

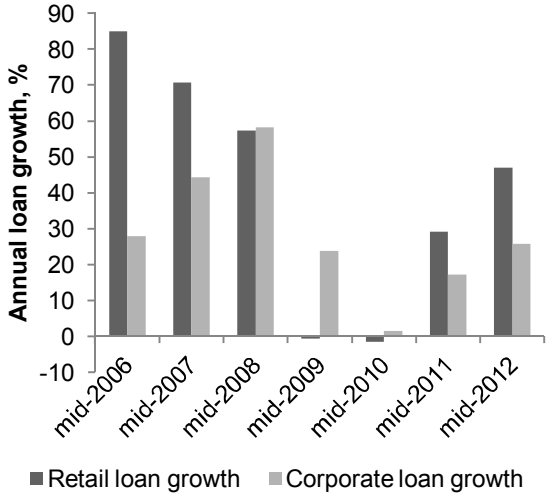


Figure 2: Annual growth rates

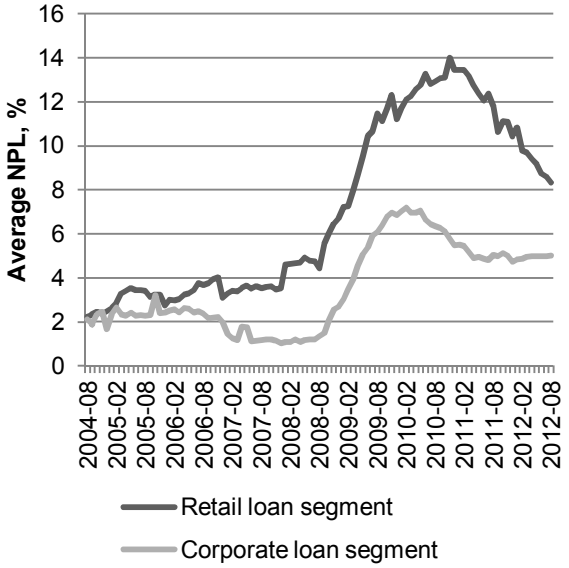
Figure 1 reflects total volume of loan provided in each sector and the first thing to notice is that volume of corporate loans given exceeds that of the retail sector (on average by 4.3 times). For the eight years period 2004-2012 corporate loans segment has grown by 7 times from around 3 to 21 trillion rubles, however, retail sector has grown by 14 times from around 0.5 to 7 trillion rubles, i.e. the overall growth rate of retail sector is twice as much as that in the corporate sector for the entire period. Figure 2 provides annual growth rates dynamics and there are several points to mention. Before the 2008-2009 crisis the growth rates of retail loan sector were very high though decreasing from enormous 85% by mid-2006 to 60% by mid-2008, while growth rates in corporate loan sector steadily grew from 28% by mid-2006 to almost catch up almost exactly the rate of growth in retail segment. The crisis hit retail sector harder as it has shown negative growth rates for two years while from July 2008 to July 2009 corporate loan sector has grown by 24% per cent despite the recession. Nevertheless, retail sector is growing much faster than the corporate by 39% and 47% respectively for the last two years compared to 17% and 26% growth in corporate loans. Hence, although we bear in mind that retail loan sector is recovering from two years of negative growth rates, Figure 1 shows that by mid-2011 the pre-crisis level of 4 trillion rubles had been surpassed and the recent sharp growth of almost 50% may be the signal of a growing bubble, acknowledged not only by market participants but also in academia (Solntsev *et al.* 2012).

Russian banks are not obliged to provide statements in accordance with IFRS and hence instead of the accepted in the literature measure of non-performing loans (classified as a loan the payment for which is overdue more than 90 days) we implement the measure of overdue loans reported in accordance with Russian accounting standards, however, for conventional reasons we refer to it as the ratio of non-performing loans in loan portfolio.

Figure 3 shows that the ratio of non-performing loans has been significantly higher in retail sector since the divergence initiated back in 2005. NPL in retail sector peaked as high as 14% by the year 2011 since the surge which began in 2008 when it was around 4%. Nevertheless since the end of 2010 it has been steadily falling to 8% by August 2012. In

corporate credit sector NPL increased because of crisis and has not returned to pre-crisis level as well, it peaked at 7% as of the end of 2009 and fluctuated around 5% since then. Hence the current picture is encouraging: if the trend stays in power, NPL in both sectors would sooner or later converge.

Standard deviation in NPL (see Figure 4) in retail sector has been significantly higher, especially for 2 years before the crisis (retail standard deviation of NPL being as much as 7 times higher) and during 2010-2011. Dynamics in standard deviation of corporate NPL is more pro-cyclical: it has been rather large (on average 5%) during 2004-2006 turmoil, as low as 1% during the upturn of 2007-2008, steadily grew to peak at 9% by the end of 2009, decreased since then to local minimum of 4% in mid-2011 and has been steadily increasing since then which is an alarming sign. Standard deviation in retail NPL is more chaotic and has stayed at crisis levels of 10-12% for the last 3 years, indicating that this segment of credit market is yet on its way to stabilize.



Source: Author's calculations based on Mobile

Figure 3: Average NPL

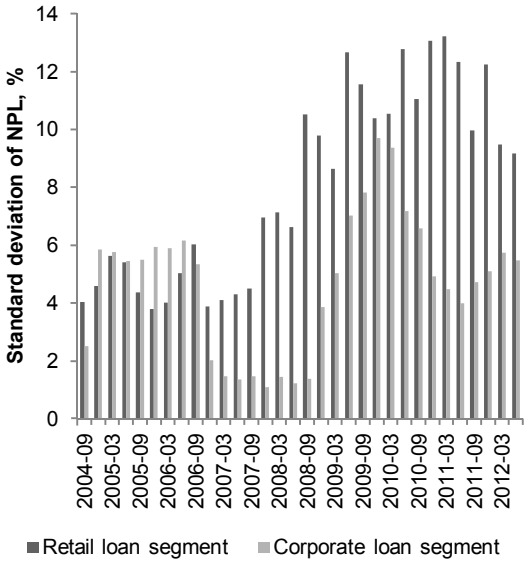


Figure 4: Standard deviation of NPL

The main points to mention is that corporate loan segment is three bigger than the retail and while both have been growing rapidly for past 10 years the level of NPL in retail sector as well as its standard deviation has been approximately 2 times higher than in corporate sector. This preliminary analysis therefore makes us conclude that significantly more credit risk is concentrated in retail loan segment. We now proceed to institution-specific analyses of systematically important state banks.

4. BANK-SPECIFIC ANALYSIS OF CREDIT RISK IN RETAIL AND CORPORATE LOAN SEGMENTS

4.1. Credit Risk – Return Stability Framework: Outlines

Our framework is based on the back-testing procedure described in Cihak (2007). The idea is to set the value of NPL on vertical axis and CAR on the horizontal and plot banks on the plane in these coordinates on a specified date. Median values of NPL and CAR can be set as thresholds and banks with high NPL and low CAR are classified as 'risky' while those with low NPL and high CAR – as 'safe'.

In order to complement our analysis we implement Z-score (first derived in Roy, 1952) instead of CAR as it additionally reflects information on return stability. We define it to measures the probability that bank losses fall below the regulatory capital minimum (taken as N1 normative stated by CBR to be 10%), i.e. that bank will be insolvent. Assuming returns follow a distribution with finite first momentsμ andσ_r^2according to Chebyshev's theorem we can estimate the upper bound of probability of insolvency:

$$P\{ROA \leq -(CAR - 10\%)\} \leq \frac{\sigma_r^2}{(\mu+(CAR-10\%))^2} \quad (1)$$

With the definition $z = \frac{\mu+(CAR-10\%)}{\sigma_r}$ the right hand side of the inequality is reduced to $1/z^2$, hence Z-score is a distance-to-insolvency measure. Following conventional practices (Ivicic *et al.* 2008) and our general trends analysis in previous section we decide to take 3 years window to provide an estimate of μ to be average ROA for the last three years and the estimate of σ_r to be standard deviation of ROA for the last three years.

As for the credit risk we propose a novel measure which takes into account average and standard deviation of NPL and loan loss reserves. The logic is the same as behind Z-score and below we provide explicit derivation. Chebyshev's theorem (inequality) is stated for some random variable *x* and some arbitrarily chosen constant μ as follows:

$$P\{|x - E(x)| > \mu\} \leq \frac{Var(x)}{\mu^2} \quad (2)$$

Define *x = NPL, μ = LLR – E(NPL)* and apply the definition of absolute value:

$$P\{|NPL - E(NPL)| > LLR - E(NPL)\} =$$
$$= P(NPL > LLR) + P(NPL < 2E(NPL) - LLR) \geq P(NPL > LLR) \quad (3)$$

And hence we get an upper bound probability estimate that NPL would exceed loan loss reserves:

$$P(NPL > LLR) \leq \frac{Var(NPL)}{(LLR-E(NPL))^2} \quad (4)$$

We define the new measure of credit risk, Z(NPL) statistic, similarly to the conventional Z-score (which we further refer to as Z(ROA)):

$$Z(NPL) \equiv \frac{LLR-E(NPL)}{\sqrt{Var(NPL)}} \quad (5)$$

Note that higher reserves a bank holds, lower expected NPL, computed as average for 3 years and lower the standard deviation of NPL result in higher values of the statistic and thus indicate bank's stability against credit risks. Z(NPL) is superior compared to a simple NPL as it takes into account historic average value of NPL and its volatility as well as the information on current credit risk buffer in the form of loan loss reserves. The statistic could be easily computed for emerging countries as well as it only requires information on NPL and LLR and could be used to quickly assess credit risk exposure of different segments of credit market without much computational burden. It is theoretically appealing as well as it rests only on the assumption that NPL follows at least some distribution as Chebyshev theorem is applicable to any distribution with finite first two moments compared to the conventional Value-at-Risk methodology the assumptions of which rest on a number of empirically estimated parameters. One should bear in mind however how NPL is calculated and whether the data on it is reliable, hence some filters could improve the indicator.

For Russian banks we compute it separately for corporate and retail loan sectors; for the former taking as the measure of LLR the balance of 44915, 45015, 45215, 45315 and 45615 accounts (loan loss reserves for corporate borrowers: state-controlled commercial entities, state-controlled non-commercial entities, private commercial entities, private non-commercial entities and foreign entities respectively) and for the latter the sum of the balances of 45415 and 45515 (loan loss reserves for individual entrepreneurs and individuals credit respectively). This data is taken from the 101 form (balance sheet), however there is missing data so here we demonstrate the statistic on a reduced sample of state banks as of the latest period available, 1st September 2012. Thresholds are chosen to be median values of Z(NPL) and Z(ROA) for the sample.

4.2. Retail Loan Segment Analysis under Credit Risk – Return Stability

For the retail sector as we can see from Figure 5 Gazprombank is the leader with the highest Z(NPL) score of nearly 9 because of rather high LLR of 2% compared to rather low NPL which has not varied much throughout 2004-2012 (standard deviation of NPL = 0.3%). However, it does not enter the 'safe' banks quadrant because of slightly lower Z(ROA) than the benchmark, again mostly because of low CAR. The other three banks have negative Z(NPL) meaning that their current level of loan loss provisions is less than their average ratio of NPL. Surprisingly, Sberbank appears in the 'risky' sector although it was in 'safe' quadrant on the Figure 14 where analysis was limited to point-in-time NPL and CAR estimates only. This outcome is largely motivated by Sberbank holding reserves for retail loans as low as 1.78% of its large retail credit portfolio, compared to 3.5% average NPL for the last three years. VTB24 has Z(NPL) = -2.5 and VTB has Z(NPL) = -4.3.

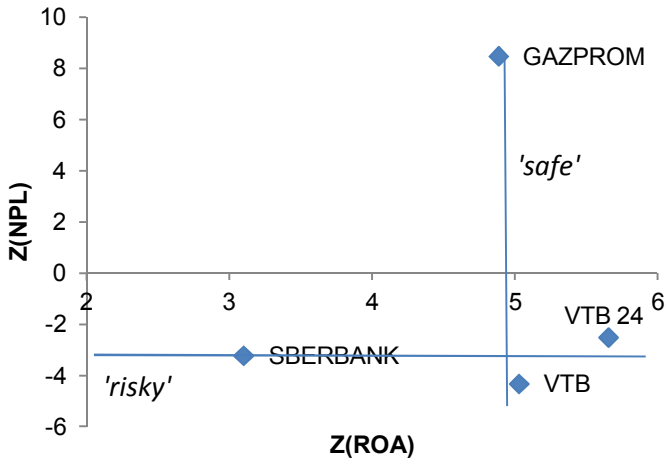


Figure 5: Credit risk - return stability framework, retail loans, 01.09.2012

4.3. Corporate Loan Segment Analysis under Credit Risk – Return Stability

On Figure 6 VTB is in the 'risky' quadrant though with Z(ROA) close to the median. Gazprombank has the highest Z(NPL) of 3 and actually it is the only bank with positive Z(NPL) similar to the retail sector. Sberbank is again close to 'risky' sector, on the border – if its Z(NPL) decreases further, it will migrate to the risky banks classification according to this framework. The only bank which appears to be 'safe' in corporate loan sector is the Vneshekonombank's affiliate Globex bank which has relatively high Z(ROA) and approximately balanced by reserves average NPL for the last three years.

Comparing Figures 5 and 6 we note that average Z(NPL) in the corporate loan sector (-1.5) is higher than in the retail (-0.4) which suggests that contrary to the general trends analysis

presented in the previous section corporate loan sector is more risky. Hence, as of 01.09.2012 more credit risk is concentrated in corporate loan segment for systematically important institutions, and supervisory authorities thus should monitor carefully state banks on the corporate loan segment of credit market. The analysis can be extended to include more banks, look at several points in time and tracing position of a single bank during some specified period – this simple framework provides various possibilities for both supervisory bodies and risk management of individual bank.

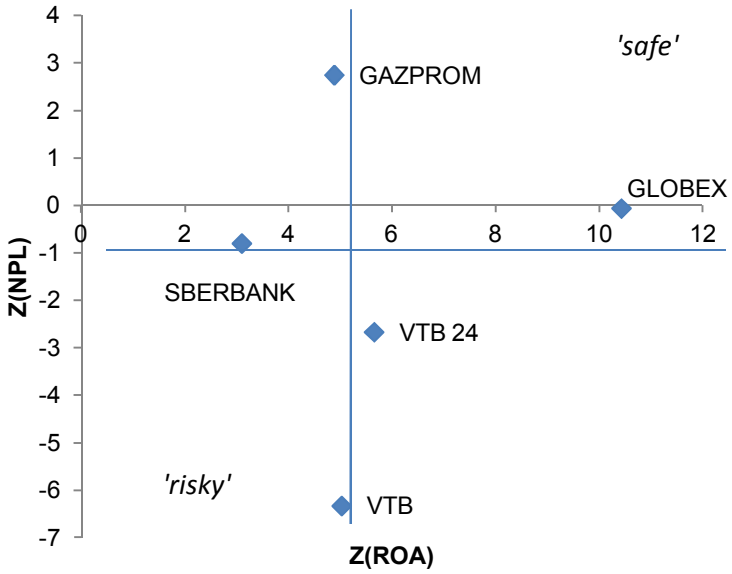


Figure 6: Credit risk - return stability framework, corporate loans, 01.09.2012

5. STRESS-TESTING OF CORPORATE AND RETAIL SEGMENTS

5.1. Data and Sampling

We now return to the system-wide level in order to investigate the relationship between NPL in different sectors and key macroeconomic variables and system-wide variables. For data on bank-specific indicators Mobile's "Banks and Finance" database was used, which is compiled directly from Russian banks' financial statements and covers the period September 2004 – September 2012 (monthly).

The sample was drawn as follows. For each segment we list all credit organizations (1486 in total) as of the 1st of September 2004 by the amount of loans they provided in descending order. The first N banks which cumulatively account for 85%[1] of the market are included in the sample. We allow the same bank to be in both segment samples, in a sense treating its corporate loan and retail loan departments as separate banks as further their operation will be explained by different factors for each segment. Hence, as of the 1st of September 2004 we had 104 banks in the sample for corporate segment and 97 banks in retail loans segment. Despite in the following periods some of the chosen banks left the market and the share of the others changed, on average the share of sampled banks in corporate credit fluctuated between 85 and 89 per cent of the market, and in retail segment of the sampled banks covered 82-90% (see Figure 7), hence we conclude that the sample stays highly representative throughout the period under consideration.

[1] 85 per cent coverage was chosen as the median value from similar studies (IMF, 2012).

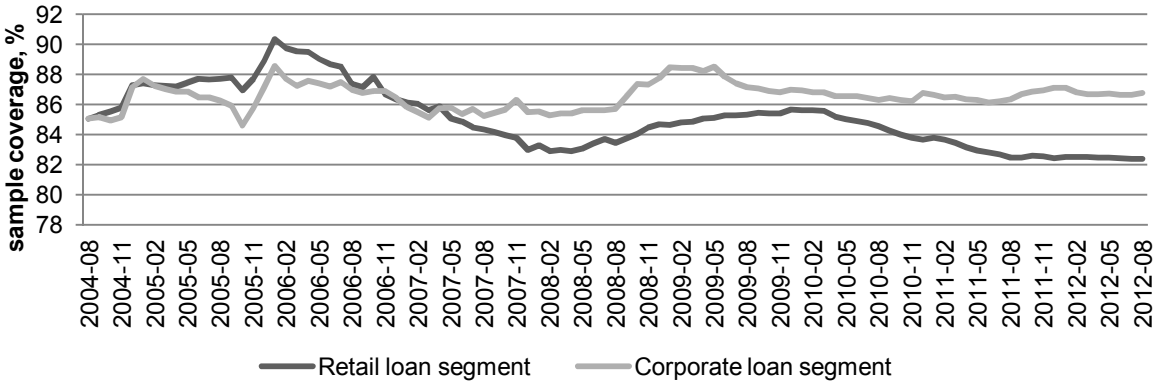


Figure 7: Sample cover age by segments

5.2. Choice of Variables for the Models

Aggregate bank-specific variables were calculated from Mobile database and monthly macroeconomic indicators were provided by CBR resources, Prime-TASS macroeconomic information agency and Joint Economic and Social Data Archive of Higher School of Economics.

From the existing literature discussed earlier in Section 2 we picked up a number of variables which were detected to correlated with NPL in different sectors. For the retail sector these are total GDP index, ruble/dollar real exchange rate, inflation measured by CPI, price of Brent oil, real disposable income, money aggregate M0 (all coins and notes in circulation), real interest rate, total volume of retail loans provided, average capital adequacy ratio across banking system, return on assets (ROA) and ROA instability (defined in Solntsev *et al.* (2010) as squared deviation of ROA from its average value for the period). For the corporate loan sector besides the mentioned variables excluding the total volume of retail loans provided we considered the index of industrial production, real investment in fixed assets and total volume of corporate loans provided.

Most of the variables show significant correlation measured in stock terms but clearly these series are not stationary and the correlation between them may root in general trend of the economy or other reasons, hence we take natural logarithm of growth in each variable. Regarding NPL in corporate sector log of GDP growth (Y), log of investment in fixed assets growth (INV), log of M0 growth (M0) and log of total corporate loans provided (CL) are significantly correlated with our variable of interest (NPL_C) and the correlations are reported in Table 1. The signs might seem puzzling: according to the reported values higher GDP growth and lower corporate credit loan growth are associated with higher growth of NPL. This effect is likely to occur because of the lagged response of NPL on the considered variables and this issue will be dealt with further.

Table 2 reports variables significantly correlated with NPL in retail loan sector. They are the same as in the corporate model with the only difference that we consider retail loans (RL) here. Although correlation sign between total amounts of loans provided with NPL in retail sector is positive it is puzzling why investment in fixed assets has rather high correlation with non-performing loans in retail sector while correlation with GDP is insignificant on 5 % level.

Table 1: Correlation matrix for corporate loan model

	NPL_C	Y	INV	M0	CL
NPL_C	1.0000				
Y	0.3116*	1.0000			
INV	0.2316*	0.0578	1.0000		
M0	0.3827*	0.2123*	0.7313*	1.0000	
CL	-0.2817*	0.0778	-0.0270	-0.0360	1.000

* represents 5% significance level
Source: author's calculations

Table 2: Correlation matrix for retail loan model

	NPL_R	Y	INV	M0	RL
NPL_R	1.0000				
Y	0.1553	1.0000			
INV	0.3428*	0.2123*	1.0000		
M0	0.4430*	0.0578	0.7313*	1.0000	
RL	0.3540*	0.2655*	0.3100*	0.2513*	1.000

* represents 5% significance level
Source: author's calculations

Nevertheless it is significant on 15% and in order for the model for two segments to be comparable we include GDP growth in further analysis. ADF test concludes that NPL_R, NPL_C, INV, M0, RL and CL are I(0) and Y is I(1) series, so we define dY as the first difference in log GDP growth and use it in further regressions.

5.3. Model Specification

Now we determine the optimum lag structure for the models. The decision on lag structure is closely connected with the issue of stability of VAR: we may include more lags in the model but it will not satisfy the stability condition[2]. After we tried various VAR lag specifications it was found that VAR is stable only if for lags smaller than or equal to 9, hence we have to focus on short-run perspective because of relatively small sample (96 months in total). Hannan and Quinn (HQIC) and Schwarz-Bayesian (SBIC) determine the 2nd lag to be optimal while the final prediction error (FPE) and Akaike's (AIC) criterion decide on the 9th lag for both models hence we include lags from 1 to 9 in our specification. Wald test for lag structure suggests that all lags are jointly significant and should be employed in the model. The roots of the companion matrix lie inside the unit circle, hence stability condition is satisfied.

Hence, we firstly estimated the following reduced-form VAR model separately for retail loans and corporate loans:

$$X_t = A_0 + A_1 X_{t-1} + A_2 X_{t-2} + \cdots + A_9 X_{t-9} + e_t \quad , \qquad (6)$$

where $X_t = \begin{pmatrix} GDP\ growth_t \\ M0\ growth_t \\ Investment\ growth_t \\ Loans\ growth_t \\ NPL\ growth_t \end{pmatrix}$

The goodness of fit of the reduced-form VAR models is presented in Table 3 below. As we can see R^2 values are rather high (0.77 on average for corporate loan model and 0.80 for retail loan model).

[2] Eigen value stability condition can be thought of as stationary condition from one-dimensional time series analysis applied to multivariate time series analysis. In order for it to be satisfied in one-dimensional time series analysis the roots of the characteristic equation must lie inside the unit circle, and for a VAR the roots of the companion matrix must lie inside the unit circle. This condition is needed in order to be able to invert AR process into infinite-order MA process; practically it is required to derive IRFs and intuitively it is needed to eliminate the possibility of explosive process in the system.

However, although reduced-form model fits the data reasonably well and can be used for forecasting it does not identify cause-effect relationships and its error terms are comprised of shocks in all other variables. Hence now we proceed to structural form VAR in order to be able to estimate actual cause and effect relations and examine the impact of macro shocks on the ratio of non-performing loans.

Based on statistical inference (Granger causality tests) and basic economic intuitionwe propose the following ordering. It is reasonable to take M0 as an exogenous variable set by CBR, and its growth is likely to affect interest rates, which shapes investment growth (INV), while the latter is a determinant of GDP growth. These macroeconomic variables together will shape the amount of loans provided in both sectors and finally all the mentioned variables influence NPL growth. Thus, we estimate the structural model using the ordering we stated for Cholesky decomposition.

Table 3: Goodness of fit of reduced-form VAR models

Corporate loan segment					
Equation	1st difGDP gr	M0 growth	Investment growth	Loans growth	NPL growth
No. of parameters	46	46	46	46	46
R^2	0.91	0.75	0.87	0.65	0.69
χ^2	866.92	262.48	585.54	160.31	189.06
$P > \chi^2$	0.0000	0.0000	0.0000	0.0000	0.0000
Retail loan segment					
Equation	GDP growth	M0 growth	Investment growth	Loans growth	NPL growth
No. of parameters	46	46	46	46	46
R^2	0.90	0.77	0.86	0.82	0.68
χ^2	761.44	292.94	533.16	402.12	183.21
$P > \chi^2$	0.0000	0.0000	0.0000	0.0000	0.0000

5.4. Results of Stress Testing: Corporate Loan Segment

We get the following estimation results for corporate loan model(* - significant at 5% level, ** - significant at 1% level):

$$\begin{cases} INV = -7.81M0^{*}, & (7) \\ Y = 0.04M0^{**} - 0.01INV^{*}, & (8) \\ CL = -0.07M0^{**} + 0.01INV + 0.10Y, & (9) \\ NPL_C = 1.18M0 - 0.17INV + 17.31Y + 14.02CL^{**}. & (10) \end{cases}$$

The main result for the corporate loan model is that only amount of corporate loans provided turns out to be significant determinant of the ratio of non-performing loans while macroeconomic factors are not, as can be seen from (10). This indicates that corporate loan segment is prone to macro shocks while 1% increase in growth of total amount of credit provided leads to 14.02% increase in NPL growth.

The consequences of a one standard deviation shock in corporate loan growth on corporate NPL are depicted on Figure 8. Standard deviation of corporate loan growth for the considered period has been 2.5% and monthly growth for August 2012 was 2.3%, hence we are considering a monthly doubling of growth rates of corporate loans. This leads to almost 8 percentage points increase in NPL growth for the first month on impact, compensated by almost the same 8 percentage points drop in the second month after shock; for the next six months the effect fades and NPL growth returns to pre-shock level.

This leads us to the conclusion that corporate loan segment is rather prone not only to macro shocks but to volume of loans shock as the effect of a shock appears to be very short termed (2 months) and has no serious consequences on quality of loans measured by NPL growth.

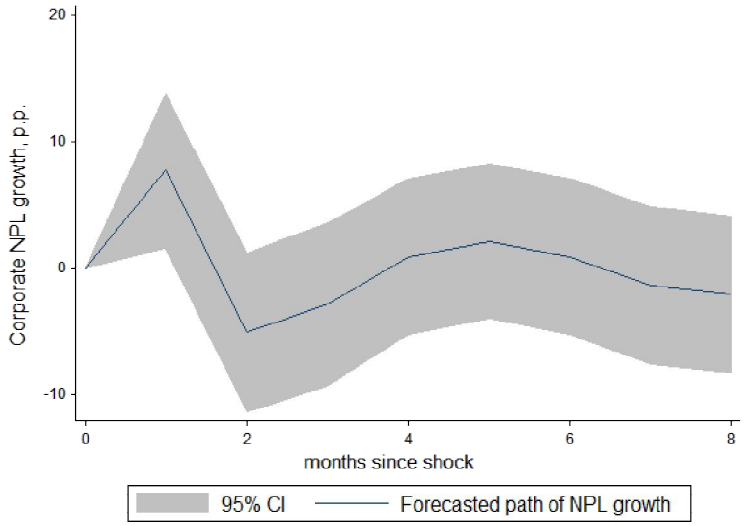


Figure 8: Impact of corporate loan growth shock

5.5. Results of Stress Testing: Retail Loan Segment

On the contrary, for the retail loan model macroeconomic variables are strongly significant while the growth in retail loans is not, hence retail loan segment is sensitive to macroeconomic environment while it is insensitive to volume of retail loans growth, as we see from (14).

As for the macroeconomic model, M0 growth is indeed a highly significant determinant of investment growth and 1% increase in M0 growth leads to 7.26% drop in investment growth which is intuitively clear: inflation brings about uncertainty and higher interest which slows down investment growth.

$$\begin{cases} INV = -7.26M0^{*}, & (11) \\ Y = 0.01M0^{**} - 0.01INV^{*}, & (12) \\ RL = -0.10M0^{*} + 0.01INV - 0.02Y, & (13) \\ NPL_R = -6.11M0^{**} - 0.45INV^{**} - 16.51Y - 1.17RL. & (14) \end{cases}$$

The key point to note is that M0 and investment growth significantly influence the ratio of NPL in retail sector while GDP growth and volume of retail loans have ultimately insignificant effect. Figures 9 and 10 reflect the impacts of one standard deviation shock in M0 and investment growth on NPL in retail respectively. Hence if monthly inflation increases by 0.5% this would increase NPL growth by around 15% on the second and the fourth months after the shock but as the estimation shows on Figure 9 after the 6th month NPL starts to decrease rapidly and by the 8th month any growth in NPL stops as it is forecasted to fall by 100%. The possible explanation could be that at first increased inflation brings about higher uncertainty and on impact the proportion of affected customers which stop paying to the bank increases (in two waves – on the 2nd and 4th month), however several months after borrowers reap the benefits of inflation: the real value of interest payments decreases and therefore it becomes easier for the borrowers to repay the loan, hence NPL growth ceases.

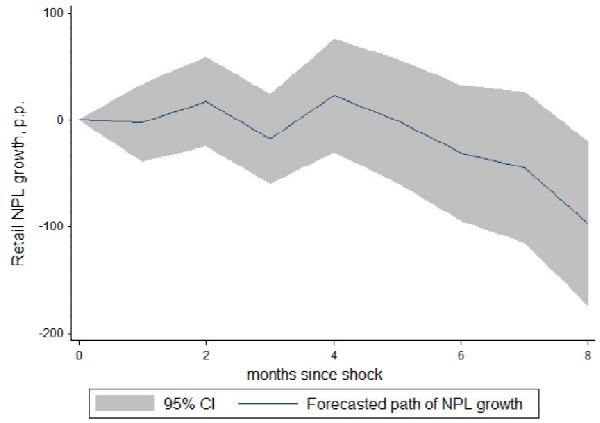


Figure 9: Impact of M0 growth shock

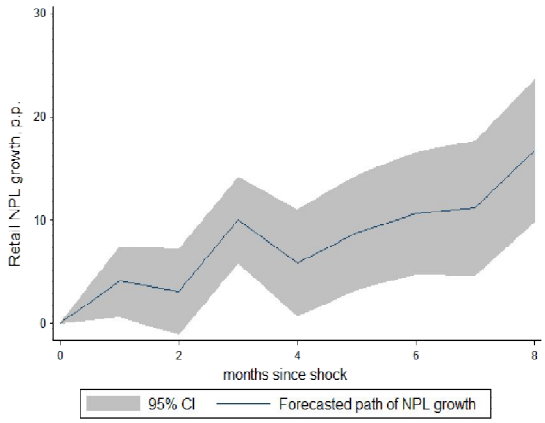


Figure 10: Impact of investment growth

As for the one standard deviation shock in investment growth, which is equivalent to triple increase compared to monthly rate as of August 2012, as reflected on Figure 10 it would lead to steady surge in NPL growth – around 5% after a month, reaches 10% after three months and grows to exceed 15% 8 months after the original shock. We note that the effect does not fade although it is rather small in absolute value compared to the impact of inflation shock.

6. CONCLUSION

This study develops a statistical approach to stress testing, firstly, conducting analysis on institutional level among systematically important state banks, and secondly, performing stress tests of retail and loan segments based on VAR model of interaction between financial and real economy sector.

Analysing major banks with state ownership as of the 1st of September 2012 under the developed Credit Risk - Return Stability framework, we find that the same banks tend to exhibit similar patterns in terms of risk-return strategies in corporate and retail segments, with Gazprombank showing exceptionally strong position prone to credit risk (especially in retail credit segment) and remaining on the median in terms of returns stability while Sberbank, although commonly acknowledged as rather safe remains on the median in terms of credit risk and below the median in terms of return stability, with significantly weaker position in the retail loan sector. Banks from VTB group were found to show alarmingly high exposure to credit risk especially in corporate loan segment while remaining close to the median in terms of return stability. Generally, corporate loan sector is found to be more risky on average than the retail. This analysis is valuable both for individual bank risk management and to the supervisory authorities as controlling of systematically important institutions is acknowledged to be more and more important especially in the light of 2008-2009 global financial crisis.

Consequently we estimate a VAR model which links aggregated financial sector indicators such as growth in average NPL and growth in total amount of loans provided for each segment of credit market with macroeconomic variables: GDP growth, money aggregate M0 growth and growth in investment in fixed assets (monthly data, September 2004 – September 2012). We find that NPL in corporate loans is significantly influenced only by total amount of corporate loans provided; hence it is prone to macroeconomic shocks. Opposite to that, growth in amount of retail loans is not a significant cause of NPL in retail sector, while growth in M0 and investment do have significant impact on retail NPL ratio. This suggests that macroeconomic condition influence primarily the retail sector, which is three times less than corporate, hence only one quarter of total loan market is vulnerable to macro shocks. A

one standard deviation shock in M0 growth (which is equivalent to 0.5% increase in monthly inflation) increases NPL growth in retail loans by 15% during the first four months but then leads to rapid decline and cease of NPL growth by the 8th month after shock. One standard deviation shock in growth of investment in fixed assets leads to a steady increase in retail NPL growth, reaching 20% by the 8th month after the initial disturbance.

The major conclusion is that macroeconomic shocks (namely, inflation and investment growth shocks) have considerable impact on credit risk in retail loan segment of Russian credit market, but do no significant impact on the corporate loan sector. On the contrary, growth of loan market itself does not influence retail loan segment but has significant impact on the corporate, though the effect of a shock fades after five months. Given that recently the growth rates of retail segment have been almost twice as much as in the corporate supervisory authorities should strengthen macroeconomic policy control in order to prevent sharp rises in retail defaults. In case of further surge in amount of corporate loans provided CBR should take preventive measures to avoid consequent rise in credit risk.

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APPLIED STRATEGIC ANALYSIS AS FURTHER BALANCED SCORECARD CONCEPT DEVELOPMENT

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Abstract: The author proposes theoretical and methodological aspects of the applied strategic analysis (ASA) as a new instrument of the balanced scorecard (BSC) comprehensive study of the organization economic activity. The ASA concept has resulted from the further development of the BSC concept which defines a set of the analyzed indicators and the analysis sequence. Such are the main ASA objectives: comparative evaluation of the BSC data, diagnostics of the BSC data divergence and forecast of the BSC data. All the objectives are closely interrelated, as every coming problem entails from the previous one. For example, the diagnostics is affected by comparative evaluation of the BSC data values and their forecast takes into account the result of the diagnostics. The principle of the ASA implementation, a deduction principle, is understood as a research, firstly, of the general BSC indicators, then – specific ones. The basic ASA applications are as follows: analysis of financial data, analysis of customers' data, analysis of the internal business processes data and analysis of the personnel training and development.

Keywords: Balanced Scorecard, Applied Strategic Analysis

1. INTRODUCTION

To enhance strategic management efficiency in difficult conditions of today market economy we need to improve its information-analytical support, to evolve theory, methodology and methods of the overall strategic economic activity aspects to the level of the financial analysis being an efficient research instrument of the financial aspects of the organization economic activity based on the financial indicators and described experience.

One of the leads of further research is the development of the foundations of the applied strategic analysis (ASA) concept, assuming a comprehensive research of strategic aspects of the organization economic activity based on the balanced scorecard (BSC) and considered to facilitate strategic management functions. It should be taken into consideration that the applied strategic analysis lacks any standard methods as it is applied to the balanced scorecard system special for any particular organization. Hence, The ASA methods are special as well for any particular organization. So it enables to discuss general aspects of the methodology rather than its universal specification.

The paper treats theoretical and methodological aspects of the applied strategic analysis concept as a research instrument of the financial aspects of the organization economic activity by means of the financial indicators of the BSC as well as other aspects of the organization performance by means of other elements of the BSC such as customer, internal business-processes, training and personnel development.

2. LITERATURE REVIEW

The balanced scorecard concept as an analytical instrument applied in the field of strategic management was developed by American scientists Robert Kaplan and David Norton (1996) at the beginning of the 90s of the XX century evolving both in their works (Kaplan *et al*. 2001, 2006) and those of other scientists studying economics (Friedag *et al*. 2002; Horvath & Partners, 2004; Olve *et al*. 2000; Rampersad, 2003), and was multiply tested. At present BSC is considered to be one of the essential instruments of the organization management system (enterprise, firm, company, and business-unit).

The main reason to develop BSC was a contradiction between contingencies aimed at setting up wide competitive opportunities and immobile accounting system (financial accounting system). Balanced scorecard as a whole is implied as an aggregate of parameters featuring an overall organization performance in up-to-date market economy. It reflects a balance to be brought about between short-term and long-term goals, financial and non-financial indicators, basic and auxiliary parameters, as well as internal and external factors of the organization economic activity.

The scores of the balanced system were formed depending on the outlook and strategic goals of any particular organization and have individual features. They represent a balance between external accounting data for the owners (shareholders) and internal characteristics of the most significant business processes, innovations, training and growth that is the balance between the results of the organization performance and future growth. The system comprises a combination of objective quantity estimated data and subjective somewhat arbitrary parameters of future growth.

The main goal of the balanced scorecard is to transform the company strategy into specific tangible objectives, indicators and end up with events. The BSC scores are selected so that the organization managers and employees focus on the factors to enhance the organization competitiveness, the BSC to be accessible for the employees of all levels. The ‘front-end’ employees should be well aware of the financial consequences of their decisions and actions, while top managers must be committed to the long-term financial success. Three scores system group balanced scorecard: cause and effect, results attain factors and interrelation with financial data.

The balanced scorecard comprises four basic interrelated elements: financial indicators, customer, internal business processes ones as well as training and personnel development indicators. The BSC scores enable to characterize comprehensively an activity of commercial, government and non-for-profit organizations, the scores being relatively few (about 25 scores in average, as a rule). The balanced scorecard is presented in Table 1.

To complete a brief description of the balanced scorecard it should be noted, that the BSC concept has matured and has been appreciated by different organizations; it has been completed yet neither in terms of theory nor practical application.

Table 1: Balanced scorecard of the organization development

BSC elements	Key problem	Strategic goal	Indicator	Target figure	Strategic event
Financial activity					
Customers					
Internal business-processes					
Training and personnel development					

3. THEORY AND METHODOLOGY

Applied strategic analysis assumes a comprehensive complex research of the strategic aspects of the organization economic activity based on the balanced scorecard. ASA subject implies balanced scorecard and determining factors. ASA object refers to as strategic aspects of the organization economic activity. ASA information support is balanced scorecard as an aggregate of parameters characterizing overall organization economic activity in up-to-date market economy: separate elements, key problems, strategic goals and their values and strategic events as well (Table 1).

A goal of the applied strategic analysis is to form analytical support of the strategic managerial decision taking. The ASA objectives are:
1. Comparative assessment of the balanced scorecard.
2. Diagnostics of the balanced scorecard variance.
3. Balanced scorecard forecast.

All of them are interrelated as each consecutive objective follows from the previous one. For example, the diagnostics is exercised on the results of the BSC elements comparative assessment while their forecast takes into account the diagnostics results.

Comparative assessment of the balanced scorecard elements assumes comparison of their outcome and target figures, determination of the BSC real and target figures variance and qualitative characteristics of the variance. The qualitative characteristics of the BSC real and target figures variance depend on their value.

Balanced scorecard variance diagnostics is based on the cause and effect ties combining BSC values into the general indicators balanced complex and specifying factors (results attaining factors). The general indicators as the key results indicators which are characteristic to many industries and organizations are assumed as basic parameters (for example, profitability, market share, customer satisfaction, customer base retaining, personnel competence field) applied for deferred evaluation. The results attaining factors are unique for every deferred specific business-unit evaluation indicators reflecting the strategy applied (for example, profitability financial factors, competition market segments, specific business-units goals, training and personnel development).

They disclose how the general indicators are attained. Moreover, at the early stages the general indicators are not sufficient to estimate implementation of the organization strategy. Vice versa, the results attaining factors (for example, production cycle time or faulty products percentage) with appropriate indicators missing enable to improve only short-term production processes and do not reflect their impact on the customer base and, consequently, on the financial results. However, some specific BSC outcome indicators (for example, customer

and internal business-processes) may be assumed as factors defining factoring indicators variance of the more general element, for example, financial element). While diagnosing the BSC indicators variance we are able to find out the results attaining factors having impact on the general or outcome BSC indicators and determine the variance value.

The BSC factoring model comprises the outcome financial BSC indicator as final (more general) indicators and seven levels of the defining factors: 1st level factors: factorial indicators of the BSC financial element; 2nd level factors: outcome customer indicators and some outcome indicators of the internal BSC business-processes; 3rd level factors: customer factorial indicators and some outcome indicators of the internal BSC business-processes; 4th level factors: some outcome indicators of the internal BSC business-processes and personnel development; 5th level factors: some factorial indicators of the internal BSC business-processes and personnel development; 6th level factors: some outcome indicators of the BSC training and personnel development element; 7th level factors: some factorial indicators of the BSC training and personnel development element.

We can push the analogy further on the five levels of the factors defining the outcome BSC customer variance, three levels of the factors defining the outcome BSC internal business-process indicators variance, and one level of the factors defining the outcome BSC training and personnel development indicators variance. The appropriate deductions are drawn from the computation results.

In case of the objective conditions the balanced scorecard forecast is targeted at the primordial determination and/or correction of the target BSC indicators values and either determination of the specific ways of their attainment or the development of the events aimed at the elimination of the variance emerged between outcome and target BSC indicators values in the future. Firstly, the general (outcome) indicators are forecast then the factorial BSC indicators are deducted from them.

The ASA aspects imply proper strategy aspects, tactical aspects and operations aspects. Within strategic ASA aspects evaluated, diagnosed and forecast are final BSC indicators values at the time of the developed strategy functioning i.e. their strategic values. Within tactical aspects of the applied strategic analysis we evaluate, diagnose and forecast interim BSC indicators values by the end of the year, i.e. their tactical values. Within operations aspect of the applied strategic analysis evaluated, diagnosed and forecast are interim BSC indicators values by the end of each month, i.e. their operations values. All the ASA aspects mentioned are interrelated and agreed: the results of the analysis of the operations BSC indicators values impact on their tactical values and the results of the tactical value analysis impact on the strategic ones.

The instruments of the ASA methods comprise a combination of methods ensuring that the analysis is carried out and its goals are attained. The basic ASA method may include methods of absolute, relative and average values, comparison, grouping, graphical, table and balance methods, as well as factoring, correlation and regression analysis.

The ASA accomplishment principle, a deduction principle presumes, firstly, an investigation of the general BSC indicators, then specific indicators. The principle defines *general* sequence of the ASA analysis according to the following leads:

1. Analysis of financial indicators.
2. Analysis of customer indicators.
3. Analysis of internal business-processes indicators.
4. Analysis of training and personnel development indicators.

4. RESULTS

Each of the basic ASA leads, financial, customers, internal business-processes as well as training and personnel development is represented through the prism of its basic objectives: evaluation, diagnostics and forecast. The ASA commences from the comparative evaluation of the financial indicators and is completed by the forecast of training and personnel development.

In addition, assuming "intersection points" of the basic leads and the most significant objectives as some kind of elements we are able to build a matrix out of the ASA elements (Table 2). The author assumes that the introduced matrix (Table 2) may be considered as a matrix model respectively visualizing their composition and economic contents.

Table 2: ASA elements matrix

Basic ASA leads	The most significant ASA objectives		
	Comparative evaluation (1)	Variance diagnostics (2)	Forecast (3)
Financial indicators analysis (1)	Comparative evaluation of financial indicators	Diagnostics of financial indicators variance	Financial indicators forecast
Customer indicators analysis (2)	Comparative evaluation of customer indicators	Diagnostics of customer indicators variance	Customer indicators forecast
Analysis of internal business-processes indicators (3)	Comparative evaluation of internal business-processes indicators	Diagnostics of internal business-processes indicators variance	Internal business-processes indicators forecast
Analysis of training and personnel development indicators (4)	Comparative evaluation of training and personnel development indicators	Diagnostics of training and personnel development indicators variance	Training and personnel development indicators forecast

Thus, completing overall description of the applied strategic analysis concept and contents we would like to discuss each of its basic leads: financial indicators analysis, customer indicators analysis, internal business-processes analysis and training and personnel development analysis in terms of their goals, separate elements, examples of the indicators analyzed and brief description of the analysis performance.

4.1. Financial Indicators Analysis

The goal of the BSC financial indicators analysis is to form analytical support of taking strategic decisions in finance management. The basic elements of the financial indicators analysis are as follows: analysis of assets and investment application efficiency, analysis of financial risk, analysis of cash flow, analysis of earnings costs and profit.

The procedure of BSC financial indicators analysis commences from the analysis of overall organization assets and investment application and their separate items as well as the level of the accompanying financial risk logical within well-known context of risk and profitability correlation. Then analyzed are cash flows generated by economic activity of the organization and by its separate divisions. The analysis is finalized by the study of earnings, expense and income from the organization economic activity including operating and other activities as well as earnings from its certain product range.

4.2. Customers Indicators Analysis

The analysis of the BSC customer indicators *is aimed* at making up analytical support for taking strategic sales management decisions. The basic elements of the BSC customer indicators analysis are: analysis of the customer profitability level, analysis of the products distribution market share, analysis of the customer base mix, volume and structure, analysis of the customer satisfaction level.

The procedure of the BSC customer indicators analysis is characterized by a rigorous sequence and commences from the analysis of the customer profitability level. Later analyzed is products distribution market share of the organization. Then the analysis of the customer base mix, volume and structure is performed. Finally, we analyze a level of customer satisfaction.

4.3. Internal Business-Processes Indicators Analysis

The analysis of the internal business-processes indicators is aimed at making up analytical support for taking strategic production management decisions. The basic elements of the internal business-processes indicators analysis are: analysis of the after-sales service indicators, analysis of the operating process indicators, analysis of the innovation process indicators. It should be noted that every element of the internal business-processes analysis such as analysis of the operation process indicators and analysis of the innovation process indicators is sizable and needs to be subdivided into particular sub-elements.

The complex after-sales service indicators analysis comprises the following elements: analysis of the customer invoicing rate, as well as final payment and differences settlement, analysis of the due delivered goods upgrade, analysis of the guaranteed maintenance and repair rate, analysis of the faulty goods replacement rate (should they be delivered).

The analysis of the after-sales service indicators commences from the customer invoicing rate, as well as final payment and differences settlement. Later analyzed is due delivered goods upgrade. Then we analyze guaranteed maintenance and repair rate and finally faulty goods replacement rate (should they be delivered).

The complex operation process indicators analysis comprises the following elements: analysis of products due delivery, analysis of production cost and analysis of the products quality compliance to customer demand.

The procedure of the operation process indicators analysis is characterized by a rigorous sequence and commences from the analysis of the products due delivery. Then analyzed are total production cost and various units' production cost. The procedure is finalized by the analysis of the products quality compliance to customer demand.

The complex elements of the innovation process analysis are the following: analysis of the new products development expediency, analysis of the applied research and development expediency and production of the next generation product feasibility study, analysis of the in-depth scientific research expediency of innovative products, analysis of the cutting-edge innovative products development feasibility study, analysis of the customer demand acceptable in terms of new products development as customer future value.

The procedure of the innovation process indicators analysis commences, firstly, from the analysis of the new products development expediency. Secondly, the applied research and development expediency and production of the next generation product feasibility study are analyzed. The third step is to analyze in-depth scientific research expediency of innovative

products and cutting-edge innovative products development feasibility study. Finally, analyzed is customer demand acceptable in terms of new products development as customer future value.

4.4. Training and Personnel Development Indicators Analysis

The analysis of the training and personnel development indicators *is aimed* at making up analytical provision for taking strategic production management decisions. The basic elements of the training and personnel development indicators analysis are: analysis of the employees' motivation level, delegated authorities volume and the extent of conformity of their personal and corporate goals, analysis of the extent of the information system expansion, analysis of the quality of the employees training and their creative abilities development.

The procedure of the BSC training and personnel development indicators analysis commences from the analysis of the employees' motivation level, delegated authorities volume and the extent of conformity of their personal and corporate goals. Ten we analyze the extent of the information system expansion. The analysis is finalized by the analysis of the quality of the employees training and their creative abilities development.

5. CONCLUDING REMARKS

To complete the treatment of the applied strategic analysis we draw a number of conclusions. Applied strategic analysis (ASA) may be considered as a new lead of scientific research and practical application in the field of strategic organization management. ASA concept emerged from the BSC concept development arising the need to transform a financial analysis of the organization activity into a broader and complex concept. ASA is a BSC indicators research instrument and assumes their comparative assessment, variance diagnostics and forecast. ASA comprises four basic leads: financial indicators analysis, customer indicators analysis, internal business-processes indicators analysis and training and personnel development indicators analysis. ASA concept may evolve into specific methods, economic-mathematic models and software to be practically applied.

The applied strategic analysis as a new BSC research instrument of the organization economic activity defines its general contours as a new lead of scientific research and practical activity presents some kind of theoretical basis for further ASA development and above all for its practical application. The following may be considered to be basic trends of the further applied strategic analysis development: further ASA development assuming its elaboration and specification in terms of certain BSC elements; ASA methods development for different companies in different industries; ASA spread to include current activities, being BSC derivative; economic-mathematic models and software development enabling to apply ASA practically for organization management processes.

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OPTIONS OF ELECTRONIC COMMERCE'S MODELLING IN A CYBERSPACE OF NEW ECONOMY

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Abstract: The new economy is and will be more based on accurate and secure information and knowledge, system-defined and integrated environment of modern information and communication technologies (ICT), progressive economic cybernetics with an application of modern management, modelling of intelligent e-business and the necessary modern e-learning. The key to success will be to contribute by the modelling to the creation of new secure cyberspace. The article describes options of electronic commerce's modelling in a cyberspace of the new economy with the definition of the new economy and, in particular, with the identification of acquired practical information and data that can be used for design of intelligent and accurate means for system-integrated interface human - ICT.

Keywords: E-business, System Integration, Economic Cybernetics, ICT Applications, System, Modelling

1. INTRODUCTION

In the world emerging "The New Economy" is the expression of the contemporary concept of scientific knowledge in the economy and systematically expressed all sorts of integration processes in the contemporary world and very dynamic processes in learning and implementing new technologies, especially information and communication systems. The new economy will be based more on accurate and secure data, information and knowledge, on systematically defined and integrated environment of modern information and communication technologies (ICT), on progressive cybernetics - as proven science of control and communication in living and non-living organisms. With this cybernetic understanding of the systems theory and with considering of structures and behaviour of real systems in area of modelling systems theory, cybernetics defines state space and another projection of date and information fields in modern cyberspace. States of the new economic cybernetics are identified in this modelling environment of cybernetics - cyberspace. It encompasses all spheres of economic processes and their models with consideration for example trade with the modern electronic environment called electronic business (e-business), electronic commerce (e-commerce) with information and data for the state and public administration (e-government), trading in banking (e-banking) and many other segments of today's and future projects of electronic commerce. Electronic business (e-business) and electronic commerce (e-commerce) thus becomes an inseparable part of the economic cybernetics with models projection of this trade to cyberspace of new economy. Modelling of these environments is

associated with identification and recognition of structures and behaviour of all integrating components of technical, technological, financial, military, security and others including modern concept of education and learning in all forms of preparation social system to that new economy (e-learning applications on modern integrated virtual universities). (Jankova, 2013)

Each modelling will always see a modern model as static, dynamic, deterministic, stochastic, etc., and on this basis modern methods of theoretical and applied cybernetics will be applied. The key to success will be by mentioned modelling to contribute to the creation of new secure cyberspace. Assess the potential for modelling the optimal structure of newly designed system with consideration of the aggressive environment in the beginning world of "cyber war", the ability to design new and improved adaptive socio-technical environment in the dynamics of global view of the world, flexible training in the field of applied cybernetics and already threatened cyberspace.

The aim of this article is generally summarized obtained states of analyzed real systems in defined cyberspace, express modelling capabilities of the new cyber systems for the new economy namely based on research projects Dvorak and Jankova (2012, 2013) and published partial conclusions of research work in universities by cooperation of students and postgraduates.

The aim of the research is to design a new systematic solved real system, expression of models using methods of theoretical and technical cybernetics for modelling environment (modern computer system), expression of "options of electronic commerce's modelling in a cyberspace of new economy" and thus finding suitable (especially optimization rules) to design safe and adaptive model of the future system in the cyberspace of new and dynamic electronic economy. The long-term aim is a design of integrated and optimized intelligent adaptive e-business in environment of technical, economic and social base in the new economy of the world. (Figure1)

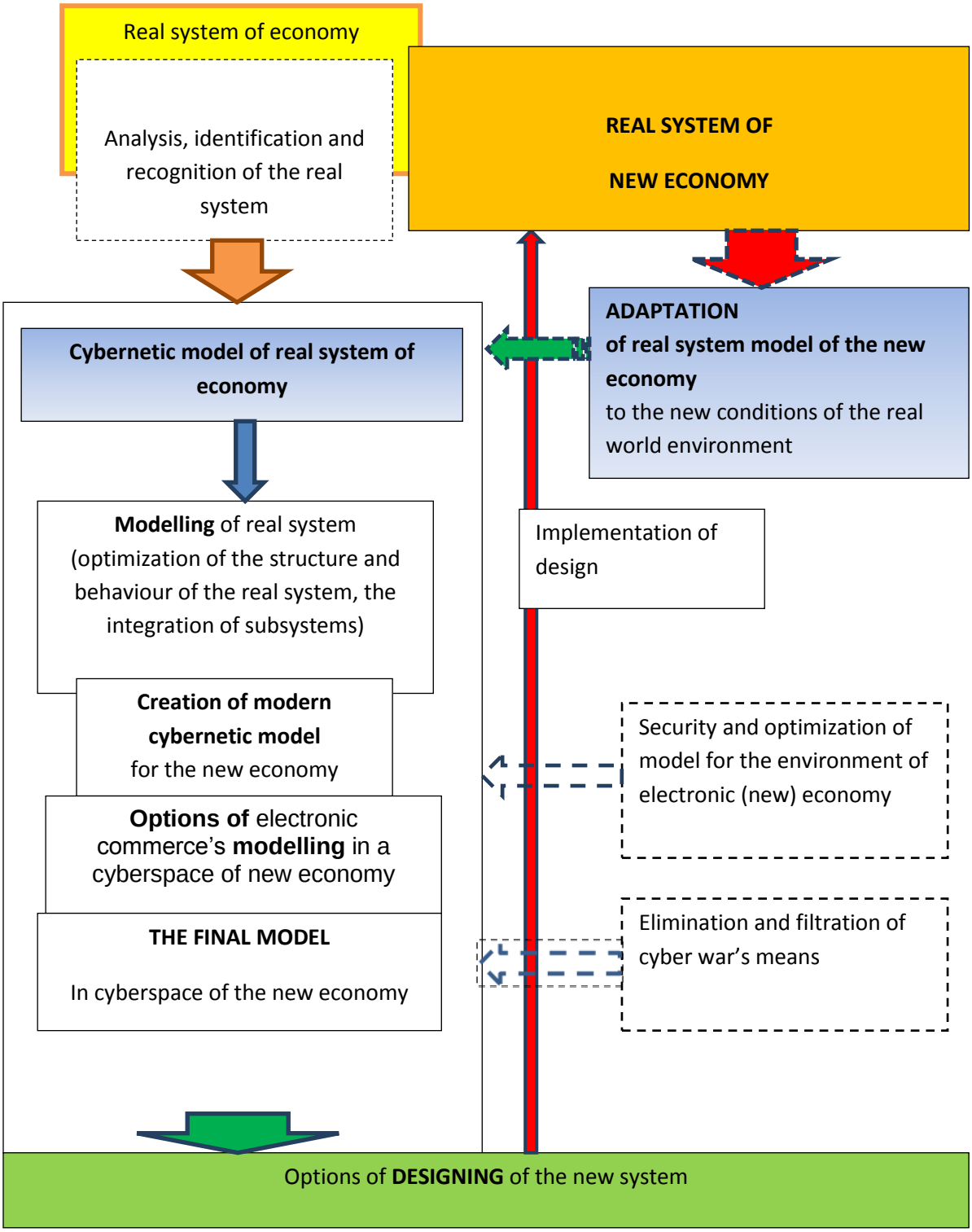


Figure 1: System definition of the specific research project

2. DATA AND METHODS

Based on the data obtained from the survey conducted by students and postgraduate students in this specific research is currently taking shape corresponding simplified model of selected part of the economic environment and then on computers as part of analysis

(identification, recognition and scene setting) of selected real subsystem is gradually creating the appropriate model of the economy system (selected subsystem). (Figure2)

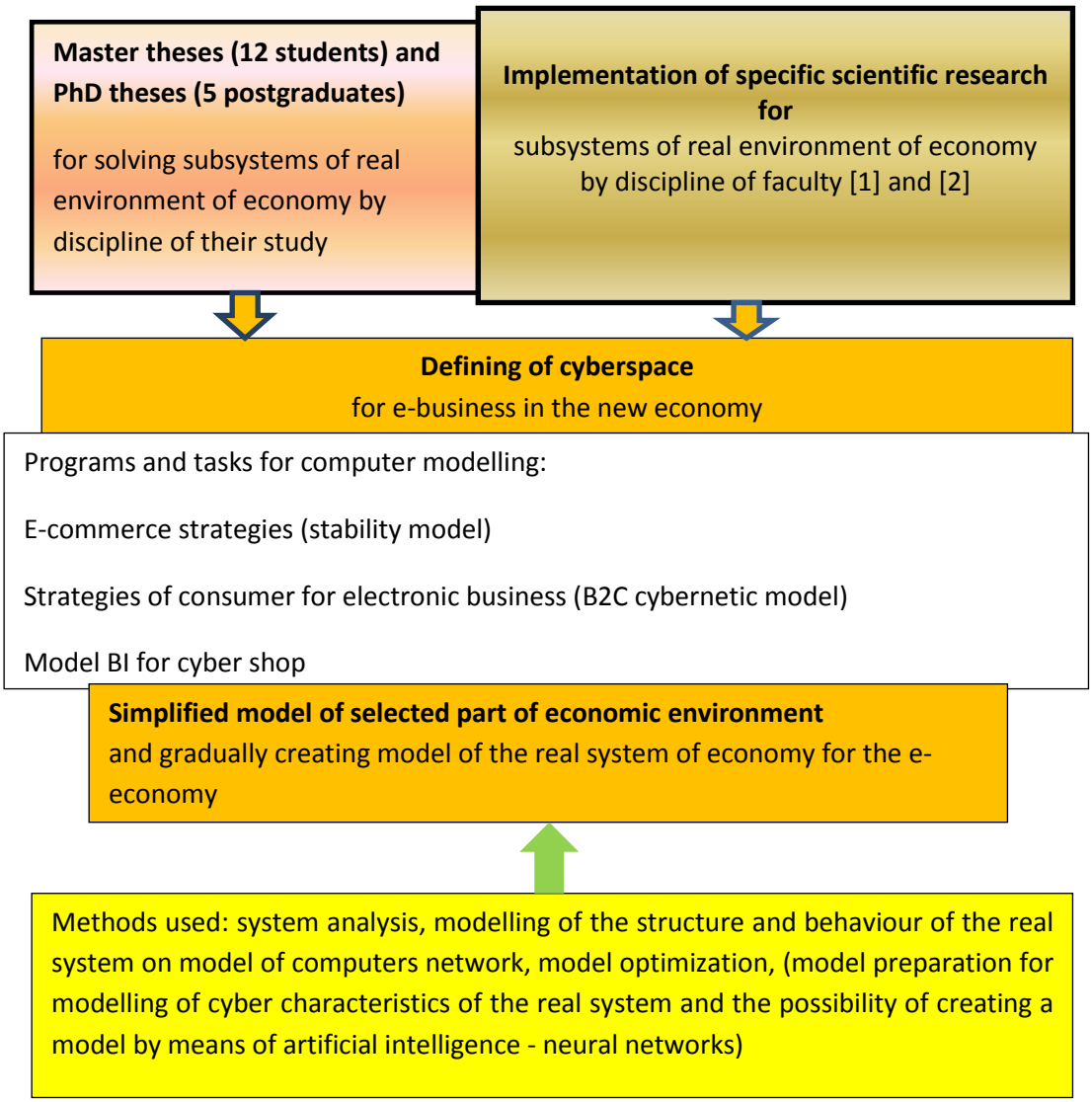


Figure 2: Research projects

Systemic verification of subsystems from previous research has been published in accordance with the conclusions of the research report (Dvorak and Jankova, 2012). To further validate the potential and generated respectively real properties of the model, systemic approaches are now solving in selected seminary student work and also in bachelor's and master's theses (Figure 2).

The results of implementation are gradually included in the sub-parts of prepared dissertations and published at conferences and doctoral workshops at the universities in the Czech Republic.

Specific in this research are the reports on the topic:

- Evaluation of the existing e-business environment and current means for modelling electronic commerce are particularly focused on e-shop on the internet.
- Current possibilities in modelling socio-technical environment of e-commerce.

The work of students solving following tasks are interesting:

- Optimization methods in e-business models.
- Trends in the use of modelling techniques for creating e-commerce.
- Possible use of selected methods of cybernetics for optimal structure and behaviour of e-commerce and e-business.
- System definition of the commerce and e-commerce.
- Options of using cybernetic models for designing and using technical environment of business in information and communication technologies.
- System integration capabilities in the new e-business situations.
- Usability of cyber environment for strategy and target behaviour of new models of electronic commerce, business.
- Using the characteristics of cybernetic model for newly emerging intelligent e-business models.
- Consideration of environmental stability, responses to customer demands in the new environment of economic cybernetics in the systemic defined e-business environment.

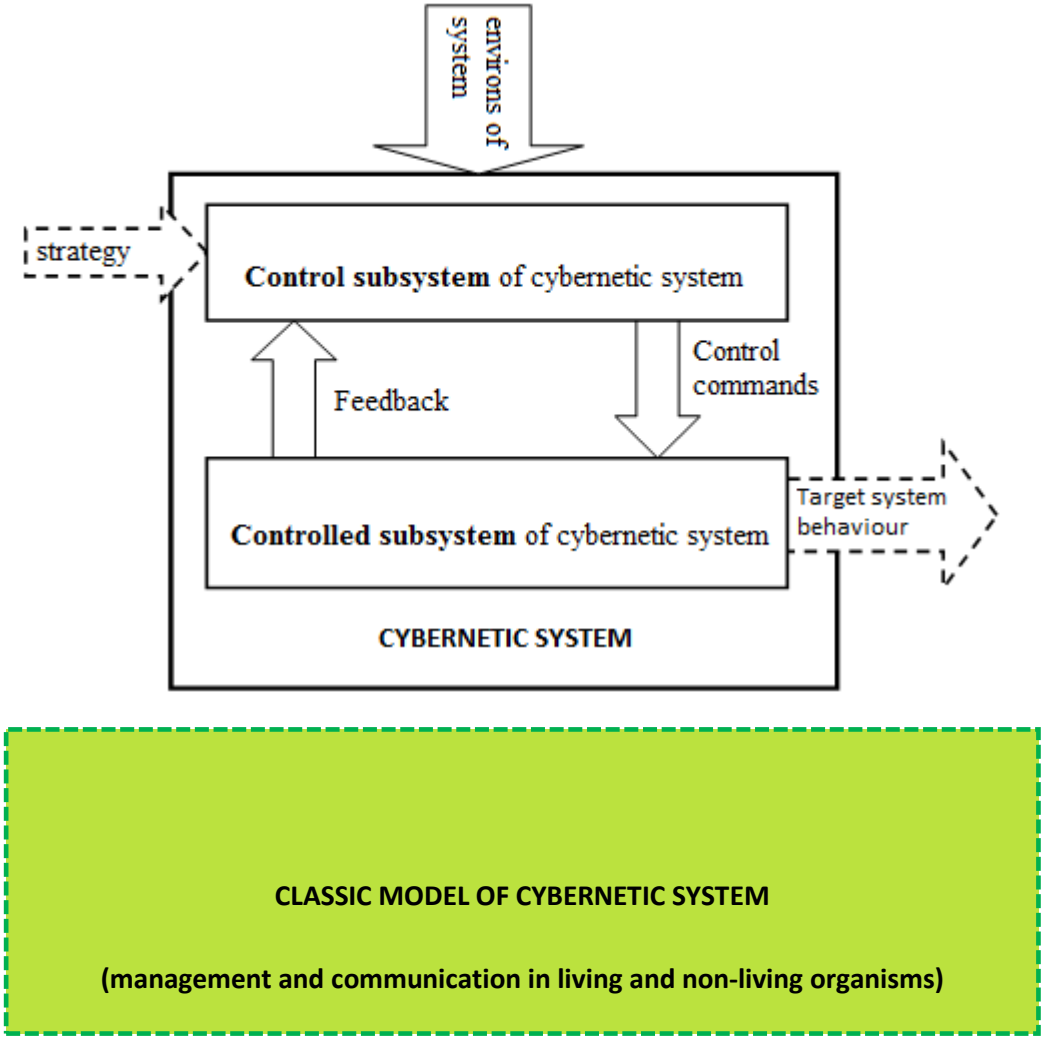
3. RESULTS

Many received partial results of the modelling suggest the need to create functional models by modern tools and to examine dependencies of individual subsystems and components of selected economic areas on them.

An example can be systematically developed business activities model and creation of new e-commerce project such as B2C (Figure 3). The base is exploring of dynamic environment that distorts mentioned electronic commerce (cyber war means). The development of technical and social interface is not given only by the dynamics of information and communication technologies, but also by vigorous implementation of optimal environment for the existence of both strategies of offer S_N and demand S_P (Figure 4). There is interesting expression of cybernetic models of supply and demand with regard to filtering of effects of cyber war and prediction of technical means of ICT with regard to the development of intelligent technical implementation of ICT. An important part is the integration of possibilities of technical means and social system with regard to optimize this interface (minimizing means for secure electronic commerce in this cyberspace). The final part will consist of adaptable intelligent e-commerce system suitable for future knowledge economy.

Intelligent systems B2C (Figure 3) will also in this field form the basis of the new economy and as in any war conflict even here in cyber war will play a role especially new effective and safe technology and in our case it will be the information technology in the field of technical security (in integrated information and communication systems) and also in the new technologies of social intelligence application (here will play an important role the new educational technologies mainly represented by the now familiar system of e-learning). In this area we start from publishing new forms of effective education for example (Hruby, 2011) (Hruby, 2009).

Modelling of referred electronic commerce is based on the known principles of cybernetics and is always expressed by modelling language - i.e. graphical (Figure 3) as it is schematically expressed in the previous figures.



Source: Krupka (2009)

Figure 3: Model of cybernetic system

The mathematical model is based on the basic terms of systems theory and in this case from the current descriptions of hierarchical dynamic systems of cybernetics. The results of the modelling are for example in response to a step change - therefore essential behaviour of strategy of referred model of e-commerce with consideration of responding substantial surroundings referred in this article as cyberspace taking into account the risks and potential crises (cyber terrorism, etc.). On Figure 5 is expressed system S as a set of subsystems $S_i...S_n$ and set of inputs I and set outputs O. The transformation of subsystem S to the model M is expressed in cyberspace K.

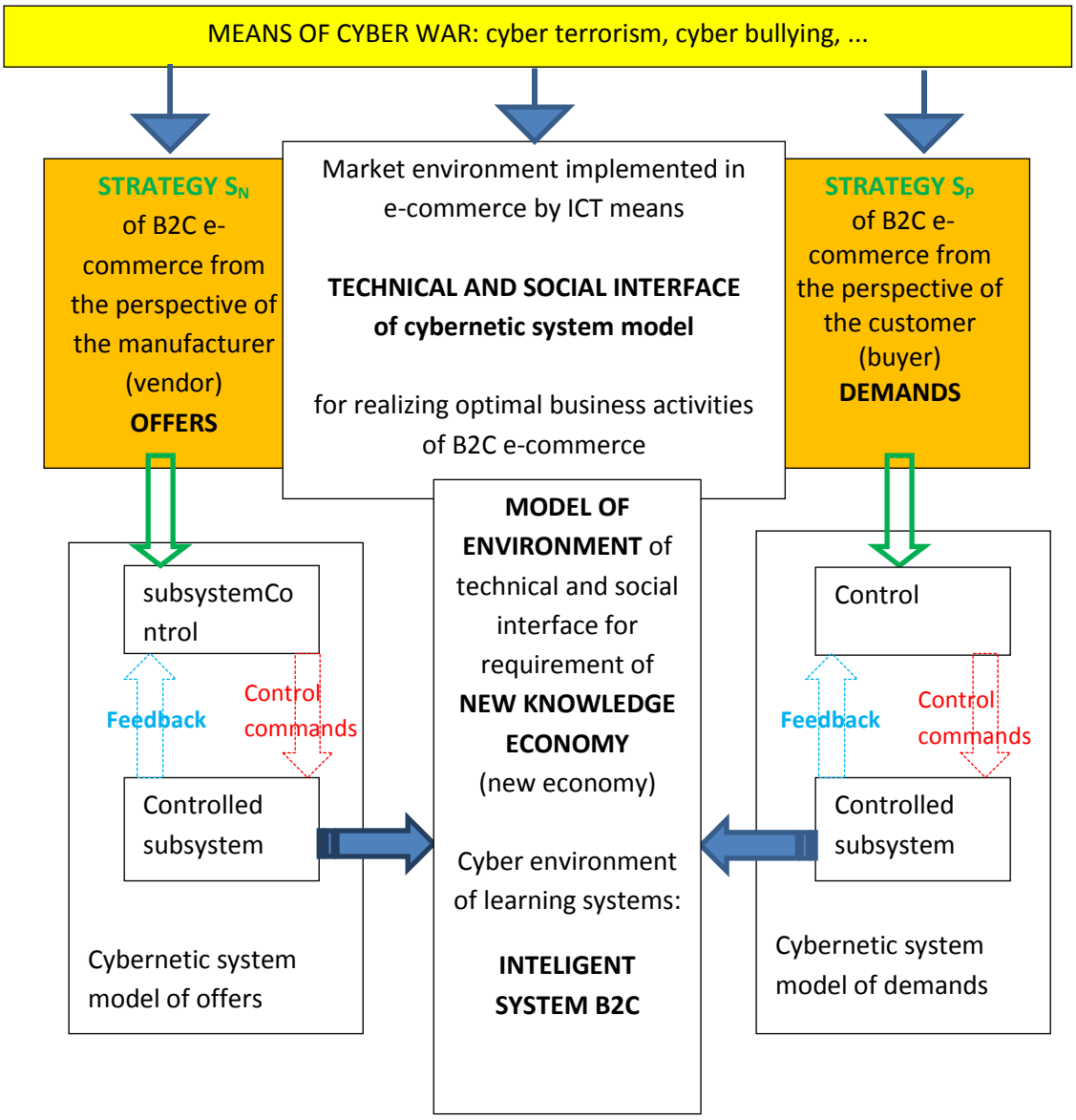


Figure 4: Systemic expression of an intelligent system

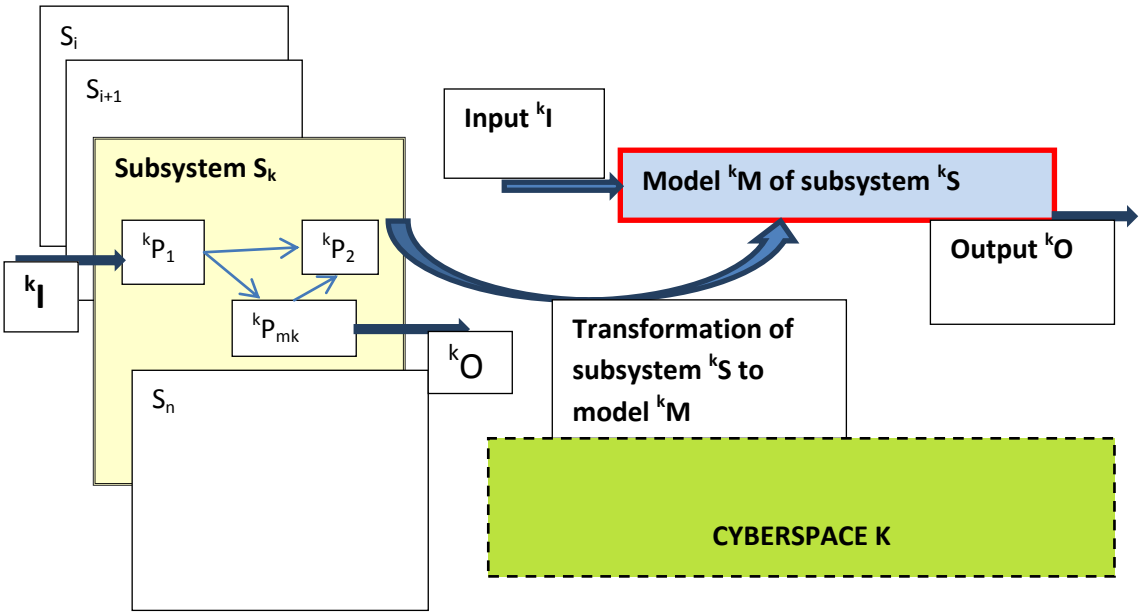


Figure 5: Modelling options of hierarchical system structures

A very important point of our own research is the expression of trends in modelling smart structures of e-commerce in the new economy - it is briefly expressed on (Figure6 Trends in the cyber environment).

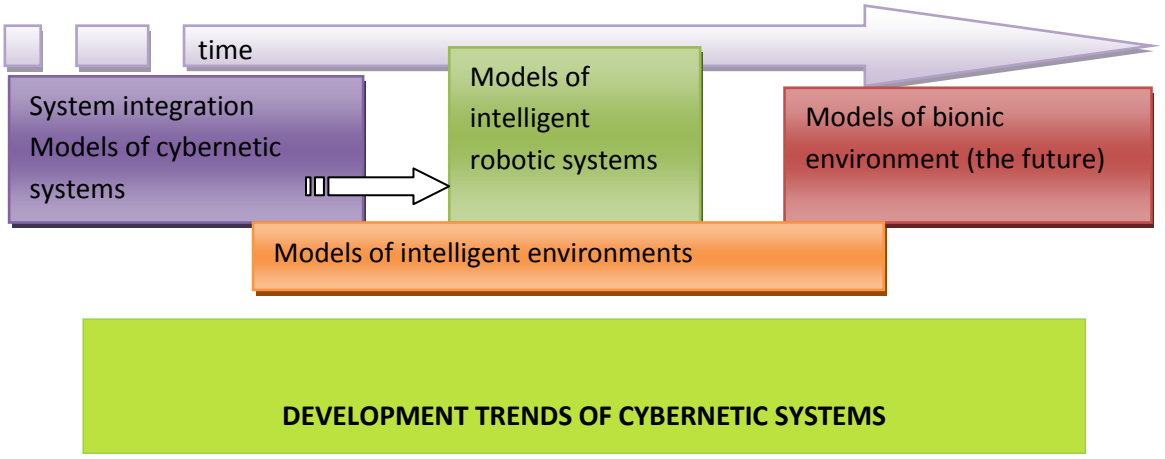


Figure 5: Trends in the cyber environment

4. CONCLUSION

Based on the data obtained from the conducted statistical survey in this specific research is created corresponding simplified model of selected part of the economic environment and then on the computer is created corresponding model as part of the identification of the selected system. System verification of subsystems is being published this year and in the next research period in 2014.

To verify the possible attributes of referred cybernetic model is now solving systemic approaches of whole research team and then in selected seminary student work and also in bachelor and master theses of Managerial Informatics students. This core area is included in the doctoral dissertation as well.

In further research we are considering the application of artificial intelligence in this extensive model with taking into account the testing and training set of data space in the modern concept of cyberspace.

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MARKETING STRATEGY TO OVERCOME THE "UNDERDEVELOPMENT WHIRLPOOL" OF THE VOLGOGRAD REGION

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Abstract: The article is devoted to the development of marketing strategy to overcome the "underdevelopment whirlpool" of the Volgograd region. The author analyzes the target markets of marketing activity of regional authorities of Volgograd region. The author considers the most attractive regions in terms of the implementation of marketing activities to attract Russian investors in the economy of the Volgograd region, as well as the target markets of marketing activity. The article includes the measures to improve the image of the Volgograd region and the formation of a new brand of Volgograd region, which aims to move away from its old industrial image and create the conditions for the formation of a new quality of economic growth in the region's economy.

Keywords: "Underdevelopment Whirlpool", Marketing Strategy, Regional Innovative Infrastructure, Concept of Economic Growth, Brand of a Region

1. INTRODUCTION

Volgograd region is one of the many regions of Russia, showing poor results of socio-economic development, despite the significant potential. In particular, the region is characterized by a lag to the parameter of economic growth, as GDP per capita, from other regions of the Russian Federation. Moreover, the industrial orientation of the economy of the Volgograd region is fixed in the concept of long-term socio-economic development of Russia until 2020.

The indicated problems require a review of approaches to strategic planning at the regional level. Such planning should be based on the active involvement of innovative marketing factors in the development of strategic policy measures. This will contribute to a unique environment for business and life, which, as noted above, have a positive impact on the prospects for the region's output of "underdevelopment whirlpool" and the formation of its new quality of economic growth.

2. ANALYSIS OF THE TARGET MARKETS OF MARKETING ACTIVITY OF REGIONAL AUTHORITIES OF THE VOLGOGRAD REGION

The phenomenon of the "underdevelopment whirlpools" is a system of space-time community development, on which the movement of the country, overcoming the barriers of the "vicious circle of poverty" in order to set their place in the international division of labor (Popkova *et al.* 2013a). In other words, this phenomenon reflects the uneven economic development in dynamics. "Underdevelopment whirlpools" arise under the pressure of the economic expansion of the developed countries, thus creating the conditions for its economic and political hegemony, which helps to create additional opportunities for their development, as measured by the growth of GNI (GDP) per capita.

The only way out of the "underdevelopment whirlpools" (in fact, generated by the globalization) – is not catch-up development, but creation of innovation of new community development on the basis of anew cycle (Popkova and Mitrakhovich, 2011). The phenomenon of "underdevelopment whirlpools" is considered in detail in the scientific papers of E.G. Popkova (Popkova, 2007). Development of marketing strategies for overcoming the "underdevelopment whirlpool" in Russian regions requires an analysis of target markets, marketing activities of regional authorities. Let`s carry out the analysis on the example of the Volgograd region (Table 1).

Table 1: Regions with the highest level of income per capita, 2012

Region	Income per capita (rubles)
Moscow	48,343.4
Chukotka Autonomous. District	43,161.7
Sakhalin Region	33,355.1
Kamchatka	30,485.1
Tyumen Region	32,553.6
Magadan region	35,995.9
St. Petersburg	27,399.0
Murmansk region	27,822.3
The Republic of Sakha (Yakutia)	27,966.0
The Republic of Komi	26,167.2
Khabarovsk Krai	25,853.5
Moscow region	29,566.3
Sverdlovsk region	27,504.7
Samara region	24,579.7
Perm	22,905.9

Source: Rosstat

Among individuals - the target audiences marketing activities in the region, it is appropriate to allocate Russian and foreign citizens. The region is interested in the citizens of the Russian regions with the highest level of wealth, much of which can afford to travel. Analysis of the level of income of the population in some regions of the Russian Federation showed that the most attractive for the implementation of measures to promote the image of the Volgograd region are: Moscow, Chukotka Autonomous. District, Sakhalin Oblast, Kamchatka Region, Tyumen Region, Magadan Region, St. Petersburg, Murmansk Oblast, the Republic of Sakha (Yakutia), the Republic of Komi, Khabarovsk, Moscow Oblast, Sverdlovsk Region, the Samara region, Perm. In foreign markets, it is first of all necessary to focus on the states most active against the cost of tourist trips (Table 2).

Table 2: International tourist spending in selected countries, billions of dollars

Number	Country	Regional market	International travel expenses (2009)	International travel expenditures (2008)	International travel expenditures (2007)	International travel expenditures (2006)
1	Germany	Europe	81.2	91.0	83.1	73.9
2	The United States of America	North America	73.2	79.7	76.4	72.1
3	The United Kingdom	Europe	50.3	68.5	71.4	63.1
4	China	Asia	43.7	36.2	29.8	24.3
5	France	Europe	38.5	41.4	36.7	31.2
6	Italy	Europe	27.9	30.8	27.3	23.1
7	Japan	Asia	25.1	27.9	26.5	26.9
8	Canada	North America	24.2	27.2	24.7	20.6
9	Russia	Europe	20.8	23.8	21.2	18.1
10	The Netherlands	Europe	20.7	21.7	19.1	17.0

Source: UNTWO World Tourism Barometer Interim Update, April 2010

Among these states should be noted Germany, the United States of America, Great Britain, China, France, Italy, Japan, Canada and the Netherlands. Next, consider the target markets of entities. In the Russian market the main suppliers of capital rate (Shahovskaya and Popkova, 2008) and, therefore, the most favorable regions for cooperation are those that contain the most profitable companies, as well as regions with a high savings (Table 3).

Table 3: The net financial result of the activities of individual companies of separate subjects the Federation

Region	The net financial result (profit minus loss) of organizations per capita, rubles
Chukotka Autonomous district	399,268
Tyumen region	222,556
Moscow	183,515
Krasnoyarsk Territory	60,619
St. Petersburg	56,394
Sakhalin region	50,713
Novgorod region	44,354
Murmansk region	39,330
The Republic of Komi	38,159
Perm	35,599
Irkutsk Region	35,469
Orenburg region	34,891
The Republic of Tatarstan	32,351
Magadan region	28,712
Lipetsk region	27,913

Source: Rosstat

Among the most attractive from the point of view of the implementation of marketing activities to attract Russian investors in the economy of the Volgograd region of regions should be mentioned oil-producing regions and the capital (Popkova and Mitrakhovich, 2010a).

Accordingly, measures to improve the image of the Volgograd region should be, first of all aimed at them. Approximately similar situation is in the field of the savings of the population. The leaders of the All-Russian rating are the same subjects of the Russian Federation. In addition, here are almost all the northern regions of the country where the income level is higher than the average in the country (Table 4).

Table 4: The volume of deposits of individuals in the Savings Bank of the Russian Federation, per capita, USD

Region	On ruble accounts	On foreign currency accounts
Moscow	72,456	26,064
Chukotka Autonomous district	58,878	2,040
Magadan region	44,198	10,581
St. Petersburg	41,425	11,259
Sakhalin region	34,103	3,500
Moscow region	33,499	4,375
Murmansk region	31,966	5,091
Kamchatka	27,977	2,595
Voronezh region	27,801	3,192
The Republic of Komi	27,591	3,248
Samara region	25,306	4,177
Arkhangelsk region	24,754	2,286
Yaroslavl region	24,379	3,337
Kaluga region	23,206	3,528
Tyumen region	22,173	5,882

Source: Rosstat

Identification of target markets of marketing activity abroad should be based on an assessment of potential foreign investment of any state. In this regard, it is useful to analyze the outgoing flows of direct investment in the world (Table 5).

Accordingly, the priority areas of work with foreign investors should become the states from this list. Study of the implementation of the marketing activities of various target audiences showed that outlined above states and regions of the Russian Federation should be the key to implementing a marketing strategy to promote the Volgograd region.

Table 5: Outgoing flows of foreign direct investment, millions of U.S. dollars at current prices in 2009

Number	Country	The volume of outbound investment flow
1	USA	248,074
2	France	147,161.3
3	Japan	74,699.08
4	Germany	62,704.78
5	Hong Kong	52,269.1
6	China	48,000
7	Russia	46,057.31
8	Italy	43,917.93
9	Canada	38,832.12
10	Norway	34,203.2
11	Sweden	30,286.93
12	The British Virgin Islands	26,535.19
13	Ireland	20,750.36
14	United Kingdom	18,463.39
16	Australia	18,426.29
17	Netherlands	17,780.27
18	Spain	16,334.66
19	Denmark	15,797.44
20	Switzerland	15,500.63
21	Luxembourg	14,956.94
22	India	14,896.72
23	Korea	10,572.1

Source: Rosstat

3. DEVELOPMENT OF NEW BRAND OF VOLGOGRAD REGION

The basis of the development of brand of the Volgograd region, which is aimed at creating the conditions for the formation of a new quality of economic growth in the region's economy, should be a move away from its old industrial image (Popkova and Mitrakhovich, 2010b). In conditions of formation of an economy based on knowledge, such image does not correspond to the effective development of the region. The world practice has accumulated enough examples of such re-branding of industrial lands, engaged in the past coal mining, textile industry, mining and processing of metals, heavy industry (Popkova *et al.* 2010). Tasks of forming of new brand of Volgograd region can be summarized as follows (Figure 1).

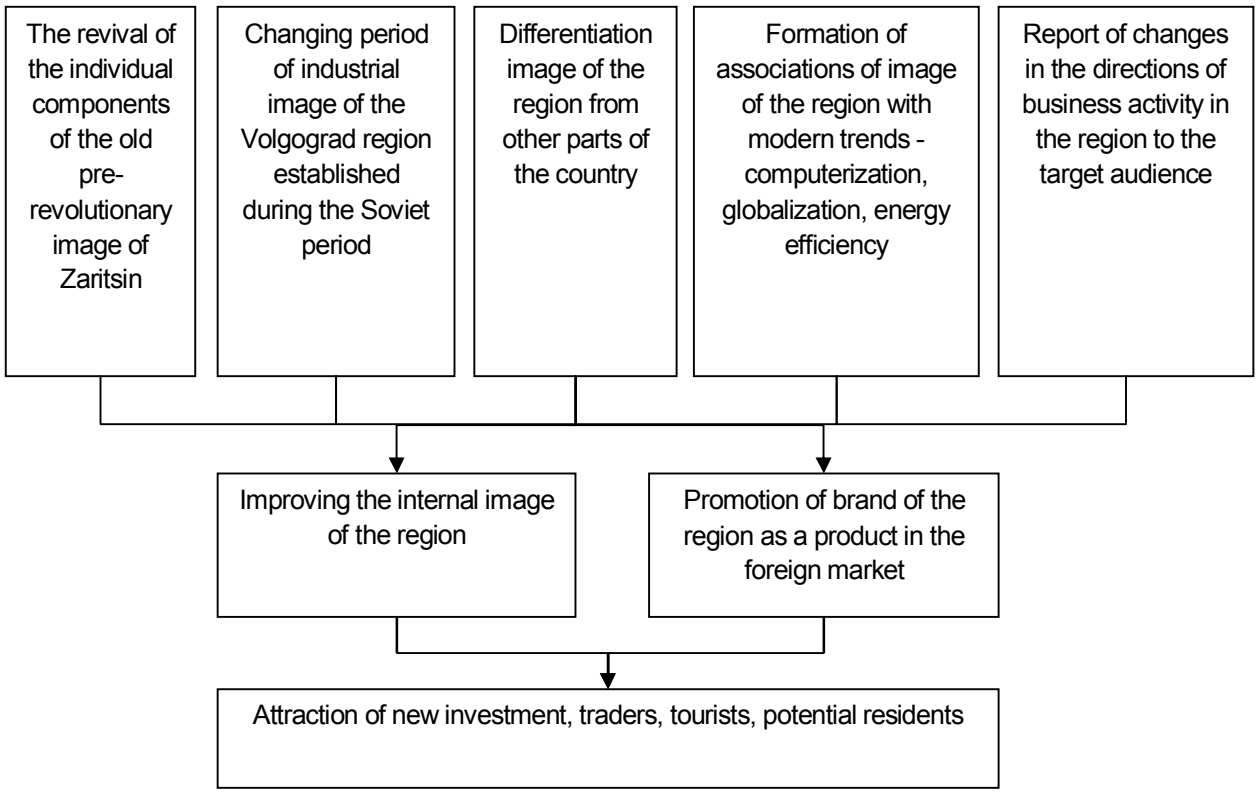

Figure 1: Key directions of brand of Volgograd region

According to these trends, the main components of a new image of the Volgograd region should be the following (Figure 2).

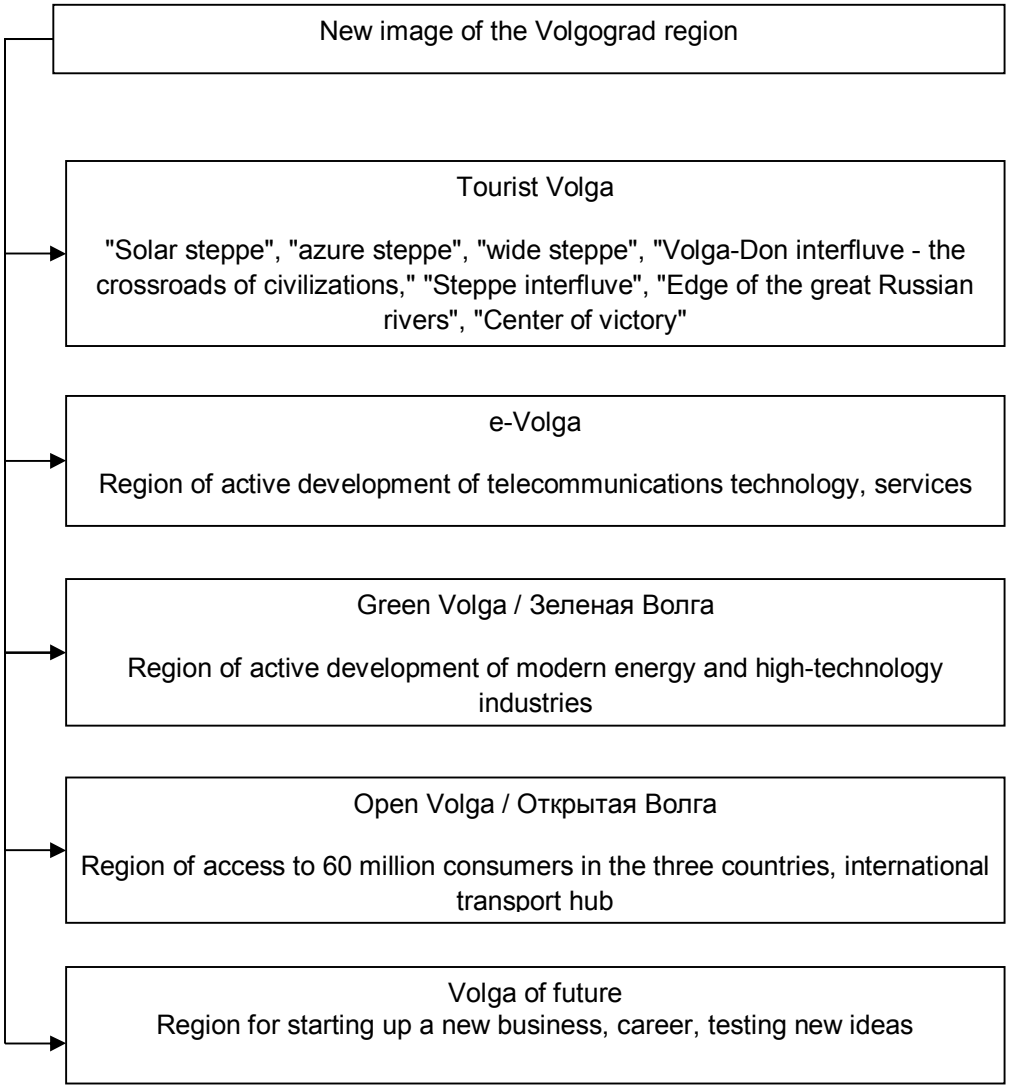

Figure 2: Structure of new image of the Volgograd region

The key task of rebranding of the Volgograd region in the series of mentioned problems is a reorientation of the region's economy in the post-industrial industrial type. Re-branding should be viewed as a development tool. The main components of the re-branding of the Volgograd region are Open Volga, e-Volga, Green Volga, Tourist Volga, Volga of future.

We should note the following directions of development most essential for the formation of a new quality of economic growth in the regional economy. The basis of the concept of regional innovation infrastructure of the Volgograd region should be constituted by the idea of “e-Volga”. An analogue of this idea can be found in the concept of Taiwan's economic development. Plans and programs of development of the State implemented currently aimed at the gradual implementation of this ambitious plan. “e-Taiwan Construction Plan”, aimed at stimulating the rapidly developing digital industries, namely the creation of a broadband communication network that has brought the country to the first place in Quiet Asian region for the development and availability of Internet-based network (Popkova *et al*. 2010).

4. THE MAIN AREAS OF MARKETING STRATEGY TO OVERCOME THE “UNDERDEVELOPMENT WHIRLPOOL” OF THE VOLGOGRAD REGION

The problem of the formation of affordable telecommunications environment is one of the most important in the innovative development of the Volgograd region, and therefore the

initiative of Taiwan in this area, in particular the problem of constructing e-Taiwan is highly relevant for our region (*Popkova et al.* 2013b). Accordingly, the key priority of the plan is the patenting of brand e-Volga. In order to develop the communications infrastructure in the region it is necessary to provide financial measures, including access to credit on favorable terms, rent, and other types of benefits in order to attract to the region as large existing companies and new fast-growing businesses.

Unfortunately, in Russia as a whole, for example, in the most acute phase of the crisis of 2008-2009., companies were not included in the list of industries that had preferential government loans, telecommunications. As a result, the World Wildlife fund, accused the Russian authorities to encourage the development of non-competitive and harmful plants. According to the UN estimates, in 2009 Russia has not invested a penny in the "green" industry (Popkova *et al.* 2011a) .Inattention to the new high-tech industries related to the formation of the economy of knowledge may be fatal for the Volgograd region, because industrial economy is not able to bring tangible progress in the standard of living of the population of the region and in the performance of its market competitiveness.

Next within the framework of the development of regional innovation infrastructure by the executive bodies of the Volgograd region should be provided a set of measures aimed at increasing the attractiveness of the Volgograd region for permanent and temporary residence, including measures to: landscaping, improvement and maintenance of the housing (including hotel) fund, creation of hiking, museum, historical, commercial and recreational areas, the development of architecture, culture and sports, personal safety and the protection of public order, improvement of roads, transportation, water, gas, heat and electricity, garbage collection, creation of parks and recreational areas, development of social and cultural support.

The key direction of increase of comfort level of temporary residence should be promotion of the development of the hotel industry in the region. It should be noted that the ultimate goal of this is not only an increase in the inflow of tourists to the region, but also to create the conditions for doing business in the area of the regional and foreign companies.

The main directions of incentives of the market should be providing discounts on purchase of land for construction to the investors who want to build a hotel, reducing the amount of rent for the land and preserving it for a few years after the start of operation of the hotel complex, reimbursement of payments on interest rates, if investor decides to raise a loan for construction of hotel, reduction of so-called urban proportion, as is customary in the construction of housing investors, significant reduction of time and simplification of the approval procedures of agreement of construction, seduction of interconnection charges for connection to infrastructure networks.

Another infrastructure problem of Volgograd region is deficit of energy. Despite the presence of large hydroelectric power station, many commercial entities continue to face shortage of generating capacity. In connection with this the third area of marketing infrastructure should be attraction of investors for the construction of generating capacity of new generation: wind farms, solar plants (Popkova *et al.* 2011b). The past few years in the world of investment in renewable energy the leaders are investments in traditional energy, while in Russia and in the Volgograd region, in particular, such projects are not practically implemented.

Moreover, ignoring of the world revolution in the field of electric power by the state is resulted in the formation of reduction of export of Russian gas to the world market. After a significant rise in price of electricity in Russia in 2011, companies working in the field of conventional energy began to lose their domestic market. The main direction of promoting of alternative energy projects should be small and medium-sized businesses, as well as foreign investors.

As an example, the Tomsk region, where the governor signed an agreement with the American company MGF-CIS of joint construction project in Tomsk of small power. The company Pricewaterhouse deals with expertise and seek of funding of the project. It is expected that the construction of small power will begin this year. Three sites are already identified and documents for another three sites are preparing. American Waterhouse and MAN Diesel set to offer three areas of Tomsk power plants with total capacity of 95 MW.

The key rationale for the construction of new energy facilities and attracting investors to the Volgograd region should be the unique natural and geographical conditions in the region much greater number of sunny days per year, compared with other regions, the constant wind contribute to the implementation of new projects.

Accordingly, a major brand in this case can be “Green steppe”. An analogue of this concept can be found in California, where the state has a special website “Green California” (http://www.green.ca.gov/default.htm). The same site should be created in the Volgograd region. Implementation of these areas will help to create the conditions for transition to a new quality of economic growth, the main characteristics of which at present time are the use of information resource saving technologies of production.

4. RESULTS

As a result of the study the author found out that the most attractive for the implementation of measures to promote the image of the Volgograd region are: Moscow, Chukotka Autonomous. District, Sakhalin Oblast, Kamchatka Region, Tyumen Region, Magadan Region, St. Petersburg, Murmansk Oblast, the Republic of Sakha (Yakutia), the Republic of Komi, Khabarovsk, Moscow Oblast, Sverdlovsk Region, the Samara region, Perm. In foreign markets, it is first of all necessary to focus on the states most active against the cost of tourist trips.

Among the most attractive from the point of view of the implementation of marketing activities to attract Russian investors in the economy of the Volgograd region of regions should be mentioned oil-producing regions and the capital. Accordingly, measures to improve the image of the Volgograd region should be, first of all aimed at them. The basis of the development of brand of the Volgograd region, which is aimed at creating the conditions for the formation of a new quality of economic growth in the region's economy, should be a move away from its old industrial image. The key task of rebranding of the Volgograd region is the reorientation of the region's economy to the post-industrial industrial type. Re-branding should be viewed as a development tool. The main components of the re-branding of the Volgograd region are: Open Volga, e-Volga, Green Volga, Tourist Volga, Volga of future.

Marketing strategy to overcome the “underdevelopment whirlpool” of the Volgograd region includes: the problem of providing of affordable telecommunication environment, the solution of the problems of infrastructure, increasing of the attractiveness of the Volgograd region for permanent and temporary accommodation, stimulating of the development of the hotel industry in the region.

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BUSINESS RATINGS: METHODOLOGY OF RUSSIAN CONSTRUCTION SECTOR

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Abstract: Evaluation of business can be determined not only from the financial point of view, but also with a help of defining its efficiency and the level of its competitiveness. Promptness of this evaluation is formed by using of rating system. Ratings represent instrument that is both informative and relatively cheap in implementing due to the usage of analysis which is based on streaming technologies. That paper provides both methodology, and methodical, informational and algorithmic prerequisites of forming process of construction companies' rating. Also, features of competitiveness ratings, their purpose and structure, mission and tasks are considered. Special attention is paid on such kinds of construction companies that are involved in engineering survey, design of buildings and construction field. Significant attention is given to hierarchy of ratings, which includes remote, questionnaire and contact ratings. Furthermore, this paper describes constructor of ratings that uses non-parametric methods and dynamics of selected quality indicators and rating in general. Specific examples are considered in relation to the building complex of Russia.

Keywords: Ratings, Construction, Competitiveness, Business

1. INTRODUCTION

The main purpose of business ratings is increase the informational transparency of business and facilitating to the arrangement of subjects in this or that sphere of activity according to the key factors of success. Due to the lack of information in many aspects of activity, it is extremely important to provide informational transparency of different businesses in practice when part of the necessary information is not available.

Competition is one of the business development stimuli. At the core of the human race, competition laid as the basis of survival. The current business model is also based on competition between the firms. The pyramid of success is formed by the results of their activities, valuation of business, its prospective of development in the middle- and longrun. During the choosing process of counteragents and contractors for regulation of economic operation it is crucially important to take into account the levels of efficiency and competitiveness of the company which indicate business success.

Success and its measuring are important for every listed area. Success is defined as the achievement of any goals. The final result is the consistency with the achieved results and public recognition of this achievement.

Measures of success are determined by goals of comparison and the composition of business-community where it is conducted. These measures differ and the aggregate of compared subjects may have quit complicated structure and system of values. Besides, in many cases without expert knowledge in complex evaluation neither a hierarchy of subjects and objectives can be created nor the formal methods of valuation can be determined. Due to the fact that expertise is a relatively expensive tool based on high-qualified labor of analysts and decision makers, there is a need for using streaming methods in it.

Ratings are the most developed streaming method that uses the unified technology which represents the complex valuation of the wide range of relatively homogeneous subjects, comparable by scale of values. In this process may be used either remote methods or mass surveys, meetings with groups of specialists from every evaluated company with detailed analysis of current and future situation. Unified measures of comparison are formed basing on the rating scales, but also there are other approaches which allow comparing subjects inside the groups.

The general task of ratings' creation, production, renewal and distribution is the division of subjects into groups depending on formal and informal features. The tasks of rating systems' creation and development embrace main components of activity (business-processes and services) including reproduction, financing, performance. Rating is a complex valuation of subject's condition, that uses the aggregate of many indexes which are not always formalized. The problem of accuracy level of experts' and ratings' valuations has become very actual and international in recent years. Financial stimulation of ratings is also a very important issue because it matters who pays for the produced information, who stimulates informational transparency and how much they are interested in the authentic result.

Ratings play substantial part in the area of business-information because they encourage business confidence level, indicate promising opportunities to allocate financial resources, create investment potential, help in choosing counteragents. Although, alternative valuations are not always comparable and represent only a set of opinions, in aggregate with personal valuations of the decision-maker they may be used for administrative solutions. Process of forming the rating system assumes designing and publishing methodological and technological features of rating approaches. First of all, should be determined and formulated: target of the rating, aggregate of its subjects and also methodological foundations: research procedures and indexes, structured by regional and branch features, presumptions and restrictions, the methods of presentation and rules of distribution, commercial foundations.

There are not only remote methods of forming the ratings, based on the public information and accounting reports, but also there are insider methods (contact), that assume the existence of the access to the research of internal activity of the subject. Remote methods are gaining importance. Diagnostic of weak signals allows to determine the pre-crisis situation basing on early signs and to respond to that in a timely manner. In the conditions of

instability, the information about the emerging threat is rising gradually: at the beginning, the first signs of changes in the environment appear, then the possible source of these changes is determined and the threat is concretized. Later it becomes possible to relatively accurate determine the consequences of the threat and its countermeasures.

Despite the relatively high prices, contact methods are also important. They play an essential role for a more accurate assessment of the situation. Those ratings are especially initial in times of crisis due to unsteadiness and the high speed of changes that occur during this period and to the increase of possibility of fast changes in subject valuations. The basics of the methodology of conducting rating research are the classification of the initial factors and determination of the quantitative assessment of risk factors that inherent to considered subject of evaluation. The analysis of the financial and business risks is specific for enterprises of different areas, but the results have the unified scale, that makes their comparison possible.

The major requirements for the unified rating structure are simplicity, interpretability and understandability in case of conformity of expected and actual results. The good interpretability of ratings creates the basis for their wider usage. Rating can't be based on strongly correlated criteria. The selection of primary criteria is extremely important for getting substantial interpretability of the results.

Such methodological tendencies of modern ratings can be highlighted as main:

-the desire to reduce the proportion of expert evaluations;
-using the conformity of expected and actual results in evaluation of rating's quality
-aspiration to relatively low correlation level of ratings' explanatory factors and models
-dividing the process of forming the ratings into stages during their decomposition
-analysis of temporary migration of ratings and its interpretation.

Construction of rating should consider its decomposition in depth: from company's rating to ratings by separated branches and centers of responsibility. The common criterion (criteria) may be broken down into particular components (due to "transmission into the depth", decomposition). That allows theoretically determine any slice in the rating and reveal the most effective ways of improving it. The rating's hierarchy formation in the governmental slice gives a chance to construct an informational pyramid in accordance with business-community's priorities and to establish connections.

Business-ratings may be also used as a measure of competition. Competition in business determines special requirements to problems of management, aim it not at making quick and local profit but at the ensuring long-term functioning of the company, its future-oriented development. The main task of managing sustainable development is coordinating company's subdivisions' activity and making them solve strategic and operational challenges in conditions of changing environment as efficient as possible.

Information-technological paradigm of business development drastically accelerates the rate of information exchange, assists the increase in quality, reasonableness and efficiency of management decisions. Considering this, using the system of business informatization, its analytical potential, including controlling systems (Karminsky *et al*. 2011) as the system for finding solutions for company's steady development, seems to be very actual.

Measures of comparison are formed to compare the companies, their compliance with the conditions of competition and the requirements of business interaction. Financial and production indexes of the subject (business-structure) are basis of that measures. Indexes in economics are absolute or relative values, which reflect certain economic realities of business. Typically, the available indexes do not directly serve as purposes of comparison, and therefore, in many cases, it is required their selection, ordering and addition.

The most important requirements for the scorecard are: the relevance to comparison purposes, the adequacy of reflection the status and performance of the company and objectivity (the basis of data, which is measured).

There are also a number of extra requirements to indexes, among them should be highlighted actuality, ability to integrate with other indexes, future-orientation (reflection of trends and risks), assimilation by business representatives, economy in getting and interpreting, representative (visualization and fast communication opportunities) and etc. In constructing of criteria for comparing businesses, comparative measure should have such properties as: compactness, dynamics, and comparability. Due to the limited information content of specific indicators, there is a need to use scorecard that allows to not only characterize quantitatively and assess the situation, but also to discover the causes of problems, and also to make the structural and logical analysis of the influencing factors.

Scorecards are a hierarchical structure of interrelated in particular way indicators. In practice, it is recommended to use particular indicators and systems of indicators that help to identify and characterize weaknesses.

There are five main stages in constructing scorecards:

1. Selecting the basic indicator(s) that would satisfy the purposes of comparison
2. Fixating the components' evaluation methods
3. Determining the time interval of index evaluation
4. Drawing-up standard requirements to information for assessment
5. Determining the sources, time-periods and accessibility of getting it .

In relation to the comparison of business structures, there are three slices of estimation. The most important is the potential sustainability of its operations. In fact, this comparison involves the analysis of risks in the operation in cases of a fast-changing environment. Other slices, that are enough demand by business community, are the efficiency and quality of services that are measured directly or indirectly.

These measures are not independent, although they characterize different aspects of the activity. Understanding the importance of each of them, as well as finding and evaluating their relationships, is extremely important for the interaction of different slices of companies' comparison, and for matching different ratings that characterize business structure. Thus, depending on the purpose, should be used those or other measures of comparison. The formation of the system evaluating businesses and their structures (Neely *et al.* 2002) highlights the factor of long-term steady development which is the basis of controlling concept (Hahn and Hungenberg, 2001; Karminsky *et al.* 2006). Sacrificing the steadiness factor for short-term profits finally exploded financing and banking systems, and after that the whole world economy in 2007.

The steady development means the aspiration for providing the successful functioning of organizational system (production sector, enterprise, bank, commercial firm etc.) in the long-run. This can be reached by adapting strategic goals to changing conditions of the environment, concordance of actual plans with strategic plan of organizational structure development, coordinating and integrating actual business-processes plans, solving a set of organizational-managerial, informational-analytical and coordination tasks.

The concept of strategic navigation assumes coordination, adaptive strategic management and planning, balance of subjects' and stakeholder's interests as part of the corporate management. The special focus should be paid on providing informational-analytical support of strategic management and on creating tools for measuring strategic intentions and potentials.

Besides the usage of typical indexes of profitability, among which a very important role play profitability indexes, that are used for assessment of efficiency, integral methods of companies' evaluation have obtained recently a wide spread. First of all they are used for comparing the efficiency of activities for different groups of companies, distributed on shareholders type, belonging to a region, type of ownership etc.

The methodological basics of conducting rating research are the classification of substantial factors and determining quantitative valuations of factors that are typical for the object of the research. Confidence to rating agencies is based on reputation, existence of generally accepted and available methodology, independence from the government, financial and industrial groups.

The availability of ratings is reached using informational resources of agents. Ratings strongly depend on rating subjects and potential users. The biggest international rating agencies such as Moody's Investors Service, Standard & Poor's, Fitch Ratings specialize in designing this kind of ratings.

Also, essential role plays minuteness, analytical procedures and informational completeness. The main principles of providing rating services are (Langhor and Langhor, 2008) independence of assessment, publicity and availability, collegiality, interactivity, information confidentiality, rating scales, that are used in companies' comparison. Methodologically rating research is based on classification of existing factors and determining quantitative valuations, typical for a certain company.

Due to limitations in rating system, lack of customers' information or unavailability of resources, many potential costumers almost don't have any opportunities to use them. Many ratings have too big actualization intervals and that is not always acceptable because of high level of business operation mobility. For these purposes exist forecasting models which use the potential of remote analysis of business operation subjects. Moreover, such models are interesting for rating agencies because of carrying out monitoring and development of enterprise's risk management systems.

2. QUALITY AND MANAGEMENT RATINGS

Many customers are interested in the quality of products, services produced and provided by a company. That's why business-ratings are in demand. Competitiveness and efficiency, including quality of subject's management, are especially important in the process of forming long-term contacts. Ratings of goods and services quality are generally customer-oriented. That's why producers are stakeholders in this case. Rating agencies (RA) are middlemen in this chain, they just give independent valuations.

The main problem of forming ratings of this kind is the absence of generally accepted criteria characterizing certain aspects of company's activity. The level of expert component is sufficiently high in preparing business-companies' ratings. The analysis of hierarchy of customers' characteristics is important for comparing products and services. That is the basis for complex evaluation of every subject's component and only basing on these results the complex assessment of subject can be undertaken. One of the mechanisms of complex valuation is constructor of ratings which will be described below.

The companies are compared using both comparison of financial results of activity and intrasectoral comparisons. There are a numbers of rankings for separated market segments such as car industry, real estate, tourism, IT, mobile communications, consumer market (books, movies, pharmaceutical industry etc.) and tertiary sector.

Among the typical ones the following ratings can be highlighted (Karminsky *et al.* 2011):

- enterprises in social area
- hotels
- restaurants
- servicers
- reliability and quality of factoring companies services etc.

The assessment process consists of three stages. At first the information about the company is collected including data about its organizational structure, proficiency and experience of the staff, informational systems, procedures and financial history. At the second stage analysts hold a meeting with top-management and departments' heads where they discuss the details of company's activity. The committee joins the process at the third stage, it rates the company after listening to the report of the principal analyst assigned to this company.

3. BASIC PRINCIPLES OF DESIGNING COMPETITIVENESS RATINGS

Competitiveness ratings, issued by Rating agency (further Agency), represent the opinions towards the competitiveness level of the companies. They are based on regularly updated and edited criteria and methodologies. Ratings are collective product. For understanding ratings and risks reflected by them you should base on definition and methodology of certain rating.

Agency's opinion is based on historical data and/or expert opinions about future indexes. In many cases, expert opinions may be based on macroeconomics and branch tendencies, historical data and manager's expectations. The certain rating may be changed in case of considerable changes in economic and technological conditions and expectations.

Ratings are comparative indexes of competitiveness and may not fully reflect small differences in the level of competitiveness of certain companies. Competitiveness ratings (CR) are opinions towards comparative level of competitiveness of the exact company including evaluation of company's activities in certain slice, and it is an integral Agency's opinion towards the company, but it is not a forecast index for the exact project.

Ratings are based on all information which Agency possesses, including publicly available information and/or nonpublic documents, and also information, provided to the Agency by the company and other actors in sufficient for formation rating amount in accordance with Agency's criteria and methodology. Requirements to the information for certain types of ratings are determined by corresponding methodologies. Absence of information may decrease the company's rating because of appearing informational uncertainty. In the rating process Agency relies on factual information received from the company, customer or other sources which Agency considers to be trustworthy. Using accessible sources Agency checks within reasonable limits the information which is used in accordance with Agency's rating methodology and also examine relevant, public information and verification of information from third parties.

Rating users should understand that neither extra research, nor third parties' verification can guarantee accuracy and fullness of the information Agency relies on. Every company is responsible for accuracy of information which it provides to the market and to Agency in reports and other types of documentation. In the rating process Agency relies on experts', including independent auditors in the financial and production accountancy, and lawyers in issues of law and taxes. Besides, those ratings are aimed at perspective and include admissions and forecasts regarding future events. That's why it is not likely to take companies' ratings as absolutely accurate valuation because of potential incompleteness of information.

The maximum rating level may be limited for remote and, in some cases, questionnaire ratings, when the company doesn't participate or participate only partly in the process of providing information or in case of minimal amount of information from public and other available to Agency sources. It can also be reconsidered, if the company provides more detailed information. For this purpose the company can initiate the procedure of conferment of contact rating, providing additional information and comments in accordance with Agency's methodology. Occasionally it can be done even before the rating is published. Ratings are not direct recommendations for customer's activities or choosing counteragents. Agency is independent and not affiliated with any third parties. It doesn't provide other parties with any kinds of business, financial and juridical recommendations, doesn't conduct audit and does not suggest any account, valuator or actuarial services. Rating should not be considered to be a substitution for these recommendations and services.

Ratings may be changed during monitoring process, commented and explained. They may be put under observance and also even recalled as a result of changes, additions, specifications, unavailability or inadequacy of information and also because of any other reason which Agency consider to be the ground for such rating activity.

4. RATINGS OF BUILDING COMPLEX AGENCY (RABC)

Rating agency of building complex (RABC) provides various types of rating assessments. The most widespread among them are competitiveness ratings. Besides that, RABC makes other ratings of companies' production activity, provide them with comparative opinion about their efficiency. The note "No rating" is given to the company in case Agency doesn't have enough information about the company in available public sources. Company's rating is an individual assessment of the company's competitiveness level in different areas of operation which also takes into account time tendencies. Rating is agency's opinion, it refers the company to a certain group using existing rating scale.

The most popular are remote, questionnaire and contact ratings, classified by areas of operation.

-rating of companies providing engineering survey
-rating of companies designing project operations
-rating of construction companies

RABC also rates companies operating in adjacent braches. In some cases companies are divided by areas of activity in accordance with generally accepted classification. RABC ratings differ by level of specification, methodological approaches and depth of valuation. There are several types of ratings. Remote ratings are constructed on the basis of public information which is contained in databases, used and systematized by RABC, and don't require contractual relationships. Agency is responsible for collection, systematization and presentation of information about remote ratings. It is also possible to form specialized ratings and rankings.

Questionnaire ratings are constructed basing on voluntary answers of companies' representatives to questions in special forms and on publicly available information including information provided by the company. RABC maintains control of authenticity of provided information.

Contact ratings, which tend to be the most objective because of greater amount of information, are used in the assessment process including confidential information within the limits of corresponding contracts. RABC experts analyze provided information, meet with customers and corresponding companies. Basing on the meeting's results and provided information, Agency undertakes complex evaluation of efficiency level using corresponding rating regulations.

5. PRINCIPLES OF FORMING RATING SCALE AND ITS CLASSES

The basis of the rating activity is the subjects' classification according to rating classes and gradations. There are some features of rating construction process and main regulations of choosing the basic scale for RABC in this document. International agencies of Big-3 use similar alphabetic symbols for ratings but their approaches to analysis do not always match. International agencies use their own valuation scales which differ a bit and are based on alphabetic-symbolic or alphabetic-numeric scales. This nomenclature consists of first letters of English alphabet and symbols: plus/minus and numbers from "1" to "3". There are three main categories of credit ratings: investment, speculative and outsider.

Rating class gradations and its widening modifications (numeric (1, 2, 3) or symbolic (+,-)) form ordinal scale which can be transformed in limited number set and then make it possible to model. The usage of ordered scales allows unifying ratings, regardless of the initial scale. The number of gradations of Big-3 is approximately 20, in the presence of 7-8 classes of ratings. In Russian rating agencies with financial focus the number of these gradations ranges from 6 to 20. In addition, the number of those which are actively used usually no more than 10.

The main principles of RABC rating scale construction are the following:

- Rating scale should be unique and consist of Russian alphabet letters and numbers
- Rating scale should be a bounded ordered set, where the number of gradations is about 10-12 and the number of rating classes is about 4.
- Rating scale is based on alphabetic-numeric gradation symbols
- Rating valuation is made according to areas and types of activity, particularly in the following directions:
    - "и' – geotechnical investigation
    - "п" – projection
    - "с" – construction
- With the rating methodology development it is possible to include ratings according to their activity inside each direction, including combined areas

Basic rating scale of RABC consists of the following classes (specification of the scale will be given further):

"А" – class of companies with excellent (very high) competitiveness

Class "А" ratings indicate a very low level of company's incapacity and, consequently, a very high level of competitiveness. Ratings of this level are given only in case of extremely strong capacity to carry out commitments in certain direction and/or area of activity. The negative impact on this ability because of predictable conditions is not so considerable.

"Б" – class of companies with high competitiveness

Class "Б" ratings indicate low expectations of company's incapacity and, as a consequence, a high level of competitiveness. The ability to carry out commitments in certain direction and/or area of activity is relatively high. However, negative business-environment or economic conditions may influence this ability to a bigger extent than the one of class "А".

"В" – class of companies with good competitiveness

Class "В" ratings indicate relatively low current expectations of company's incapacity and, consequently, a good level of competitiveness. The ability to carry out commitments in certain direction and/or area of activity is assessed as appropriate. However, the influence of negative business-environment or economic conditions may lessen this ability. At the same time business's flexibility and production and/or financial flexibility allows the company to carry out production commitments.

"Г" - class of companies with low competitiveness

Class "Г" ratings indicate serious risks of company having incapacity and, therefore, the reduced competitiveness level. However, the margin of safety remains limited. Now

commitments are carried out, but in case of negative changes in business-environment or economic conditions the ability to do this may become vulnerable.
"Д" – indicates partial or complete default of the company which is given to the companies which were previously assessed and now are expected to lose incapacity or to go bankrupt.
"НР" – rating is not given because of the lack of information about the company.

6. CONCLUSION

In world practice, business - ratings are designed to encourage businesses to improve standards of services and production of goods. This leads to significant positive changes in the industry as a whole. Construction as one of the most important and resource-intensive industries can benefit most from the introduction of professional rating. This paper shows the importance of the rating process in relation to the construction sector. Ratings act as a tool to improve the quality of business, growth of informational transparency. Moreover, it is a stimulus to increase the competitiveness level of companies. Every organization strives to improve its reputation in order to attract more customers, and therefore to have a greater profit.

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BANK RISK PREFERENCES ON THE GOVERNMENT-INSURED MORTGAGE MARKET*

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Abstract: The paper presents the structural model of decision-making process on the residential mortgage market. We empirically estimates key drivers of mortgage borrowing, underwriting, and default process by jointly using market-level monthly data and loan-level data from regional branch of Agency of Home Mortgage Lending (AHML). The multistep estimation procedure allows correcting for sample selection bias and endogeneity and provides consistent parameter estimates. Obtained results shows that risk preferences are changing during the time and AHML borrowers are relatively high risky.

Keywords: Demand, Default, Mortgage, Sample Selection, Endogeneity

1. INTRODUCTION

The mortgage crisis that started in USA in 2007 and lasted until 2009 was characterized by an unusually large number of defaults on the subprime mortgage market. As a result, it overgrew in to the global economic recession and placed the stability of the world banking system in jeopardy. It caused strong government processes to support mortgage lending and residential housing as a part of all anti-recessionary measures. Such activities include support of citizens with mortgages and the refinancing system of mortgage lending, helping to buy property by citizens, providing living quarters for particular categories of Russian citizens. Key issues of government policy include providing of affordable housing, identifying the main drivers of mortgage borrowing and performance of mortgage loans. Therefore the problem of developing optimal credit contracts and effective risk management systems, especially on the residential mortgage market, is becoming crucial.

National institute for development of housing activity - Agency of Home Mortgage Lending (AHML) helps to implement strong government housing policy and anti-recessionary measures to support mortgage lending in Russia. AHML is state-owned provider of government-insured loans, which uses two-level system of lending. In the first step banks

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and non-credit organizations provide mortgage loans to households according the common standards of AHML. The second step is refinancing (redemption) of mortgage receivables by AHML. AHML develops special mortgage programs and refinances risks from its regional branches and commercial banks, which operates such programs. The list of programs contains “Young researchers”, “Young teachers”, “Mortgage for Soldiers”, “Mothers’ capital” and other social and subprime programs. All of them have relatively high risk that is insured by government. Considering this the demand for such kind of mortgage programs and behaviour of borrowers are generated by some special subsample of potential borrowers that is different from the general population. This research investigates the key drivers of self-selection of borrowers to participate in AHML programs, choosing particular terms of credit contract and loan performance.

This paper has the following structure. It starts with literature review and some generalization of recent studies of mortgage borrowing process. The second part contains the description of collected data and estimation strategy, which allows correcting for sample selection bias and endogeneity. Finally, we discuss the empirical results and conclude with further work.

2. LITERATURE REVIEW

Demand for mortgage loan is the function of probability of credit contract agreement and functions of credit contract terms, on characteristics of borrower, aim of lending, expected loan performance and some macroeconomic variables. However, econometric estimation of parameters of these functions facing with inconsistency driven by endogeneity and sample selection bias. Endogeneity is generated by simultaneity in borrower and credit organization decisions on explanatory variables in demand and credit risk equations. Sample selection arises when decision-making process of borrowing is made sequentially and some explanatory variables are observed partially in different stages of lending process. These challenges in estimation process were avoided in recent papers that studied lending process.

The following papers focused on the structure of borrowing process and have not got any empirical evidence. Mortgage borrowing as a sequence of consumer and bank decisions firstly introduced by Follain (1990). He defines the borrowing process as a choice of how much to borrow (the Loan-To-Value ratio, LTV decision), if and when to refinance or default (the termination decision), and the choice of mortgage instrument itself (the contract decision). The main contribution of this study is focusing on possible self-selection of borrowers in borrowing process.

Rachlis and Yezer (1993) then suggested a theoretical model of mortgage lending process, which consists of a system of four simultaneous equations: (1) borrower’s application, (2) borrower’s selection of mortgage terms, (3) lender’s endorsement, and (4) borrower’s default. This paper investigates the nature of inconsistency of estimates of recent researches on borrower’s discrimination and showed that all of four equations (and decisions) should be considered as interdependent.

From the middle of 90s XX, data publicly were available such as, American mortgage datasets from the Federal Housing Authority (FHA) foreclosure, The Boston Fed Study, The Home Mortgage Disclosure Act (HMDA), and several empirical studies, which analyzed mortgage lending process and studied the interdependency of bank endorsement decision and borrower’s decisions modeled by bivariate probit model. As an extension of study (Rachlis and Yezer, 1993), Yezer *et al*. (1994) applied Monte-Carlo experiment to estimate above-listed theoretical model. They empirically shown that isolated modeling processes of the credit underwriting and default leads to the biased parameter estimates. Later on Phillips and Yezer (1996) and Ross (2000) supported these findings.

Phillips and Yezer (1996) compared the estimation results of the single equation approach with those of the bivariate probit model. They showed that discrimination estimation is biased if the lender's rejection decision is decoupled from the borrower's self-selection of loan programs, or if the lender's underwriting decision is decoupled from the borrower's refusal decision. Ross (2000) studied the link between loan approval and loan default by bivariate probit and found that most of the approval equation parameters have the opposite sign compared with the same from the default equation after correction for the sample selection.

The following earlier papers studied the borrower's choice of mortgage contract terms by probability models. Shear and Yezer (1983) estimated the linear probability model of choosing FHA insured loans by OLS. Gabriel and Rosenthal (1991) estimated the probability of choosing between FHA insured loans and conventional loans by Maximum-Likelihood estimation (MLE) of parameters of simple probit model. Canner *et al*. (1991) studied the link between the probability of choosing conventional loan as self-measure of risk and probability of delinquency and showed that minority borrowers are more likely to take a mortgage insured by FHA has less probability of delinquency. This paper deals with two logit equations that estimated independently by MLE.

Coulibaly and Li (2009) using survey data found the evidence that more risk-averse, with risky income and low probability of future move borrowers prefers the fixed rate mortgage contracts than the adjusted rate ones also by estimating logit model. Leece (2001) investigated the choice of ARM-FRM in the UK market dependent on the expected level of rates. Thus with sustainable low interest rates households intends to lock into fixed rate mortgage. In order to construct consistent and unbiased estimates he used linear additive model with time-dependent explanation variables and generalized linear probit model.

Firestone *et al*. (2007) analyzed the default and prepayment behavior of low- and moderate-income borrowers. Main finding of this research is that non-white borrowers prepay more slowly than white ones. Results are stable during the time. The data contains the performance of 1.3 million loans originated from 1993 to 1997. To construct consistent estimates they used proportional hazard models for probability of default and prepayment and estimated it by MLE.

Forthowski *et al*. (2011) studied the demand for mortgage loans from the point of choosing of adjusted rate mortgage versus fixed rate mortgage as a function on expected mobility. They find that, with all else equal, who self-select into ARM estimates their probability of moving in the future as relatively high. Choice of ARM-FRM modeled by logit but expected mobility in that equation is endogenous that's why it is predicted by proportional hazard model. The main contribution of this paper is finding that expected mobility and, respectively, choice of mortgage terms are functions on macrovariables.

LaCour-Little (2007) was also focused on the question of choosing the credit program among low- and moderate-income borrowers. Using the loan-level from only one financial organization he founds that LMI borrowers are more likely to choose Federal Housing Administration insured mortgage programs and Special programs that assumed less down payments and higher score of expected risks due to high levels of current debt or weaker credit history. He also finds that nonprime loans preferred for those borrowers who are time limited to provide full documentation. This paper contains multinomial logit (MNL) model for the probability of choosing one of the credit programs. In order to deal with endogeneity at several first steps authors constructed OLS estimated linear models and MLE binary choice models to predict fitted values for endogenous variables in MNL equation.

Previous models that tackled sample selection bias in lending analysis are not appropriate to estimate the loan amount or LTV ratio. The bivariate probit model of Ross (2000) and bivariate probit model used by Yezer *et al*. (1994) and Phillips and Yezer (1996) are suitable

for estimating a binary outcome. The following papers studied the dependence of the decision on loan amount as well as different endogenous variables on the exogenous ones.

Zhang (2010) investigated the sample selection bias and interaction between pricing and underwriting decisions using classical Heckman model. Courchane (2007) studied differences in pricing for different ethnicities after controlling of other pricing and underwriting parameters by estimating the Heckman. Karlan and Zinman (2009) found different method for solve the endogeneity problem when modeling the loan amount equation in microfinance crediting. They generated the truly random sample of credit proposals by sending letters with it to former borrowers. Using the classical Heckman model they estimated the elasticities of demand for consumer credits to maturity and interest rate for different risk types of borrowers.

Attanazio *et al*. (2008) were followed Das *et al*. (2003) and introduced more progressive approach of managing the sample selection problem when modeling the empirical demand for loan equation. They studied the existence of credit constraints in different income segments. Using loan-level data of car loans they found that low-income households has positive elasticity of demand for car loans on the maturity and zero reaction of demand to interest rate change that means that those households are credit constraint. For doing that they used three-stage estimation methodology. At the first stage they estimated the selection equation. At the second stage the endogenous variables equations are being estimated by semi-parametric regression with correction for self-selection. Then endogenous variables in the demand equation were replaced by fitted values and the parameters were estimated also by semi-parametric regression. The only one motivation of using semiparametric regression is that the error terms of the loan amount, endogenous variables error terms and error term from the participation equation are correlated in non-linear way.

Bocian *et al*. (2008) used 3SLS for the simultaneous decisions on pricing and credit rating and found the empirical evidence that non-white borrowers are more likely to receive higher-priced subprime credits than similar white borrowers. Ambrose *et al*. (2004) constructed a simultaneous equation system of LTV and house value, which is used as a proxy for loan amount to account for endogeneity.

As a generalization of recent papers, mortgage-lending process can be represented by following sequence of decisions:

1. Application of borrower: Potential borrower realizes the necessity of borrowing, chooses the credit organization and credit program that reflects her/his preferences, fills an application form with demographic characteristics.

2. Approval of borrower: Considering application form and recent credit history, credit organization endorses the application or not, inquires the form data.

3. Set the limit loan amount: When credit organization endorsed a particular borrower, it sets the limit loan amount.

4. Contract agreement: The approved borrower makes a choice on contract agreement and when agreed.

5. Choice of credit terms: The approved borrower makes a choice on property to buy and credit terms from feasible set: loan amount not more than limit, down payment, monthly payment and maturity determined by credit program.

6. Loan performance: Borrower chooses the strategy of loan performance: to pay in respect to contract terms or to default, prepay or refinance the loan.

3. ESTIMATION STRATEGY AND METHODOLOGY

Econometric model repeats steps of the structural one. The functional form of regression function is taken unspecified following (Das *et al*. 2003). Particular assumptions on specification form of regression functions and distribution of error terms will be introduced further.

1. Since we do not have micro-level data on who not applied to AHML, the first step of estimation process is modeling the probability of application on aggregated data:

$$y_{1it} = g_{1t}(z_{1t}) + e_{1it} \quad (1)$$
$$e_{1it} \sim IID(0, \sigma^2_{e_{it}})$$
$$z_{1t} = (D_t, M_t),$$

where

$t = 1,...,T, T$ – a set of time moments,

y_{1it} – the probability of application as number of applications in month *t* divided by the amount of households,

D_t – a vector of strictly exogenous aggregated demographics,

2. Modeling the probability of endorsement for all applied applicants:

$$y^*_{2it} = g_2(z^*_{2it}) + e_{2i} \quad (2)$$
$$y_{2it} = y_{1it} y^*_{2it} \text{ – is observed}$$
$$\text{cov}(e_{1it}, e_{2i}) = \sigma_{12}, i \in N_t$$
$$\text{cov}(e_{1it}, e_{2i}) = 0, i \notin N_t$$
$$z^*_{2it} = (D^*_i, M_t),$$

where

y^*_{2i} – the probability of endorsement for all applied applicants,

N – a set of individuals, $N = (N_1,..., N_T)$,

N_t – a set of individuals, who applied for a mortgage loan in the time moment *t*,

y_{2it} – an endorsement decision of *i* individual,

z^*_{2it} – a vector of exogenous individual demographics and macrovariables on the date of application.

3. Since loan amount limit is chosen by credit organization it is endogenous and needed to be instrumented (as well as all further endogenous variables) for all endorsed borrowers:

$$\bar{L}^*_{it} = g_{\bar{L}}(z^*_{\bar{L}it}) + e_{\bar{L}i} \quad (3)$$
$$\bar{L}_{it} = y_{2it} \bar{L}^*_{it} \text{ is observed}$$
$$\text{cov}(e_{2i}, e_{\bar{L}i}) = \sigma_{2\bar{L}}$$

where

$\bar{L}$ – a decision on loan limit,

$z^*_{\bar{L}it}$ – a vector of instrumental demographics and macrovariables on the date of application.

4. Modeling the probability of contract agreement:

$$
\begin{gathered}
y_{3it}^{*} = g_3(z_{3it}^{*}, \hat{L}_{it}^{*}) + e_{3i} \\
y_{3it} = y_{2it} y_{3it}^{*} \text{ is observed} \\
\operatorname{cov}(e_{2i}, e_{3i}) = \sigma_{23} \\
z_{3it}^{*} = (D_i^{*}, M_t) \\
\hat{L}_{it}^{*} = \hat{g}_{\bar{L}}(z_{\bar{L}it}^{*})
\end{gathered}
\tag{4}
$$

where

$y_{3i} = 1$ an agreement decision,

z_{3it}^{*} – a vector of individual demographics and macrovariables on the date of application.

$\hat{L}_{it}^{*}$ – a fitted value of loan amount limit.

5. Simultaneous choice of the credit terms and property for all agreed contracts:

$$
\begin{gathered}
\begin{cases} C_{jit}^{*} = g_{C_j}(z_{C_j it}^{*}, \hat{L}_{it}^{*}, C_{-jit}^{*}, V_i^{*}) + e_{ji} \\ V_{it}^{*} = g_V(z_{Vit}^{*}, \hat{L}_{it}^{*}, C_{it}^{*}) + e_{Vi} \end{cases} \\
(C_{it}, V_{it}) = y_{3it}(C_{it}^{*}, V_{it}^{*}) \text{ is observed} \\
\operatorname{cov}(e_{3i}, e_{ji}) = \sigma_{3j} \\
\operatorname{cov}(e_{3i}, e_{Vi}) = \sigma_{3V} \\
\operatorname{cov}(e_{ji}, e_{ki}) = \sigma_{jk} \\
\operatorname{cov}(e_{ji}, e_{Vi}) = \sigma_{jV} \\
z_{it}^{*} = (D_i^{*}, M_t, F_i)
\end{gathered}
\tag{5}
$$

where

V – property value,

$C = (C_j, C_{-j})$ – vector of contract terms (loan amount, maturity, down payment, interest rate, type of rate),

z_{it}^{*} – a vector of individual demographics D_i^{*}, macrovariables M_t on the date of application and property characteristics F_i.

6. Modeling the probability of contract events and loss given credit event:

$$
\begin{gathered}
y_{4it}^{*} = g_4(z_{4it}^{*}, \hat{C}_{it}^{*}, \hat{V}_{it}^{*}) + e_{4i} \\
y_{4it} = y_{3it} y_{4it}^{*} \text{ is observed} \\
\operatorname{cov}(e_{3i}, e_{4i}) = \sigma_{34}
\end{gathered}
\tag{6}
$$

where

y_{4it}^{*} – the probability of default,

$\hat{C}_{it}^{*}$ – fitted value of the credit terms,

$\hat{V}_{it}^{*}$ – fitted property value.

In (Das *et al*. 2003) it was showed that with some light assumptions the simple sample selection model with endogenous repressors like

$$
\begin{aligned}
y_i^* &= g_0(z_{1i}^*, x_i) + e_i \\
x_i^* &= \pi(z_{1i}^*, z_{2i}^*) + v_i \\
y_i &= dy_i^* \text{ is observed} \\
x_i &= dx_i^* \text{ is observed} \\
\operatorname{cov}(e_i, d) &\neq 0 \\
\operatorname{cov}(v_i, d) &\neq 0
\end{aligned}
\tag{7}
$$

can be estimated up to additive constant by following three-step procedure:

1. Consistent estimation of $\hat{p} = E[d \mid z_d]$;
2. Estimation of $\hat{x} = E[x \mid z, d = 1] = \pi(z_1, z_2) + \mu_0(\hat{p})$;
3. Estimation of $E[y \mid x, z, d = 1] = g_0(z, \hat{x}) + \lambda_0(\hat{p})$.

The paper (Ozhegov, 2013) contains an extension of this model and Newey *et al*. (1999) for the case of simultaneous equations with sample selection (5). It reflects this method to non-triangular system of simultaneous equations with sample selection and adds one estimation step. For the model like

$$
\begin{cases}
y_{1i}^* = g_1(z_{1i}^*, y_{-1,i}^*, x_i) + e_{1i} \\
\ldots \\
y_{Ki}^* = g_K(z_{Ki}^*, y_{-K,i}^*, x_i) + e_{1i}
\end{cases}
\tag{8}
$$

$$
\begin{aligned}
y^* &= (y_1^*, \ldots, y_K^*) = (y_j^*, y_{-j}^*) \\
z^* &= (z_1^*, \ldots, z_K^*) \\
x_i^* &= \pi(z_i^*, z_{xi}^*) + v_i \\
y_{ji} &= dy_{ji}^* \text{ is observed, } j = 1, \ldots, K \\
x_i &= dx_i^* \text{ is observed} \\
\operatorname{cov}(e_{ji}, e_{ki}) &= \sigma_{jk},\ j, k \in \{1, \ldots, K\} \\
\operatorname{cov}(e_{ji}, d) &= \sigma_{jd},\ j \in \{1, \ldots, K\} \\
\operatorname{cov}(v_i, d) &= \sigma_{vd}
\end{aligned}
$$

the estimation procedure will now be:

1. Consistent estimation of $\hat{p} = E[d \mid z_d]$;
2. Estimation of $\hat{x} = E[x \mid z, z_x, d = 1] = \pi(z, z_x) + \mu_0(\hat{p})$;
3. Estimation of $\hat{y}_j = E[y_j \mid z, x, d = 1] = g_j'(z, \hat{x}) + \lambda_j(\hat{p})$;
4. Estimation of $E[y_j \mid z, y_{-j}, x, d = 1] = g_j(z, \hat{y}_{-j}, \hat{x}) + \lambda_j(\hat{p})$.

This procedure provides an identification of *g* up to *K* additive constants when μ_0, λ, π, g are continuously differentiable with continuous distribution functions almost everywhere and with probability one $\frac{\partial \hat{p}(z_d)}{\partial z_d} \neq 0$ and $rank[\frac{\partial \hat{x}}{\partial z_x}] = \dim(x)$.

Estimation of model (1–6) considers following assumptions. Error terms in (1–6) have jointly normal distribution with zero-vector of first moments. Matrix of second moments has each diagonal element equal to one (because of identifiability of the model up to the set of constants, it need to be specified) and non-zero covariates between error terms that is being estimated. This assumption implies using Heckman's lambda (or Inverse Mills ratio) as μ_0 and λ functions in (7–8). Combined with first degree polynomial approximation functions for π and g it satisfies the first condition of identifiability of model. It was shown in Attanasio *et al*. (2008) that the estimates in demand-for-credit equation with higher degree polynomial approximation functions are no less consistent but less efficient. Evidence of this statement for the data set of this research for all borrowing process stages will be provided in further researches.

The data collected for this research contains two sets. The first data set is aggregated regional monthly data on the AHML branch performance, mortgage market characteristics and regional macroeconomic variables for the period from 01/08/2008 to 31/08/2012. This data set is publicly available.

The second set includes the loan-level data from one regional AHML branch on 4300 applications for mortgage loans. This data set contains information on socio-demographic characteristics of each particular applicant, the date of application, the flag of credit organization's approval decision, the flag of contract agreement, the credit terms agreed, property characteristics, which was bought, the flag of default, the date of default. Socio-demographic characteristics are fixed on the date of application.

Initially the second data set included 4897 observations. However we cleaned data and excluded outliers. Borrowers whom age was not specified or fewer 21 years old, mortgages with negative down payment or/and null monthly payment or/and contract rate, and observations with LTV exceeds 1 or close to 0 and DTI equals 0 or exceeds 1 were dropped. The variables in models are defined in Table 1-2. Tables 1-2 contain variable description, descriptive statistics: sample means and standard deviations after dropping outliers.

Specifically, data set of 4300 individuals includes both approved and denied ones in the proportion 86:14. However only 2801 borrowers (76,6 % from total number of approved applicants) have mortgages. 5% of approved loans were defaulted (90 days or more delinquent). The problem of data disproportion is typical in the credit risk modeling. According to Maddala (1992), in the estimation of binary choice model or even linear probability model it influences only estimated intercept, but not other estimated parameters.

The terms of credit contract practically are used as proxy variables to estimate the risk of a particular borrower. For example, mortgages with low loan-to-value ratio (LTV) are attractive for non-liquid borrowers. The probability that they could face with serious problem of repayment of a loan is much higher. Moreover, borrowers with LTV higher 90%, think as holders, because they do not invest a lot of own capital and have less motivated to overcome obstacles with repayment of a loan. For this reason mortgages with high LTV are riskier and lenders offer higher interest rates for these mortgage products. The data in Table 1 shows that sample contains borrowers with different LTV, but an average these are not high risky borrowers because sample mean LTV equals 56 %, which is much less 90 % and sample assessed property value approximately 2 million Russian rubles, which is common for secondary real market.

Typically mortgages have two types of interest rates – adjustable (ARM) and fixed (FRM). Adjusted-rate mortgages are riskier, and practically the level of such interest rate depends on one of the stock index. Only 13,5% mortgages in sample are that ones. Approximately

39,54% of observations are 15-year and 20-year mortgages.

From socio-demographic characteristics is an income of a particular borrower plays significant role to predict the probabilities of application, approval, contract agreement, and default, because it directly influences on the ability to repay a mortgage. Noticeably among 4300 individuals, approximately 68 % do not have information about income. 8,74 % and 13,93 % people have monthly income 10 000-19999 Russian rubles, and 20000-39999 Russian rubles correspondingly. An average 45% of monthly income spends to repay mortgage payments. In the Table 1 it shows the debt-to-income ratio (DTI), which has larger effect on borrowers with low credit quality.

The level of education could be regarded as a proxy for the level of financial literacy of particular borrower, which could influence the probability of default too. Most of borrowers in the sample have higher education (52,36%) and secondary one (42,69%). 95,27% of total sample are middle-aged hired employees.

Macrovariables characterizes the market demand and supply characteristics. Sample mean housing to price ratio reaches 3,48 years that means during this period household can able to save money from current income for buying property. In Europe, this index ranges from 3 to 6 years. However, there is a significant difference between Russia and the developed countries in terms of the conditions to save money for buying property and access to credit resources (Kosareva, 2006).

Table 1: Summary statistics

Variables	Description	Mean	Std. Dev.	Min	Max
Flag of endorsement	=1 if loan approved	-	-	-	-
Flag of contract agreement	=1 if client agreed to have mortgage	-	-	-	-
Flag of default	=1 if borrower defaults on an approved loan (delinquent payments more than 90 days)	-	-	-	-
Age of borrower	Age of borrower, years	34	7.6	21	61
Age squared	Age of borrower squared, years	-	-	-	-
Male	Sex, =1 male	-	-	-	-
Family status	Family status, 1 - single; 2 - married; 3 - widowed; 4 - divorced	-	-	-	-
Activity category	Type of work, 1 - unemployed; 2 - retiree[1]; 3 - soldier; 4 - hired employee; 5 - entrepreneur; 6 - state employee	-	-	-	-
Education level	Education level, 1 - elementary education; 2 - secondary education; 3 - incomplete higher education; 4 - higher education	-	-	-	-
Income category	Monthly income of borrower (in Russian rubles), 1 - no data on income; 2 - income 0-9999; 3 - income 10000-19999; 4 - income 20000-39999; 5 - income >=40000	-	-	-	-
Sum of co-borrowers main income	Sum of co-borrowers main income (in Russian rubles), 0 - no data co-borrower's income; 1 - co-borrower's income 10000-19999; 3 - co-borrower's income >=20000	-	-	-	-
# of co-borrowers	Number of co-borrowers	0.62	0.57	0	3
Loan limit	Maximum loan limit, Russian rubles	936059,4	684952	0	12700000
Rate	Contract rate, %	11.58	1.62	9.55	19
Type of rate	Type of contract rate, 0 - fixed rate, 1 - adjusted rate	-	-	-	-
Loan amount	Loan amount, Russian rubles	1039966	573503.1	120000	10000000
Maturity	Maturity of credit, 1 - maturity < 120 months; 2 – maturity 120-179 months; 3 - maturity 180-239 months; 4 - maturity 240-299; months; 5 - maturity >=300 months	-	-	-	-
Down payment	Down payment, Russian rubles	854494.6	706638.9	0	13800000
LTV	Loan-to-value ratio	0.56	0.17	0.02	0.94
DTI	Debt-to-income ratio	0.45	0.18	0.06	1
Flat value	Assessed value, Russian rubles	1894460	1049331	330000	15300000
Days of observation	Total amount of days observed in credit, days	786.65	430.77	15	1487
Unemployment rate	Quarterly regional unemployment, %	8.43	1.51	6.3	10.9
Mean loan	Average size of mortgage in region, Russian rubles	1160.27	252.23	899.31	1908.2
Median maturity	Median maturity for mortgage in region, Russian rubles	201,64	12.7	173	222.2
Median rate	Median contract rate for mortgage in region, %	13.1	0.82	12	14,3
Mean DTI	Average DTI in region	34.81	0.7	33.44	36.68
Mean m2 value	Average price for 1 square meters in region, Russian rubles	37617.03	6395.77	28782	51304
Lodging coefficient in years	Housing price to income ratio, years	3.48	0.68	2.57	4.65
Mortgage volume	Total amount of mortgages in region, millions Russian rubles	885948.4	563161.6	116100	2191000
Mortgage amount	Total amount of mortgages in the region	896.57	528.89	134	2112

[1] There is 1 retiree individual in the sample. After cleaning data that observation was dropped.

Table 2: Summary of categorical variables[2]

Variables	Total	%
Male		
male	1881	43.74
female	2419	56.26
	4300	100
Family status		
single	1221	28.70
married	2359	55.45
widowed	56	1.32
divorced	618	14.53
	4254	100
Activity category		
unemployed	1	0.02
retiree	0	0.00
soldier	13	0.31
hired employee	3965	95.27
entrepreneur	39	0,94
state employee	144	3.46
	4162	100
Education level		
elementary education	65	1.59
secondary education	1748	42.69
incomplete higher education	138	3.37
higher education	2144	52.36
	4095	100
Income category		
no data on income	2918	67.86
0-9999	118	2.74
10000-19999	376	8.74
20000-39999	599	13.93
>=40000	289	6.72
	4300	100
Sum of co-borrowers main income		
no data co-borrower's income	3725	86.63
co-borrower's income 0-9999	160	3.72
co-borrower's income 10000-19999	225	5.23
co-borrower's income >=20000	190	4.42
	4300	100
Type of rate		
fixed rate	2423	86.50
adjusted rate	378	13.50
	2801	100
Maturity		
< 120 months	181	6.46
120-179 months	595	21.25
180-239 months	1107	39.54
240-299 months	690	24.64
>=300 months	227	8.11
	2800	100

[2] Such variables as the family status, the activity category, and the education level have missing data. Percentages are calculated as percent from total available data. The type of rate and the maturity are available only for issued mortgages.

4. RESULTS

The parameters of model (1–6) was estimated with linear *g*-functions for continuous outcomes, probit *g*-functions for discrete outcomes and sample selection bias correction term in form of Heckman's lambda function. Consistent estimation of model (1–6) is presented in Table 3–8. These estimates were compared with those that were not corrected for sample selection bias or endogeneity and both. Standard errors of parameters were estimated in robust (controlling for hidden heterogeneity) and bootstrap (controlling for correlation between households who take a mortgage in the same month) way with 100 repetitions. It compared with simple standard errors estimates and parameters remain significance in all specifications. Then the bootstrap standard errors are reported.

4.1. Application of Borrower

Table 3: Estimated parameters for probability of application equation (eq.1)

	(1) OLS
Mean loan	–0.019***
	(0.000)
Median maturity	–1.561***
	(0.004)
Median rate	9.033***
	(0.047)
Mean DTI	–22.608***
	(0.046)
Mean m2 value/1000	0.164***
	(0.005)
Lodging coefficient in years	20.152***
	(0.067)
Constant	976.993***
	(2.143)
Observations	4284
R^2	0.481
Adjusted R^2	0.481

Note: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

The second column in Table 3 contains OLS estimates of linear probability model for the probability of household to apply to AHML for mortgage (eq.1). The market demand and supply determinants and aggregated demographic characteristics were used as explanatory variables. The set of demographics is coming out to be insignificant due to low variation between the time moments (more information can be mined from regional-monthly panel structured data from several regional branches). The exception is the lodging coefficient which is computed as the number of years that needed to work with mean nominal earnings to buy median flat. This variable receives the information on income and price variation. Increasing of this coefficient (the affordability of lodging) causes increasing the probability of application for mortgage. The increasing of this coefficient is a main proxy for negative demand shock. Mortgage market negative supply shocks (increasing of median interest rate and decreasing of median maturity as proxies of mortgage market collapsing) also increases the probability of application to AHML. It can be easily explained by AHML's social functions of providing accessible housing even when mortgage and real estate markets drop.

4.2. Approval of Borrower

Table 4: Estimated parameters for probability of endorsement (eq.2)

	(1) Probit corrected for sample selection	(2) Probit
Fitted probability of application	–0.005**	
	(0.002)	
Age of borrower	–0.041	–0.037
	(0.031)	(0.031)
Age squared	0.001	0.001
	(0.000)	(0.000)
Male	0.124**	0.119**
	(0.061)	(0.061)
Single	0.041	0.036
	(0.068)	(0.068)
Widowed	–0.486**	–0.486**
	(0.216)	(0.216)
Divorced	–0.078	–0.076
	(0.084)	(0.084)
Entrepreneur	0.534	0.517
	(0.461)	(0.459)
State employee	0.565***	0.570***
	(0.194)	(0.194)
Elementary education	0.074	0.104
	(0.246)	(0.245)
Secondary education	–0.055	–0.032
	(0.143)	(0.142)
Complete higher education	0.339**	0.350**
	(0.143)	(0.142)
No data on income	–1.529***	–1.520***
	(0.380)	(0.378)
Income 10000-19999	-0.117	–0.137
	(0.425)	(0.423)
Income 20000-39999	–0.507	–0.518
	(0.396)	(0.394)
Income >=40000	–0.648	–0.656
	(0.412)	(0.410)
Constant	3.006***	2.690***
	(0.680)	(0.664)
Observations	3987	3987
AIC	2716.3	2719.9
BIC	2829.6	2826.8
Log-likelihood	–1340.2	–1342.9
% of right predictions	87.5	87.5

Note: Family status "Married" was taken as base outcome Activity category "Hired employee" was taken as base outcome Education level "Incomplete higher" was taken as base outcome Income level 0-9999 was taken as base outcome.
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Underwriting decision is, first of all, determined by clear recent credit history and providing of correct documentation (that is unobserved in collected data, gaining low explaining ability of other borrower characteristics). The second driver of underwriting decision is the number of applications that negatively affects the probability of borrower's approval. It is supported by the negative significant correlation (–0.005) between fitted probability of application and the probability of endorsement. This is due to the fact that regional AHML branches have the limits of funds provided by AHML in each period and branches must take into account and regulate the number of applications by controlling the rigidity of underwriting. Controlling for probability of application is necessary to correct the sample for sample selection bias caused

by different rigidity of underwriting in different months and provides some additional information of variation of probability of application endorsement. Relatively high percentage of right predictions (87.5%) appeared in this model. All coefficients in both specifications have same signs and approximately same values.

The coefficient on gender is statistically significant. This finding provides evidence of gender discrimination in approval process. However, problems of discrimination on the Russian mortgage market are not developed yet. In addition, the presence of complete higher education and work in state-owned organization increase the likelihood of approval. All other coefficients are intuitive. There is a point about the preference of relatively high endorsement of low-income applicants but it evidenced in next part of research that low-income borrowers have relatively small credit risk (See comments on Table 6).

4.3. Set the Limit Loan Amount

Credit limit or maximum affordable loan amount for borrower is determined firstly by the characteristics of borrowers such as age (mid-aged preferred), sex of main borrower, family status of main borrower (married strictly preferred to single and then to widowed and divorced), education level (complete high and higher education preferred), type of work (entrepreneurs preferred to hired employees and state employees) and positively correlated with level of income and co-corrower's income level. Moreover, the less value of credit limit affected by the relatively high probability of approval due to the reasons of funds controlling described above.

4.4. Contract Agreement

Table 5: Estimated parameters for probability of contract agreement (eq.4)

	(1) Probit with correction for endogeneity and sample selection	(2) Probit with correction for endogeneity	(3) Probit with correction for sample selection	(4) Probit
Probability of application	0.236***		0.221***	
	(0.049)		(0.048)	
Probability of endorsement	0.377*		0.218	
	(0.202)		(0.182)	
Loan limit $x10^{-4}$	0.003*	0.000	0.000	0.000
	(0.001)	(0.001)	(0.000)	(0.000)
Mean loan	0.004***	0.001***	0.004***	0.001***
	(0.001)	(0.000)	(0.001)	(0.000)
Median maturity	0.402***	0.030***	0.377***	0.030***
	(0.078)	(0.005)	(0.076)	(0.005)
Median rate	–2.101***	–0.200**	–2.019***	–0.202***
	(0.412)	(0.079)	(0.409)	(0.077)
Mean LTV	0.017	0.012	0.015	0.011
	(0.017)	(0.017)	(0.017)	(0.017)
Mean DTI	5.453***	0.175**	5.117***	0.174**
	(1.099)	(0.073)	(1.081)	(0.073)
Lodging coefficient in years	–4.439***	0.343***	–4.105***	0.346***
	(0.988)	(0.090)	(0.969)	(0.088)
Single	–0.231***	–0.264***	–0.262***	-0.266***
	(0.059)	(0.058)	(0.056)	(0.056)
Widowed	–0.031	–0.116	–0.116	–0.122
	(0.231)	(0.227)	(0.226)	(0.224)
Divorced	–0.194***	–0.241***	–0.230***	–0.244***
	(0.075)	(0.073)	(0.072)	(0.071)
Entrepreneur	–0.432	–0.197	–0.285	–0.188
	(0.310)	(0.295)	(0.297)	(0.290)
State employee	0.375***	0.389***	0.357***	0.385***
	(0.132)	(0.131)	(0.132)	(0.130)
Elementary education	0.751***	0.714***	0.654***	0.705***
	(0.249)	(0.249)	(0.243)	(0.242)
Secondary education	0.360**	0.317**	0.281**	0.311**
	(0.145)	(0.145)	(0.138)	(0.138)
Complete higher education	0.281**	0.310**	0.272**	0.309**
	(0.136)	(0.136)	(0.136)	(0.135)
Constant	–245.250***	–11.424***	–229.221***	–11.296***
	(48.545)	(3.156)	(47.651)	(3.065)
Observations	3487	3487	3487	3487
Pseudo R^2	0.096	0.089	0.095	0.089
AIC	3501.2	3523.4	3504.4	3523.3
BIC	3612.1	3621.9	3615.3	3621.8
Log-likelihood	–1732.6	–1745.7	–1734.2	–1745.7
% of right predictions	76.1	76.2	76.0	76.2

Note: Family status "Married" was taken as base outcome Activity category "Hired employee" was taken as base outcome Education level "Incomplete higher education" was taken as base outcome
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

In different specifications the estimates remain statistical significance and are generally consistent. Sample selection bias terms from selection equations is need to be included due to its significance (significant correlation between error terms in application, endorsement and contract agreement decisions). Correction for endogeneity of loan limit gains significance

of this variable for contract agreement decision and that is so only with sample selection correction.

Relatively high probability of contract agreement is observed for borrowers who are tend to be settled(married, work in state-owned organization) and has positive expectations on the terms of credit contract (high mean DTI, loan amount and maturity, low rate and gained higher credit limit). Borrowers with elementary, secondary, or complete higher education are more likely to contract compared with borrowers with incomplete higher education. This equation has relatively small goodness-of-fit reasoned by strong dependency on such unobservables as alternative offers, quality of service in AHML and presence of suited property.

4.5. Choice of Credit Terms

Demand for mortgage loan or desired loan amount less determined by characteristics of borrower (and from underwriting and contract agreement decisions that firstly determined by demographics) but on desired flat (more expensive flat, larger loan), macrovariables (determines the probability of applications) and (fitted) contract terms such as type of rate (larger loans with fixed rate, smaller loans with adjusted rates), down payment (more down payment needed, less loan) and loan limit (with positive dependency) and does not affected by mortgage rate and maturity. It is needed to be pointed out that correction for endogeneity strongly corrects the coefficients suffered from inconsistency due to simultaneity bias.

4.6. Loan Performance

Table 6: Estimated parameters for probability of default (eq.6)

	(1) Probit with correction for endogeneity and sample selection	(2) Probit with correction for endogeneity	(3) Probit with correction for sample selection	(4) Probit
Probability of application	0.061***		–0.016***	
	(0.021)		(0.006)	
Probability of endorsement	1.580*		–0.224	
	(0.952)		(0.710)	
Probability of contract agreement	0.512		–0.026	
	(0.643)		(0.418)	
Rate is adjusted	–11.584	4.473	0.322***	0.331***
	(20.484)	(3.204)	(0.043)	(0.041)
Rate	1.659***	0.305	0.563	0.620*
	(0.371)	(0.523)	(0.379)	(0.376)
Maturity <120 months	8.313	–19.045**	0.563	0.620*
	(8.659)	(8.039)	(0.379)	(0.376)
Maturity 120-179 months	15.305**	–20.623**	0.481	0.527*
	(7.715)	(8.236)	(0.317)	(0.317)
Maturity 180-239 months	14.134*	–19.633***	0.359	0.394
	(7.263)	(7.424)	(0.304)	(0.305)
Maturity 240-299 months	29.289***	–12.513***	0.142	0.194
	(10.947)	(3.695)	(0.323)	(0.323)
Flat value $x10^{-4}$	–0.091***	–0.018	–0.001	–0.001
	(0.032)	(0.012)	(0.001)	(0.001)
Loan amount $x10^{-4}$	0.175***	–0.002	0.001	0.001
	(0.065)	(0.005)	(0.002)	(0.002)
LTV	–36.064**	–0.003	–0.077	–0.098
	(14.351)	(0.002)	(0.451)	(0.443)
Age of borrower	–0.742**	0.441**	0.055	0.060
	(0.367)	(0.212)	(0.070)	(0.067)
Age squared	0.011*	–0.005*	–0.001	–0.001
	(0.006)	(0.003)	(0.001)	(0.001)
Male	0.255**	0.438***	0.287**	0.269**
	(0.124)	(0.160)	(0.124)	(0.120)
Entrepreneur	0.775	0.353	0.696	0.537
	(0.519)	(0.452)	(0.488)	(0.450)
State employee	–0.349***	–0.334***	–0.350***	–0.345***
	(0.112)	(0.109)	(0.118)	(0.110)
# of coborrowers	0.391	-2.001***	–0.826**	–0.760***
	(0.670)	(0.483)	(0.398)	(0.268)
No data on income	–0.427*	–1.170***	–0.377	–0.406*
	(0.230)	(0.330)	(0.232)	(0.228)
Income 10000-19999	–0.080	–1.056***	–0.661**	–0.658***
	(0.397)	(0.295)	(0.275)	(0.243)
Income 20000-39999	–0.130	–0.414	–0.446	–0.389
	(0.659)	(0.478)	(0.357)	(0.306)
Income >=40000	–0.054**	0.027	0.000	0.015
	(0.022)	(0.020)	(0.012)	(0.009)
Mean m2 value	0.001	0.003***	0.002***	0.001***
	(0.001)	(0.001)	(0.001)	(0.000)
Constant	–9.455	3.662	–7.622***	–8.768***
	(8.161)	(4.478)	(1.626)	(1.422)
Observations	2229	2229	2229	2229
Pseudo R^2	0.377	0.341	0.419	0.411
AIC	695.8	727.9	651.1	653.2
BIC	832.8	847.8	782.4	767.4
Log-likelihood	–323.9	–342.9	–302.5	–306.6
% of right predictions	93.8	93.8	94.0	94.3

Note: Activity category "Hired employee" was taken as base outcome Income level 0-9999 was taken as base outcome Maturity >=300 months was taken as base outcome

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

One of the most unfavorable credit events is default. The probability of default is used as a measure of credit risk. The second column in Table 6 reports the results of probit model with correction endogeneity and sample selection for the probability of borrower's default (eq. 6). High predictive power of the model is supported by high percentage of right predictions, which is close to 94%.

Credit risk increases with increasing in (fitted) mortgage rate, loan amount, deceasing of flat value, linked with initial low and high (but not moderate) income level and negatively with number of co-borrowers. The last two facts should be explained. Mortgage programs suppose debt-to-income ratio not more than the upper bound determined by particular program. In order to obtain it low-income borrowers pick co-borrowers which may take some risk in case of delinquency. Additional explanation of high payment discipline of low-income borrowers is that a mortgage is the only chance to obtain housing and bankruptcy will cause deprivation of property. Parabolic with branches up dependency of credit risk on age may be explained by higher moral cost for young-aged (deterioration of credit history) and old-aged (soviet stark discipline mentality) borrowers when default.

Relatively high level of credit risk of AHML borrowers is empirically evidenced by significant positive correlation of error terms in probability of default equation and equation of probability of application to AHML. The reason is that AHML orients to achieve social goals and providing affordable housing even in negative mortgage market demand and supply shocks. Negative shocks determine high probability of application to AHML which is positively correlated with risk of delinquency.

Low significance of probability of endorsement and its' positive correlation with credit risk error terms are giving evidence that endorsement process is not aimed to bring light to potential unfair borrowers but takes into account rather different than risk factors. Since all risk refinanced by government, AHML borrowers are high risk household which cannot take affordable mortgage loan in commercial banks.

5. CONCLUSION

To summarize our results, we estimated the model of borrowing process on the stages of application, underwriting, contract agreement and loan performance. The estimation strategy relies on several assumptions on joint distribution of error terms and approximation functions for regression equations. However, corrected for sample selection and simultaneity biases estimates appear to be consistent.

Results are, of course, conditional on data and estimation strategy. Based on this estimates we find that (1) probability of application for mortgage to AHML increases with negative mortgage market shocks; (2) underwriting process rely on characteristics of borrower and amount of applications in particular period; (3) probability of contract agreement determined by loan limit, expectations of credit terms and stability of demographics; (4) demand for mortgage is a function of loan limit and characteristics of desired flat and less determined by contract characteristics and demographics; (5) credit risk is higher with higher rate, for larger loans, moderate-income and middle-aged borrowers; (6) AHML borrowers is relatively more risky than the general sample.

The collected data set suffers from lack of credit history data, reasons of disagreement on contract, particular rival offers on mortgage market, quality of service of AHML and other credit organizations, low variation in aggregate demographic characteristics. Further research should attempt to avoid these challenges. More flexible econometric techniques like semiparametric and nonparametric estimation should apply. Cross-validation allows conducting robustness check of models.

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ACCOUNTS PAYABLE AS A SOURCE OF CORPORATE FINANCING IN RUSSIAN FOOD INDUSTRY

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Abstract: The results of the present study evidenced that accounts payable were actively used as a financial source by Russian food industry companies in 2008-2010, during the last financial crisis. However, the ratio of accounts payable over total assets was not associated at all with the amount of total assets. Moreover, the negative link between the bank credit and trade credit proportions was rather weak and accounted for no more than 15% of the total variance observed within these variables. The individual pairwise comparison of annual change in return on sales ratio and annual change in accounts payable over total assets did not reveal any significant relationship between these variables also. Thus, the determinants of accounts payable levels proposed in the previous studies are hardly applicable for Russian food market firms, pointing at the existence and importance of other key factors controlling the exploitation of trade credit in the emerging economies.

Keywords: Corporate Finance, Accounts Payable, Trade Credit, Bank Credit, Capital Source

1. INTRODUCTION

Accounts payable (AP) are not considered as a source of finance for WACC and capital budgeting purposes by the majority of modern financial management textbooks (Erhardt and Brigham, 2011). Nevertheless, the interest for trade credit in developing countries has grown in recent years, as a number of recent studies have shown that accounts payable are usually represent the usage of trade credit which may substitute bank credit as a capital source (Hyndman and Serio, 2010). Several explanations have been given to account for the advantages of the use of AP (Garcia-Teruel and Martinez-Solano, 2010). Firms choose trade credit to overcome financial constraints, especially when credit from financial institutions is not available, or in countries with a poorly developed financial sector (Petersen and Rajan, 1997; Garcia-Teruel and Martinez-Solano, 2010). Moreover, trade credit allows firms to reduce the transaction cost related with the process of paying invoices, the verification of the quality of products before paying and provides a higher degree of financial flexibility than bank loans (Garcia-Teruel and Martinez-Solano, 2010).

However, these assumptions have been tested mostly on corporate data from developed countries and China (Rajan and Zingales, 1995; Shiraishi and Yano, 2010; Wu *et al.* 2012). Only a few empirical studies address the issue of inter-firm credit provision, and those that

have generally find somewhat conflicting results (Hyndman and Serio, 2010). Based on this, the goal of the study was to determine whether trade credit hypotheses are valid for the emerging economies such as Russia.

2. MATERIALS AND METHODS

The dataset was obtained from FIRA agency (www.fira.ru) and consists of the food industry companies which were active for the period 2007 – 2012 and located in the Novosibirsk-Altay agricultural region (Russian Federation). All absolute measures have been adjusted for inflation and presented in the 2010 year US dollars.

Statistical differences between means were estimated by Fridman or Kruskall-Wallis non-parametric ANOVA. The associations between variables were assessed using Spearman rank correlation coefficient. The results were considered significant at probability level less than 0.05.

3. RESULTS AND DISCUSSION

Our results evidence that accounts payable constitute a large proportion (more than 20%) of total assets for food industry firms in the sample, and this proportion was comparable with the ratio of bank debt to total assets in these companies (Fig. 1A; $\chi 2(60,1)=1.067$, $p>0.301$). The level of observed AP to total assets ratio was comparable with the one observed for US firms in the early 1990s – 17.8% (Rajan and Zingales, 1995). The value of AP to total assets ratio for Russian food market firms also fell within the range for this proportion (16-24%) across all nontransitional and almost all transitional European countries (Wu *et al.* 2012; Delannay and Weill, 2004). Only in China and few transitional European economies mean trade payables were about two fold lower than one found for our dataset and represented 11%-15% of the total assets of listed companies (Wu *et al.* 2012; Delannay and Weill, 2004). Thus, the firms from our dataset share the same level of AP to total balance sheet as the one observed worldwide.

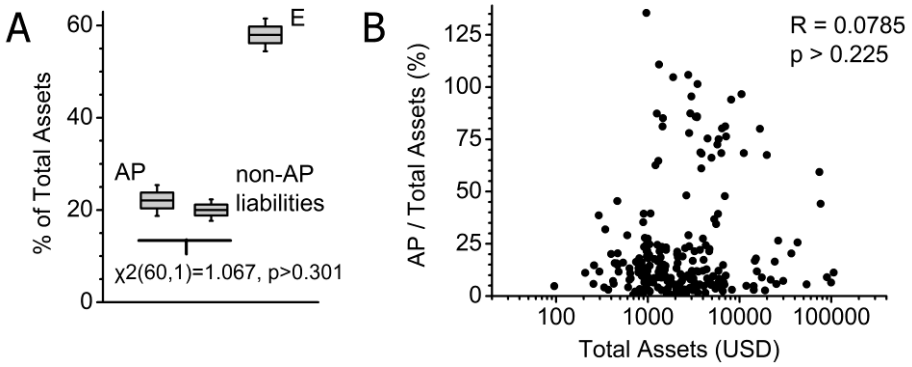

Figure 1: (A) The proportion of accounts payable, non-AP liabilities and equity in the total assets for Russian food market firms in 2008-2010. (B) The interrelation between the total assets and proportion of accounts payable within total assets for Russian food market firms in 2008-2010.

Firstly, the impact of the company's size was assessed in our dataset (Garcia-Teruel and Martinez-Solano, 2010). Theoretically, on the one hand, size is a proxy for reputation, as large established companies may be considered as less risky, and therefore the positive link between size and accounts payable ratio should be expected, as suppliers are more inclined to extend credit to large firms (Delannay and Weill, 2004). On the other hand, large companies are supposed to have a better access to bank credit, and a negative link between

size and AP ratio should be observed, if substitution exists between bank credit and trade credit (Delannay and Weill, 2004). Most previous surveys confirm the negative relathionship between the size of the company and the level of AP over total assets (Delannay and Weill, 2004; Rodrıguez-Rodrıguez 2006; Garcia-Teruel and Martinez-Solano, 2010). However, the ratio of AP to total assets was not associated at all with the amount of total assets, and this was in contrast with existing theories of trade credit advantages (Fig. 1B; R=0.0785; p>0.225).

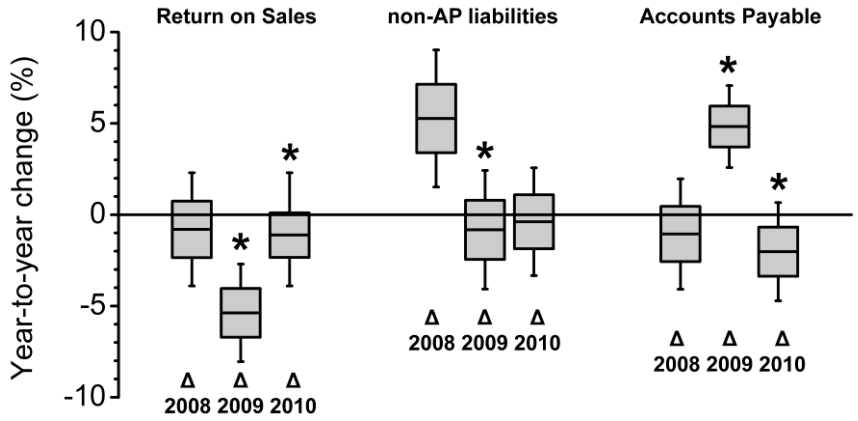

Figure 2: Year-to-year change in the return on sales ratio, and proportion of non-AP liabilities and accounts payable to total assets for Russian food market firms in 2008-2010. * - p<0.05 vs the same measure in the previous year.

The second hypothesis tested was about the relationship between the bank loans and accounts payable. If these types of credit were substitutable, the negative link would be observed between this variable and accounts payable ratio, while the link would be positive if they are complementary (Delannay and Weill, 2004; Gama and Mateus, 2010). The mean ratio of AP to total assets was increased across the food industry in 2009, compensating for the absence of growth in the ratio of bank debt to total assets in this year, which stopped since 2008 (Fig. 2; $\chi 2$ (60,2)=10.83, p<0.005 for AP; $\chi 2$ (60,2)=7.56, p<0.023 for non-AP liabilities). At first glance, the observed changes confirm the substitutability of bank credit and trade credit during the crisis of 2008-2010. However, such explanation accounted for no more than 15% of the total variability, as the correlation between these ratios was weak (Fig. 3; R=-0.357, p<0.00001). In contrast, previous surveys confirm the negative relathionship between the bank loans and trade credit evidencing for substitution effect (Garcia-Teruel and Martinez-Solano, 2010; Delannay and Weill, 2004).

The last hypothesis tested was about effects of profitability on accounts payable ratio. Suppliers might value high profitability as it reduces risk of default: consequently, a positive relationship between profitability and accounts payable ratio may be observed (Delannay and Weill, 2004). However, high profitability is also considered as a positive signal for banks, and should therefore relax rationing in bank credit resulting in the negative link and opposite, substitution effect (Rajan and Zingales, 1995; Delannay and Weill, 2004).

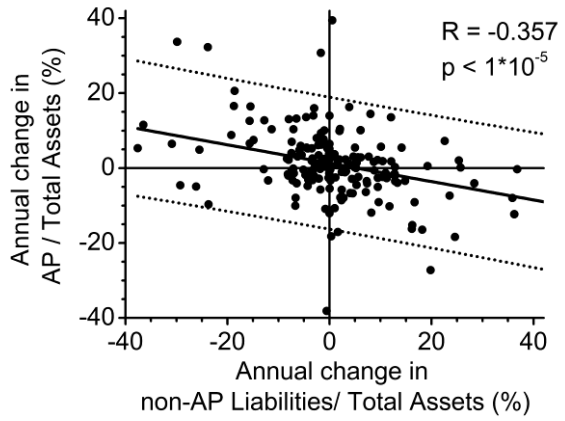

Figure 3: The interrelation between the annual change in AP / Total Assets and the annual change in non-AP liablities / Total Assets for Russian food market firms in 2008-2010.

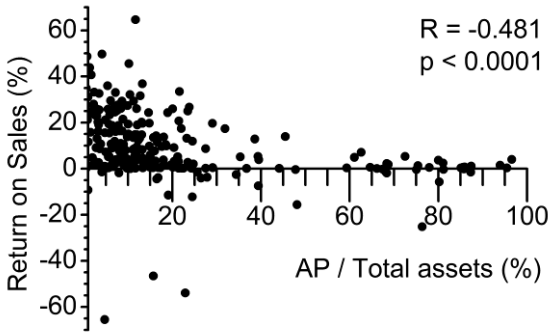

Figure 4: The interrelation between the return on sales ratio and the proportion of accounts payable in the total assets for Russian food market firms in 2008-2010.

Year-to-year change in the mean return on sales ratio in 2008-2010 evidenced for its significant relative decrease for about 5% at the peak of crysis in 2009 (Fig. 2; $\chi 2$ (60,2)=8.63, p<0.013 for return on sales). The proportion of accounts payable to total assets was increased in the same year and, like in the previous case, at first glance, confirm the negative relationship between these variables (Fig 2, 4; R=-0.481; p<0.0001). However, individual pairwise comparison of annual change in return on sales ratio and annual change in AP / Total Assets did not reveal any significant relationship between these variables (Fig. 5; R=-0.111; p>0.140). This situation was described earlier for transient economies - Hungary and Lithuania - with low levels of AP in total firm assets only (Delannay and Weill, 2004). However, most other transient and developed European countries had a significant negative correlation between AP ratio and return on sales (Delannay and Weill, 2004).

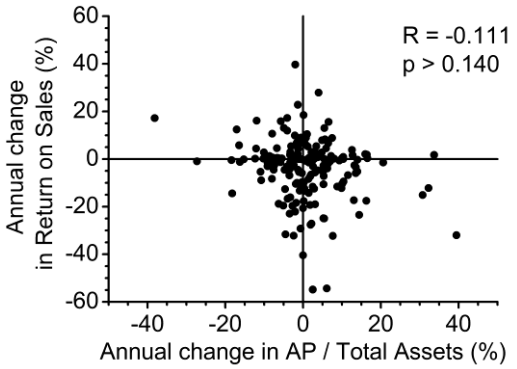

Figure 5: The lack of relationship between the annual change in return on sales ratio and annual change in AP / Total Assets for Russian food market firms in 2008-2010.

The research has shown that neither of hypotheses tested were in accord with the behavior of accounts payable for Russian food market firms in 2008-2010, during the last financial crisis. The reasons for this behavior remain unknown, and future studies should address this issue.

4. CONCLUSIONS

In summary, the results of the present study evidence that accounts payable are actively used as a financial source by Russian food industry companies. However, determinants of accounts payable levels proposed in the previous studies are hardly applicable for these firms, pointing at the existence and importance of other key factors controlling the exploitation of trade credit in the emerging economies.

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FUNDAMENTAL RATIOS AND STOCK MARKET PERFORMANCE: EVIDENCE FROM TURKEY

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Abstract: The fundamental analysis strives to determine the approximate future market value of a firm and an important step in a fundamental analysis is the computation of basic ratios which provide an indication of firms' financial performance in several key areas. The purpose of this study is to investigate the financial performance of Turkish manufacturing companies and the impact of this performance on common stock returns for the three years from 2009 to 2012. The sample consisted of 20 chemical-sector firms quoted to the Borsa Istanbul. For each company seven key financial ratios measuring profitability, liquidity, efficiency and leverage were calculated separately for three years in the analysis. Technique for Order of Preference by Similarity to Ideal Solution (TOPSIS) method is applied to rank the firms in the sample according to seven criteria, which are financial ratios. Based upon the rankings two portfolios are constructed: the first is comprised of 10 best performers and the second is comprised of 10 worst performers. The t-test which was conducted on the stock market returns of both portfolios revealed that there was no significant difference between the yearly returns of the two portfolios for any of the three years of this analysis.

Keywords: Ratio Analysis, TOPSIS, Portfolio Return

1. INTRODUCTION

Performance evaluation is one of the most critical challenges facing the organizations. The financial performance measurement system plays a key role for managers in developing strategic plans, evaluating the achievement of firms' objectives and implementing corrective actions when required. But the most important role of performance evaluation however, lies in the determination of the present and future value of a firm.

The fundamental analysis which is a widely used technique in performance measurement, strives to determine the approximate future market value of a firm by examining related economic, financial and other qualitative and quantitative factors. An important step in a fundamental analysis is the computation of basic ratios which provides an indication of firms' financial performance in several key areas. Of critical concern in this process is the determination of which ratios and which weights will be used to measure the performance. Multi-criteria decision-making techniques offer various methods of dealing with the above-mentioned problem (Brealey *et al*. 2012).

One of the more widely used multi-criteria decision-making methods is "The Technique for Order of Preference by Similarity to Ideal Solution (TOPSIS)". This is a multi-criteria decision analysis technique that was originally developed by Hwang and Yoon in 1981 with further developments by Yoon in 1987, and Hwang, Lai and Liu in 1993. TOPSIS is a method of compensatory aggregation which compares a set of alternatives by identifying weights for each criterion, normalizing scores for each criterion and calculating the geometric distance

between each alternative and the ideal alternative, which represents the best score in each criterion (Demireli, 2010).

An important output of the TOPSIS technique is the ranking of alternatives which in the context of firms' performance evaluation provides an important input to portfolio managers. In order to increase the performance of their portfolios portfolio managers strive to select the best performing stocks, for which an important determinant is the performance of the companies underlying the shares.

The purpose of this study is to investigate the persistence in the financial performance of Turkish chemical sector manufacturing companies and the impact of this performance on common stock returns for the three years from 2009 to 2012. The TOPSIS method is used to evaluate and to compare the performance of 20 firms in the analysis.

Although a vast amount of literature on firms' financial performance already exists, the multi-criteria decision-making methods are rarely used in the evaluation process of such companies. This is the main contribution of this paper to existing literature. Emerging markets on the other hand, have their own dynamics which makes them unique and different than developed markets. Considering this phenomenon from an emerging market perspective represents another important contribution of this research.

The reminder of the paper is organized as follows. Data and methodology are presented in Part 2; Part 3 presents the analysis and the results. Part 4 concludes the discussion.

2. DATA AND METHODOLOGY

As stated in the introduction, the purpose of this study is to search for persistence in the financial performance of industrial companies in the chemical sector and the impact of this performance on common stock returns. Hence the hypothesis of the study is:

H_1: The stock returns of a portfolio composed of the shares of the firms with higher financial performance are greater than those of a portfolio composed of the shares of the firms with lower financial performance.

The analysis was conducted on a sample of 20 Turkish chemical-sector firms quoted to the Borsa Istanbul. The chemical sector was intentionally selected as it is a field that provides significant amounts of input to many branches of industry, such as automotive, leather products, glass, textile and paper products and is considered one of the key sectors of Turkish economy. The industry employs more than 81,500 people in approximately 4,000 companies. It has developed significantly and is expected to develop further in terms of quality, productivity, and environmental awareness as part of Turkey's adaptation to EU standards. As one of the main producers of soda ash, chrome and boron in the world Turkey has competitive advantage in this sector. The primary products exported by the Turkish chemical industry include petrochemicals, fertilizers, pharmaceuticals, synthetic fiber and strings, soap and detergent, as well as paints. There are about 314 companies with foreign investment in the Turkish chemical industry, an industry which has captured 13 percent share of total foreign capital in Turkey. The export volume of the Turkish chemical industry is increasing steadily. Today, the chemical industry was one of the most important exporting sectors among total industrial exports. In recent history, exports of chemicals constituted approximately 6.2 percent of all Turkish exports, making it the 4th largest sector by value of exports after the automotive, steel and textile industries (Deloitte, 2010; Erk, 2010). Due to data restrictions only 20 firms which were quoted to the stock exchange were included in the sample. Of those 20 firms, 13 were local firms and the remaining 7 had foreign ownership greater than 40 percent. Five firms had a sales volume greater than $1 billion; 5 had sales

volumes between $500 million and $1 billion, the remaining 10 firms were small companies with sales volume less than $500 million.

Financial ratios provide insights about the company in an organized way and allow for the comparison of different firms. The ratios are classified according to the information they provide. The main areas of measurement are liquidity, profitability, efficiency and leverage of a company. Liquidity ratios measure the extent to which assets can be turned into cash quickly whereas profitability ratios measure how much profit a business has made. Leverage ratios reveal the financing and risk structure of a company and finally efficiency ratios measure how effectively a company utilizes its assets and manages its liabilities (Weygandt *et al*. 2012)

In the existing literature many metrics have been developed to measure these dimensions. In the context of this analysis seven measures are used of which two are for liquidity, two for profitability, two for efficiency and one for leverage. The two metrics that measure liquidity are current ratio (CR) and quick (QR) ratio. Both show the short-term debt-paying ability of a company. CR is defined as current assets divided by current liabilities whereas QR is defined as quick assets -which are cash, marketable securities and receivables- divided by current liabilities. Profitability is measured according to return on assets (ROA) and return on equity (ROE). ROE is calculated as net income divided by average equity whereas ROA is calculated by dividing net income less financial expenses to average assets. Efficiency measures used in this study is account receivable efficiency (ARE) and asset efficiency (AE).ARE is calculated by dividing net sales to average accounts receivables and AE is calculated by dividing net sales to average assets. Finally leverage is measured by debt equity ratio (DE) which is calculated by dividing total liabilities to total equity (Brealey *et al.* 2012; Weygandt *et al.* 2012).

The balance sheets and income statements of 20 firms in the sample were obtained from the website of public disclosure platform (www.kap.gov.tr) and the ratios were calculated thereupon.

To rank the 20 companies in the sample The Technique for Order of Preference by Similarity to Ideal Solution (TOPSIS) method was used. In this method two artificial alternatives are hypothesized. The first is the ideal alternative which represents the alternative that has the best level for all attributes considered and the second is the negative ideal alternative which represents the alternative that has the worst attribute values. TOPSIS selects the alternative that is the closest to the ideal solution and farthest from negative ideal alternative (Uygurturk and Korkmaz, 2012).

To apply TOPSIS m alternatives (options) and n attributes/criteria should be selected and the score of each option with respect to each criterion should be calculated. After the identification of alternatives and options TOPSIS is applied at five stages:

1. Construction of the normalized decision matrix: This step transforms various attribute dimensions into non-dimensional attributes, which allows for comparisons across criteria. Scores or data are normalized scores or data as follows:

$$r_{ij} = x_{ij} / (\Sigma x2_{ij}) \text{ for } i = 1, \ldots, m; j = 1, \ldots, n$$

2. Construction of the weighted normalized decision matrix. A set of weights is determined for each criteria w_j for $j = 1,\ldots n$. Each column of the normalized decision matrix is multiplied by its associated weight.
3. Determination of the ideal and negative ideal solutions.
   Ideal solution is:

$$A^* = \{ v_1^*, \ldots, vn^* \}, \text{ where}$$

$$v_j^* = \{ \max (v_{ij}) \text{ if } j \in J ; \ \min (v_{ij}) \text{ if } j \in J' \}$$

Negative ideal solution is:

$$A' = \{ v_1', \ldots, vn' \}, \text{ where}$$

$$v' = \{ \min (v_{ij}) \text{ if } j \in J ; \ \max (v_{ij}) \text{ if } j \in J' \}$$

4. Calculation of the separation measure for each alternative.
   The separation from the ideal alternative is:

$$S_i^* = [\Sigma (v_j^* - v_{ij})^2]^{1/2} \qquad i = 1, \ldots, m$$

   Similarly, the separation from the negative ideal alternative is:

$$S_i' = [\Sigma (v_j' - v_{ij})^2]^{1/2} \qquad i = 1, \ldots, m$$

5. Calculation of the relative closeness to the ideal solution C_i^*

$$C_i^* = S_i' / (S_i^* + S_i') , \qquad 0 < C_i^* < 1$$

The option with Ci*closest to 1 is selected.

In the context of this analysis in the calculation of “C” score, equal weights are given to each criterion and the firms are ranked according to their “C” values for each year in the analysis separately.

To test the single hypothesis of this study two different portfolios were formed. The first consisted of 10 best performers and the second consisted of 10 worst performers. The stock market returns of both portfolios were calculated separately for three years in the analysis. The data for stock prices was obtained from the website of Borsa Istanbul (www.borsaistanbul.com) and yearly stock returns were calculated thereupon.

3. ANALYSIS AND FINDINGS

The calculated ratios are presented at Attachment 1 and the mean ratios at Table 1.

Table 1: Financial ratios

	ROA	ROE	CR	QR	DE	ARE	AS
2010	0.07	0.11	1.94	1.52	1.10	7.48	1.07
2011	0.08	0.05	2.03	1.56	1.51	6.83	1.22
2012	0.07	0.13	1.84	1.30	1.35	7.26	1.25
mean	0.07	0.10	1.94	1.46	1.32	7.19	1.18

As Table 1 shows, in terms of net income, highest profitability was obtained at year 2011 whereas in terms of net income less financial expenses at year 2012. Firms in the sample had both highest liquidity and largest debt at year 2011. The most efficient year in terms of accounts receivables was 2010 whereas in terms of assets the year 2012.

At the next step, consistent with TOPSİS approach, the ratios were normalized. Mean normalized ratios are presented at Table 2.

Table 2: Normalized financial ratios

	ROA	ROE	CR	QR	DE	ARE	AS
2010	0.017	0.030	0.512	0.438	0.342	2.033	0.267
2011	0.021	0.071	0.640	0.584	0.586	1.885	0.316
2012	0.019	0.040	0.494	0.381	0.476	2.042	0.318
mean	0.019	0.047	0.548	0.467	0.468	1.987	0.300

To construct weighted normalized matrix, equal weights were given to all ratios. Based on normalized weighted matrix ideal positive and negative solutions were calculated. The computed ideal positive and negative solutions are presented at Table 3.

Table 3: Ideal positive and negative ratios

	ROA		ROE		CR		QR		DE		ARE		AS	
	ideal +	ideal -	ideal +	ideal -	ideal +	ideal -	ideal +	ideal -	ideal +	ideal -	ideal +	ideal -	ideal +	ideal -
2010	0.012	0.000	0.021	0.000	0.534	0.004	0.624	0.001	0.000	0.494	1.268	0.010	0.160	0.000
2011	0.010	0.000	0.145	0.000	1.236	0.002	1.354	0.000	0.001	1.338	1.368	0.011	0.197	0.000
2012	0.017	0.000	0.047	0.000	0.451	0.002	0.585	0.000	0.001	0.932	1.305	0.009	0.188	0.000
mean	0.013	0.000	0.071	0.000	0.740	0.003	0.855	0.000	0.001	0.921	1.314	0.010	0.182	0.000

“C” values were then computed for each observation based on the distance between the observation and positive and negative ideal solution. The observations were ranked according to “C” values for all 3 years from 2009 to 2012. Based upon these rankings two portfolios were formed. The first portfolio is comprised of 10 best performers and the second portfolio is comprised of 10 worst 10 performers. The “C” values, rankings and portfolio attributions are presented at Table 4.

As table 4 shows, portfolio attributions were the same for all years and for all observations meaning that the companies in the sample were either in the first or second portfolio for all three years of the analysis which showed performance persistence. Still the same persistence was not found to be valid when within-portfolio rankings were considered. The 2011 and 2012 rankings were very similar to each other but differed from those of 2010. The best and worst performers of 2011 maintained their position also in 2012.

At the last step of the analysis portfolio returns were calculated based on individual stock returns. The weights of the stocks in the portfolio were assumed to be equal. As a result portfolio returns were calculated as simple averages of individual stock returns. The results are presented at Table 5.

Table 4: "C" values, rankings and portfolio attributions

	C (2010)	Rank(2010)	C (2011)	Rank(2011)	C (2012)	Rank(2012)
firm 1	0.526	6	0.585	10	0.579	2
firm 2	0.509	13	0.582	16	0.552	16
firm 3	0.521	8	0.594	3	0.579	3
firm 4	0.428	19	0.575	19	0.529	18
firm 5	0.522	7	0.586	8	0.563	9
firm 6	0.531	5	0.588	5	0.565	7
firm 7	0.512	11	0.533	20	0.492	20
firm 8	0.512	10	0.597	2	0.572	5
firm 9	0.534	**1**	0.588	6	0.568	6
firm 10	0.449	17	0.583	13	0.558	11
firm 11	0.517	9	0.586	7	0.560	10
firm 12	0.533	3	0.585	9	0.577	4
firm 13	0.509	12	0.583	15	0.555	14
firm 14	0.502	14	0.582	17	0.541	17
firm 15	0.533	2	0.588	4	0.565	8
firm 16	0.428	20	0.584	11	0.523	19
firm 17	0.498	15	0.584	12	0.556	13
firm 18	0.452	16	0.583	14	0.554	15
firm 19	0.532	4	0.615	**1**	0.585	**1**
firm 20	0.438	18	0.581	18	0.557	12

Table 5: Portfolio returns

portfolio 1		return			portfolio 2		return		
	2010	2011	2012	mean		2010	2011	2012	mean
firm 1	48%	28%	23%	33%	firm 2	21%	11%	56%	29%
firm 3	47%	16%	15%	26%	firm 4	64%	-1%	16%	26%
firm 5	93%	21%	128%	81%	firm 7	35%	-52%	54%	12%
firm 6	10%	-33%	8%	-5%	firm 10	75%	14%	55%	48%
firm 8	60%	-48%	42%	18%	firm 13	92%	2%	45%	46%
firm 9	65%	-34%	9%	14%	firm 14	56%	-16%	41%	27%
firm 11	88%	-36%	25%	26%	firm 16	33%	-48%	22%	2%
firm 12	66%	-10%	54%	37%	firm 17	87%	3%	-4%	29%
firm 15	7%	18%	8%	11%	firm 18	46%	4%	-27%	8%
firm 19	35%	-46%	43%	11%	firm 20	39%	17%	37%	31%
portfolio return	52%	-12%	35%	25%	portfolio return	55%	-7%	29%	26%

As Table 5 indicates, surprisingly the return of the portfolio two was greater than that of portfolio 1 for the years 2010 and 2011. When the mean of the three years are considered, the return of the first portfolio was one point lower than that of portfolio two, demonstrating that there was no relationship between financial performance indicators and stock returns hence the present firm value.

The analysis of variance test demonstrated that mean of the two portfolios was not significantly different for all three years in the analysis. The results are presented at Table 6.

Table 6: Analysis of variance test results

		Sum of squares	df	Mean Square	F	Sig
Y2010	Between Groups	0.004	1	0.004	0.059	0.810
	Within Groups	1.278	18	0.071		
	Total	1.282	19			
Y2011	Between Groups	0.017	1	0.017	0.220	0.645
	Within Groups	1.379	18	0.077		
	Total	1.396	19			
Y2012	Between Groups	0.018	1	0.018	0.172	0.683
	Within Groups	1.883	18	0.105		
	Total	1.901	19			

As the Table 6 indicates the hypothesis stating that the stock returns of a portfolio composed of the shares of firms with higher financial performance are greater than those of a portfolio composed of the shares of the firms with lower financial performance was rejected.

4. CONCLUSION

The purpose of this analysis was to examine the relationship between financial performance indicators and stock returns. It was hypothesized that the stock returns of a portfolio composed of the shares of firms with higher financial performance are greater than those of a portfolio composed of the shares of the firms with lower financial performance Seven key financial indicators were calculated from a sample of 20 Turkish chemical industry manufacturing firms for three years from 2009 to 2012. The TOPSIS method was applied to rank the firms according to equally weighted financial indicators and based upon these rankings two portfolios were constructed. The first was comprised of the best performers and the second was comprised of the worst performers. An important finding was that all firms in the sample fell in the same portfolio for all three years in the analysis demonstrating persistence in terms of financial performances.

The computed portfolio returns revealed that the return of the second portfolio which was comprised of firms with lower financial performance indicators was higher than that of the first portfolio for two years of the analysis. Similar results were obtained when overall returns were considered. The three-year return of the second portfolio was 26 percent whereas that of the first was 25 percent. The analysis of variance test which was performed demonstrated that the mean of the two portfolios was not significantly different for any year in the analysis. Hence the single hypothesis of this study was rejected.

The results revealed that although the financial performance of the companies was persistent through the years, there wasn't any link between financial results and firm value. It is important to note that due to data restrictions the analysis was limited to 20 observations and only seven ratios which represent the main limitation of this study.

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Appendix 1: Ratios

RATIOS	ROA			ROE			CR			QR			DE			ARE			AE		
	2010	2011	2012	2010	2011	2012	2010	2011	2012	2010	2011	2012	2010	2011	2012	2010	2011	2012	2010	2011	2012
1	0.05	0.07	0.11	0.08	0.12	0.17	1.67	1.77	1.61	1.27	1.33	1.23	0.75	0.94	0.60	3.92	4.16	5.03	0.96	1.01	1.04
2	0.06	0.08	0.06	0.09	0.13	0.09	2.72	2.47	2.32	1.91	1.69	1.47	0.36	0.53	0.49	6.59	4.89	4.98	0.76	0.75	0.79
3	0.07	0.12	0.05	0.12	0.18	0.13	1.90	1.78	1.56	1.63	1.37	1.08	0.39	0.26	0.24	17.50	18.11	18.10	1.66	2.01	1.89
4	0.17	0.15	0.07	0.25	0.31	0.10	2.68	2.63	2.72	2.35	1.82	1.26	0.35	0.47	0.42	14.73	9.27	11.35	1.12	0.93	1.11
5	0.07	0.08	0.09	0.13	0.15	0.19	1.63	1.42	1.01	0.96	0.78	0.66	0.76	1.25	1.54	4.46	4.04	3.17	1.24	1.27	1.14
6	0.01	0.04	0.08	-0.00	-0.05	0.09	1.42	1.37	1.30	0.86	0.90	0.87	0.83	0.93	0.91	2.56	2.42	2.18	0.62	0.61	0.58
7	0.04	-0.00	0.07	0.02	-1.20	0.24	0.87	0.95	0.87	0.71	0.79	0.72	4.86	10.48	7.88	1.73	1.77	2.03	0.73	0.77	0.87
8	0.10	0.12	0.05	0.16	-0.00	0.10	0.55	0.39	0.39	0.23	0.11	0.12	1.29	1.23	0.79	19.00	19.00	19.00	0.74	0.83	0.91
9	0.08	0.06	0.08	0.14	0.09	0.13	1.54	1.57	1.67	1.38	1.33	1.52	1.21	1.26	1.12	1.83	1.67	1.63	0.90	0.91	0.89
10	0.03	0.09	0.10	0.05	0.19	0.13	1.74	1.69	2.23	1.23	1.12	1.56	0.87	0.96	0.57	4.80	6.14	5.67	1.58	1.89	1.95
11	0.14	0.17	0.21	0.30	0.31	0.52	0.93	1.12	1.08	0.60	0.77	0.82	1.66	1.47	1.59	4.96	3.96	5.84	0.64	0.77	1.03
12	0.09	0.09	0.14	0.15	0.14	0.19	3.44	2.38	4.70	2.51	1.54	2.58	0.35	0.59	0.26	3.92	3.70	3.19	0.67	0.68	0.91
13	0.08	0.01	0.01	0.11	-0.02	-0.03	2.87	1.84	1.61	2.37	1.23	1.13	0.42	0.62	0.70	6.79	6.00	5.49	1.35	1.66	1.47
14	0.05	0.06	-0.01	0.08	0.06	0.01	1.62	1.59	1.41	1.01	1.04	0.96	0.48	0.57	0.68	7.01	6.66	7.99	1.22	1.46	1.55
15	0.03	0.01	0.03	0.04	-0.17	0.08	1.53	1.17	1.27	1.15	0.87	0.92	1.22	1.85	1.57	1.83	2.19	2.31	0.82	0.94	0.98
16	0.04	0.05	0.05	-0.02	-0.10	0.01	1.25	1.67	1.54	0.83	1.02	0.93	2.02	2.35	2.50	14.98	13.93	12.11	2.44	2.95	2.89
17	0.09	0.08	-0.01	0.13	0.15	-0.13	1.18	1.22	1.03	0.71	0.63	0.52	1.10	1.26	1.81	7.25	5.14	4.92	1.32	1.46	1.46
18	0.07	0.11	0.09	0.11	0.23	0.13	2.09	1.96	1.70	1.69	1.61	1.33	0.54	0.53	0.43	5.96	5.14	5.69	0.70	0.71	0.83
19	0.01	0.10	0.00	0.10	0.16	0.10	6.19	10.52	5.58	6.19	10.52	5.58	0.02	0.37	0.48	7.68	6.82	5.18	0.09	0.01	0.02
20	0.06	0.11	0.07	0.19	0.28	0.30	1.05	1.08	1.14	0.83	0.64	0.74	2.57	2.35	2.50	12.00	11.47	19.31	1.88	2.76	2.75
	0.07	0.08	0.07	0.11	0.05	0.13	1.94	2.03	1.84	1.52	1.56	1.30	1.10	1.51	1.35	7.48	6.83	7.26	1.07	1.22	1.25
NORMALIZED	ROA			ROE			CR			QR			DE			ARE			AE		
RATIOS	2010	2011	2012	2010	2011	2012	2010	2011	2012	2010	2011	2012	2010	2011	2012	2010	2011	2012	2010	2011	2012
1	0.01	0.01	0.03	0.01	0.01	0.04	0.27	0.25	0.26	0.18	0.15	0.20	0.08	0.08	0.04	0.38	0.46	0.62	0.17	0.16	0.17
2	0.01	0.01	0.01	0.01	0.01	0.01	0.73	0.48	0.55	0.42	0.25	0.29	0.02	0.02	0.02	1.07	0.63	0.61	0.11	0.09	0.10
3	0.01	0.04	0.01	0.02	0.02	0.02	0.35	0.25	0.25	0.30	0.16	0.15	0.02	0.01	0.01	7.53	8.70	8.02	0.52	0.64	0.56
4	0.08	0.06	0.01	0.11	0.07	0.01	0.70	0.54	0.75	0.63	0.28	0.21	0.02	0.02	0.02	5.34	2.28	3.15	0.23	0.14	0.19
5	0.01	0.01	0.02	0.03	0.02	0.04	0.26	0.16	0.10	0.10	0.05	0.06	0.08	0.13	0.25	0.49	0.43	0.25	0.29	0.25	0.21
6	0.00	0.00	0.02	0.00	0.00	0.01	0.20	0.15	0.17	0.08	0.07	0.10	0.10	0.07	0.09	0.16	0.16	0.12	0.07	0.06	0.05
7	0.00	0.00	0.01	0.00	1.02	0.07	0.07	0.07	0.08	0.06	0.05	0.07	3.46	9.37	6.52	0.07	0.08	0.10	0.10	0.09	0.12
8	0.03	0.03	0.01	0.04	0.00	0.01	0.03	0.01	0.02	0.01	0.00	0.00	0.24	0.13	0.07	8.88	9.57	8.84	0.10	0.11	0.13
9	0.02	0.01	0.02	0.03	0.01	0.02	0.23	0.19	0.28	0.22	0.15	0.30	0.22	0.14	0.13	0.08	0.07	0.06	0.15	0.13	0.12
10	0.00	0.02	0.02	0.00	0.02	0.02	0.30	0.22	0.50	0.17	0.11	0.32	0.11	0.08	0.03	0.57	1.00	0.79	0.47	0.57	0.60
11	0.06	0.07	0.12	0.15	0.07	0.33	0.08	0.10	0.12	0.04	0.05	0.09	0.40	0.18	0.26	0.61	0.42	0.84	0.08	0.09	0.17
12	0.02	0.02	0.05	0.04	0.01	0.05	1.16	0.44	2.24	0.72	0.20	0.88	0.02	0.03	0.01	0.38	0.36	0.25	0.08	0.07	0.13
13	0.02	0.00	0.00	0.02	0.00	0.00	0.80	0.27	0.26	0.64	0.13	0.17	0.03	0.03	0.05	1.13	0.96	0.74	0.34	0.44	0.34
14	0.01	0.01	0.00	0.01	0.00	0.00	0.26	0.20	0.20	0.12	0.09	0.12	0.03	0.03	0.05	1.21	1.18	1.56	0.28	0.34	0.38
15	0.00	0.00	0.00	0.00	0.02	0.01	0.23	0.11	0.16	0.15	0.07	0.11	0.22	0.29	0.26	0.08	0.13	0.13	0.13	0.14	0.15
16	0.00	0.01	0.01	0.00	0.01	0.00	0.15	0.22	0.24	0.08	0.09	0.11	0.60	0.47	0.66	5.52	5.14	3.59	1.12	1.38	1.32
17	0.03	0.02	0.00	0.03	0.02	0.02	0.14	0.12	0.11	0.06	0.03	0.04	0.18	0.14	0.34	1.29	0.70	0.59	0.33	0.34	0.34
18	0.01	0.03	0.02	0.02	0.04	0.02	0.43	0.30	0.29	0.33	0.22	0.23	0.04	0.02	0.02	0.87	0.70	0.79	0.09	0.08	0.11
19	0.00	0.02	0.00	0.02	0.02	0.01	3.74	8.65	3.16	4.37	9.48	4.10	0.00	0.01	0.02	1.45	1.23	0.66	0.00	0.00	0.00
20	0.01	0.03	0.01	0.06	0.06	0.11	0.11	0.09	0.13	0.08	0.04	0.07	0.96	0.47	0.66	3.54	3.49	9.13	0.66	1.21	1.19
	0.02	0.02	0.02	0.03	0.07	0.04	0.51	0.64	0.49	0.44	0.58	0.38	0.34	0.59	0.48	2.03	1.89	2.04	0.27	0.32	0.32
WEIGHTED	ROA			ROE			CR			QR			DE			ARE			AE		
RATIOS	2010	2011	2012	2010	2011	2012	2010	2011	2012	2010	2011	2012	2010	2011	2012	2010	2011	2012	2010	2011	2012
1	0.00	0.00	0.00	0.00	0.00	0.01	0.04	0.04	0.04	0.03	0.02	0.03	0.01	0.01	0.01	0.05	0.07	0.09	0.02	0.02	0.02
2	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.07	0.08	0.06	0.04	0.04	0.00	0.00	0.00	0.15	0.09	0.09	0.02	0.01	0.01
3	0.00	0.01	0.00	0.00	0.00	0.00	0.05	0.04	0.04	0.04	0.02	0.02	0.00	0.00	0.00	1.08	1.24	1.15	0.07	0.09	0.08
4	0.01	0.01	0.00	0.02	0.01	0.00	0.10	0.08	0.11	0.09	0.04	0.03	0.00	0.00	0.00	0.76	0.33	0.45	0.03	0.02	0.03
5	0.00	0.00	0.00	0.00	0.00	0.01	0.04	0.02	0.01	0.01	0.01	0.01	0.01	0.02	0.04	0.07	0.06	0.04	0.04	0.04	0.03
6	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.02	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.01	0.01	0.01
7	0.00	0.00	0.00	0.00	0.15	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.49	1.34	0.93	0.01	0.01	0.01	0.01	0.01	0.02
8	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.02	0.01	1.27	1.37	1.26	0.01	0.02	0.02
9	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.04	0.03	0.02	0.04	0.03	0.02	0.02	0.01	0.01	0.01	0.02	0.02	0.02
10	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.03	0.07	0.02	0.02	0.05	0.02	0.01	0.00	0.08	0.14	0.11	0.07	0.08	0.09
11	0.01	0.01	0.02	0.02	0.01	0.05	0.01	0.01	0.02	0.01	0.01	0.01	0.06	0.03	0.04	0.09	0.06	0.12	0.01	0.01	0.02
12	0.00	0.00	0.01	0.01	0.00	0.01	0.17	0.06	0.32	0.10	0.03	0.13	0.00	0.00	0.00	0.05	0.05	0.04	0.01	0.01	0.02
13	0.00	0.00	0.00	0.00	0.00	0.00	0.11	0.04	0.04	0.09	0.02	0.02	0.00	0.00	0.01	0.16	0.14	0.11	0.05	0.06	0.05
14	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.03	0.03	0.02	0.01	0.02	0.00	0.00	0.01	0.17	0.17	0.22	0.04	0.05	0.05
15	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.02	0.02	0.02	0.01	0.02	0.03	0.04	0.04	0.01	0.02	0.02	0.02	0.02	0.02
16	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.03	0.03	0.01	0.01	0.02	0.09	0.07	0.09	0.79	0.73	0.51	0.16	0.20	0.19
17	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.01	0.00	0.01	0.03	0.02	0.05	0.18	0.10	0.08	0.05	0.05	0.05
18	0.00	0.00	0.00	0.00	0.01	0.00	0.06	0.04	0.04	0.05	0.03	0.03	0.01	0.00	0.00	0.12	0.10	0.11	0.01	0.01	0.02
19	0.00	0.00	0.00	0.00	0.00	0.00	0.53	1.24	0.45	0.62	1.35	0.59	0.00	0.00	0.00	0.21	0.18	0.09	0.00	0.00	0.00
20	0.00	0.00	0.00	0.01	0.01	0.02	0.02	0.01	0.02	0.01	0.01	0.01	0.14	0.07	0.09	0.51	0.50	1.30	0.09	0.17	0.17
ideal +	0.01	0.01	0.02	0.02	0.15	0.05	0.53	1.24	0.45	0.62	1.35	0.59	0.00	0.00	0.00	1.27	1.37	1.30	0.16	0.20	0.19
ideal -	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.49	1.34	0.93	0.01	0.01	0.01	0.00	0.00	0.00

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ESTIMATION OF WAGE CHANGES IN THE REGIONS OF LITHUANIA IN THE CONTEXT OF THE ECONOMIC DOWNTURN*

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Abstract: In nowadays economics each individual puts on the priorities what he expects from life. It is very important to analyze the situation on the labor market based on the economic criteria. Mostly two trends are distinguished: labor market theory, which analyzes the structure, constitution, behavior of the labor market, examine labor productivity, wages, fluctuation of supply and demand balance and the economic theory, which analyzes the factors that influence the technical progress and globalization processes, inflation and its effect, wage differentiation, the relations between employers and employees. The objective of this paper is to evaluate the wage changes and differences in the regions of Lithuania in the period of economic downturn. The performed research will reveal the factors that influence the wage; will allow evaluating the differences in wages of different regions of Lithuania and provide the support for those regions which are mostly needed in it. The indicators that influence the wage are analyzed: education, knowledge, competence, viewpoint, the ability to adapt in the labor market, values, skills and other individual features the individual productivity is depend on. The economic loss assessment, which was influenced by the economic downturn in different regions of Lithuania, is performed.

Keywords: Wage, Region, Economic Loss

1. INTRODUCTION

Constantly changing environment conditions new challenges are raised. Formation and implementation of the regional economic policy has a significant impact on economy growth. The concept of the region is widely discussed in scientific researches. However, the content of the region concept is not unambiguous and undoubted (Burtulyte, 2005).

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If we analyze the region as an integral part of the state, then the country consists of a number of regions. Such an understanding of the region allows us to perceive the region as an open complex socio-economic system in the wider area, i.e. the country. Under the European Union common hierarchical classification system of territorial units (Nomenclature of Units for Territorial Statistics) Lithuania consists of 10 NUTS Level 3 regions: Alytus, Kaunas, Klaipeda, Marijample, Panevezys, Siauliai, Taurage, Telsiai, Utena and Vilnius counties.

The issues of establishment possibilities in labor market, wage changes and inequalities of income in different regions were investigated as well as by Lithuanian and foreign scientists (Aghion *et al.* 2011; Giziene *et al.* 2012; Giziene and Palekiene, 2011; Vetlov and Virbickas, 2006; Lengyel, 2003; Martin, 2004; Diamond, 1982; Skuciene, 2008; Aaberge, 1995; Motellon *et al.* 2011; Giorgio *et al.* 2005; James and Jansen, 2010 and others).

The size of the region‘s territory, the supply of local resources, the region's infrastructure (roads, communication) determine the development in this region. As more the region is developed, it's more competitive, and as a result the wages in this region is higher. Wages rate could vary depending on the chosen specialty and region in which the individual lives and is getting ready for work. The proper choice of specialty will ensure a higher income in the future. The choice of specialty shouldn’t determine only by psychological criteria. More often the women are chosen the fields of study which in the future conditions their job in fewer paid sector of economy. Another very important reason – family responsibilities. Wage is one of the main sources of personal income, the amount of which determine the individual‘s conditions, quality of life and satisfy many individuals’ needs. So, working individual is interested in getting the higher wage (Petkeviciute, 2006).

The wages rate mostly depends on:

- the characteristics of the labor force (social characteristics, labor market needs, supply and demand);
- positioning processes (mobility of factors, substitution, internal and external markets);
- access to higher education (price, the possibility of entering the higher education institution).

In order to estimate the wage changes in the regions of Lithuania in the context of economic downturn it is very important to identify and evaluate the factors influencing the labor market, development of the region, individual capabilities and his human capital.

2. FACTORS INFLUENCING THE LABOR MARKET AND WAGES IN DIFFERENT REGIONS

In scientific economic literature few different scientific theories dealing with the processes in the labor market could be found. The labor market could be defined as a place or procedure, where the employer and the job seeker in order to agree on the working conditions, working time, wages, social guarantees and etc., are interacted. The labor market is an integral part of the market economy and its basic function is distribution of labor force between economic activities, professions, territories and businesses. However, beyond the labor market basic function it carries out two more socio-economic functions: responsible for population income in the form of wages distribution and thus encourages working activities; responsible for formally equal opportunities in order to look forward for job and professional development formation. Accordingly, the labor market is characterized by specific features:

- specificity of labor factor (work, as the subjective factor, is based on the principle of personal character and is inseparable from the same individual);

- mobility of labor factor (limited, in comparison of other factors of production);
- multidimensionality of the labor market (labor market is presented as a bundle of partial markets, where each of them is differed by territorial, administrative, personal, qualified and others features);
- the nature of the interaction between labor supply and demand (in the labor market labor supply is regulated by economic, demographic, cultural, psychological, social and other factors; labor demand – mostly by economic factors; due to inertia of non-economic factors labor supply in comparison of labor demand is more stable);
- limitation of information (labor market participants don‘t have enough detailed information about the situation on the labor market);
- the social aspect (the existing social intervention, acting through the public institutes, replaces the legal and institutional conditions of the labor market);
- determination of labor force costs (the labor costs depends on several factors: the individual social status, the expenditures related to production and investment, regulation of the market, etc.);

In order to analyze the changes of wages in the regions of Lithuania in the context of the economic downturn it is necessary to identify the indicators which influence the labor market in both micro and macro levels.

According to Martinkus and Berzinskiene (2005), under social perspective the work is the conscious headwork or physical activity in order to pursue the set tasks when the employee directly or indirectly is able to satisfy his needs. Under economic perspective the work is understood as a conscious individual activity, which definitely differs from the concept of instinctive, natural reaction of organism or physical work.

More and more often competitiveness is measured not only by net accumulative economic assets. In order to evaluate the competitiveness the following factors of economic model, such as creativity, knowledge and environment conditions is also successfully used. The mentioned factors just are embodied into the human capital and due to that expression the human is found as a competitive product. So, economically growth and competitive region is that one where labor force is characterized by constantly knowledge accumulation.

Wage depends on the current situation in the labor market. Labor market and wages depend on both internal and external factors. Internal factors are determined as human capital: an individual's personal characteristics, acquired education, knowledge, competence, skills, ability to adapt on the labor market. External factors are macroeconomic factors, which reflect the economic situation in the country: GDP, inflation, investments and international trade. The external factors and wages directly depend on the economic stage. Labor market and wage evaluation model is presented in Figure 1.

The economic stage, the situation on the labor market (unemployment, employment rates) and wages are very closely interconnected. If the economy increases, unemployment will decrease, the average wage will increase, and vice versa. The consequences of unemployment are: declining GDP, not paid taxes, decreased consumption.

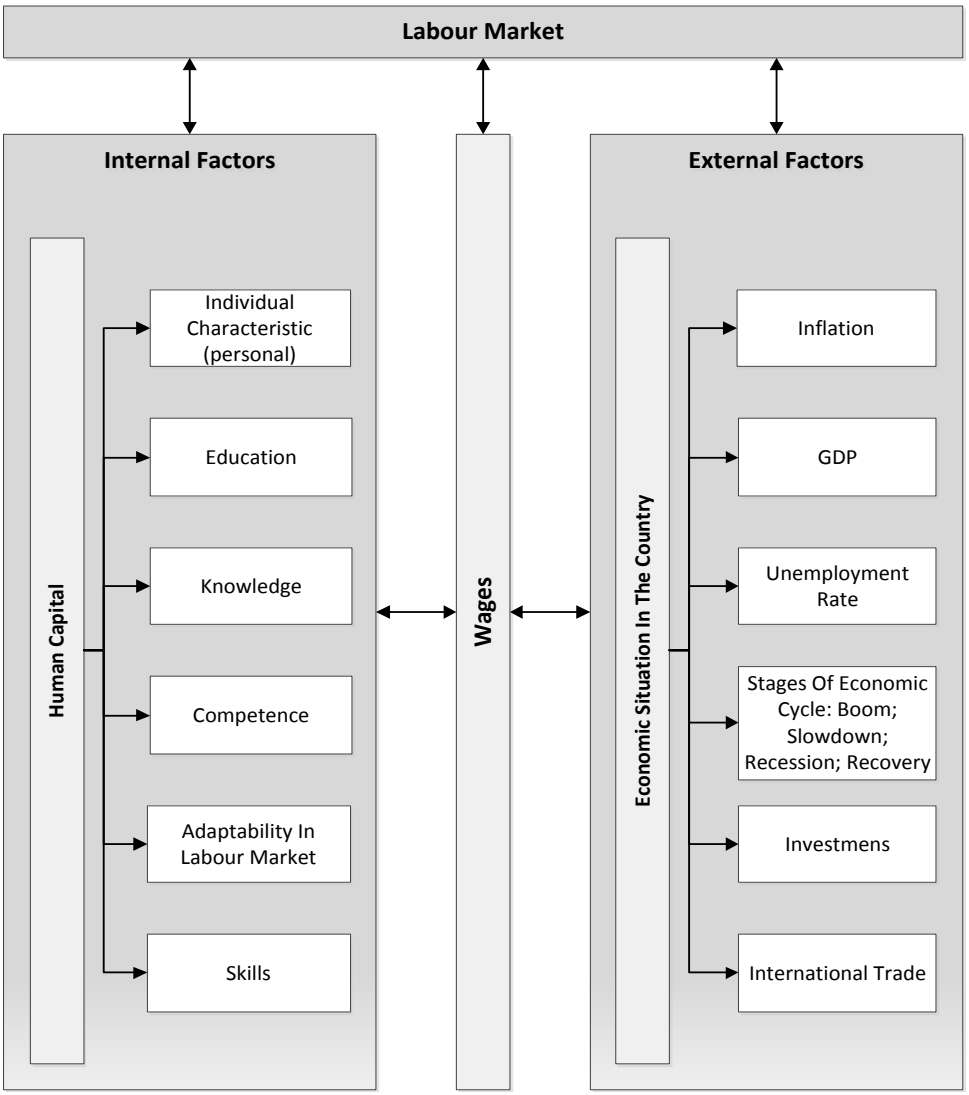


Figure 1: Labor market and wage evaluation model

3. ESTIMATION OF WAGE DIFFERENCES IN THE REGIONS OF LITHUANIA

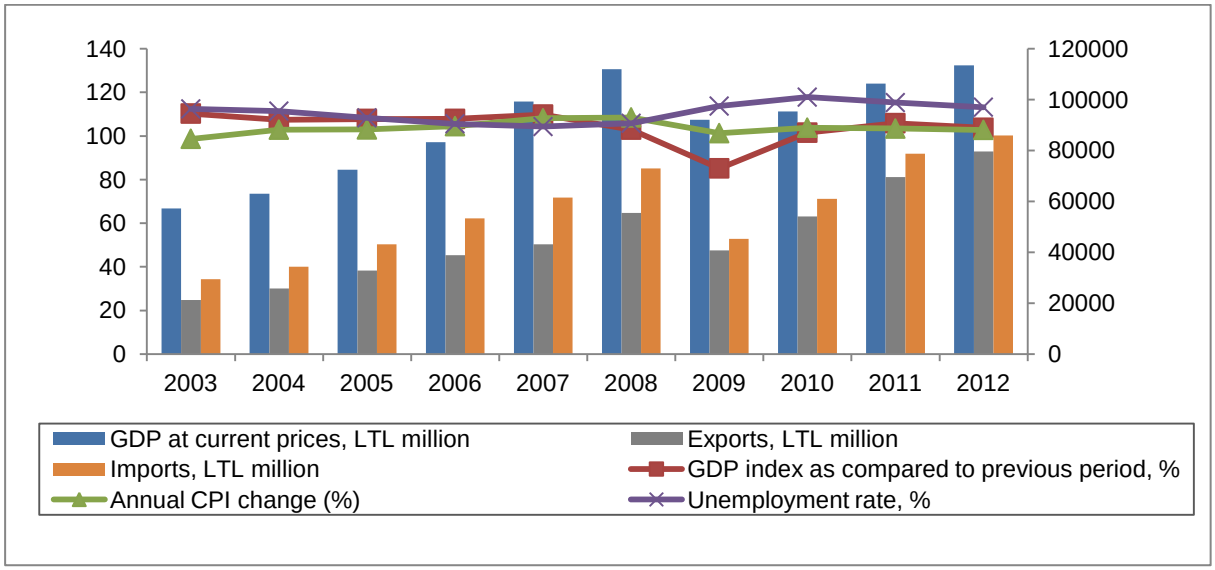
Performing the analysis of wage differences in different regions, it is necessary to evaluate the economic situation in those regions. The territory of Lithuania is divided into 10counties (Under the European Union common hierarchical classification system of territorial Lithuania consists of 10 NUTS Level 3 regions): Klaipeda, Siauliai, Telsiai, Taurage, Marijampole, Kaunas, Alytus, Panevezys, Vilnius and Utena. Each county differs by its territory size, number of inhabitants, and number of educated persons. It is easier to integrate into the labor market and find the job in big cities in comparison with small towns or province regions, because in big cities the industry is more developed, business opportunities are higher, requirements for labor force is higher. Moreover, getting the job depends on many factors: acquired education, individual‘s age, gender, personal skills and qualities, i.e. from acquired human capital.

In order to properly estimate the wage changes in the regions of Lithuania and to identify the factors influencing the wage in the context of economic downturn, it is necessary to analyze the main macroeconomic indicators of Lithuania. According to the authors proposed model (see Figure 1) six macroeconomic indicators are chosen for wage changes estimation: GDP

at current price, imports, exports, unemployment level, the annual CPI change (inflation) and GDP index (compared with the previous year).

Whereas it is importantly to perform the analysis of economic situation and wages till and after economic downturn, two periods of analysis were chosen – the period till the economic downturn (2003-2008) and after economic downturn (2009-2013).

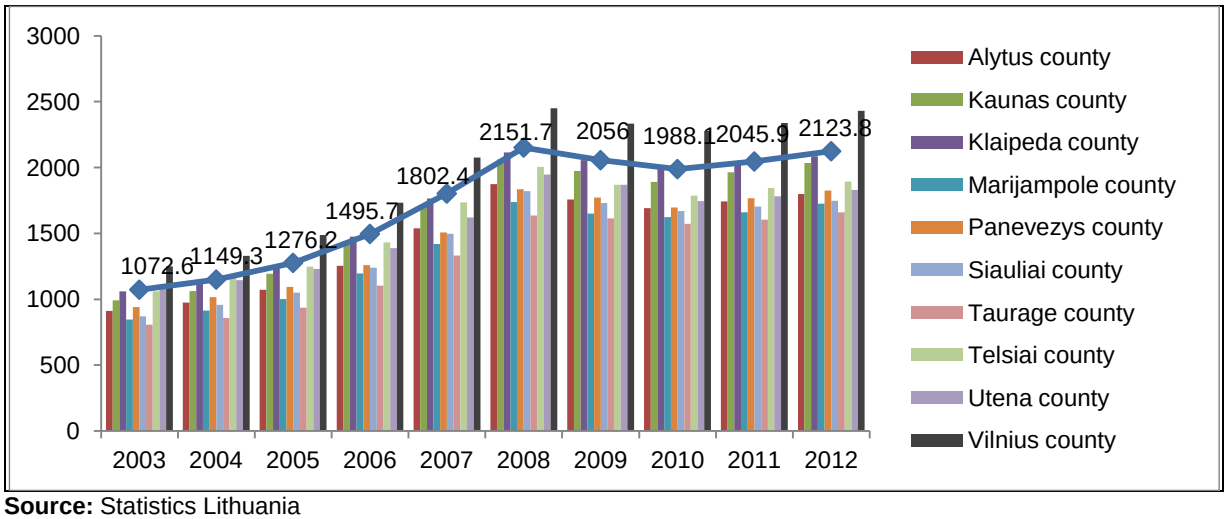
The main macroeconomic indicators of Lithuania are presented in Figure 2. GDP, exports and imports in Lithuania gradually increased up to 2008, where in 2009was observed the decline of all these indicators, however from 2010 they increased. Such increase evidenced that Lithuania started to recover after the economic downturn. It is necessary to note that imports exceed the exports in Lithuania and such situation/indicator is not good. The annual inflation in Lithuania was decreased in 2009, which corresponds to the economic rules that during the economic downturn the inflation should be decreased. During recovery period after the economic downturn in Lithuania, inflation rates started increasing from 2010, unemployment rates from 2009-2010.



Source: Statistics Lithuania

Figure 2: The main Lithuania‘s macroeconomic indicators

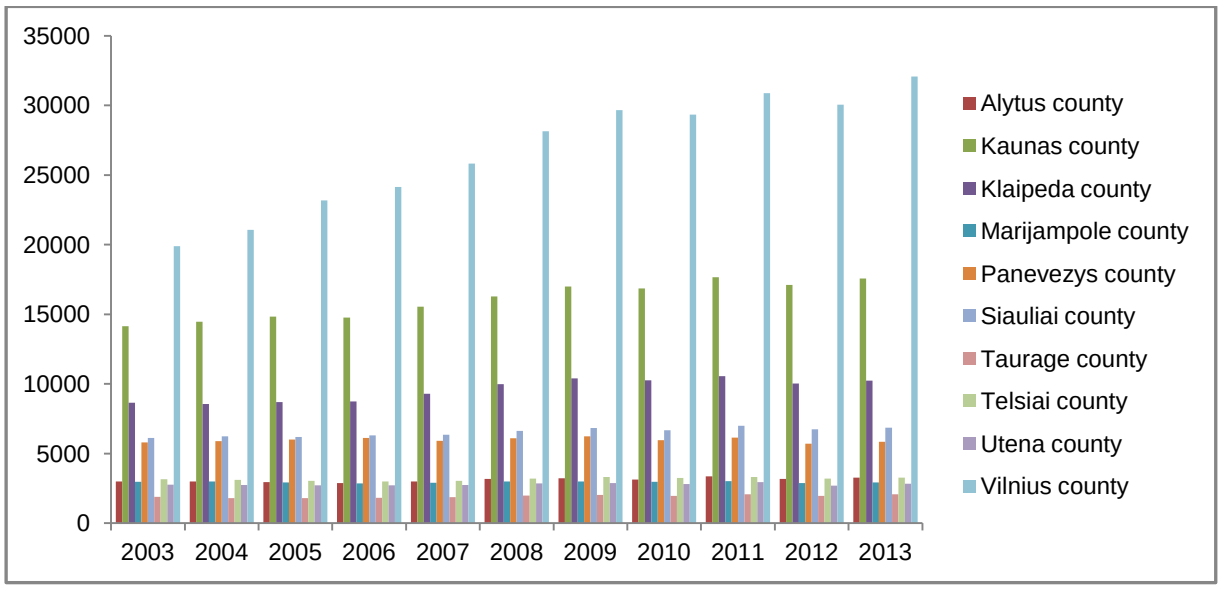
The performed analysis of main external factors (macroeconomic indicators) showed that the economic crisis has affected the economy of Lithuania. The variation of wage from 2003 up to 2012 is presented on Figure 3. Before the crisis the average wage in Lithuania was steadily increased, whereas after economic downturn followed the decline of average wage (the decline of average wage lasted from 2009 up to 2010 and from 2011 it began to increase, while in 2012 it almost reached average wage level of 2008 year). This indicates that the country's economy is recovering. Analyzing the situation in different regions of Lithuania, it is noted that the best situation was in Vilnius county and the worst is in Taurage county, where the wage is the smallest one.



Source: Statistics Lithuania

Figure 3: Average gross monthly earnings by administrative territory and year

Before performing the estimation of wage changes in the regions of Lithuania it is necessary take into account the existing number of population, region's territory size, the development of industry, created GDP. The number of operating economic entities in Lithuanian counties is presented in Figure 4.



Source: Statistics Lithuania

Figure 4: Number of economic entities in operation by size of enterprises

Most of the economic entities are operating in Vilnius, Kaunas and Klaipeda regions; the average wage in these regions is the highest. Least of operating economic entities is in Taurage county accordingly the average wage in this county is the smallest. This data indicates that the wage rate depends on the number of operating economic entities in the analyzed region.

In order to identify the factor which is directly affecting wages some indicators are specified: average monthly wage, GDP per capita, the number of working age population, the unemployed, employees, international migration (outgoing from Lithuania), the consumer price index, the number of operating economic entities.

Since the chosen indicators were measured on the interval scale and relatively short period is analyzed, a statistical monotonic relation was characterized by Spearman rank correlation coefficient. This coefficient is non-parametric measure of statistical dependence between two variables. It is appropriate for both continuous and discrete variables, including ordinal ones. The results of correlation analysis are presented in Table 1.

Table 1: The interdependence of average monthly wage and selected economic indicators

	Working-age population in Lithuania	Consumer price index (in comparison with previous year)	Average monthly wage in Lithuania,	Operating economic entity in Lithuania	International migration, outgoing from Lithuania	GDP per capita in Lithuania,
The unemployed in Lithuania					0.588*	
Average monthly wage in Lithuania	-0.830***			0.864***		0.882***
GDP per capita in Lithuania	-0.857***	0.706**	0.882***	0.873***		

***. Correlation is significant at the 0.01 level (2-tailed).
**. Correlation is significant at the 0.05 level (2-tailed).
*. Correlation is significant at the 0.10 level (2-tailed).

Relation is statistically significant ($p < 0.10$) (*** marked values indicate that $p < 0.01$, ** marked values indicate that $p < 0.05$). The performed correlation analysis revealed that some of the selected economic indicators and wage have an interdependence relation, characterized by Spearman rank correlation coefficient. The working-age population in Lithuania statistically presents the close reliable inverse relation with the average monthly wage in Lithuania (-0.830 ***) and with GDP per capita in Lithuania (-0.857 ***). Unemployed in Lithuania are statistically significant correlate with international migration rate (0.588 *). The average monthly wage in Lithuania statistically presents the close reliable inverse relation with the working-age population in Lithuania (-0.830 ***) and statistically significantly correlate with GDP per capita (0.882 ***). GDP per capita statistically presents the close reliable relation with the consumer price index. The number of operating economic entities statistically significantly correlate with wages (0.864 ***).

Wage is also closely related to the variation of unemployment rate. Rising unemployment rate blocks the increase of wage, in some cases conditions it‘s decline (Vetlov and Virbickas, 2006). In order to estimate the economic losses suffered by wage decline in Lithuania during the period of economic downturn, the average wage approximation function issued (see Figure 5).

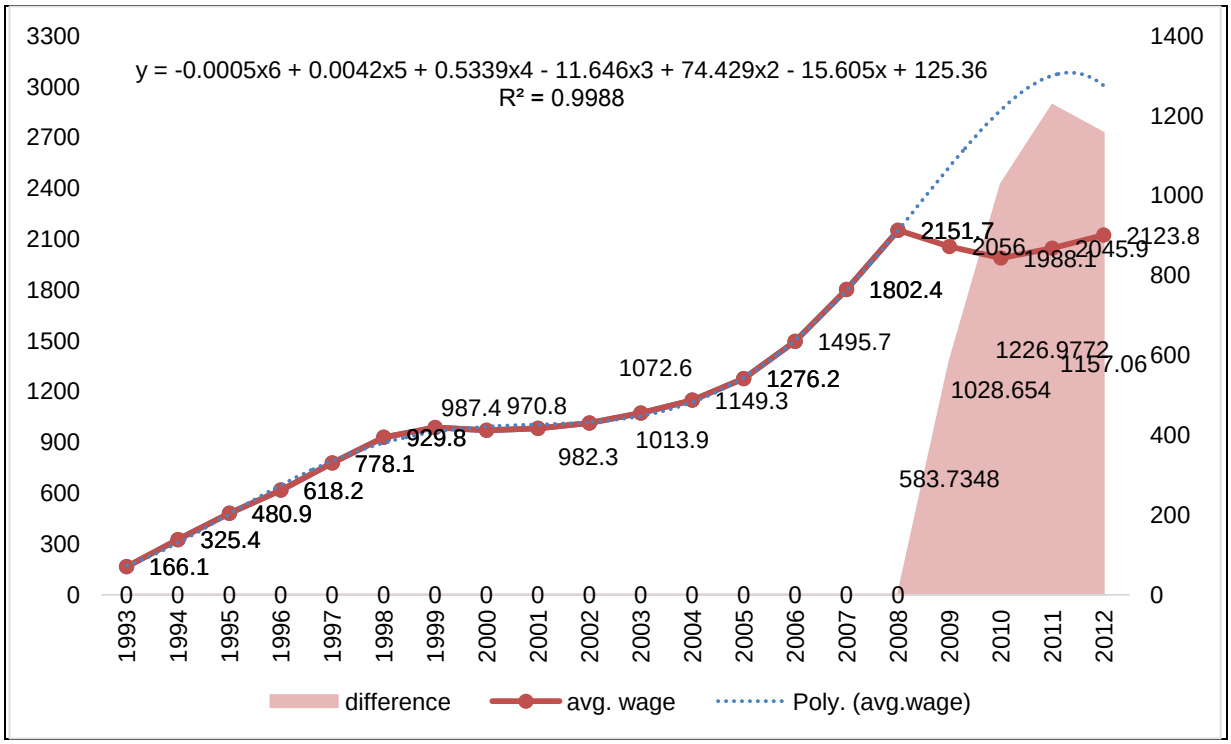


Figure 5: Average wage in Lithuania variation and forecast in 1993-2012

The performed research revealed that the sixth degree polynomial function described the variation of average wage the best. In accordance to the sixth degree polynomial function the wage after economic downturn period was calculated. The average wage approximation and forecast of 1993-2012 are marked blue dotted line in the Figure 5. The real average wage of 1993-2012 was marked red line. The difference between real and forecast data, economic losses, was estimated. In Figure 5 this difference corresponds to the red area.

If lost wage due to economic downturn are analyzed in the context of economic losses, these losses would be calculated. The estimation of economic losses is presented in Table 2.

Table 2: Economic losses suffered due to economic downturn

Year	Average monthly wage in Lithuania, LTL	Forecast average monthly wage in Lithuania, LTL	The difference between real and forecast wage, LTL
2009	2056.0	2639.74	583.74
2010	1988.1	3016.76	1028.66
2011	2045.9	3272.88	1226.98
2012	2123.8	3280.86	1157.06

As it is seen from Table 2 the real average monthly wage in Lithuania in the period of 2009-2010 decreased. The main reason of this decrease definitely was economic downturn. If it be possible to avoid the economic downturn, the average wage would be steadily increased in 2012 up to 3280.86 LTL. Estimating the economic loss in paper context, the economic loss was presented as the difference between the real and forecast wages. The decreased wage: 1) reduces consumption, the individuals buy less goods; 2) less taxes are collected to the State budget (less taxes are paid, because the less are earned); 3) shadow economy develops much faster.

4. CONCLUSIONS

In summary it could be stated that, due to rising unemployment, Lithuania loses a part of GDP, inhabitants' income in the form of wage decrease, as well as national budget revenue, collected from personal income tax, also decrease.

The regions in Lithuania are differed by their size, development level and receivable financing. The subsidies pointed for the region' development, promote the activities for which they are intended, and at the same time promote an increase of the local turnover tax. The regions with their own local resources are mostly developing. The development of the regions depends of two types of external conditions: (a) demand for the region production, other words – external sources of income; (b) region local resource supply for industrial activities.

Performing the analysis of macroeconomic indicators in the context of economic downturn, was found that all the indicators worsened: GDP decreased, unemployment rate increased, average monthly wage decreased. The marked decline of all these indicators observed both throughout country and all its regions. The most developed regions in Lithuania are Vilnius, Kaunas and Klaipeda; in these regions the average monthly wage exactly is the highest. Taurage region is the least developed industrially, it involves the least number of operating economic entities, and the average monthly wage in this region accordingly is the smallest. Economic losses are estimated as a result of wage decline due to economic downturn, which influenced the less taxes collected, reduced consumption.

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INTERACTIONS BETWEEN BUSINESS CONDITIONS, ECONOMIC GROWTH AND CRUDE OIL PRICES

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Abstract: The present study aims to search empirical relationship between business conditions and crude oil prices by employing time series analysis for a list of countries. Business conditions have been proxied by real income and real industrial production as advised in the relevant literature. Results suggest that economic activity and industrial value added are in long term relationship with oil price movements in the selected countries and regions. Gross domestic product and industrial production significantly are affected by oil prices worldwide. Real income and industrial value added converge to their long term paths significantly through the channel of oil price movements. Oil price have negative impact on business activities in some countries while it has positive impact in some other countries. Therefore, the sign of coefficient of oil prices has been found to be mixed in this research study.

Keywords: Business Conditions, Oil, Error Correction Model

1. INTRODUCTION

Today, oil plays momentous role in the world and has influence on decision making for many great countries. Therefore, oil price has experienced more fluctuations in recent years. However, oil price fluctuations may affect basic aspects of any country like business conditions, economic growth, financial development, money supply and so on. Arouri (2011) expresses that oil price changes have effects on macroeconomic events, investment costs, firm's production structure and unemployment, consumption situation, monetary policies interest rates and inflation (Aroui, 2011).

Alvarezet *et al.* (2009) confirms increase in oil prices has more effects on certain aspects of the economy; finance and banking sector for importing countries than exporting countries. These effects can be direct or indirect. Changes in oil prices have direct effect on oil productions; for example, fuels or heating oil that is common for household's consumption. Indirect effect will be through a change in part of industry and cost generated for goods and services, which petroleum outputs use those as inputs (Alvarez *et al.* 2011).

Lehwald (2013) used Bayesian dynamic factor model for business cycle in Europe and she found that between 1991 and 1998 macroeconomic variables were key factors in improving business condition and its increase. In addition, because of debt crises in Europe after 2002 and its impacts on the economy and politics, business situation fell (Lehwald, 2013).

Boschi and Girardi (2011) suggest that economic conditions have a positive relationship with business conditions. However, they forecast, which oil price has a positive interaction with economic situation. Increase in oil prices are expected to have negative influences on the economy since it increases the costs of production (Boschi and Girardi, 2011).

This literature investigates interactions between business conditions, economic growth and crude oil prices in five regions. These are: Euro Area, European Union, Latin America and Caribbean, South Asia and Sub Saharan Africa. In addition, these regions contain both oil importing countries and oil exporting countries but this research considers regions as a whole. Studying the effects of fluctuations in oil prices is important for several reasons. First, oil as a sensitive material in the world has great impacts on sensitive sectors in any country. Changes in oil price cause an asymmetric change between sensitive and insensitive sectors. Second, industry is base source of revenue for some countries such as France and Germany; therefore changes in oil price may have lower or indirect effects for those countries rather than the other and they are less sensitive toward oil price fluctuations. Finally, according to portfolio management and sectors sensitive to oil price swings, there exist some regions that can have still lower dependent to oil.

The remnant of the paper is organized as follows. Data and methodology introduce in section 2. Section 3 presents empirical results and discussions around our main findings. Summery conclusions and policy implications are provided in section 4 and references are in section 5.

2. DATA AND METHODOLOGY

Our objective is to investigate long run relationship between domestic product (GDP), industrial production (IND) and oil prices in five regions for all income level. We use data of World Bank for years 1973 to 2010. We calculated oil prices for each region according to Dubai oil index by this equation:

$$\text{Oil Price Region}_t = \text{Dubai oil index}_t / \text{CPI region}_t \quad (1)$$

Where CPI stands for consumer price index and t stands for year. In addition, we express oil prices in US dollar.

Industrial production will be used as a proxy for business conditions in parallel to the literature Chen (Chen & Czerwinski, 2000). Station point of this study is that oil prices and business conditions might be a determinant of real income. Therefore, the following functional relationship can be investigated (Katircioglu, 2010):

$$GDP_t = f(\text{oil price}_{t,} \text{Industry}_t) \quad (2)$$

According to equation (2), real gross domestic product is a function of crude oil price and industrial production. It is inferred that there might be a long term effect on real gross domestic product by crude oil price and industrial production. There should be a natural logarithmic model of equation (2) in order to capture growth effects (Katircioglu, 2010):

$$\ln GDP_t = \beta_0 + \beta_1 \ln OIL_t + \beta_2 \ln INDU_t + \varepsilon_t \quad (3)$$

Where ln GDP stands for the natural logarithm of real gross domestic product at period t; ln OIL stands for the natural logarithm of crude oil price; ln INDU stands for the natural logarithm of industrial production and ε stands for the error term of long term growth model. In equation (3) singe of coefficients for ln OIL and ln INDU is positive. According to speed of isotropy for ln GDP can be fined by expressing error correction equation; because of that ln GDP for long term equilibrium value might not correct by the portion of regressors (Katircioglu, 2010):

$$\Delta \ln GDP_t = \beta_0 + \sum_{i=1}^{n} \beta_1 \Delta \ln GDP_{t-j} + \sum_{i=0}^{n} \beta_2 \Delta \ln OIL_{t-j} + \sum_{i=0}^{n} \beta_3 \Delta \ln INDU_{t-j} + \beta_4 \varepsilon_{t-1} + u_t \quad (4)$$

Where Δdenotes for a change in ln GDP, ln OIL and ln INDU, and ε_{t-1} stands for coefficient of error correction term (ECT) from equation (3). The sign of coefficient of ECT is expected to be negative and it proposes for receiving ln GDP to its long run level (Katircioglu, 2010). We apply tow standard unit root tests for determining integration in our series, those are: Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) and they are based on null hypothesis of unit root.

Related to weakness ADF test and PP test which cannot express sharp declines and structural breaks by the financial crises, we also implement the Zivot-Andrews (ZA) test for checking unit root in model A, model B and model C. The base of ZA test is null hypothesis similar with ADF and PP tests. There are some advantages for ZA test in comparison with ADF test and PP test. First, high potential ZA test for present and demonstrate of structural breaks. Second, Z&A test does not need to a priori specification of the possible timing of a structural break (Narayan, 2005).

Then, we apply ARDL approach by bound test that has been found by Pesaran *et al.* (2001) to determine long run relationship among variables. The proposed tests are based on standard F- statistics. Two sets of critical values are provided: one of them for lower bounds and the other one for upper bounds. Also, this test involves five scenarios: F_I, F_{II}, F_{III}, F_{IV} and F_V. If F value cannot falls below lower limits then the null hypothesis of no level relationship is accepted. If it falls within lower and upper limits, test is inconclusive; and If F value falls beyond the upper limit then the null hypothesis of no level relationship is rejected and its alternative of level relationship is accepted (Pesaran *et al.* 2001), The ARDL structure for estimating long term relationship includes the following error correction model (Katircioglu, 2010):

$$\Delta \ln GDP_t = a_{0r} + \sum_{i=1}^{n} b_i \Delta \ln GDP_{t-i} + \sum_{i=1}^{n} c_i \Delta \ln OIL_{t-i} + \sum_{i=0}^{n} d_i \Delta \ln INDU_{t-i} + \sigma_1 \ln GDP_{t-1} + \sigma_2 \ln OIL_{t-1} + \sigma_3 \ln INDU_{t-i} + \varepsilon_{1t} \quad (5)$$

According to equation (5), Δ is the difference between operators, ln GDP_t is the natural logarithm of dependent variable, gross domestic product, ln OIL and ln INDU are the natural logarithm of independent variables of crude oil price and industrial production, and ε_{1t} stands error term of the model. The F-test will be utilized to seek for a long run association between GDP and its possible determinants in equation (5). While ln GDP is dependent variable, the null hypothesis of no long term relationship is H_0: $\sigma_{1y} = \sigma_{2y} = \sigma_{3y} = 0$ and the alternative hypothesis of having long term relationship is H_1:$\sigma_{1y} \neq \sigma_{2y} \neq \sigma_{3y} \neq 0$. We employed three scenarios of III, IV and V in F-test in parallel to the works of Katircioglu (2010) and Katircioglu (2009) (Katircioglu, 2010). In order to have long run relationship, we should survey impacts (for example: positive effect or negative effect) of long run relationship on the other variables. Some time series data may show short-run dynamics, while they

converge to the similar case of equilibrium in their long-run position. Because of this reason, study goes to the next step that sets up an Error Correction Model (ECM). After confirming long run relationship, long run and short run coefficients together with corrections term should be estimated (Katircioglu, 2010).

The ECM which utilizes the ARDL procedure will be computed for equation (3), once equation (5) has a long run relationship. The ECM can be estimated as:

$$\Delta \ln \mathrm{GDP}_t = \Delta\beta_0 + \sum_{j=1}^{p-1} \emptyset_j \Delta \ln \mathrm{GDP}_{t-i} + \sum_{i=1}^{k} \beta_{i0} \Delta \ln X_{it} + \varphi \Delta Z_t + \gamma(1,p) + \mathrm{ECT}_{t-1} + u_t \quad (6)$$

Where $\emptyset_j$, β_{ij} and φ are the coefficients for the short-run period. The coefficient of $\gamma(1,p)$ is error correction term which is expected to be negative (Gujarati, 2004). Furthermore, X stands for ln oil price and ln INDU variables that are independent variables in this thesis. Again $\gamma(1,p)$ shows how fast ln GDP will converge to its long term equilibrium path through the channels of ln X_i variables. Having a statistically significant plus negative t-ratio for $\gamma(1,p)$ would be sufficient condition to make this inference (Katircioglu, 2010).

3. EMPIRICAL RESULTS AND DISCUTION

We investigate the long-term relationship between GDP, oil prices and industrial production in five regions for years 1973 to 2010 based on time series data. We begin our analysis by estimating level of stationary for variables. We then test for long-run relationship between the functions of variables. Finally, we perform the conditional ECMs for the short-run deviations of series from their long-run equilibrium level are also captured by including an ECT (Narayan, 2005).

3.1. Unit Root Test for Stationary

Table 1 gives ADF and PP unit-root test results for variables under consideration. In the case of Euro Area and European Union, real GDP and oil variables are non-stationary at their levels but stationary at their first differences, whereas industrial production variable is stationary at its level as confirmed by both ADF and PP tests. Therefore, GDP and oil are said to be integrated of order one, I(1), whereas INDU is said to be integrated of order zero, I(0). In the case of Latin America and Caribbean, South Asia and Sub-Saharan Africa, real GDP, oil and INDU variables are non-stationary at their levels but stationary at their first differences. Therefore, GDP, oil and INDU are said to be integrated of order one, I(1) for these Three regions.

Unit-root tests have provided mixed results for the variables of this study. Therefore, Zivot-Andrews test will be employed to confirm the stationary for those mixed results at breaks. Phillips and Perron (1988) supply a strong alternative test for unit roots than ADF test, because of that we bring all the results of PP test in Table 1 (Narayan, 2005).

Table 2 gives ZA unit-root test results for variables under consideration. In the case of Euro Area and European Union, real GDP and INDU variables are non-stationary at their levels but stationary at their first differences, whereas oil variable is stationary at its level. Therefore, GDP and INDU are said to be integrated of order one, I(1), whereas oil is said to be integrated of order zero, I(0). In the case of Latin America and Caribbean, real GDP and oil variables are non-stationary at their levels but become stationary at first difference, whereas INDU variable is stationary at its level. Therefore, GDP and oil are said to be integrated of order one, I(1), whereas INDU is said to be integrated of order zero, I(0).

In the case of South Asia, real GDP and INDU variables are non-stationary at their levels but stationary at their first differences, whereas oil variable is stationary at its level. Therefore, GDP and INDU are said to be integrated of order one, I(1), whereas oil is said to be integrated of order zero, I(0). In the case of Sub-Saharan Africa, INDU variable is non-stationary at its level but become stationary at first difference, whereas GDP and oil variables are stationary at their levels. Therefore, INDU is said to be integrated of order one, I(1), whereas GDP and oil are said to be integrated of order zero, I(0).

3.2. Bounds Tests for Long-Run Relationship

Bounds tests will be employed to investigate the long-run equilibrium relationship between some functions within ARDL modeling approach, as suggested by Pesaran *et al.* Critical values for F-statistics for small samples are presented in Table 3, as taken from Narayan (2005). Table 3 gives the results of the bounds test for level relationship between functions. These models are under three different scenarios, as suggested by Pesaran *et al.* which are restricted deterministic trends (F_{IV}), with unrestricted deterministic trends (F_V) and without deterministic trends (f_{III}). Intercepts in these scenarios are all unrestricted (Pesaran *et al.* 2001).

Results in Table 4 suggest that the application of the bounds F-test using the ARDL modeling approach suggest level relationship in all of the ten models presented in Table 4. This is because the null hypotheses of H_0: $\boldsymbol{\sigma}_{1y} = \boldsymbol{\sigma}_{2y} = \boldsymbol{\sigma}_{3y} = 0$ in equation (5) can be rejected according to the bonds test results in Table 4. In the case of Euro Area, industrial productions and real GDP are in a long-run relationship in both models where INDU and GDP are dependent variables respectively. In the case of European Union, oil prices and real GDP are in a long-run relationship in both models where oil and GDP are dependent variables respectively.

In the case of Latin America and Caribbean, industrial productions and real GDP are in a long-run relationship in both models where INDU and GDP are dependent variables respectively. In the case of South Asia and Sub-Saharan Africa, industrial productions and real GDP are in a long-run relationship in both models where INDU and GDP are dependent variables respectively.

In the next stage, conditional ECM regressions associated with above level relationships should be estimated. These are provided in Table 4. In the Euro Area, it is seen that GDP converges to its long term level by 23.88 percent thought the channel of oil prices and industrial production. Long term coefficient of oil price is -0.022 and for industry is 0.590 that those are statistically Significant at 1 percent. It means that one percent change in oil price and industry will lead to 0.022 and 0.59 percent change in GDP in the negative direction. In the second model of Euro Area, it is seen that industry converges to its long term level by 33.12 percent even for thought the channel of oil price and GDP. Long term coefficient of oil price is 0.034 and for GDP is 1.546 that those are statistically significant at 1 percent. It means that one percent change in oil price and GDP will lead to 0.034 and 1.546 percent change in industry in the same direction. According to Table 4 for the European countries, it is seen that GDP converges to its long term level by 10.44 percent even for thought the channel of oil price and industry. Long term coefficient of industry is 0.546 that is statistically significant at 10 percent. It means that one percent change in industry will lead to 0.546 percent change in GDP in the same direction.

In Latin America and Caribbean, it is seen that GDP converges to its long term level by 34.39 percent even for thought the channel of oil price and industry. Long term coefficient of industry is 0.860 and for oil price is 0.014 that are statistically significant at 1 percent. It

means that one percent change in GDP will lead to 0.860 and 0.014 percent change in GDP in the same direction. Also, it is seen that INDU converges to its long term level by 41.53 percent even for thought the channel of oil price and GDP. Long term coefficient of GDP is 0.734 that are statistically significant at 1 percent. It means that one percent change in GDP will lead to 0.734 percent change in INDU in the same direction.

In the case of South Asia, it is seen that GDP converges to its long term level by 40.15 percent even for thought the channel of industry and oil price. Long term coefficient of industry is 0.968 that is statistically significant at 1 percent. It means that one percent change in industry will lead to 0.968 percent change in GDP in the same direction. In the second model of South Asia, it is seen that industry converges to its long term level by 61.78 percent even for thought the channel of GDP and oil price. Long term coefficient of GDP is 0.974 that is statistically significant at 1 percent. It means that one percent change in GDP will lead to 0.974 percent change in industry in the same direction.

In Sub Saharan Africa, it is seen that industry converges to its long term level by 10.21 percent even for thought the channel of GDP and oil price by. Long term coefficient of GDP is 0.708 that is statistically significant at 1 percent. It means that one percent change in GDP will lead to 0.708 percent change in industry in the same direction.

4. CONCLUSION AND POLICY IMPLICATIONS

This paper empirically investigated the long-run equilibrium relationship between gross domestic product (GDP), crude oil prices, and industrial production in Euro Area, European Union, Latin America and Caribbean, South Asia, and Sub-Saharan Africa. Results of the present study reveal that a long-run equilibrium relationship exists between industrial productions and real GDP in the case of Euro Area, between oil prices and real GDP in the case of European Union, between industrial productions and real GDP in the case of Latin America and Caribbean, between South Asia real GDP and industrial productions in South Asia and between industrial productions and real GDP in the case of Sub-Saharan Africa.

Furthermore, this study revealed that in Euro Area, oil price changes have a negative effect on GDP but Have a positive effect on industrial productions, however, industrial productions have a positive effect on GDP and vice versa. In the European Union, oil price changes have negative impacts on GDP; otherwise, industrial productions have positive impacts on GDP. In the case of Latin America and Caribbean, oil price changes and industrial productions have positive effects on GDP and GDP has positive effects on industrial productions. In south Asia, industrial productions have positive impacts on GDP and reversely, but, oil price changes have negative effects on industrial productions.

Finally, in the case of Sub-Saharan Africa, GDP has positive effects on industrial productions. Therefore, this study has validated a long-run equilibrium relationship between business conditions, economic growth, and crude oil prices in five regions. oil export countries, because of the swings in oil prices and world economic and politic situations and for declining risk in oil export countries, because of the swings in oil prices and world economic and politic situations and for declining risk in economic growth, they can promote and provide their industry and industrial productions which has direct effects on their business conditions and their economic growth. Our finding suggest that Latin America and Caribbean have appropriate situation between the regions, so, they can keep their position with improvement in monetary policy and can be better with empowering to quantitative techniques and expand their industry with advanced advertising. Finally, in the case of South Asia and Sub-Saharan Africa, they are relying to their industry. Government should be provides special business conditions and increases quality of its products and services.

However, they can employ expert labor force and boost more skills in their labor force. Further, similar research can also be conducted for more variables in order to make a comparison with the results of the present study.

Table 1: PP unit root test

Variables	With Constant	And time trend	With constant,	But no time trend
	Level	First difference	Level	First difference
Euro Area				
Ln GDP	-1.3027[2]	-5.0151[5]*	-1.8286[4]	-4.8309[4]*
Ln INDU	-2.5630[3]	-5.5881[5]*	-1.1276[4]	-5.6489[5]*
Ln Oil	**-2.4258**[2]	-7.7698[0]*	**-2.4143**[3]	-7.8637[1]*
European Union				
Ln GDP	-1.9922[2]	-4.5994[5]*	-1.1315[3]	-4.5882[4]*
Ln INDU	-2.7135[3]	-5.5630[6]*	-0.9048[5]	-5.6413[6]*
Ln Oil	-2.3677[3]	-7.8682[1]*	-2.3158[3]	-7.8698[2]*
Latin America And Caribbean				
Ln GDP	-2,4462[1]	-4.2817[4]*	-0.4945[0]	-4.4178[4]*
Ln INDU	-2.6025[1]	-4.3972[5]*	-0.5028[2]	-4.5304[5]*
Ln Oil	-1.4055[3]	-7.2066[3]*	-0.9314[3]	-7.0490[3]*
South Asia				
Ln GDP	-0.7610[0]	-7.4202[3]*	4.3221[4]	-6.0670[3]*
Ln INDU	-1.2491[3]	-4.6542[7]*	2.9882[7]	**-4.4428**[3]*
Ln Oil	-2.5609[3]	**-7.3399**[2]*	-1.5526[3]	-7.4751[2]*
Sub-Saharan Africa				
Ln GDP	0.2357[2]	-4.7079[2]*	1.9939[2]	-3.7462[2]*
Ln INDU	-0.7290[3]	-3.8096[1]**	1.1794[2]	-3.5459[0]**
Ln Oil	-2.1698[3]	-7.3184[2]*	-1.1923[2]	-7.3456[2]*

Note: This table reports the results of the Pillps-Perron (PP) tests applied to time series data. The test is based on the null hypothesis of a unit root. All of the series are at their natural logarithms. GDP represents real gross domestic product; INDU represents industrial productions; oil represents oil prices. When using PP test, numbers in brackets represent Newey-West Bandwith (as determined by Bartlett-Kernel). PP test unit root test where performed from the most general to the least specific model by eliminating trend and intercept across the models (see Enders, 1995, pp. 254-55). *, ** and *** denote rejection of the null hypothesis at the 1 percent, 5 percent and 10 percent levels respectively. The bold values '-2.42' and '-2041' are not statistically significant, while the bold values '-4.44' and'-7.33' are statistically significant at the one percent level. Test for unit roots have been carried out in E-VIEWS 6.0.

Table 2: Zivot and Andrews test

Variables	Ln Oil	Ln GDP	Ln INDU
Euro Area			
Model A	-4.615[0]	-3.637[2]	-3.769[1]
Model B	-5.417[0]	-4.090[2]	-3.281[0]
Model C	-5.246[0]	-3.947[2]	-3.952[0]
European Union			
Model A	-4.684[0]	-3.542[1]	-4.107[1]
Model B	-5.210[0]	-3.656[1]	-3.394[0]
Model C	-4.993[0]	-4.218[3]	-4.022[0]
Latin America and Caribbean			
Model A	-3.696[0]	-2.161[0]	-5.058[4]
Model B	-4.691[0]	-3.902[2]	-4.709[2]
Model C	-4.539[0]	-2.703[0]	-4.929[4]
South Asia			
Model A	-4.640[0]	-2.775[0]	-3.521[0]
Model B	-4.896[0]	-3.400[0]	-4.083[1]
Model C	-4.633[0]	-3.353[0]	-4.147[1]
Sub-Saharan Africa			
Model A	-4.971[0]	-2.335[2]	-2.579[1]
Model B	-4.679[0]	-5.102[2]	-3.036[1]
Model C	-4.314[0]	-4.970[2]	-4.132[0]

Note: This test includes three models, those are: model A, model B and model C and critical values at 1 percent, 5 percent and 10 percent significance levels are -4.24, -4.80 and -5.34 respectively for model A, and -4.93, -4.42 and -4.11 respectively for model B and, -5.57, -5.08 and -4.82 respectively for model C. It is quoted to remind that the all and alternative hypothesis of ZA (1992) tests are the same with those in ADF and PP tests.

Table 3.Critical values for the ARDL modeling approach

K=2	0.10		0.05		0.01	
	I(0)	I(1)	I(0)	I(1)	I(0)	I(1)
F_{IV}	3.66	4.37	4.36	5.13	5.98	6.97
F_{V}	4.47	5.42	5.38	6.43	7.52	8.80
F_{III}	3.37	4.37	4.13	5.26	5.89	7.33

Note: K is the number of regressors for the dependent variable in ARDL models, F_{IV} represents the F-statistic of the model with unrestricted intercept and restricted trend, F_{V} represents the F-statistic of the model with unrestricted intercept and trend, and F_{III} represents the F statistic of the model with unrestricted intercept and no trend. Source: Narayan (2005) for F-statistics.

Table 4: Conditional error correction estimation and conditional granger causality test under the ARDL approach

	Euro Area		European Union		Latin America and Caribbean		South Asia		Sub-Saharan Africa	
Co integration Test										
F_V	8.65c	6.40b	6.43c	1.82	1.56a	7.76c	7.02c	4.78b	2.47a	5.93c	6.25c
F_{IV}	9.85c	7.06c	7.00c	1.73	1.60a	5.65c	5.36c	4.25b	5.23c	9.42c	5.20c
F_{III}	9.76c	10.05c	8.19c	4.51c	2.09a	5.43c	6.27c	5.22c	7.18c	7.71c	2.72a
ARDL Estimated Intercept	12.67*	-17.19	14.05	1782.4	NA	-4.96*	3.90*	-3.94*	-3.23*	36.36	6.31**
GDP	-	1.54*	-	-562.78	NA	-	0.73*	0.97*	-	-	0.70*
OIL	-0.02*	0.03*	-0.02	-	-	0.14*	-0	-0	0.006	0.12	0.025
INDU	0.59*	-	0.54***	522.55	NA	0.86*	-	-	0.96*	-0.45	-
Error Correction Coefficient	-0.23*	-0.33*	-0.10*	-0.01*	NA	-0.34*	-0.41*	-0.61*	-0.40*	-0.03*	-0.10*

Note: Akaike information criterion (AIC) and Schwarts criteria (SC) were used to select the number of lags required in the bounds test. . F_{IV} represents the F-statistic of the model with unrestricted intercept and restricted trend, F_V represents the F-statistic of the model with unrestricted intercept and trend, and F_{III} represents the F-statistic of the model with unrestricted intercept and no trend. (*), (**) and (***) denote rejection of the null hypothesis at the 1 percent, 5 percent and 10 percent levels respectively. Distributed lags are 5, 1 and 3 for all the regions in Error Correction Coefficient.

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OPTIMAL MONETARY POLICY WITH TWO COMPETING PRICING MODELING IN AN ESTIMATED DSGE MODEL FOR TUNISIA

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Abstract: In this paper we estimate two models competing of Tunisia economy. Each model incorporates various other features of the standard new-Keynesian model such as habit formation, costs of adjustment in capital accumulation and variable capacity utilization. The two versions of DSGE models are estimated on Tunisia data with Bayesian methods. Also, we compare the welfare properties of various monetary policies. In particular, the Ramsey allocation has been computed, giving a natural benchmark for welfare comparisons. Our results show that the DSGE model with nominal and real rigidities generate significant and persistent real effects in response to monetary policy shocks. In addition, the monetary authority absorbs shocks and protects the economy of technological shocks. Therefore, our estimates show that, despite the apparent similarities of the two versions of models (Calvo and the Sticky Information), their responses to shocks and fit to data are quite different. Consequently, monetary and economic authorities cannot afford to rely on a single reference model of the economy but need a large number of alternative modeling tools available when they take their decision of optimal monetary policy, since by definition each model is itself a simplification that does not take into account all relevant aspects of reality.

Keywords: DSGE Model, Nominal Rigidities, Optimal Monetary Policy, Bayesian Approach

1. INTRODUCTION

In recent years, the progress in macroeconomic modeling (An and Schorfheide, 2007; Ruge-Murcia, 2007; Smets and Wouters, 2003; 2005) and the development of simulation software have favored the development of DSGE models (DSGE, for Dynamic Stochastic General Equilibrium). These models are gradually invading central banks and institutions of economic policy. The central banks have largely contributed to the development of DSGE models because of the interest they represent for the analysis of monetary policy, the properties of dynamic general equilibrium models are also powerful tools for assessing impact of tax measures (Pereira and Shoven, 1988; Baylor and Beausejour, 2004) and those of structural reforms.

The idea of this model is based that the economic activity (at country level) must be based on a series of microeconomic issues (at the level of individuals) that, once resolved, are aggregated to form the macroeconomic reality described by the model. All DSGE models is therefore first in a precise statement of the choices available to economic actors (households, businesses, government and central bank) staged in the model, the

preferences of these actors, the horizon they retain planning and ultimately specifying the uncertainty they face. The main advantage of these models is that they incorporate real and nominal frictions (e.g., rigidities in prices and wages, monopolistic distortions, adjustment costs in investment and the use of variable capital) in order to better reproduce the observed responses of a number of aggregate structural shocks[1]. There is now a consensus among academics and institutional settings on the idea that the DSGE can provide a framework for economic debates effective analysis.

The objective of this paper is to introduce an empirical comparison of two representations of the inflation dynamics, each one having formal microeconomic foundations. To learn inflation dynamics associated with each representation we considered two competing closed economy DSGE models: a standard Calvo type pricing model; Mankiw and Reis (2002) standard sticky information model. Each model incorporates various other standard New-Keynesian features such as habit formation, costs of adjustment in capital accumulation and variable capacity utilization. While in the standard Calvo (1983) model, some prices are exogenously fixed for certain periods and the Phillips curve associated it performs badly to reproduce the gradual and delayed effects of monetary shocks on inflation. Mankiw and Reis (2002) propose to replace it with a Sticky information model. In that last specification, firms face some frictions while updating their information sets to determine the optimal flexible price. However, in the two cases, the frequency of price revisions is constant and without cost. In such a context, literature on state-dependent pricing (Dotsey *et al*. 1999) allows firms either to evaluate in every period if it is convenient to change their price contracts or to keep them unchanged given a random cost. Finally for each model, the Ramsey allocation has been computed, giving a natural benchmark for welfare comparisons.

More specifically, the idea of paper is to present an analysis of social welfare with a DSGE model based on alternative assumptions of pricing and a Taylor rule estimated on Tunisian data. Our goal is to introduce an analysis using a DSGE model based on two alternative hypotheses pricing in a small closed economy (no trade with the outside world) similar to Haider and Drissi (2009), Kolasa (2009), Gali and Monacelli (2008), Liu (2006), Lubik and Schorfheide (2006), Smets and Wouters (2003), and Christiano *et al*. (1997). The optimal monetary policy regimes called Ramsey and the Taylor rule are estimated with Tunisian data. The model specification is limited to sources of nominal rigidities, a linear production function, and a simple role of the central bank with its two main objectives of price stability and the economic growth. Two classes of non-nested specifications are made in terms of plausible representation of the dynamics of inflation, each with micro-economic foundations rigorous: While in the Calvo model prices are set exogenously for a certain period and the Phillips curve associated fails to reproduce the offset and gradual behavior in inflation following a monetary shock, Mankiw and Reis (2002) propose to replace this specification by rigid contracts information (Sticky information). In their model, firms face frictions time to update their information together to determine their optimal price. We use quarterly data, using the Bayesian estimation approach to information available in the literature on Tunisia.

The rest of the chapter is organized as follows: the second section describes the structure of the model, section three presents the empirical setup, in section four, we present the discussion of empirical results, and section five concludes the paper.

2. STRUCTURE OF THE MODEL

In this section we present the dynamic stochastic general equilibrium model (DSGE) where uncertainty affects all economic variables. The following relationships are common to all

[1] Smets and Wouters (2003; 2005), and Christiano *et al*. (2005) have shown that neo-Keynesian DSGE model in a closed economy, including a sufficient number of nominal rigidities in prices and wages as well as many real rigidities and structural shocks, is able to reproduce satisfactorily the data of the euro area and the United States.

models in the specification of the economy. These specifications are similar to Haider and Drissi (2009), Keen (2007), Christiano *et al*. (2005) and Smets and Wouters (2003). The advantage of this framework is that it is based on a structural model of the economy and is therefore not subject to the criticism of macro-econometric models of Lucas (1976). Indeed, a common framework is a mean to obtain comparable New Keynesian Phillips curves and to explain the main different responses observed across each specification essentially by the nature of nominal rigidities.

2.1. Households

The economy consists of an infinite number of households, each of which provides a specific type of work for a wage W_t, households determine their consumption and labor supply, and they have access to complete financial markets, they have the capital they rent domestic companies. At time t, the intertemporal utility function of a representative household (h) maximizes a utility function which is defined over a CES basket of goods, C, real money balances, M_t/P_t, where M_t are national nominal money balances (there is no currency substitution) and P_t is the general index of national prices. Agents derive utility from holding real money for their liquidity services and work effort generates disutility and labour supply, N_t. Equation (1) below represents the utility incorporates a preference shock for consumption ε_t^B and labor supply shock ε_t^N. For the consumer utility is given as:

$$U_t(h) = E_t\left(\sum_{s=0}^{\infty}\beta^s\left[U_1(C_t, H_t, M_t) - U_2(N_t)\right]\varepsilon_{t+s}^B\right) \quad (1)$$

Where,

$$U_1(C_t, H_t, M_t) = \frac{1}{1-\varsigma_C}\left(C_{t+s}(h) - \upsilon C_{t+s-1}(h)\right)^{1-\varsigma_c} + \frac{\chi}{1-\varepsilon}\left(\frac{M_t}{P_t}\right)^{1-\varepsilon} \text{ and } \quad U_2(N_t) = \frac{\varepsilon_{t+s}^N}{\kappa_s + \varsigma_N}\left(N_{t+s}(h)\right)^{\kappa_s+\varsigma_N}$$

where $0 < \beta^s < 1$, the intertemporal discount factor which describe rate of time preferences, ς_c is the inverse of the elasticity of intertemporal substitution in consumption and ς_N is the inverse of wage elasticity of labor supply, κ is the scale parameter and $\kappa > 1$ and $\varepsilon > 0$. ε_t^N is a shock variable. An increase in ε_t^N represents an increase in the marginal disutility of labour and therefore a contraction in labour supply at a given wage.
Each household *h* maximizes its utility function in Equation 1 above, under the following budgetary constraint by Equation (2):

$$\frac{B_t(h)}{P_t(1+i_t)} + M_t + C_t(h) + I_t(h) = \frac{B_{t-1}(h)}{P_t} + \frac{(1-\tau_{w,t})W_t(h)L_t(h) + A_t(h) + T_t(h)}{P_t} + M_{t-1} + r_t^k u_t(h)K_t(h) \quad (2)$$

where B_t (*h*) is a nominal bond, W_t (*h*) is the nominal wage, A_t (*h*) is a stream of income coming from state contingent securities, T_t (*h*) and $\tau_{w,t}$ are government transfers and time timevarying labor tax respectively, M_{t-1} is quantity of nominal balances that is accumulated in period (t-1), and $r_t^k u_t(h)K_t(h)$ represents the return on the real capital stock minus the cost associated with variations in the degree of capital utilization. As in Christiano *et al.* (2005), the income from renting out capital services depends on the level of capital augmented for its utilization rate. Separability of preferences and complete financial markets

ensure that households have identical consumption plans. The first order condition related to consumption expenditures is given by the Equation (3):

$$\lambda_t = \varepsilon_t^B \left(C_t - C_{t-1}\right)^{-\varsigma_c} - \beta E\left[\varepsilon_t^B \left(C_{t+1} - C_t\right)^{-\varsigma_c}\right] \quad (3)$$

Where λ_t is the Lagrange multiplier associated with the budget constraint. In this model, the home nominal interest rate is given by the fisher equation denoted by Equation (4):

$$\left(1+i_t\right) = E_t\left[\frac{P_{t+1}}{P_t}\right]\left(1+r_t\right) \quad (4)$$

Each household is assumed to be a monopoly offer or differentiated work. He sells his services to a competitive firm that is responsible for transforming the well of aggregate labor using the following technology: $N_t = \left[\int_0^1 N_t^{h\frac{1}{\mu w}} dh\right]^{\mu w}$

The household faces a demand curve for labor to the constant elasticity of substitution denoted by Equation (5):

$$N_t(h) = \left[\frac{W_t(h)}{W_t}\right]^{\frac{-\mu w}{\mu w - 1}} N_t \quad (5)$$

Where, $W_t = \left[\int_0^1 W_t(h)^{\frac{1}{1-\mu w}} dh\right]^{1-\mu w}$

Households set their wage on a staggered basis. Each period, any household faces a constant probability 1-α_w of changing its wage. In such a case, the wage is set to $\tilde{w}_t$ which is the same for all suppliers of labor services, taking into account that it will not be re-optimized in the near future. Otherwise, wages denoted by Equation (6) are adjusted following an indexation rule on past inflation and central bank objective:

$$W_t(h) = \left(\frac{P_{t-1}}{P_{t-2}}\right)^{\zeta_w} \left(\frac{\overline{P}_t}{\overline{P}_{t-1}}\right)^{1-\zeta_w} W_{t-1}^h \quad (6)$$

$\pi_t = \frac{P_t}{P_{t-1}}$ denotes one plus the GDP deflator inflation rate while $\overline{\pi}_t = \frac{P_t}{P_{t-1}}$ denotes one plus the inflation objective of the central bank and ζ_w is fraction of wage. Notice that among the fraction of wage setters, which cannot re-optimize in period *t*; each nominal wage appears with the same frequency as in the *t*-1 distribution after controlling for the common indexation on inflation rates. This property crucially hinges on the fact that each wage has an equal probability of being adjusted in a given period. Accordingly, the aggregate wage dynamics leads to the following relation given by the Equation (7).

$$w_t^{\frac{1}{1-\mu w}} = \left(1-\alpha_w\right)\left[\mu_w \frac{Z_{W1,t}}{Z_{W2,t}}\right]^{\frac{-1}{\mu w(1+\varsigma_K)-1}} + \alpha_w w_{t-1}^{\frac{1}{1-\mu w}} \left[\frac{\pi_t}{\pi_{t-1}^{\xi_w} \overline{\pi}^{1-\xi_w}}\right]^{\frac{-1}{1-\mu w}} \quad (7)$$

With

$$Z_{W1,t} = \varepsilon_t^B \varepsilon_t^L N_t w_t + \alpha_w \beta E_t \left[\left(\frac{\pi_{t+1}}{\pi_t^{\xi_w} \bar{\pi}^{1-\xi_w}} \right)^{\frac{\mu w(1+\varsigma_K)}{\mu w-1}} Z_{W1,t+1} \right]$$

And

$$Z_{W2,t} = (1-\tau_{w,t}) \lambda_t N_t w_t^{\frac{\mu w}{\mu w-1}} + \alpha_w \beta E_t \left[\left(\frac{\pi_{t+1}}{\pi_t^{\xi_w} \bar{\pi}^{1-\xi_w}} \right)^{\frac{1}{\mu w-1}} Z_{W2,t+1} \right]$$

2.2. Investment Dynamics

Physical capital is introduced in model, producers combine the existing capital, K_t, leased from the entrepreneurs to transform an input I_t, gross investment, into new capital according given by the Equation (8):

$$K_{t+1} = (1-\delta) K_t + I_{k,t} \tag{8}$$

Where I_t is gross investment, δ is the depreciation rate, and K_{t+1} is the shock of capital accumulated through the end of period t. In each period, the agent invests in physical capital and rents the existing capital stock to firms at $r_{K,t}$ - the real rental rate per unit of capital. Physical capital depreciates at the constant rate δ. The Equation (9) represents the adjustment costs $X_{K,t}$ associated with physical capital accumulation is nonlinear:

$$X_{K,t} = \frac{\psi_K}{2} I_{K,t}^2 \tag{9}$$

Where . ψ_K is a positive parameter and X_K is denominated in terms of the composite consumption good.

2.3. Firms Behavior

The final consumption good Y_t is produced by a representative firm is in a perfectly competitive market. This property can be used for consumption and investment, is the combination of a continuum of intermediate goods $Y_t(z)$, with, $z \in [0,1]$ according to the production technology Dixit-Stiglitz (1977) as follows:

$$Y_t = \left[\int_0^1 Y_t(z)^{\frac{1}{\mu}} dh \right]^{\mu}$$

Where $\mu = \frac{\theta_p}{\theta_p - 1}$ and . $\theta_p > 1$ is the elasticity of substitution between differentiated goods.

The representative final good producer maximizes profits - $P_t Y_t - \int_0^1 P_t(z) Y_t dh$ - subject to the production function, taking as given the final good price P_t and the prices of all intermediate goods. Finally, given that the sector is perfectly competitive, the zero-profit condition is valid and the relationship between the price of final goods and intermediate goods prices is given by:

$$P_t = \left[\int_0^1 P_t(z)^{\frac{1}{1-\mu}} dh \right]^{1-\mu}$$

In addition, each company z produces an intermediate good, with a Cobb-Douglas technology as it shows the Equation (10):

$$Y_t(h) = \varepsilon_t^A (U_t(h)K_{t-1}(h))^{\alpha} N_t(h)^{1-\alpha} - \Omega \qquad \forall\ h \in (0,1) \tag{10}$$

Where ε_t^A is an exogenous technology parameter and Ω is a fixed cost.

2.4. Pricing Scheme

This section presents the baseline version of the standard Calvo and the Sticky Information (SI) models of price setting as different nominal rigidities modeling strategies.

2.4.1. Calvo-type Price Setting Model

In this section we describe the competing models based on price stickiness, standard Calvo (1983) type price stickiness model. In each period, firms receive a random signal with constant probability $1-\alpha_p$ that allows them to change the price p_t^*. This probability is independent across firms and time. The average duration of a rigidity period is $1/(1-\alpha_p)$. If a firm cannot re-optimize its price, the price evolves according to the following simple rule:

$$p_h(h) = \Pi_{t-1}^{\xi_p} \overline{\Pi}^{1-\xi_p} p_{t-1}(h)$$

Firms that are allowed to change their price maximize expected profit is given by the Equation (11):

$$E_t\left[\sum_{j=0}^{\infty} \alpha_p^j \Xi_{t,t+j}\left((1-\tau_{t+j})\tilde{p}_t(h)Y_{t+j}(h)\left(\frac{P_{t-1+j}}{P_{t-1}}\right)^{\xi_p}\left(\frac{\overline{P}_{t-1+j}}{P_{t-1}}\right)^{1-\xi_p} - MC_{t+j}P_{t+j}\left(Y_{t+j}(h)+\Omega\right)\right)\right] \tag{11}$$

Where,

$$Y_{t+j}(h) = \left(\frac{\tilde{p}_t(h)}{P_t}\right)^{-\frac{\mu}{\mu-1}}\left[\frac{P_t}{P_{t+j}}\left(\frac{P_{t-1+j}}{P_{t-1}}\right)^{\xi_p}\left(\frac{\overline{P_{t+j}}}{\overline{P_t}}\right)^{1-\xi_p}\right]^{-\frac{\mu}{\mu-1}} Y_{t+j}$$

And $\Xi_{t,t+j} = \beta^j \frac{\Lambda_{t+j}P_t}{\Lambda_t P_{t+j}}$ is the marginal value of one unit of money to the household. MC_{t+j} is the real marginal cost and τ_t is a time-varying tax on firm's revenue. Due to our assumptions on the labor market and the rental rate of capital, the real marginal cost is identical across producers as shown in Equation (12).

$$MC_t = \frac{W_{R,t}^{(1-\alpha)} R_t^{k\alpha}}{E_t^A \alpha^{\alpha}(1-\alpha)^{(1-\alpha)}} \tag{12}$$

The first order condition for the optimal nominal reset price p_t^* is:

$$E_t\left[\sum_{j=0}^{\infty}\alpha_p^j \Xi_{t,t+j} Y_{t+j}(h) P_{t+j}\left((1-\tau_{t+j})\frac{\tilde{p}_t(h)}{\overline{P}_t}\frac{P_t}{P_{t+j}}\left(\frac{P_{t-1+j}}{P_{t-1}}\right)^{\xi_p}\left(\frac{\overline{P}_{t-1+j}}{\overline{P}_{t-1}}\right)^{1-\xi_p} - \mu MC_{t+j}\right)\right]$$

The Equation (13) represents the aggregate price level which incorporates rule of thumb price setters evolves according to:

$$P_t^{\frac{1}{1-\mu}} = \alpha_p\left(\Pi_{t-1}^{\xi_p}\overline{\Pi}^{1-\xi_p} p_{t-1}(h)\right)^{\frac{1}{1-\mu}} + (1-\alpha_p)\left(\tilde{p}_t(h)\right)^{\frac{1}{1-\mu}} \qquad (13)$$

This price setting scheme (equation above) can be written in the following recursive form which give us the Equation (14):

$$\frac{\tilde{p}_t(h)}{P_t} = \mu\frac{Z_{1,t}}{Z_{2,t}} \qquad (14)$$

Where,

$$Z_{1,t} = \Lambda_t MC_t Y_t + \alpha_p \beta E_t\left[\left(\frac{\Pi_{t+1}}{\Pi_t^{\xi_p}\overline{\Pi}_{t+1}^{1-\xi_p}}\right)^{\frac{\mu}{1-\mu}} Z_{1,t+1}\right]$$

And

$$Z_{2,t} = (1-\tau_t)\Lambda_t Y_t + \alpha_p \beta E_t\left[\left(\frac{\Pi_{t+1}}{\Pi_t^{\xi_p}\overline{\Pi}_{t+1}^{1-\xi_p}}\right)^{\frac{1}{1-\mu}} Z_{2,t+1}\right]$$

Accordingly, the Equation (13) aggregate price dynamics leads to the following relation given by the Equation (15):

$$1 = \alpha_p\left(\frac{\Pi_{t+1}}{\Pi_{t-1}^{\xi_p}\overline{\Pi}_t^{1-\xi_p}}\right)^{\frac{1}{1-\mu}} + \left(1-\alpha_p\right)\left(\mu\frac{Z_{1,t}}{Z_{2,t}}\right) \qquad (15)$$

The above specification of Calvo price for which, ξ_p equals to 0 is considered as a standard Calvo.

2.4.2. The Sticky Information Model

In each period, a randomly chosen fraction of agents updates their information set. To be more precise, prices are flexible in the sense that firms are allowed to change them in any periods, but at a different level than in a full information environment while they do not have the same information available about the state of the world. Therefore, prices fixed based on different information coexist in the economy.

At period *t*, firms choose the price p_t^* using all current information. Define P_t, the overall price index. The optimal price is determined by the solution of the profit maximization problem given by the Equation (16):

$$\underset{p_t(h)}{Max}\, E_{t-j}\left[\left(1-\tau_t\right)p_t(h)Y_t(h) - MC_t\, p_t(Y_t(h)) - MC_t P_t(Y_t(h)+\Omega)\right] \qquad (16)$$

Where $Y_t(h)$ is the demand schedule:

$$Y_t(h) = \left(\frac{p_t^*(h)}{P_t} \right)^{-\frac{\mu}{\mu-1}} Y_t$$

The Equation (17) determines the first order condition of this program gives the following relationship between the optimal price $p_t^*(h)$ and the real marginal cost MC_t:

$$p_t^*(h) = \frac{\mu}{1-\tau_t} MC_t P_t \tag{17}$$

Let's consider the specification with backward looking agents as in Gali and Gertler (1999, 2007) by adding rule of thumb price setters.

$$(P_t)^{1-\frac{\mu}{\mu-1}} = \alpha_p \left(P_{t-1} \Pi_{t-1}^{\xi_p} \overline{\Pi}^{1-\xi_p} \right)^{1-\frac{\mu}{\mu-1}} + (1-\alpha_p) \sum_{j=0}^{+\infty} \left((1-\alpha)^j . E_{t-j} (p_t^*(h))^{1-\frac{\mu}{\mu-1}} \right) \tag{18}$$

In each period, firms face a constant probability (1- α_p) of receiving a signal that allows them to change their price. The Equation (18) can be rewritten as follows:

$$(P_t)^{1-\frac{\mu}{\mu-1}} = \alpha_p \left(P_{t-1} \Pi_{t-1}^{\xi_p} \overline{\Pi}^{1-\xi_p} \right)^{1-\frac{\mu}{\mu-1}} + (1-\alpha_p) \alpha \sum_{j=0}^{+\infty} \left((1-\alpha)^j \left[\mu E_{t-j} \left(\frac{P_t MC_t}{(1-\tau_t)} \right) \right]^{1-\frac{\mu}{\mu-1}} \right) \tag{19}$$

Some manipulations on Equation (19) allow us to obtain the stationary version Equation (20) of the previous equation which symbolizes the non-linear Sticky information Phillips curve:

$$\left(\frac{P_t}{P_{t-j}} \right)^{1-\frac{\mu}{\mu-1}} = \alpha_p \left(\frac{P_{t-1}}{P_{t-j}} \Pi_{t-1}^{\xi_p} \overline{\Pi}^{1-\xi_p} \right)^{1-\frac{\mu}{\mu-1}} + (1-\alpha_p) \alpha \sum_{j=0}^{+\infty} \left((1-\alpha)^j \left[\mu E_{t-j} \left(\frac{MC_t}{(1-\tau_t)} \frac{P_t}{P_{t-J}} \right) \right]^{1-\frac{\mu}{\mu-1}} \right) \tag{20}$$

2.5. The Government

The government in each country purchases goods in the form of the composite good and finances expenditure using lump-sum taxes and money printing.

2.5.1. Fiscal Policy

Thus public expenditures $\tilde{G}$ are assumed to be exogenous and subject to random shocks ε_t^G. The Equation (21) describe the government finances public spending with labor tax, the government faces the following budget constraint:

$$P_t \tilde{G} \varepsilon_t^G = \tau_{W,t} W_t N_t + \tau_t P_t Y_t + P_t T + M_t - M_{t-1} \tag{21}$$

2.5.2. Monetary Policy

The government also controls the short term interest rate R_t. Monetary policy is specified in terms of an interest rate rule given by Equation (22): the monetary authority follows generalized Taylor rules which incorporate deviations of lagged inflation and the lagged

output gap defined as the difference between actual and flexible-price output. Such reaction functions also incorporate a non-systematic component ε_t^r:

$$(1+i_t)=(1+i_{t-1})^{\rho_i}\left[\left(\frac{\bar{P}_t}{P\overline{t-1}}\right)\left(\frac{P_{t-1}}{P_{t-2}}\frac{\bar{P}_{t-1}}{\bar{P}_t}\right)^{\psi_y}\left(\frac{Y_t}{Y_t^n}\right)^{\psi_y}\right]^{1-\rho_i}\times\left(\frac{P_t}{P_{t-1}}\frac{P_{t-2}}{P_{t-1}}\right)^{\psi_{\Delta\pi}}\left(\frac{Y_t}{Y_t^n}\frac{Y_{t-1}^n}{Y_{t-1}}\right)^{\psi_{\Delta y}}\varepsilon_t^R \quad (22)$$

All shocks presented are expected to follow an AR(1) process and *iid* innovation.

2.6. Market Equilibrium

The total resource constraint (aggregate demand) is given by Equation (23):

$$Y_t = C_t + I_t + \tilde{G}\varepsilon_t^G + \Psi(u_t)K_{t-1} \quad (23)$$

Market clearing condition on goods market is given by:

$$\int_0^1 Y_t(z)dz = \varepsilon_t^A \int_0^1 \left(u_t K_{t-1}(z)\right)^{\alpha}\left(N_t(z)\right)^{1-\alpha}dz - \Omega$$

$$= \varepsilon_t^A (u_t)^{\alpha}\int_0^1 \left(K_{t-1}(z)\right)\left(\frac{N_t(z)}{K_{t-1}(z)}\right)^{1-\alpha}dz - \Omega$$

Or some manipulations on Equations (10) and (23) allow us to obtain the equation (24).

$$\Delta_{p,t}Y_t = \varepsilon_t^A\left(u_t K_t\right)^{\alpha}\left(N_t\right)^{1-\alpha} - \Omega \quad (24)$$

With, $$\Delta_{p,t} = \int_0^1 \left(\frac{p_t(z)}{P_t}\right)^{-\frac{\mu}{\mu-1}}dz$$

The equation denoted by (25) and (26) it measures the price dispersion due to the staggered price setting. As in the case of the aggregate price index, we can show that this price dispersion index under Calvo contracts and sticky information (SI) contracts has respectively the following dynamics:

$$\Delta_{p,t}^{Calvo} = \alpha_p \int_0^1 \left(\frac{p_{t-1}(z)}{P_{t-1}}\frac{P_{t-1}}{P_t}\pi_{t-1}^{\xi_p}\bar{\pi}^{-1-\xi_p}\right)^{-\frac{\mu}{\mu-1}}dz + \left(1-\alpha_p\right)\left(\frac{p_t^*}{P_t}\right)^{-\frac{\mu}{\mu-1}}$$

$$= \alpha_p \Delta_{p,t-1}\left(\frac{\pi_t}{\pi_{t-1}^{\xi_p}\bar{\pi}^{-1-\xi_p}}\right)^{-\frac{\mu}{\mu-1}}dz + \left(1-\alpha_p\right)\left(\mu\frac{Z_{1,t}}{Z_{2,t}}\right)^{-\frac{\mu}{\mu-1}} \quad (25)$$

$$\Delta_{p,t}^{SI} = \alpha_p \Delta_{p,t-1} \left(\frac{\pi_t}{\pi_{t-1}^{\xi_p} \bar{\pi}^{1-\xi_p}} \right)^{-\frac{\mu}{\mu-1}} + (1-\alpha_p) \left(\frac{P_{t-j}}{P_t} \right) \alpha \sum_{j=0}^{J} (1-\alpha) E_{t-j} \left(\mu MC_t \frac{P_t}{P_{t-j}} \right)^{-\frac{\mu}{\mu-1}} \quad (26)$$

2.7. The Optimal Monetary Policy

In the neo-keynesian theory, monetary policy can influence the state of the economy in the short term. The DSGE models lend themselves particularly the exercise of “optimal monetary policy". In addition, similar analysis for the euro area is conducted by Levin *et al.* (2005); Adjemian, Darracq Pariès and Moyen (2007); Adjemian, Darracq Pariès and Smets (2008); Haider and Drissi (2009). The optimal monetary policy or the Ramsey policy under commitment consists in maximizing the intertemporal households’ welfare (Ut) subject to a set of non-linear structural constraints of the model. In order to analyze essentially the macroeconomic stabilization properties of the monetary policy, we assume subsidies on labor and goods markets are offsetting first order distortions. In that case, the flexible price equilibrium is Pareto optimal. The Ramsey policy problem is written using an infinite horizon Lagrangian is represented by the Equation (27):

$$L = U_t + E_t \lambda_r \sum_{j=0}^{J} \beta \left(i_{t+j} - \bar{i} \right)^2 + \lambda \quad (27)$$

Where λ_r the weight is associated to the cost on nominal interest rate fluctuations, U_t is the consumer utility and λ is the preferred banker for stabilizing the output gap. β is the intertemporal discount factor which describe rate of time preferences. We introduce an interest rate objective in this problem in order to make the Ramsey policy operational. The first order conditions to this problem are obtained using the symbolic toolbox of Matlab R2010a.

3. THE EMPIRICAL SETUP

This section briefly outlines the empirical setup by illustrating data, choice of priors and estimation methodology used in this paper: We adopted the empirical approach outlined in Haider and Drissi (2009) and Smets and Wouters (2003) and we estimate the DSGE models with sticky prices information and wages, employing Bayesian inference methods Geweke (1999), DeJong (2000). This involves obtaining the posterior distribution of the parameters of the model based on its log-linear state-space representation and assessing its empirical performance in terms of its marginal likelihood. In the following we briefly sketch the adopted approach and describe the data and the prior distributions used in its implementation. We then present our estimation results in next coming section.

3.1. Data

We consider six key macro-economic quarterly time series from 1990q1 to 2011q3: output, consumption, investment, real wages, GDP deflator inflation rate, and 3 month short-term interest rate. Tunisia data are taken from the national institute of statistics and central bank of Tunisia.

Aggregate real variables are expressed per capita by dividing with working age population. All the data are detrended before the estimation. Since the model has implications for the log deviations from the steady-state of all these variables, so we pre-process the data before the estimation stage. The different versions of the DSGE model described are estimated in log-linearized forms using Bayesian techniques. The simulations were performed under Dynare[2].

[2] http://www.dynare.org/download/dynare-4.1.

3.2. Choice of Priors

The discount factor β is calibrated to 0.99, which implies annual steady state real interest rates of 4%. The depreciation rate δ is equal to 0.0025 per quarter. markups are 1.3 in the goods market and 1.5 in the labor market. The steady state is consistent with labor income share in total output of 70%. Shares of consumption and investment in total output are respectively 0.65 and 0.18.

3.2.1. Calvo Model Parameters

In Table 1 and 2 in Appendix we added two additional parameters (α_p and ξ_p) the parameter α_p which determines the probability that firms are allowed to change their price, has a prior mean of 0.75 and a standard deviation of 0.0084.

3.2.2. Sticky Information Model Parameters

Let's suppose the same prior[3] for the previous parameters in that case and consider the probability to receive new information about the state of the economy, follows a Beta-distribution with the mean of 0.75 and the standard deviation of 0.0512. This parameter value is also consistent with Mankiw and Reis (2002).

4. DISCUSION OF EMPIRICAL RESULTS

4.1. Model Comparison based on Posterior Distribution

Tables 1 and 2 in Appendix present information about the posterior distributions of the two pricing schemes, under the different assumptions. In the standard case while most of estimated parameters are quite similar, the estimated degree of wage indexation is significantly high in the Sticky Information model under Calvo wage contracts (0.76) and low in the Calvo model (0.21). In the same way, the variance of wage markup is 0.40 in SI model vs 0.19 in Calvo model. We can also note an important difference across the pricing regarding the persistence degree of the preference shock and its variance (respectively in Calvo and SI: 0.87 vs 0.23 and 0.97 vs 0.99). As a result, the Sticky information assumption has different implications for some key parameters including the ones in the policy instrument. The degree of inertia is slightly smaller in that this model as opposed to the Calvo specification. This shows that model parameters are highly sensitive to both specifications; therefore, it is difficult to conclude the degree of robustness of each model specification. As both models can produce an important degree of persistence such as the choice of sticky price against sticky information is not sufficient to determine dynamics properties of two key variables inflation and output.

4.2. Model Comparison based on Impulse Responses Functions

Figures 1 and 2 compare the impulse response functions of models estimated of main variables after one percent increase in key structural shocks, showing the 90% posterior bands and the median of the posterior densities.

[3] See tables in the Appendix.

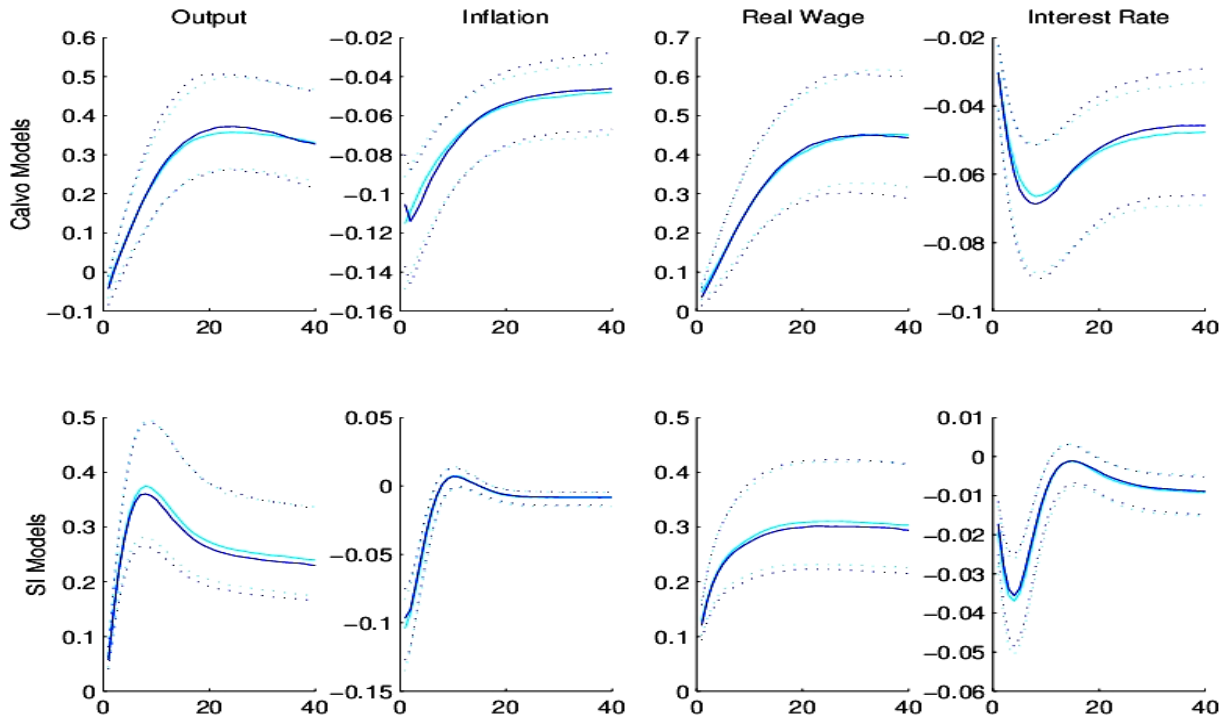

Figure Key: The median of the posterior density is solid and the confidence interval of 90% in dashed lines, and the standard version is in cyan and the hybrid version is blue.

Figure 1: Dynamic response to a productivity shock

In Figure 1 we can show the responses after a productivity shock. Across both Calvo model, the propagation of the shock is consistent, though in the hybrid version, the inflation displays a “hump-shaped” curvature after the few initial impact. As opposed to the SI model, the Calvo models can bring down the policy instrument slightly longer below its steady state in the short run. In the overall, the short run responses are much stronger under the Sticky information pricing due to its volatile short run dynamics for the nominal variables. Indeed, after an initial boost, the variables more quickly come back towards the long-run values.

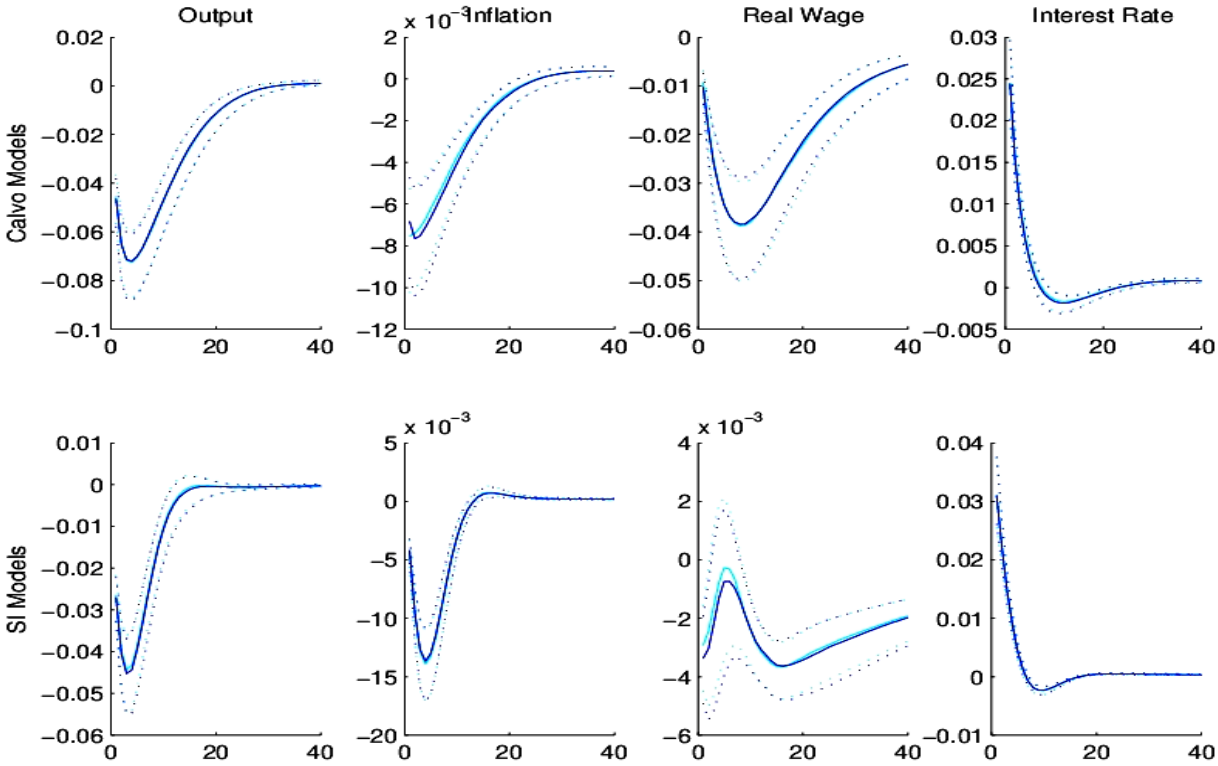

Figure Key: The median of the posterior density is solid and the confidence interval of 90% in dashed lines, and the standard version is in cyan and the hybrid version is blue.

Figure 2: Dynamic response to a monetary policy shock

The Figure 2 summarizes the responses after a monetary policy shock. As it shown, the regarding responses of output and inflation (see Figure 2), both specifications lead to a hump-shaped response of inflation. First of all, the standard Calvo model exposes an immediate response of inflation. Mankiw and Reis (2002) criticize in the fixed prices models, the absence of delay in the inflation reaction. While it seems to be only a feature related to the fixed prices forward looking models, the hybrid Calvo reproduce a reaction of inflation less delayed than the response of the Sticky Information model. Moreover, this last specification respect the condition of a more delayed response of inflation than Output[4] while in the Calvo models the response of inflation is faster. Indeed, the peak slightly occurs before the one of Output.

4.3. Welfare Comparison based on Optimal Monetary Policy

In this section, the Ramsey allocation is computed by solving the first order approximation of the equilibrium conditions. Figures 3 to 6 refer to the responses of aggregates after an efficient supply shock.

[4] This is an evaluation criteria of the relative performance of inflation dynamics models advanced by Kiley (2007)

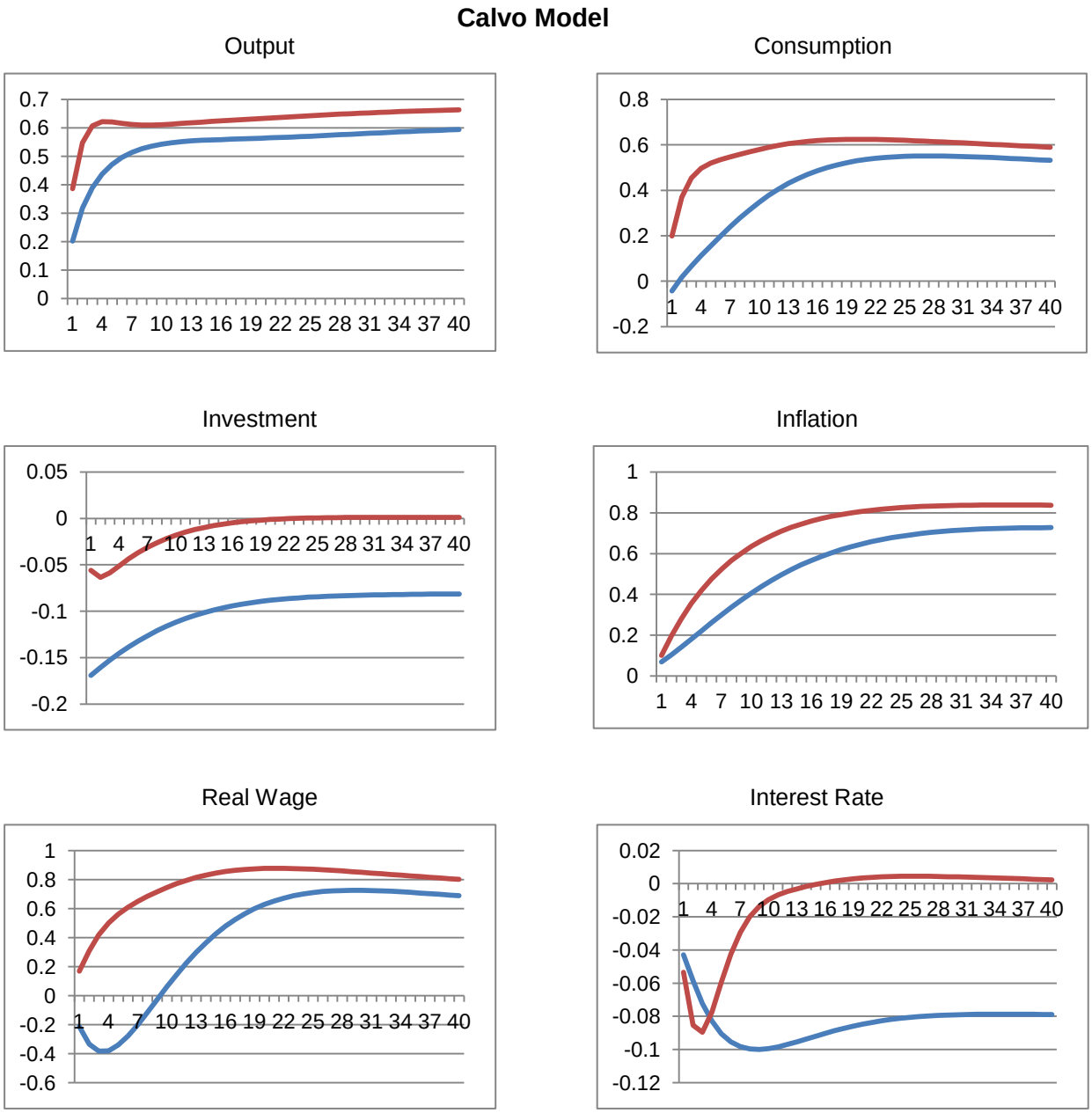

Figure Key: Ramsey Policy in red and the estimated rule in Blue

Figure 3: Dynamic responses to productivity shock (Calvo Model)

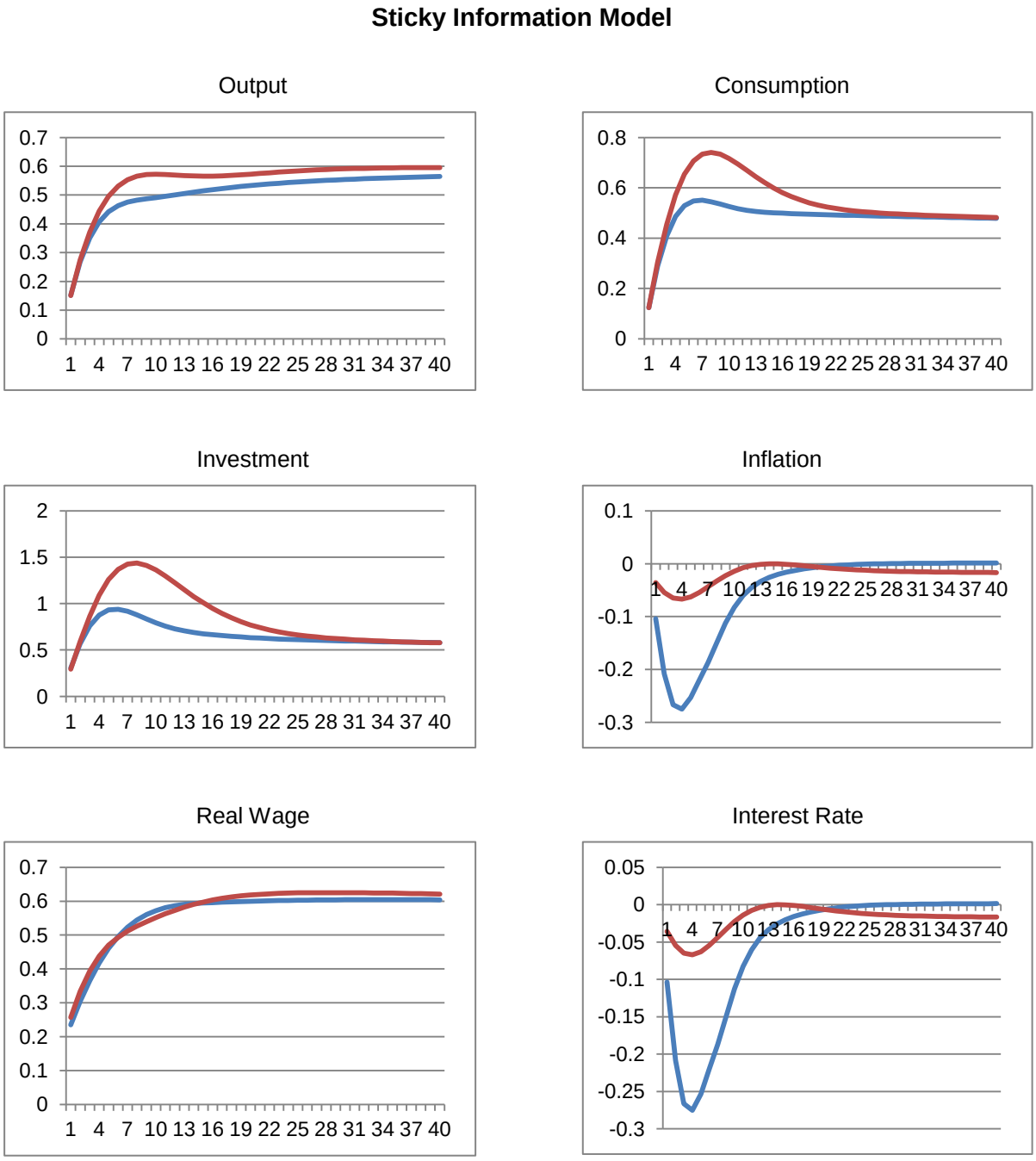

Figure Key: Ramsey Policy in red and the estimated rule in Blue

Figure 4: Dynamic responses to productivity shock (S.I Model)

Concerning the productivity shock (as it can be seen in Figures 3 and 4), the Ramsey allocation generates a stronger and faster response of real variables and real wage in the Calvo Model but weaker and slower in the SI model. The associated interest rate path is much more accommodative in the short term but reverts very quickly to its initial level. In the overall, for both models, over longer horizons, the response of real variables becomes significantly closer in both monetary regimes. Regarding the labor supply shock, in the Calvo model, the hump-shaped downward under the Ramsey policy stimulated output, consumption and investment and leaves quasi-unchanged inflation and real wages. Under Sticky Information pricing, the effect is weaker and the hump-shaped stimulates all the aggregates. By contrast, the estimated rule is not supportive enough to prevent a decrease

in real wage and inflation, above all in the SI model where the interest rate is close to the steady state value.

Turning now to efficient demand shocks, Figures 5 and 6 shows that increase in consumption after a preference shock, is more limited under the Ramsey policy than the alternative rule, and the contraction in investment is stronger. In the Calvo model (see Figure 5), the output decreases in short term under the Ramsey allocation while inflation and real wage are almost fully stabilized while in the SI model (see Figure 6), the output is stabilized and the real wage decreases in short term. Under estimated rule, such a shock is expansionary on output and upward pressures emerge on real wages and inflation.

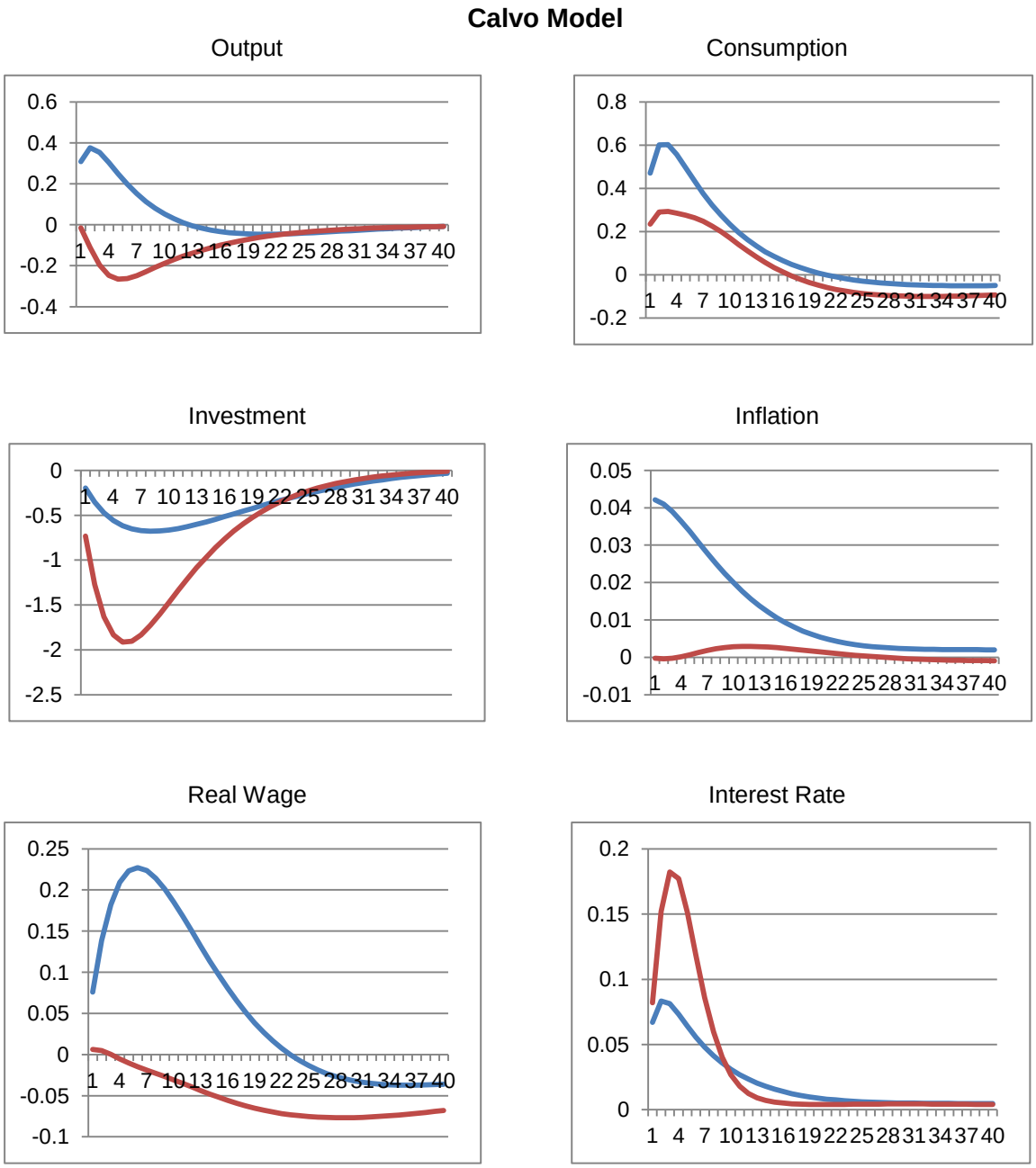

Figure Key: Ramsey Policy in red and the estimated rule in Blue

Figure 5: Dynamic responses to a preference shock (Calvo Model)

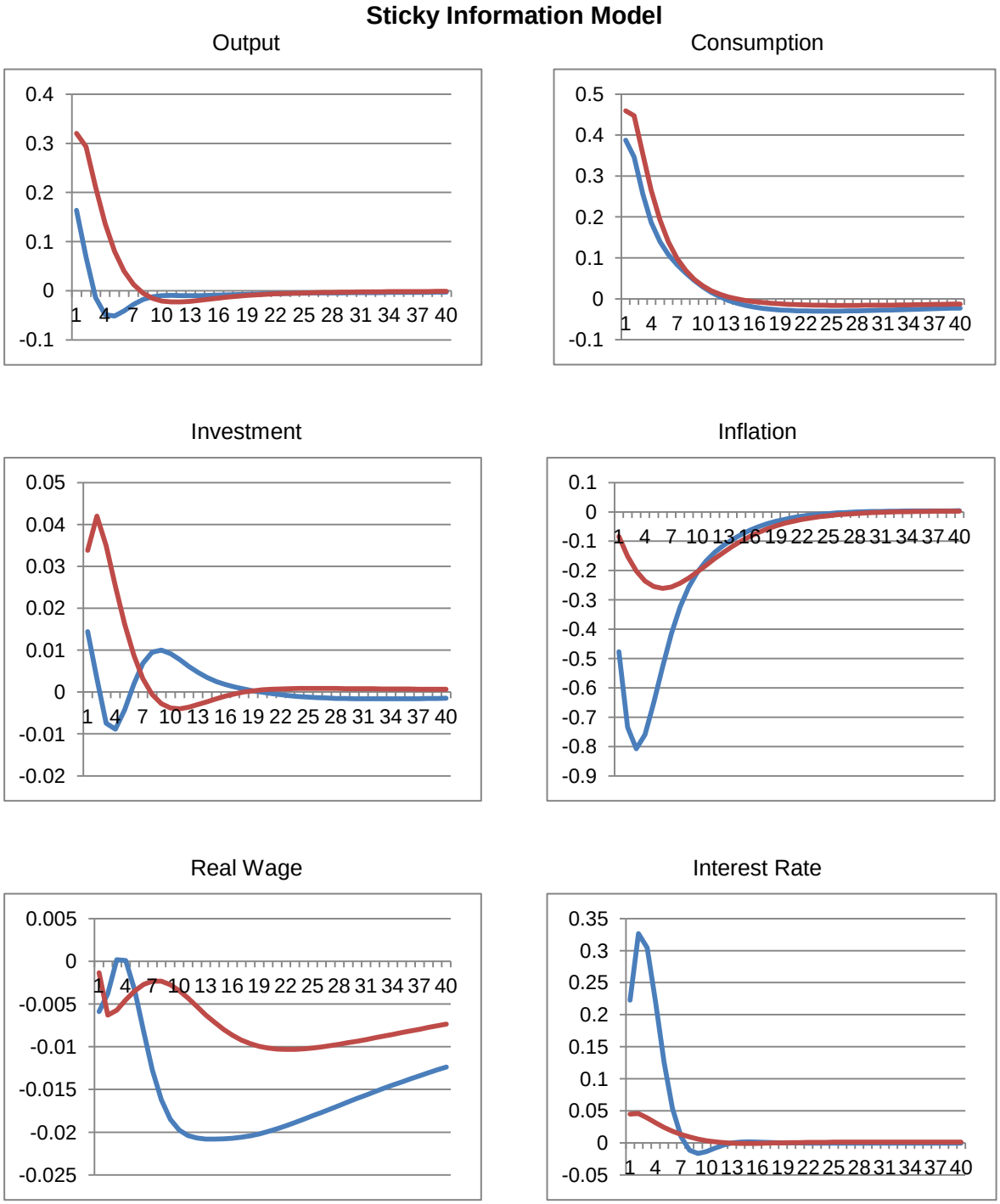

Figure Key: Ramsey Policy in red and the estimated rule in Blue

Figure 6: Dynamic responses to a preference shock (S.I Model)

For the others demand shocks, the differences noted above are less pronounced. The responses of output, consumption, investment and real wages to an investment shock or a government spending shock are relatively similar under Ramsey policy and he estimated rule, even if the inflation response is much more muted in the Ramsey allocation.

The transmission of price markup shocks to the economy is not strongly different under both monetary regimes which suggest a similar inflation/output tradeoff for this type of shock.

However, in the case of wage markup, the Ramsey policy is much more restrictive. It delivers lower real variables and more stable inflation. In the overall, compared with the estimated Taylor rule, the Ramsey policy accommodates more strongly the efficient supply shocks, leans more against efficient demand shocks. In addition, the optimal policy is much more responsive to labor market shocks than the estimated rule which incorporates only goods market variables such as inflation and output.

5. CONCLUSION

This paper attempts to compare two versions of DSGE model competition in the analysis of social welfare and the optimal policy: a standard Calvo (1983) type pricing model and Mankiw and Reis (2002) standard sticky information model. Each model incorporates various other standard New-Keynesian features such as habit formation, costs of adjustment in capital accumulation and variable capacity utilization. Using marginal densities, posterior distribution results and dynamic impulse responses both these models are compared for different policy alternatives represented by a Taylor-type interest rate rule. For welfare criterion the Ramsey allocation is computed by solving the first order approximation of the equilibrium conditions.

Our main results show that, despite the apparent similarities of the two versions of models (Calvo and the Sticky Information) responses to shocks are quite different. In addition, there is not agreement on their relative performance. In addition, the two versions of the Tunisian DSGE model with nominal and real rigidities generate significant and persistent effects in response to monetary policy shocks. In addition, the optimal monetary policy is good at absorbing technology shocks and protect the economy of exogenous shocks in demand for currency. Therefore, two hypotheses can produce a significant degree of persistence such as the choice of price against the rigidity of the information, it is not sufficient to determine the dynamic properties of two key variables namely, the inflation and output.

In addition, exercises developed in this paper show that the nature of rigidities can significantly influence the scope of the policy recommendations. Consequently, the Tunisian monetary authority cannot afford to rely on a single reference model of the economy, but they need a large number of modeling tools when they make their decision to determine the optimal monetary policy, insofar as they have a very limited knowledge of the structure and functioning of the economy, it is important to consider alternative hypotheses governing the monetary transmission mechanism, since by definition each model is in itself a simplification that does not take into account all relevant aspects of reality.

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Appendix: Tables of priors and posterior parameter estimates

Table 1: Priors and posterior parameter estimates- Calvo model

	Prior Distribution	Mean	S.D	Posterior Mode	Mean	HPD inf	HPD sup
Calvo model							
ρ_A	Beta	0.850	0.0023	0.9971	0.9932	0.9866	0.9998
ρ_B	Beta	0.850	0.0336	0.8763	0.8690	0.8118	0.9311
ρ_G	Beta	0.850	0.0123	0.9754	0.9636	0.9355	0.9905
ρ_N	Beta	0.850	0.0082	0.9673	0.9614	0.9458	0.9768
ρ_I	Beta	0.850	0.0241	0.9496	0.9348	0.8897	0.9808
ς_A	Uniform	2.000	0.0627	0.6683	0.6932	0.5799	0.8003
ς_B	Uniform	5.000	0.3098	2.1295	2.3267	1.7244	2.9018
ς_G	Uniform	3.000	0.1154	1.8202	1.8356	1.6445	2.0274
ς_N	Uniform	2.000	1.6482	5.3026	5.8479	3.1627	8.6104
ς_I	Uniform	3.000	0.1919	1.0455	1.1417	0.7924	1.4999
ξ_p	Normal	1.000	0.2575	1.9971	0.9932	0.9866	0.9998
ςN	Normal	2.000	0.6464	2.5456	0.8690	0.8118	0.9311
α_p	Beta	0.750	0.0084	0.9754	0.9636	0.9355	0.9905
κ	Beta	0.750	0.0082	0.9673	0.9614	0.9458	0.9768
φ	Gamma	0.200	0.0241	0.9496	0.9348	0.8897	0.9808
α	Normal	4.000	0.0627	0.6683	0.6932	0.5799	0.8003
ξ_w	Beta	0.210	0.3098	2.1295	2.3267	1.7244	2.9018
α	Beta	0.500	0.1154	1.8202	1.8356	1.6445	2.0274
α_w	Normal	0.190	1.6482	5.3026	5.8479	3.1627	8.6104
ρ_i	Gamma	0.300	0.1919	1.0455	1.1417	0.7924	1.4999

Table 2: priors and posterior parameter estimates- SI model

	Prior Distribution	Mean	S.D	Posterior Mode	Mean	HPD inf	HPD sup
SI model							
ρ_A	Beta	0.850	0.0035	0.9981	0.9961	0.9926	0.9998
ρ_B	Beta	0.850	0.0646	0.2334	0.2670	0.1599	0.3787
ρ_G	Beta	0.850	0.0050	0.9905	0.9741	0.9460	0.9989
ρ_N	Beta	0.850	0.0082	0.9723	0.9741	0.9643	0.9884
ρ_I	Beta	0.850	0.0282	0.9181	0.9759	0.8383	0.9619
ς_A	Uniform	2.000	0.5846	0.4663	0.8980	0.3930	0.5909
ς_B	Uniform	5.000	0.5814	3.3213	0.4966	2.4979	4.7223
ς_G	Uniform	3.000	01089	1.6943	3.6212	1.5248	1.8828
ς_N	Uniform	2.000	2.1650	9.3482	1.7030	6.6766	9.1940
ς_I	Uniform	3.000	0.2482	1.0690	8.3747	0.6759	1.5794
ξ_p	Normal	1.000	0.3576	1.9981	0.9961	0.9926	0.9998
ς_N	Normal	2.000	0.6446	2.5434	0.2670	0.1599	0.3787
α_p	Beta	0.750	0.0512	0.7663	0.9741	0.9460	0.9989
κ	Beta	0.750	0.0088	0.9723	0.9741	0.9643	0.9884
φ	Gamma	0.200	0.1830	0.9181	0.9759	0.8383	0.9619
α	Normal	4.000	0.4430	0.4663	0.8980	0.3930	0.5909
ξ_w	Beta	0.760	0.0526	1.5711	0.4966	2.4979	4.7223
α	Beta	0.500	0.0077	1.6943	3.6212	1.5248	1.8828
α_w	Normal	0.400	0.0364	9.3482	1.7030	6.6766	9.1940
ρ_i	Gamma	0.300	0.0229	1.0690	8.3747	0.6759	1.5794

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EFFECTS OF ASSETS STRUCTURE ON THE FINANCIAL PERFORMANCE: EVIDENCE FROM SULTANATE OF OMAN

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Abstract: The main objective of this study is to examine the effects of assets structure (fixed assets and current assets) on the financial performance of some manufacturing companies listed on Muscat Securities Market. The methodology of the study is content analysis of annual reports of a sample of 28 out of 70 (40%) companies for the period 2008-2012. The assets structure is measured by fixed assets turnover and current assets turnover while the financial performance is measured by return on assets (ROA) and return on equity (ROE). The study attempts to answer the following question: What is the effect of fixed assets turnover and current assets turnover on financial performance in a sample of manufacturing companies in the Sultanate of Oman? The study examines two main hypotheses. The first one examines the effects of total assets turnover on ROA whereas the second one examines the effects of total assets turnover on ROE. These hypotheses were tested based on all companies and across some distinguished subsectors in the manufacturing sector. The overall result for the study is that the structure of assets doesn't have a strong impact on profitability in terms of ROE. This result means that if the structure of assets is changing then the ROA will not change. Another result of the study indicates that only the fixed assets have impact on ROE unlike ROA. On the other hand, there is not any impact for current assets on ROE and ROA. Another result of the study suggests that the effect of asset structure has an impact on ROE only in petro-chemical sector.

Keywords: Assets Structure, Fixed Assets Turnover, Current Assets Turnover, Assets Turnover, ROA, ROE

1. INTRODUCTION

The manufacturing companies depending on the structure of assets consist of two types of assets, fixed and current assets. The manufacturing companies use fixed assets to transfer the raw materials into finished goods. These assets are called property, plant and equipments include land, building, equipments, automobiles and furniture. *In 2012, the investments in fixed assets at large and medium- sized companies made 96.4% of the level of 2008 investments* (Lzryadnova, 2013, p.27). The growth rate of fixed capital in Sultanate of Oman is 10.5% for 2010 and the increase in fixed assets in the Petro-Chimerical is 35% for 2012. Therefore, there is increasing importance of fixed assets to generate profit in the manufacturing companies. Sometimes, these companies accumulate a higher percentage of current assets, the second type of assets. In this case, there is an essential question concerning the role of fixed assets and current assets in generating the profit.

This question is very important in the industrial sector in Sultanate of Oman because most of the manufacturing companies have a destroyed assets structure. Some of these companies have a higher percentage of fixed assets and a low percentage of current assets and vice versa; where the percentage of current assets is higher than the percentage of fixed assets. This means that the contribution of current assets is greater than the contribution of fixed

assets to generate the net profit. This contribution is measured by assets turnover (current turnover and fixed turnover).In this regard; most of Omani manufacturing companies don't have intangible assets.

Most of results of the previous studies are mix. Some studies indicate positive associations, others negative associations and several studies conclude that there is no correlation between assets structure and profitability. In Sultanate of Oman, there is no evidence about the impact of assets structure on the profitability of the manufacturing companies. This is because most of these companies did not have an assets structure that reflects their nature. In other words, no one can distinguish this nature through its assets structure. The importance of this study is derived from the importance of assets in operating activities to generate profit. Accordingly, it is very important to study the assets structure and its role in the financial performance for the Omani manufacturing companies.

The study attempts to answer the following questions: What is the effect of fixed assets turnover and current assets turnover on financial performance in a sample of manufacturing companies in Sultanate of Oman? The main objective of this study is to examine the effects of assets structure (fixed assets and current assets) on the financial performance of some manufacturing companies listed on Muscat Securities Market. The methodology of the study is content analysis of annual reports of a sample of 28 out of 70 companies for the period 2008-2012. The assets structure is measured by fixed assets turnover and current assets turnover while the financial performance is measured by return on assets (ROA) and return on equity (ROE).

The study consists of six sections. In the current section, the study presents the introduction including the aims of the study and the hypotheses. The assets structure is discussed in the second section. The third section presents the literature review. In the fourth section, the study presents the model, data and methodology used in the study. Section five provides results of the analysis and finally section six presents the summary and conclusions.

2. ASSETS STRUCTURE IN THE MANUFACTURING COMPANIES

In concept statement no.6, FASB defined Assets as *"probable future economic benefits obtained or controlled by a particular entity as a result of past transactions or events".* Typically, assets are divided into two categories; tangible assets and intangible assets. Fixed assets and current assets are composing the tangible assets. Intangible assets have distinct conditions according to accounting standards. Therefore, most of the assets presented in the balance sheet for the companies are tangible assets (fixed and current). In this context, assets structure is a group of assets (tangible) holding by the firm to establish and expand its business. This study refers to assets structure as a combination of fixed assets and current assets holding by the manufacturing companies. The assets structure is very important for many reasons.

Firstly, the firms cannot start or/and expand without assets because they need assets to produce their products. These assets measure the ability of the firms to survive and compete with other firms (Reyhani, 2012). On the other hand, there is a strong relationship between the structure of assets and structure of capital. The firm cannot borrow the money without a strong assets structure and the creditors prefer the tangible assets when they decide to lend money to others (Campello and Giambona, 2010). The firms hold the assets because there is no effective rental market to sell or buy these assets. Some companies hold assets (especially fixed assets) because there is a tax advantage for economic growth and technology development purposes (Dong *et al*. 2012).

Traditionally, there is a positive relationship between manufacturing companies and fixed assets because the nature of these companies required a high percentage of fixed assets to transfer the raw materials into finished goods. Aguzzi and Payne (2007) refer to this fact where many industries in the mining sector have a "massive growth" in fixed assets. In this case, the assets structure in the manufacturing companies tends to increase investment in fixed assets and decrease the investment in current assets. Moreover, the massive growth in fixed assets should lead to increase the profit because the utilization of these assets means more products and sales (Kantudu, 2008).

3. LITERATURE REVIEW

The relationship between management efficiency, investment in assets and profitability has much more interest in the finance and accounting literature. These literatures explain the role of assets structure in generating profitability and the appropriate size of investment in the assets. Li (2004) examines the negative association between capital investments (fixed assets), future profitability and stock returns. The study analyzed the financial statements for the firms from 1962-2002. The result showed the negative association between investment and future profitability is robust to scaling of investment and conservative accounting effects.

Demir (2005) examines the relations between higher risks, uncertainty and competition for 172 manufacturing firm in Turkey from 1993-2003 and investment in financial assets or fixed assets and impact of them on the profitability. He concludes that increasing short-term financial investments are found to be reducing the negative effects of risk, volatility and higher interest rates at a significant level while the increasing uncertainty, country risk and real interest rates have a significantly negative effect on manufacturing firm profitability.

Iqbal and Mati (2012) examine the relationship between noncurrent assets and firm's profitability of the companies which are non financial firms. Multiple regression analysis has been utilized to find out the effects of noncurrent on profitability. It is concluded that there is an association between non -current asset and firm's profitability.

Dong *et al.* (2012) studied the level of fixed assets and risk-adjusted performance. They found that firms with a higher level of fixed asset holding and overhead expenses and covered by preferential tax policies in China are found to be associated with lower risk-adjusted performance. Okwo *et al.* (2012) assess the impact of a company's investment in fixed assets on its operating profit margin. The study is based on a sample for companies in the Nigerian brewery sector for a period from 1999 to 2009. They used regression statistical method to examine the relationship between level of investment in fixed assets and its impact on the operating profit. The study concluded that there is a positive relationship between the variables, but it is not statistically significant. Therefore, the result did not suggest any strong positive impact of investment in fixed assets on the operating profit of brewery firms in Nigeria.

Dhillon and Vachhrajani (2012) examine the impacts of operational efficiency on overall profitability of Gujarat Industries Power Company Limited (GIPCL), based on published data during 2005-06 to 2010-11. They used the activity ratios such as assets turnover to measure the operational efficiency and overall profitability. The finding of the research indicates that there is insignificant positive correlation between operational efficiency and overall profitability. Reyhani (2012) measures the effect of assets structure on the performance of accepted companies of Tehran Stock Exchange (TSE) through some industries. He defined the assets structure by fixed assets and variable assets as independent variables and EBIT (Earnings before Interest and Taxes) as a dependent variable. The findings of the study revealed that the fixed assets have significant positive effect on EBIT. Also, the effect of these variables on EBIT among various industries is not same.

Jamali and Asadi (2012) studied the relationship between the management efficiency and profitability of 13 auto manufacturing companies listed on the Bombay Stock Exchange for the period from 2006-2010. The assets turnover was one of the most important ratios used in measuring the management efficiency. The finding of study is that there is a high degree of correlation between profitability and management efficiency. Kotsina and Hazak (2012) examine the impact of investment intensity measured by the percentage of fixed assets to total assets and the return on assets. The sample of the study is 8,074 companies in six European Union (EU) member states over a nine year period from 2001 to 2009. The finding of the study indicates that there is not any strong negative (or positive) impact of companies' investment intensity on future rate of return on assets.

Ishmael and Kehinde (2013) examine the effects of components of current assets on the profitability in the Ajaokuta Iron Industry. The study concluded that there are different proportions of current assets in the industry (for example there are a huge amount of current assets in receivables, cash and bank). The results raveled that the profitability analysis of Ajaokuta Iron Industry has shown an upward trended in the periods 2001-2010. Azadi (2013) examines the effects of changes in assets (fixed and current) on accepted operating earnings in the Tehran Stock Exchange. The study uses squares (OLS) in order to investigate these effects. Results showed that, for food and metal industries, the coefficient of variation of fixed assets has positive and significant effect on operating earnings. For chemical industries, the coefficient of variation of current assets did not have a significant effect on operating earnings. Another result of the study suggests that the effect of asset structure changes has a significant difference on operating assets and among different industries.

4. HYPOTHESES DEVELOPMENT AND STUDY METHODOLOGY

4.1. Hypotheses Development

The fixed assets are considered to be the productive capacity in the manufacturing companies which are used to generate sales and profit. On the other hand, these assets are considered the base to generate and accumulate the current assets (Iqbal and Mati, 2012). The manufacturing companies focus on the current assets because they convert these assets into cash to finance the operating activities (Ishmael and Kehinde, 2013). In this area, these assets are playing a vital role to produce the profit. This role can be measured by return on assets and return on equity. The first one measure the net income generated from each currency unit invested in total assets and the second one indicates how well managers of the company have used resources of shareholders to produce the net income.

To measure the efficiency of assets in generating the profit, the assets management ratios are used. These ratios are referred to as *asset utilization or asset efficiency ratios, measure a firm's ability to manage the assets at its disposal. The ratios include the accounts receivable turnover ratio, inventory turnover ratio, fixed asset turnover ratio, and the total asset turnover ratio* (Baker and Powel, 2005:p.56). In general, there are three types of turnover, assets turnover, fixed assets turnover and current assets turnover. These turnovers and profitability ratios are calculated as in the following equations:

$$\text{Total Assets Turnover (TAT)} = \frac{\text{Sales}}{\text{Total Assets}} \quad (1)$$

$$\text{Current Assets Turnover (CAT)} = \frac{\text{Sales}}{\text{Current Assets}} \quad (2)$$

$$\text{Fixed Assets Turnover (FAT)} = \frac{\text{Sales}}{\text{Fixed Assets}} \quad (3)$$

$$\text{Return on Assets (ROA)} = \frac{\text{Net Income after Tax}}{\text{Total Assets}} \quad (4)$$

$$\text{Return on Equity (ROE)} = \frac{\text{Net Income after Tax}}{\text{Equity}} \quad (5)$$

Total assets turnover measures the efficiency with which total assets are utilized. The high ratio indicates high efficiency of total assets to generate a sale. Current assets turnover is an indicator of how efficiently the current assets are utilized. High ratio indicates high efficiency of the current assets (Ishmael and Kehinde, 2013)

Fixed assets turnover ratio indicates how effectively a firm's management uses its net fixed assets to generate sales. High ratio indicates high efficiency of the fixed assets (Baker and Powel, 2005). The logic of using assets management ratios is that the companies employ assets to generate sales and profit, and for this reason, the efficiency of assets should be judged in relation to sales (Dhillon and Vachhrajani, 2012). For example, a high fixed assets turnover indicates efficient utilization of fixed assets in generating sales while a low ratio indicates inefficient management of fixed assets (Okwo *et al*. 2012). Therefore, the hypotheses of the study are as follows:

H1: The total assets turnover doesn't have an impact on ROA.
H1-1: The fixed assets turnover and current assets turnover don't have an impact on ROA.
H2: The total assets turnover doesn't have an impact on ROE.
H2-1: The fixed assets turnover and current assets turnover don't have an impact on ROE.

4.2. Study Methodology

The data for the study is taken from the financial statements of the manufacturing companies listed on the web site of Muscat Security Market (MSM). The study is based upon the convenient sampling among the registered manufacturing companies by MSM. The financial statements for 28 out of 70 (40%) were analyzed, and the statistical analysis concluded the results of the study. Sample size was taken on the analyzed past 5 years (2008-2012) financial statements as well as balance sheets of MSM 70 index all manufacturing companies. These companies are divided into more than one sector, but this study deals with some of them; food industries sector, chemical industries sector and construction sector. In the first one, there are 23 companies; in the second one, there are 7 companies, and in the last one there are 10 companies. The total is 40 companies.

Unfortunately, some financial statements are missing (for one or more years) for some companies on the website of MSM and the companies itself. Therefore, this study analyses only 28 out of 40 financial statements (70%) as follows: 14 companies of food industries sector, 5 companies of chemical industries sector and 9 companies of construction sector. In order to achieve the objective of the study, the total assets turnover, fixed assets turnover and current assets turnover, return on assets (ROA) and return on equity (ROE) were calculated of the sample for the period from 2008-2012. Multiple regression analysis has been used for the analysis of the results because research has to find out the association and the relationship of total assets turnover, fixed assets turnover and current assets turnover as independent variables and return on assets (ROA) and return on equity (ROE) as the dependent variables.

5. RESULTS AND DISCUSSIONS

5.1. Calculate the Turnovers, ROA and ROE

Table 1 presents the TAT, FAT and CAT as independent variables and ROA and ROE as dependent variables. These primarily results will be used to test the hypotheses of the study.

Table 1: 5-Yares average of turnovers, ROA and ROE

Sector\ Turnovers	FAT	CAT	TAT	ROA	ROE
Food sector	2.6966	1.3522	0.8582	0.03366	0.03578
	2.1870	1.6698	0.9298	0.09780	0.33570
	10.334	2.0556	1.6990	0.15392	0.4460
	3.1568	2.8478	1.4718	0.03220	0.09380
	1.8940	2.3330	1.0388	0.06370	-0.0398
	5.7546	3.4190	2.1110	0.18875	0.2910
	1.0640	1.6968	0.6498	0.12469	0.2386
	2.2670	1.7274	0.9308	0.04048	-0.0199
	5.9386	3.9118	2.3514	0.05210	0.2134
	0.9014	3.4142	0.7098	-0.06666	0.0081
	3.5126	1.3990	0.9958	0.11568	0.1624
	6.7726	2.4988	1.7792	-0.10560	0.0882
	4.1656	2.4548	1.3160	-0.12880	-0.2962
	0.9202	2.5224	0.6728	0.11840	0.2234
Construction sector	0.6614	1.6568	0.3608	0.1130	0.1298
	2.6442	1.6994	1.0170	0.02390	0.0558
	4.6962	1.8306	1.2620	0.06280	0.1298
	1.0410	1.8088	0.5000	0.14860	0.2070
	0.9436	1.5394	0.5828	0.12200	0.1682
Petro-Chemical	2.5248	2.7174	1.2732	0.06160	0.1702
	7.3682	1.4686	1.2236	0.12800	0.1932
	2.6122	3.7056	1.0988	0.07460	0.1004
	2.5380	1.8402	0.9548	0.17400	0.2140
	0.6246	1.0062	0.3788	0.16120	0.2008
	19.1616	7.0724	5.0760	0.19320	0.4420
	1.4860	2.4654	0.9248	0.05080	0.0776
	3.0462	0.5606	0.4048	0.10920	0.1200
	10.3546	5.8850	3.6738	0.12060	0.2456

Source: Prepared by researcher based on the financial statements of companies listed on MSM (2008-2012).

5.2. Results on the Level of all Manufacturing Companies

H1: The total assets turnover (TAT) doesn't have an impact on ROA

Table 2: Model summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
	0.156a	0.024	-0.013	0.08086

a. Predictors: (Constant), TAT
b. Dependent Variable: ROA

The correlation between TAT and ROA is significant at the level of significance 0.05. This means that TAT is associated positively with ROA. The R-squared is 0.024 which means that approximately 2.4% of the variance of predictors is accounted for by the model.

Table 3: ANOVA[b]

Model		Sum of Squares	Df	Mean Square	F	Sig.
	Regression	0.004	1	0.004	0.644	0.429[a]
	Residual	0.170	26	0.007		
	Total	0.174	27			

a. Predictors: (Constant), TAT
b. Dependent Variable: ROA

Table 4: Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
	(Constant)	0.065	0.025		2.597	0.015
	TAT	0.012	0.015	0.156	0.803	0.429

a. Dependent Variable: ROA

As in the Tables 2, 3 and 4, the F value is greater than the level of significant and this means that the model is statistically insignificant. It seems that the TAT doesn't have an impact on the ROA at 0.05. It means that if the manufacturing companies increase the total asset then there will be no impact on ROA. From the forgoing analysis, the hypothesis which states that the TAT doesn't have impact on ROA is accepted and the companies do not need to make any changes in the assets structure to increase the ROA.

H1.1: The fixed assets turnover (FAT) and current assets turnover (CAT) don't have an impact on ROA. To find out the effects of components of assets structure (FAT and CAT), correlations and regression were calculated. Table 5 shows the result of correlations as follows:

Table 5: Correlations

		ROA	FAT	CAT
Pearson Correlation	ROA	1.000	0.212	0.060
	FAT	0.212	1.000	0.710
	CAT	0.060	0.710	1.000

Although there are positive correlations between FAT and CAT and ROA, but it is not statistically significant 0.05.

Table 6: Model summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
	0.248a	0.061	-0.014	0.08087

a. Predictors: (Constant), CAT, FAT
b. Dependent Variable: ROA

Table 7: ANOVA[b]

Model	Sum of Squares	Df	Mean Square	F	Sig.
Regression	0.011	2	0.005	0.818	0.453[a]
Residual	0.163	25	0.007		
Total	0.174	27			

a. Predictors: (Constant), CAT, FAT

Table 8: Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
(Constant)	0.079	0.032		2.502	0.019
FAT	0.007	0.006	0.341	1.241	0.226
CAT	-0.010	0.016	-0.182	-0.663	0.513

a. Dependent Variable: ROA

From Tables 6, 7 and 8, it is evident that the F-test is statistically insignificant; the model shows the significant value 0.453 which means that the model is statistically insignificant. It seems that the FAT and CAT did not have impact on ROA. The R-squared is 0.061 which means that approximately 6.1% of the variance of predictors is accounted for by the model. H1-1 is rejected and the FAT and CAT are not significant factors affection on ROA.
The final result of these hypotheses is that TAT, FAT and CAT don't have an impact on ROA. This means that the assets structure doesn't have an impact on the profitability in terms of ROA in the Omani manufacturing companies.

H2: The total assets turnover (TAT) doesn't have an impact on ROE.

Now, the study will attempt to test the second hypothesis and its sub-hypothesis based on the same analysis.

The Tables 9, 10 and 11 show the results of the above hypothesis:

Table 9: Model summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
	0.402[a]	0.162	0.130	0.13775

a. Predictors: (Constant), TAT
b. Dependent Variable: ROE

As in Table 9, the correlation between TAT and ROE is significant at the level 0.05. This means that there is a positive association between TAT and ROA. TAT interprets 16.2% of the variance of ROE. Coefficient of determination (R-Sq=16.2%) shows that 16.2% of change in ROE is due to change in TAT.

Table 10: ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
	Regression	0.095	1	0.095	5.022	0.034[a]
	Residual	0.493	26	0.019		
	Total	0.589	27			

a. Predictors: (Constant), TAT
b. Dependent Variable: ROE

Table 11: Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
(Constant)	0.076	0.043		1.776	0.088
TAT	0.058	0.026	0.402	2.241	0.034

a. Dependent Variable: ROE

From Tables 10 and 11, it seems that the model is significant at the level 0.05 where the F-value is less than the *Sig*. of F value. In this case, the independent variable TAT has an impact on ROE. This means that the investment in assets leads to increase the wealth of shareholders of the companies. In this model, the regression equation is:

$$\mathrm{ROE} = 0.076 + 0.058\,\mathrm{TAT} \qquad (6)$$

H2.1: The fixed assets turnover and current assets turnover don't have an impact on ROE.
In order to find out the effects of components of assets structure (FAT and CAT) on ROE, correlations and regression were calculated. Table 12 shows the results of correlations as follows:

Table 12: Correlations

		ROE	FAT	CAT
Pearson Correlation	ROE	1.000	0.477	0.281
	FAT	0.477	1.000	0.710
	CAT	0.281	0.710	1.000

The correlation between FAT and ROE is significant at the level 0.05, but it's not the same between CAT and ROE.

Table 13: Model summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
	0.484[a]	0.234	0.173	0.13427

a. Predictors: (Constant), CAT, FAT
b. Dependent Variable: ROE

Table 14: ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
	Regression	0.138	2	0.069	3.827	0.035[a]
	Residual	0.451	25	0.018		
	Total	0.589	27			

a. Predictors: (Constant), CAT, FAT
b. Dependent Variable: ROE

Table 15: Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
(Constant)	0.099	0.053		1.890	0.070
FAT	0.021	0.009	0.560	2.254	0.033
CAT	-0.012	0.026	-0.117	-0.470	0.642

a. Dependent Variable: ROE

From Tables 13 and 14, it seems that the model is significant at the level 0.05 because the F- *Sig* (0.035) is less than 0.05 and there is at least one independent variable has an impact on dependent variable.

Table 15 shows that the FAT has an impact on ROE because the F- *Sig* is 0.033. This means that there is a significance relationship between FAT and ROE. On the other hand there is no association between CAT and ROE because the F- *Sig.* is greater than the level of significance 0.05. This result suggests that the investment in fixed assets is more important for the Omani manufacturing companies to increase the wealth of shareholders. In this model, the regression equation is:

$$\mathrm{ROE} = 0.099 + 0.021\mathrm{FAT} \quad (7)$$

Table 16 summarizes the previous results based on the 28 Omani manufacturing companies:

Table: 16 Results of impact the independent variables on dependent variables

Hypotheses	Independent variables	Dependent variable	Correlation	Regression	Result	R-Square
H1	TAT	ROA	Insignificant	No impact	Accepted	2.4%
H1.1	FAT, CAT	ROA	Insignificant	No impact	Accepted	6.1%
H2	TAT	ROE	Significant	Impact	Rejected	16.2%
H2.1	FAT, CAT	ROE	Significant with FAT	Impact	Rejected	23.4%

The results of the present study are consistent with similar results reported by Okwo *et al.* (2012) and Kotsina and Hazak, (2012) related to fixed assets. The two studies have agreed that the investment in fixed asset does not have any strong and statistical impact on the profitability. The present study has agreed with the studies of Iqbal and Mati (2012), Reyhani (2012), Jamali and Asadi (2012) and Azadi (2013) about the impact of fixed assets on the profitability (in spite of the studies use different dependent variables of profitability). The result of the present study suggests that the companies in the sample are not utilizing assets efficiently in generating the net profit. This result is consistent with the similar result reported by Dhillon and Vachhrajani (2012).

On the other hand, the results of the present study are not consistent with other similar studies. The studies of Demir (2005) and Ishmael and Kehinde (2013) didn't agree with this study about the impact of current assets. Ishmael and Kehinde (2013) concluded that the changes in current assets have a strong impact on profitability. Unlike the present study, Li (2004) concluded that there is a negative association between fixed assets and profitability.

Now, the study tested the forgoing hypotheses based on the three sectors subject to analysis.

5.3. Food Industrial Sector

The results for 14 companies in the Food industrial sector as follows:

5.3.1. TAT and ROA

In the Food sector, it seems that the model is insignificant where the F-*Sig* 0.906 is greater than 0.05 and it has been found that there is no association between TAT and ROA. Tables 17 and 18 show the results:

Table 17: ANOVA[b]

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	0.000	1	0.000	0.014	0.906[a]
Residual	0.117	12	0.010		
Total	0.118	13			

a. Predictors: (Constant), TAT
b. Dependent Variable: ROA

Table 18: Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
(Constant)	0.044	0.068		0.650	0.528
TAT	0.006	0.050	0.035	0.120	0.906

a. Dependent Variable: ROA

5.3.2. FAT and CAT and ROA

In this case, the model is insignificant at the level 0.05 and there is no effect of FAT and CAT on ROA.

Table 19: Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
(Constant)	0.089	0.091		0.985	0.346
CAT	-0.023	0.036	-0.190	-0.633	0.539
FAT	0.004	0.011	0.123	0.409	0.690

a. Dependent Variable: ROA

As in Table 19, the *Sig*. for FAT and CAT are greater than 0.05 and this means that they have no impact on ROA. These results can be attributed to the lesser amount of net income and greater amount of sales and shareholder equity in the Omani manufacturing companies.

5.3.3. TAT and ROE

Tables 20 and 21 show the relationship between TAT and ROE in food sector:

Table 20: ANOVA[b]

Model	Sum of Squares	Df	Mean Square	F	Sig.
Regression	0.024	1	0.024	0.665	0.431[a]
Residual	0.432	12	0.036		
Total	0.456	13			

a. Predictors: (Constant), TAT
b. Dependent Variable: ROE

Table 21: Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
(Constant)	0.030	0.130		0.228	0.823
TAT	0.078	0.096	.229	0.816	0.431

a. Dependent Variable: ROE

There is a positive correlation between TAT and ROE (0.229) but it's not statistically significant at 0.05. In addition, the model is insignificant where the R- Square interprets 5.3% of the variation of ROE.

5.3.4. FAT and CAT and ROE

Tables 22 and 23 show the relationship between FAT and CAT and ROE in food sector:

Table 22: ANOVA[b]

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	0.064	2	0.032	0.902	0.434[a]
Residual	0.392	11	0.036		
Total	0.456	13			

a. Predictors: (Constant), CAT, FAT
b. Dependent Variable: ROE

Table 23: Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
(Constant)	0.077	0.169		0.455	0.658
FAT	0.027	0.020	0.382	1.342	0.207
CAT	-0.020	0.067	-0.086	-0.301	0.769

a. Dependent Variable: ROE

It seems that the model is insignificant at the level 0.05 and there is no impact of FAT and CAT on ROE. This means that the assets structure in the food industries sector doesn't have effects on the maximization of profit for shareholders.
In summary, the study concluded that the association between assets structure and profitability in the food sector is statistically insignificant. The total assets, fixed assets and current assets did not have impact on the profitability.

The results of the study have agreed with Iqbal and Mati (2012) about the impact of fixed assets in food sector, whereas this result is not consistent with Azadi (2013) which concluded that the changes in fixed assets are significant for food sector.

5.4. Construction Sector

The following the results for 5 companies in the Construction sector:

5.4.1. TAT and ROA

In this sector, Tables 24 and 25 shows that there is an inverse relation between TAT and ROA. The correlation is (-0.796). Therefore, the model is insignificant because the F- value for the model is greater than 0.05.

Table 24: ANOVA[b]

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	0.006	1	0.006	5.190	0.107[a]
Residual	0.004	3	0.001		
Total	0.010	4			

a. Predictors: (Constant), TAT
b. Dependent Variable: ROA

Table 25: Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
(Constant)	0.172	0.038		4.567	0.020
TAT	-0.105	0.046	-0.796	-2.278	0.107

a. Dependent Variable: ROA

5.4.2. FAT and CAT and ROA

In the construction sector, it has been found that there is an association between FAT and ROA unlike the association between CAT and ROA due to the higher use of fixed asset in this sector. Tables 26 and 27 show the results:

Table 26: ANOVA[b]

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	0.006	2	0.003	1.473	0.404[a]
Residual	0.004	2	0.002		
Total	0.010	4			

a. Predictors: (Constant), FAT, CAT
b. Dependent Variable: ROA

Table 27: Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
(Constant)	-0.146	0.383		-0.381	0.740
CAT	0.173	0.235	0.410	0.737	0.538
FAT	-0.028	0.016	-0.939	-1.686	0.234

a. Dependent Variable: ROA

5.4.3. TAT and ROE

From Tables 28 and 29, it seems that the model is insignificant and the TAT in that it did not have impact on ROE in this sector.

Table 28: ANOVA[b]

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	0.004	1	0.004	1.186	0.356[a]
Residual	0.009	3	0.003		
Total	0.013	4			

a. Predictors: (Constant), TAT
b. Dependent Variable: ROE

Table 29: Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
(Constant)	0.197	0.059		3.328	0.045
TAT	-0.079	0.072	-0.532	-1.089	0.356

a. Dependent Variable: ROE

5.4.4. FAT and CAT and ROE

Tables 30 and 31 show that there is no impact for assets structure on ROE in this sector.

Table 30: ANOVA[b]

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	0.004	2	0.002	0.527	0.655[a]
Residual	0.008	2	0.004		
Total	0.013	4			

a. Predictors: (Constant), CAT, FAT
b. Dependent Variable: ROE

Table 31: Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
(Constant)	-0.218	0.546		-0.399	0.729
FAT	-0.024	0.023	-0.722	-1.018	0.416
CAT	0.236	0.335	0.500	0.706	0.553

a. Dependent Variable: ROE

In summary, the results indicate that there is no impact of assets structure on profitability in the construction sector. This means that the assets (fixed and current) are not utilized efficiently to increase the ROA and ROE.

The above result is consistent with Iqbal and Mati (2012) which concluded that the increase in fixed assets did not lead to increase in ROA and ROE.

5.5. Petro-chemical Sector

In this sector, the relationship between assets structure and profitability were analyzed for 9 companies.

5.5.1. TAT and ROA

The correlation between TAT and ROA is positive but it's not statistically significant at the level 0.05. TAT interprets 17% of the variation of ROA. Therefore, the model is insignificant and there is no impact for TAT on ROA. The Tables 32 and 33 show the results:

Table 32: ANOVA[b]

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	0.004	1	0.004	1.458	0.266[a]
Residual	0.017	7	0.002		
Total	0.020	8			

a. Predictors: (Constant), TAT
b. Dependent Variable: ROA

Table 33: Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
(Constant)	0.097	0.024		4.002	0.005
TAT	0.013	0.011	0.415	1.208	0.266

a. Dependent Variable: ROA

5.5.2. FAT and CAT and ROA

In the same manner, the Tables 34 and 35 show that the model is insignificant and there is no impact for FAT and CAT on the ROA in this sector due to the fact that the F- value is greater than 0.05.

Table 34: ANOVA[b]

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	0.009	2	0.004	2.163	0.196[a]
Residual	0.012	6	0.002		
Total	0.020	8			

a. Predictors: (Constant), CAT, FAT
b. Dependent Variable: ROA

Table 35: Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
(Constant)	0.114	0.026		4.363	0.005
FAT	0.009	0.005	1.066	1.965	0.097
CAT	-0.015	0.012	-0.661	-1.218	0.269

a. Dependent Variable: ROA

Note: the study could accept the impact of FAT on ROA at level of significance 0.10. In this case, the fixed assets have a positive association with ROA and the increase in fixed assets may lead to increase the return on assets.

5.5.3. TAT and ROE

In the Petro-chemical sector, as in Tables 36 and 37, it has been found that there is a strong association between TAT and ROE. The model of regression is significant because the F- value (0.004) is less than (0.05). TAT has an impact on ROE and this means that the assets in this sector are utilized efficiently to increase the ROE. The regression equation is:

$$\mathrm{ROE} = 0.102 + 0.057\mathrm{TAT} \quad (8)$$

Table 36: ANOVA[b]

Model	Sum of Squares	Df	Mean Square	F	Sig.
Regression	0.066	1	0.066	17.329	0.004[a]
Residual	0.027	7	0.004		
Total	0.093	8			

a. Predictors: (Constant), TAT
b. Dependent Variable: ROA

Table 37: Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
(Constant)	0.102	0.031		3.313	0.013
TAT	0.057	0.014	0.844	4.163	0.004

a. Dependent Variable: ROE

5.5.4. FAT and CAT and ROE

From Tables 38 and 39, it seems that there is a strong and significant association between FAT and ROE but not between CAT and ROE. The model of regression is significant at the level 0.05 and there is an impact of FAT on ROE unlike CAT.

Table 38: ANOVA[b]

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	0.072	2	0.036	10.578	0.011[a]
Residual	0.021	6	0.003		
Total	0.093	8			

a. Predictors: (Constant), CAT, FAT
b. Dependent Variable: ROE

Table 39: Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
(Constant)	0.115	0.034		3.354	0.015
FAT	0.018	0.006	0.974	2.911	0.027
CAT	-0.006	0.016	-0.115	-0.343	0.743

a. Dependent Variable: ROE

The results indicate that the investment in fixed assets in this sector lead to increase the wealth of shareholders of the companies. The regression equation is:

$$\mathrm{ROE} = 0.115 + 0.018\mathrm{FAT} \quad (9)$$

In summary, the results show that the fixed assets in the structure of assets in the Petro-chemical sector has impact on the profitability (ROE) of the companies and the increase in fixed assets is significant for this sector.

These results are consistent with Reyhani (2012) which concluded that the fixed assets have a positive significant effect on profitability (EBIT) and there is no impact for current assets on the EBIT.

The results of the present study in the chemical sector don't agree with those of Iqbal and Mati (2012) which concluded that there is a negative association between fixed assets and ROA and ROE. There is also a difference between this study and that of Azadi (2013) which concluded that the changes in current assets have a significant effect on profitability (operating earnings) for chemical industries.

6. SUMMARY AND CONCLUSIONS

This study aims at examining the effects of assets structure (fixed assets and current assets) on the financial performance (profitability) of some manufacturing companies listed on Muscat Securities Market (MSM). The study measures the assets structure by fixed assets turnover (FAT) and current assets turnover (TAT). The financial performance is measured by profitability by using ROA and ROE. The intangible assets were excluded because most of Omani Manufacturing companies did not have these assets. The financial statements of 28 Omani Manufacturing companies listed on MSM were analyzed for the period from 2008-2012 based on two levels; the all companies in the sample and three distinguished sectors in the manufacturing companies; food sector, construction sector and petro-chemical sector. The total manufacturing companies listed on MSM are 70, but some companies were excluded for many reasons. Firstly, some companies have made losses for 5 years (period of study). Secondly, some companies did not present their financial statements on the website (their websites and website of MSM). Finally, there are some other sectors consisting of one or two companies such as paper sector, electrical sector, textile sector and pharmaceutical industries sector. Therefore, for those reason, the final sample subject to analysis is 28 companies.

In general, the literature review reported in this study, can be divided into three categories. In the first one, the studies concluded that the structure of assets has a significant impact on the profitability. The second one includes the studies which concluded that only one type of assets has impact on the profitability; either fixed assets or current assets. The final one, includes the studies concluded that the structure of asset did not have impact on profitability. The results of the present study are consistent with the second category of the literature review. The overall result for the study is that the structure of assets doesn't have a strong impact on profitability in terms of ROE. This result means that if the structure of assets is changing then the ROA will not change. Another result of the study indicates that, only the fixed assets have impact on ROE unlike ROA. On the other hand, there is not any impact for current assets on ROE and ROA.

Another result of the study suggests that the effect of asset structure has an impact on ROE only in petro-chemical sector. In the food sector and construction sector, the assets structure doesn't have any impact on ROA and ROE.

One of the most important reasons of the above results is that the assets are not utilized efficiently to generate the profit. Another reason is that the sales and shareholders equity in the Omani manufacturing companies are higher than the assets but the net income is low. Finally, there is a significant difference between the percentage of fixed assets to total assets

and percentage of current assets to total assets in the manufacturing companies. Some companies have a higher percentage of fixed assets and other companies have a higher percentage of current assets. Therefore, the structure of assets in the Omani manufacturing companies is inconsistent and the results of the present study suggest that they make a balancing between the components of the structure of assets.

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EFFECT OF INFLATION ON INDIAN CONSUMER'S PURCHASE INTENTION

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Abstract: Indian economy is transforming into a consumption based economy from the early state of survival economy. Sustained increase in the prices of essential commodities over time has lead to a fall in the purchasing power of consumers and changes their consumption pattern. Even though the Planning Commission report projects that the, Indian economy would grow at the rate of 9-9.5 percent during the 12th Five year plan period (2012-2017), consumers in India are feeling the inflationary heat and are worried about their spending. Due to inflation, consumers are paying more for essential commodities and their savings are disappearing slowly. Inflation affects the consumer spending, business investment and over all mode of the economy. Keeping inflation low and stable has been one of the major challenges for the Indian government and the central bank. In the current macroeconomic scenario, inflationary condition creates uncertainty for the consumer about their purchase decision which will affect the whole business cycle. This paper focuses on how inflation affects the Indian consumer's spending and its effect on purchase intention. Research findings and discussion will be useful to marketers, retailers and policy makers.

Keywords: Inflation, Indian Consumer, Purchase Intention, Buyer Behavior, Effect of Inflation, Buying Decision

1. INTRODUCTION

Inflation is one of the periodic happenings, which very rarely captured the minds of the people and the media in the past. Fortunately, today, inflation has become the pivotal element of economic, political and social discussions in and around the globe. Inflation is gaining tremendous public attention as well as media coverage to its full extent (Shetty and Sreelakshmi, 2009).

Consistent rise in the price of essential commodities, relatively for a longer period is termed as inflation. Inflation tends to redistribute income and wealth. A state in which the value of

money is falling - that is prices are rising is defined as inflation. Too much money chasing too few goods creates inflation but too little money hurts growth (Gupta, 2011). Inflation has cost Indian consumers $129 billion over the last 3 years largely pushed by rising food and fuel prices (Badkar, 2013). Inflation is the price that ordinary Asians are paying for high growth rates (Devichand, 2011).

Inflation in India has traditionally been low and stable in developing country standard-averaging around 6.9% in last three decades, with reasonable stability. With inflation at a 13-year high at around 12 to 13% in the recent period and much above the Reserve Bank's perceived tolerable limit of 5.0%, there have been widespread concern in the policy circles and media for reasoning out possible causal factors and prescribing remedies (Samantaraya, 2009). Inflation is a global phenomenon and significant macroeconomic variable which affect the economic growth of all most all countries of the world. While some amount of inflation is inevitable and is perhaps necessary to accompany development, inflation beyond a certain limit is considered undesirable (Patra and Sahu, 2012).

Objective of this study is to first, by creating a compiled literature review, this paper assesses the factors leading to high inflation of food products in India. This paper also focuses on how inflation affects the Indian consumer's spending pattern, lifestyle and its effect on their purchase intention of food products like vegetables, egg, meat and fish, cereals and pulses which are having high inflation rate.

2. REVIEW OF LITERATURE

Inflation is probably the biggest bottleneck that is faced by India and its economic future (Prabhudesai, 2011). The high Inflation rate in India is backed by the factors such as galloping international crude oil prices, inflow of foreign capital and so on. A degree of perfect correlation could be found between Indian inflation and international crude oil price. The pressure of inflation in India is due to the tremendous growth in employment opportunities and astonishing growth in industrial and service output. The pricing disparity between the producers and the consumers, as to the agricultural products, is the major internal cause of inflation. Therefore, it is rightly called as 'agflation' or 'food inflation' (Kumar, 2008).

The Reserve Bank of India (RBI) has increased interest rates seven times in 2010 to control inflation. Goyal (2010) pointed out that a booming economy does add pricing power, but supply-side shocks can explain even manufacturing inflation. Inflation is largely supply-determined in India, but demand determines output. This is the precise sense in which the economy is supply-constrained. Pandey (2011) stated that lower and middle income group people feel the impact of inflation more severely.

A study conducted by Assocham has revealed that household savings of an average employee in the metros has come down by 45 per cent in the last six years due to the exorbitant rise in prices of essential commodities, fuel, education, burden on housing loan instalment and increase in health insurance premiums. Majority of the respondents said that they have been falling behind financially and their standard of living has deteriorated (Milmo, 2008).

The RBI, says inflation is because of shortages of food products. The Government says it is because of high prices of energy and other commodities. The Left (Communist Party) says it is because of speculation by international investors. The economists say it is because of the high fiscal deficit. And many others say it is because of growth. Another dimension for inflation is better quality. The cost of that improvement in quality has to get reflected in prices. Costs are bound to increase when loosely sold items get packaged, when investments are made in supply chains, when manufacturers start building in energy

efficiency, and so on. At present there is no way of assigning the cost of improvements in product quality and, therefore, no way of knowing how much of the inflation is being caused by it (Raghavan, 2011).

The average inflation rate (April-January) was 9.6% in 2010-11 and 9.1% in 2011-12. In the period 2002-10, inflation had averaged 5.1%. The first half of 2008 saw global food prices rising 41% over the previous year due to droughts and crop failures in several major food producing countries combined with a substantial diversion of foodgrains for ethanol production whose output increased by 32.3% in 2008 over 2007 in response to the steep hike in crude oil prices. The specific conditions that are responsible for this steep and sustained increase in foodgrain prices are gap in domestic demand and supply and rise in international prices (Kumar *et al.* 2010).

Bhat (2011) observed that high food inflation has become a matter of global socio-economic concern and must be addressed with a war-footing. An integrated approach to curb the demand-supply mismatch would be required to address the economic and policy issues to mitigate supply and distribution side constraints and risks due to natural calamities such as unseasonal rains, cyclones, floods, droughts, pests and diseases leading to a devastating effect on crop and livestock.

Chandrasekhar and Ghosh (2011) stated that food price inflation is one of the most critical economic problems in the country today, and the ability to control prices of food articles quickly and effectively is one of the main bases on which people will judge the performance of this government. India is one of the worst countries in the world in terms of hunger among the population, and the number of hungry people in India is reported to have increased between the early 1990s and the mid-2000s by the UN.

India is vulnerable because food price inflation has been high and it affects a large number of people with roughly 50 per cent of consumer expenditure of the poor certainly going to food (Thomas, 2011). Gupta (2010) stated that prices of all goods and services, irrespective of type, place or consumer, keep changing. The current inflationary cycle began with the rise in food prices caused due to poor monsoon ruining the kharif crop across India. But inflation was largely supply-driven by perpetual bottlenecks in the food chain choking the supply of every essential food items. A study by the UN's Food and Agriculture Organisation says a 10% inflation rise hits welfare of both rural and urban households in emerging economies. In India, inflation typically hits the organised, urban labour force the hardest (Haq, 2012).

Nair and Eapen (2012) studied the causes of the high inflation experienced in twelve food commodities between January 2008 and July 2010. It was shown that a majority of the commodities were subject to inflationary pressures due to domestic supply-side constraints. They include pulses, fruits, vegetables, meat, fish, spices, tea, coffee and sugar. Cost escalation was the primary reason for rising prices of milk and eggs (Chand, 2010).

Mazumdar (2010), pointed out that, in 2009, most of the food price inflation was explained away by the poor monsoons and the subsequent deficient rainfall, which did affect the production of crops and their supply. There is yet another school of thought which says that more than supply, it is the rise in aggregate demand (for food), especially in rural areas, due to rising incomes contributed by the Mahatma Gandhi National Rural Employment Guarantee Scheme (MNREGS), that has contributed to inflation in 2009.

Swaminathan (2013) stated that the major causes of the Indian agrarian crisis are unfinished agenda in land reform, quantity and quality of water, technology fatigue, access, adequate and timeliness of institutional credit and opportunities for assured and remunerative marketing. Adverse meteorological factors add to these problems. Farmers need to have

assured access and control over basic resources, which include land, water, bio-resources, credit and insurance, technology and knowledge management and markets.

Chanda (2011) observed that the growing demand for food from the developing world as the main cause behind the rise in prices. Nearly a quarter million new mouths coming to the world's table every day that result in ever-increasing supply of food. Bhargava (2010) stated that Indians today are consuming more fruits, vegetables, pulses, eggs, meat, chicken and milk. But the production of most of these has not kept pace leading into shortage. In some cases, the demand has been met by imports. But in others, the gap remains. Many pulses are only produced and consumed in India and cannot be imported. Fruits and vegetables are perishable, and India does not have the infrastructure needed to store such foods.

Hanif (2012) pointed out that poor individuals spend larger proportion of their income on food compared to rich. In low and middle income countries, food spending share (40 percent) is double compared to high income countries (20 percent) despite the fact that with the passage of time these shares have declined with increase in real per capita income. Change in dietary habits towards protein foods, pressure from growth policies, large increases in minimum support prices of food grains, Shocks from global food inflation, financialization of commodities are the main factors driving Food Inflation in India (Subbarao, 2011).

Min (2013) pointed out that in advanced economies, during the last two decades, economic growth was led by consumption, so much so that economic activity in these economies swung from investment to consumption by a total of 10 percentage points of GDP. As a result, in 2010 the share of consumption in their GDP had reached 81.6%. Meanwhile, emerging markets and developing economies provided almost a mirror image of this trend, raising their investment and boosting the supply of goods to the rest of the world at the cost of consumption in their own economies. In economies where investment levels are leading to excess capacity, resources could shift from investment to consumption.

Damodaran (2011) observed that food inflation is caused by the presence of too many intermediaries between the field and the important work. Such an extended value chain benefits neither the consumers (who pay through their nose) nor the farmers (who hardly gain even when retail prices go up).

Vittal and Shukla (2011) pointed out that food inflation is a national crisis of economic, social and emotional well-being that will affect not just the poor but also middle India. If this is not addressed with urgency, there could be a slowdown in consumption. The most transformative impact of food inflation will be that it could leave a lasting toll on the middle class. This will have a seriously adverse impact on consumption, consumer confidence and social equity. The shift in savings and consumption patterns is bound to have implications for both companies and the government.

The existing literature clearly shows that there is a limited amount of empirical studies on the Indian consumer's response towards inflation. This research gap provides a scope for exploring the consumer purchase intention and purchase patterns during inflation in the Indian context.

On the basis of the previous discussion, we put forward the following hypothesis

H_1: Price Awareness of the food product affects the consumer purchase intention
H_2: Consumer's affordability of the food products affects the consumers purchase intention
H_3: Consumer's willingness to pay affects the consumer purchase intention
H_4: The price of the food products affects the consumers purchase intention
H_5: The Price of the food products affects the consumers purchase patterns
H_6: The Price of the food products affects the consumer's lifestyle.

3. RESEARCH METHODOLOGY

This study was conducted in Tiruchirappalli district of Tamilnadu state during first half of 2013. For this cross sectional study the primary data was collected through a structured questionnaire from the households about their purchase intention and spending pattern during inflation. The questionnaires were circulated to the respondents with diverse income group. The survey instrument was simultaneously translated into Tamil (Mother tongue language of Tamilnadu) and distributed to collect the responses from farmers and labourer.

A sample size of 365 persons is recommended to be sufficient for data analysis (Hair *et al*. 1998). We collected 365 fully filled questionnaires from the different strata of income groups. The data was coded and analyzed with the help of SPSS 18.0. The association of the various factors was analyzed through factor analysis and the hypothesis was tested with the help of Multiple Regressions. The purchase intention of the consumers during inflation is studied with respect to the awareness, affordability, willingness to pay and price of the selected food products based upon the literature review. Table 1 shows the items referred for the awareness, affordability, willingness to pay and Purchase Pattern of the Indian consumer.

For this research, the instrument (questionnaire) development was done with the help of a panel of experts. The questionnaire development was followed by pilot study which was conducted to finalize the instrument. The validity of the questionnaire instruments were also confirmed with the real time survey. The reliability of the various measures and items was checked by internal consistency. Internal consistency reliability is assessed by computing Cronbach's alpha. The alpha coefficient for all the constructs of this study is given in the Table 3. All the constructs in our research model demonstrated the acceptable level of reliability.

Table 1: Measures of constructs

Constructs	Items	Source
Price	Price of Pulses and Cereals during last three months	Dodds and Monroe (1985)
	Price of vegetables during last three months	
	Price of Egg Meat And Fish during last three months	
Awareness	I am aware of the increase in the price of cereals and pulses	Seiders and Costley (1994)
	I am aware of the increase in the price of vegetables	
	I am aware of the increase in the price of eggs fish and meat	
Affordability	I can afford the increase in price of cereals and Pulses	Casassus *et al.* (2009); Nezakati *et al*. (2011)
	I can afford the increase in price of vegetables	
	I can afford the increase in price of eggs, fish and meat	
Willingness to pay	I am ready to pay for the price of cereals and pulses during inflation	Rodriguez *et al.* (2007)
	I am ready to pay for the price of vegetables during inflation	
	I am ready to pay for the price of eggs. Fish and meat during inflation	
Purchase Intention	I am willing to purchase the same quantity of cereals and pulses after price increase	Raats *et al.* (1995); Ajzen (2002)
	I am willing to purchase the same quantity of vegetables after price rise	
	I am willing to purchase the same quantity of eggs, meat and fish after the price rise	
Lifestyle	The increase in prices would affect my savings	Shimp and Bearden, (1982); Lichtenstein and Burton, (1990)
	I get anxiety and stress due to continuous price increase	
	My food habits are changed due to price increase	
Purchase Pattern	I buy cereals and Pulses in advance expecting rise in the price	Raats *et al.* (1995); Ajzen (2002)
	I buy vegetables in advance expecting rise in the price	
	The change in price affects my expenditure for cereals and pulses	
	The change in price affects my expenditure for vegetables	
	The change in price affects my expenditure for eggs, fish and meat	

With reference to the foregoing literature review, a conceptual model is proposed in Figure 1 to explain the Indian consumers' purchase intention and spending pattern during inflation.

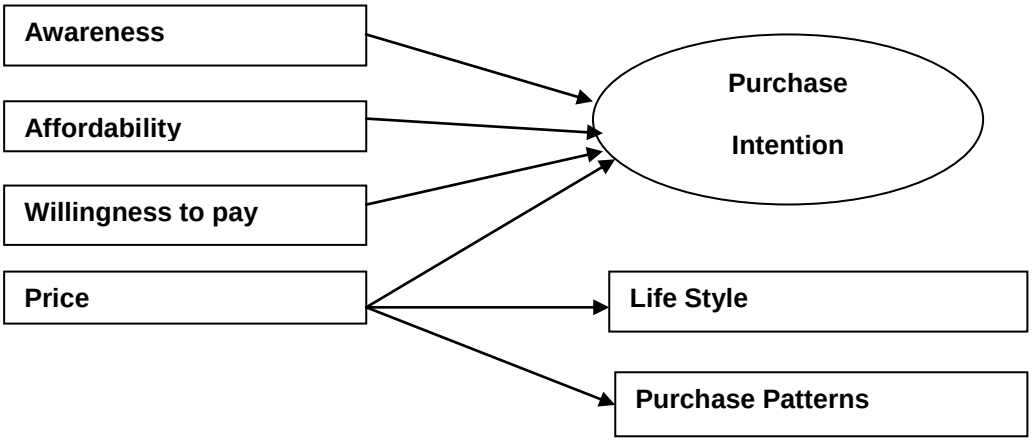

Figure 1: Conceptual framework

4. RESEARCH FINDINGS

This research work adds new findings, insights and knowledge to the body of literature in the context of inflation and consumer behavior. The insights from the current study encompass the multiple aspects of the purchasing decisions by the Indian consumers during the inflation.

Our respondents (please refer Table 2) include farmers, laborers, and people working in Private and Govt. Organization as well as Self-Owned Businesses. The respondents of this study also include the various income groups families of the chosen area. Among the respondents the majority of our respondents are in the household income group of Indian Rupees 6000-15000. Apart from the diverse income groups, the education qualification also shows that this study has captured the response from the different socio-economic backgrounds. Both private and government organizations employee were surveyed in this study. There are also a significant number of responses from the self-owned businesses owners and laborers.

According to the respondents (please refer Table 4) major reasons for the increasing food prices are food storage problems (factor loadings=7.40), change in food habits (factor loadings=7.37) and increase in the demand (factor loadings=7.23). The other important reasons are drought/ monsoon failure/ heavy rain, online commodity trading and policies of the Government.

Table 2: Demographics of respondents

Characteristics	Category	Frequency (n=365)	Percentage (100)
HouseHold Income (InIndian Rupees)	Up to 6000	51	14.0
	6000-15000	113	31.0
	15000-25000	98	26.8
	25000-40000	68	18.6
	40000-60000	22	6.0
	60000-above	13	3.6
Education	High School	72	19.7
	Graduate	56	15.3
	Post Graduate	126	34.5
	Others	111	30.4
Occupation	Farmer	66	18.0
	Labourer	89	24.4
	Working in Private Organization	93	25.5
	Working in Government Organisation	78	21.4
	Self-Owned Business	27	7.40
	Others	12	3.3
Family Members	2	12	3.3
	3	65	17.8
	4	137	37.5
	5	93	25.5
	Above 5	58	15.9

Table 3: Factor loadings of consumer purchase pattern for select food products during inflation

Constructs	Items	Factor Loadings	Cronbach alpha
Price	Price of Pulses and Cereals during last three months	0.773	0.736
	Price of vegetables during last three months	0.809	
	Price of Egg Meat And Fish during last three months	0.560	
Awareness	I am aware of the increase in the price of cereals and pulses	0.778	0.749
	I am aware of the increase in the price of vegetables	0.875	
	I am aware of the increase in the price of eggs fish and meat	0.794	
Affordability	I can afford the increase in price of cereals and Pulses	0.793	0.793
	I can afford the increase in price of vegetables	0.902	
	I can afford the increase in price of eggs, fish and meat	0.825	
Willingness to pay	I am ready to pay for the price of cereals and pulses during inflation	0.913	0.865
	I am ready to pay for the price of vegetables during inflation	0.893	
	I am ready to pay for the price of eggs. Fish and meat during inflation	0.855	
Intention	I am willing to purchase the same quantity of cereals and pulses after price increase	0.871	0.855
	I am willing to purchase the same quantity of vegetables after price rise	0.902	
	I am willing to purchase the same quantity of eggs, meat and fish after the price rise	0.870	
Lifestyle	The increase in prices would affects my savings	0.751	0.645
	I get anxiety and stress due to continuous price increase	0.825	
	My food habits are changed due to price increase	0.722	
Purchase Pattern	I buy cereals and Pulses in advance expecting rise in the price	0.763	0.697
	I buy vegetables in advance expecting rise in the price	0.765	
	The change in price affects my expenditure for cereals and pulses	0.719	
	The change in price affects my expenditure for vegetables	0.801	
	The change in price affects my expenditure for eggs, fish and meat	0.691	

Table 4: Factors responsible for food price increase

Factors	Mean	Factor Loadings
Drought / Heavy Rain / Monsoon Failure	4.00	0.654
Policies of the Government	4.01	0.612
Food Storage Problems	3.66	0.740
Change in Food Habits	3.67	0.737
Global Price Rise	3.76	0.550
Increase in minimum support prices of agricultural commodities	3.79	0.601
Intermediaries/Middleman/Channel Members	3.83	0.486
Increase in the demand	3.34	0.723
Online Commodity Trading	3.95	0.632
Increase in the Gap of demand and supply	3.94	0.603

Majority of our respondents have the family size of 4-5 members which shows the popularity of the nuclear families among the region. Also, the respondents have given interesting insights about their shopping during inflations. Television has been found to be the major source of information about the price increase for the families. The store itself is the next major source to know about the price increase. This shows that purchase decisions of the selected food items are being done in the store. Based upon the price increase within the limited time the consumers are making the purchase decisions about the choice of the vegetables and quantity of the cereals and pulses. Fluctuation in vegetable prices decides the range or variety of products to be purchased by each household. This has enormous scope in making the consumers involve in the sales promotions and activities.

Consumers are shopping for the selected food items such as cereals and pulses in the modern retail outlets and supermarkets as per the survey. With a chunk of 49.9 per cent respondents opting for the supermarkets and moderns retail settings there is an opportunity for the different private labels and store labels in the category of pulses and cereals. By doing these consumers intends to save some amount of money in the shopping process. During the price increase of the various food products respondents are stating that they would reduce their quantity of the food products usually purchased. This shows a strong indication of the price sensitivity of the Indian Consumers in the food products. Although 28 per cent of the respondents have said that they are going to buy the same quantity of the chosen products even during the price increase.

62.5 per cent stated that among the different category of food products the vegetables are highly priced. The exploratory factor analysis of the Price construct result also shows that the price of the vegetables in the last three months has highest factor loading (.809). Meat is the next category of food products which is highly influenced during inflation followed by cereals and pulses.

As far as purchase patterns are concerned family with four members in the income group of Rs 6000-15000 are spending an average of Rs. 2300 for cereals and pulses with purchase frequency of two times per month. For vegetables the same group of family spends on an average of Rs. 1300 for vegetables with a purchase frequency of five to six times per month. Out of 365 respondents 28 percentages are consuming egg, fish and meat on weekly basis with an average budget of Rs. 1100 per month.

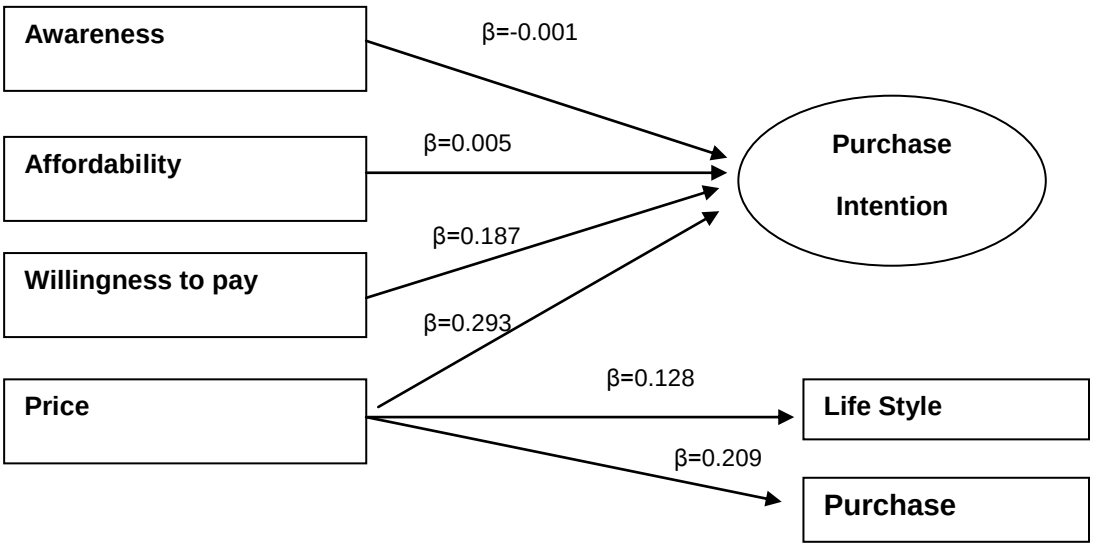

Figure 2: Results of hypothesis testing

Table 5: Path coefficient

Hypothesis	Relationship	Beta	t	Significance
1	Awareness→Purchase Intention	-0.001	-0.015	Not Significant
2	Affordability→Purchase Intention	0.005	0.098	Not significant
3	Willingness to pay→Purchase Intention	0.187	3.149	0.002*
4	Price→Purchase Intention	0.293	4.908	0.000*
5	Price→Lifestyle	0.128	2.482	0.014*
6	Price→Purchase Patterns	-0.209	-4.022	0.000**

The formulated hypotheses were tested with multiple regressions in SPSS 18.0. The multiple regressions have been used to study the linear relationships of the multiple factors (price, awareness, affordability, willingness to pay) simultaneously with respect to consumers purchase intention(refer Figure 2 and Table 5).

Willingness to pay (beta=0.167, $p<0.05$) emerges as the deciding factor in the consumer purchase intention. Hence we accept the Hypothesis 3. Also the perceived Price of the food products has a significant amount of relationship (beta=0.293, t=4.908, p=0.000) towards the consumer purchase intention during inflation. Hence we accept the Hypothesis 4.

Based upon the results we have found that the relationship variable of Hypothesis 1 and Hypothesis 2 have very insignificant values. Hence Hypothesis 1 and Hypothesis2 are not accepted. This implies that the Awareness of the selected food products prices as well as Affordability have least significant impact on the consumer purchase intention.

We have also analyzed the price of the food products and their impacts on the consumer's lifestyle and purchase patterns. In the case of our Hypothesis 5 (beta=0.128, $p>0.14$) we found a high t-value (t=2.482) which supports our hypothesis that Price has an impact on the consumers lifestyle. In Hypothesis 6, there is a significant path value (beta=-0.209, t=-0.4022, $p<0.000$), thus we accept the hypothesis 6.

When we compare the path value of the various relationships as formulated in our hypothesis section, we have found that Price is strong indicator for consumer purchase

intention along with the consumers' willingness to pay for the select food products. In the case of consumer's lifestyle and purchase patterns, we have inferred that the rising prices have strong influence on the purchase patterns such as advance buying of food products and adjusting the consumption amount of the various food products studied. Also the highly fluctuating food product prices have caused change in the food habits as well as stress and anxiety in the lifestyle of consumers.

The following suggestions were received from the respondents to minimize the inflation, especially the food inflation in India. Concentration on agriculture, providing more dignity and privilege to the agriculture laborers, empowers farmers, encourage agricultural entrepreneurship, contract farming, encouraging corporates to the agriculture. Change in pricing policies, Govt. subsidies and policies, focus on agricultural development by planning commission, direct outlets by farmers without intermediate brokers, Food management, Better storage and preservation facilities, meet demand and supply, better logistics and supply chain.

Increasing farm productivity, increasing access to farm credit, development of post-harvest storage infrastructure, fertilizer availability will improve the agriculture productivity which results in lower rate of inflation.

4. MANAGERIAL IMPLICATIONS

Till now there is no specific study to study the consumers purchase intention and behavioral patterns during the inflation. This paper is first of its kind which covers the various aspects of inflation and its influence on the consumers purchase patterns and lifestyle. This is one of the pioneering studies to provide a comprehensive picture about the consumer behavior in the Indian context

Based upon the response, it is found that consumers are ready to pay for the price of cereals and pulses during inflation. But vegetables are most affected food category during inflation which results in change of purchase patters of vegetables. They are compromising on the purchase patterns of vegetables with cereals and pulses. Based on demand and supply outputs and festivals, vegetables prices are in high fluctuation. The seasonal variations such as drought, heavy rain and monsoon failure are the major causes for price increase of vegetables.

Since the shelf life of the vegetables is very less, and there is lack of modern storage facilities for the vegetables the price of the vegetables are more fluctuating. The rise in the agricultural productivity, price policy, focus on supply chain management and managing competition for land from Non-Farm activities would result in increase of productivity and reduction in the price of the vegetables. When vegetable prices are increasing consumers are buying more cereals and pulses during the inflationary which results in the change their food habits. It is clear from the research that price increase have affected the savings of the families which results in anxiety and stress. Moreover the food habits are also changed due to price increase which results in forced substitution of one food item over another.

Since the inflation rate is more than that of the bank interest rates, the savings of the families get affected. Unnecessarily consumers are paying more for the same items with same quantity. This study also shows that due to Inflation lower income groups are more worried and anxious which further results in the change in normal lifestyle. Because of high inflation in India, families are more stressed about their planning of monthly budget, and private employees are forced to take additional incomes generating jobs.

Inflation affects the consumer spending, business investment and over all mode of the economy. The government plans to set up measures to help lower-income households, particularly in rural areas, to deal with the recent sharp increase in food prices. Because of high inflation of food items, Tamilnadu state government has opened low price restaurants for poor people in the major cities. The public distribution system (PDS) is providing below poverty line (BPL) families with 4 kg of free rice per family member and Pulses at a subsidized rate. The recently proposed Food security bill ensures 5 kilogram of food products at the price of Rs 3 per kilogram for a family.

There is transfer of wealth from the consumer, not to the producer but to the middlemen, who take speculative positions in the derivatives market without any genuine exposure to the underlying commodity. Growing the crop is not a challenge, burden of food delivery costs. Rationing of food has been an established practice in India since Independence.

India can become the food supplier of the world. It has the cultivable land, all the seasons for production of all varieties of fruits and vegetables, an agribusiness system that works although it needs to be vastly improved. The single most important problem faced by the Indian agricultural industry is the highly inefficient supply chain, Because of lack of cold chain infrastructure and also a food processing industry where about 20 percent of all foods produced in India are wasted.

5. CONCLUSION

This study is unique in several ways to explore the consumer behavior and the factors influencing purchase patterns. This paper is a pioneer work in Indian context with respect to the impact of food inflation on Indian Consumers. This paper also discusses in detail about the various reasons for inflation in the food product categories. The detailed account of the various suggestions and measures are given in this research paper to tackle this ever-growing price rise or inflation of the food products. It is the collective responsibly of the all stake holders to involve themselves to for controlling the inflation which result in economic growth and prosperity of the nation. Our study findings would be beneficial for food product marketers and policy making agencies for further research. The current research offers an extended scope for further study with relevance to consumption of other essential categories.

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THE INFLUENCE OF KNOWLEDGE MANAGEMENT STAGES ON COMPETITIVE ABILITY IN INDUSTRIAL ENTERPRISES

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Abstract: Recently the idea is prevailing that knowledge management is the main source creating the competitive ability of an enterprise. In contemporary world of business the complicated processes take place: strong competition, rapid changes in price, confusion in the market. Enterprises seek for new ways how to remain in business and to compete effectively against other enterprises each day. One of the methods how to do it effectively is to recognize or to discover anew such resources of the enterprise, which have not been exploited sufficiently. It is more often noticeable that the results of an organization are highly affected not by material resources but by continuously dominating knowledge resources and which are difficult to measure. To improve results and to possess an appropriate advantage the knowledge should be managed properly. The empirical research is presented, the basis of which is a questionnaire. The research results have revealed a positive effect of separate stages of knowledge management on the competitive ability of an enterprise. The highest attention of the stages being assessed should be paid by managers to the practical application of knowledge, since this stage reflects the ability of the enterprise to turn knowledge into the competitive advantage.

Keywords: Knowledge Management, Competitive Ability, Industrial Enterprises

1. INTRODUCTION

Knowledge is considered to be the most valuable, but at the same time the most complicatedly managed resource of an enterprise. It is noticeable that knowledge itself does not guaranty the competitive ability of enterprises; everything depends on how the enterprise succeeds in the implementation of knowledge management stages and application of knowledge itself in its activity. The essence of a scientific problem is to identify the main stages of knowledge management to the competitive advantage of an enterprise.

Often the integration of knowledge management stages into the activities of enterprises is poor, since the efforts including monetary are needed for the successful run of the processes, therefore it is necessary to find out which stages of knowledge management are the most essential in the enhancement of competitive ability of industrial enterprises and to give a particular attention to the identified most essential stages in the management of enterprises.

The knowledge management and its stages were analysed by the scientists of different countries such as Guthrie (2000); Wiig (1999); Bieliunas (2000); Kalkan (2008); Paswan and Wittman (2009); Collison and Parcell (2010); Baer *et al.* (2010). The influence of knowledge management on the competitive ability of an enterprise was analysed by: Zack (1999); Perez and Ordonez (2003); Chuang (2004); Kikoski and Kikoski (2004), Atkociuniene (2009), Barkauskas (2009), Mozuraitiene *et al.* (2011).

Despite a fair interest in this subject, an individual influence of knowledge management stages was little analysed. After the analysis of scientific literature it emerged that scientists accentuate a common relationship of knowledge management and of the competitive ability formed as the result of knowledge. The knowledge applied is a unique resource of every company, which helps to constantly introduce innovations, to react quickly to consumers' needs and to supply the market with a competitive product. Each author analysing the influence of knowledge management on the competitive ability of an enterprise has considered different subjects, however they all unanimously agree that knowledge management has a significant impact on the competitive ability of an enterprise, and they all have to develop and to create knowledge management continually in order to make their activity more effective and providing higher benefit for the enterprises.

2. METHOD

Analysis of scientific literature (in order to emphasize relationship of knowledge management and competitive ability in theoretical aspect), questionnaire (employees of industrial enterprises), and statistical analysis (by systematizing questionnaire data and determining the strength of relations between knowledge management stages and rates of competitive ability) were applied.

The restrictions of this empirical research are abstracted. The questionnaire was performed once, i.e., in March-April of 2012, and was not repeated. During the research the employees of two industrial enterprises were questioned. In one company 67 employees were working and in another – 94 employees. In total 109 respondents were questioned. After the analysis of the performed scientific researches about knowledge management and its influence on company's competitive ability it was noticed that most researchers (Mundra *et al.* 2011; Liu *et al.* 2004; Chuang, 2004) use a questionnaire form.

A questionnaire was formed for the employees of two chosen industrial enterprises. This questionnaire is intended for finding out their opinion about knowledge management pursued by the enterprise. The questionnaire was formed under the researches carried out during which knowledge management at the enterprises was analyzed (Probst *et al.* 2006; .Mundra

et al. 2011; Byrd and Turner, 2001; Auskalnyte and Ginevicius, 2001).

The question for the assessment of knowledge management stages was formed on the basis of knowledge management stages accentuated by Probst *et al.* (2006). The questions about knowledge acquirement, application, renewal, sharing with other are made up referring to the research of influence of knowledge management on the competitive ability and innovations performed by Mundra *et al.* (2011). The evaluation elements of competitive ability are presented referring to Byrd and Turner (2001) as well as Auskalnyte and Ginevicius (2001).

When making up the questionnaire it was necessary to analyze the main criteria for the assessment of the competitive ability. Many scientists who have analyzed the influence of knowledge management on the competitive ability of the enterprise, used to choose different identification criteria for the evaluation of competitive ability. For the assessment of competitive ability Liu *et al.* (2004) used the following criteria: scope of sales, quality of product and service, company's image, possibilities of information technologies, possibilities of teaching, financial possibilities and potentials of international management. While Holsapple and Joshi (2001) for the assessment of competitive ability applied: productivity, flexibility, innovations and reputation. Mozuraitiene *et al.* (2011) for evaluation of company's competitive ability suggest using the following rates: human, financial, marketing, productivity. It was decided to refer in the research to a wide spectrum of rates of the competitive ability, the variety of which is well reflected by the criteria of measurement of the competitive ability by Chuang (2004): innovations, situation in the market, production scope. Besides those rates for the measurement of competitive ability the product quality and product price were assessed (Auskalnyte and Ginevicius, 2001), since an attractive, qualitative product has to satisfy the needs of customers and it has to be available to him. If the company fails to introduce into the market the product meeting the needs of the market, it will not be able to compete against other companies, will not obtain necessary income and will not be able to improve the activity pursued.

During the research 140 questionnaires were presented in order to ensure a sufficient sample of the research, however only 109 of questionnaires were filled up correctly. 92 men and only 17 women participated in the questionnaire. Such a distribution of respondents is because the enterprises being surveyed are industrial and most their employees are men. Even 31 percent of respondents who participated in the questionnaire have higher university education, 28.5 percent of respondents have secondary education with a professional qualification, 25.7 percent – further education, 11.9 percent – secondary education and 3.7 percent have higher non-university education. 36.7 percent of respondents have been working at the enterprise for 5-10 years, 27.2 percent have been working for more than 10 years, 31.2 percent have been working for 1-5 years and the rest, i.e., 4.6 percent have been working for less than a year.

3. RESULTS

The section of results is composed of two subsections, in the first one the relationship between knowledge management and competitive ability is analyzed, and in the second the results obtained during empirical research are introduced.

The competitive ability of an enterprise depends on its capability to provide itself with valuable and rare resources. Such resources allow the companies to distinguish, and this oneness may be enduring. And one of such resources is knowledge, which is hard to imitate and copy by the competitors. From the point of view based on resources, the scientists having analyzed knowledge management have determined also the other resources related to knowledge management, which have some effect on the competitive ability formed by the enterprise. Pan and Scarbrouth (1998) accentuated two categories of knowledge management: 1. technological resources of knowledge management composed of

informational technologies, 2. social resources of knowledge management involving structural, cultural, and human resources.

Gold *et al.* (2001) claim that technical elements of knowledge management are essential resources of the enterprise activity and the resources creating a long-term competitive ability of the enterprise. The technologies used by the enterprise allow the company creating and seeking for new knowledge as well as constantly observing the resources of knowledge. Technical elements of knowledge management allow the enterprise introducing innovations and continually improving the quality of a product (Zhang *et al.* 2010). Thus, those resources enable the enterprises to implement necessary procedures, to reduce expenditure and increase the quality. Technical resources of knowledge management facilitate the creation, accumulation, protection, distribution of knowledge and allow controlling the knowledge flows.

While social resources are also grouped into structural, cultural and human resources of knowledge management. Structural resources are, for example, when an organization may repress or stimulate knowledge management (Nonaka *et al.* 2000), cultural resources of knowledge management are when a culture encourages people to create and distribute knowledge (Holsapple and Joshi, 2001). Meanwhile human resources are employees' knowledge, skills, education, experience, etc. According to Chuang (2004) the enterprises which have strong social resources of knowledge management are able to:

- incorporate more effectively the processes of knowledge management and business planning;
- develop innovative programs, which satisfy the needs of enterprise more quickly than competitors;
- prognosticate future needs of customers more rapidly than competitors.

As we may see, social resources of knowledge management allow performing a lot of actions related to a successful activity of the company. However these resources are developing for a long time and the company is not able to subordinate those resources rapidly for the pursuit of successful activity.

According to Lubit (2001) to create the competitive ability of an enterprise, knowledge should be distributed quickly inside the enterprise, but not allowing it to reach the competitors. On one hand, such knowledge which is easy to distribute inside the company may quickly extend outside the company and reach the competitors, On the other hand, there such knowledge exists which is possessed only by particular employees of the company, i.e., their skills which are hard to copy and develop. According to Nonaka *et al.* (2000) due to the reason that expressed knowledge may be copied by the competitors, it may lose a competitive advantage. However, it may not be claimed that a non-expressed knowledge is much more important to the company than expressed one. Meso and Smith (2000) notice, that knowledge of both types interacts, helps creating new knowledge and applying it in suitable and useful direction for the enterprise. Agreeably with mentioned, Kikoski and Kikoski (2004) state that the enterprise will obtain a competitive ability if the enterprise values both expressed and non-expressed knowledge.

Knowledge management includes more stages such as knowledge acquirement, development, sharing, application, protection (Massa and Testa, 2008). Therefore when analyzing what effect different stages of knowledge management have on the competitive ability of the company, it is necessary to review and analyze more researches which focus on all stages of knowledge management. The research carried out by Liu *et al.* (2004) showed the influence of knowledge management on the competitive ability of an enterprise. These authors identified knowledge management with proper technologies and experience in designing and manufacturing a product. They analyzed the ability of an enterprise to obtain, develop, reserve and share knowledge. While the competitive ability they measured

choosing the following criteria: scope of sales, quality of product and service, company's image, possibilities of information technologies, possibilities of teaching, financial possibilities and capabilities of international management. The hypothesis, i.e., different abilities of knowledge management of various enterprises differently affect the competitive ability of enterprises, was proved applying the criterion of Chi squares' compatibility (see Table 1).

Table 1: Example of the construction of one table

Elements of knowledge management	Competitive ability	
	X^2	P-value
Knowledge acquirement	696.035	0
Knowledge development	358.82	0
Knowledge protection	402.655	0.005
Knowledge distribution	857.226	0

Source: Adapted by the authors with reference to Liu *et al.* (2004)

Knowledge management includes more stages such as knowledge acquirement, development, sharing, application, protection (Massa and Testa, 2008). Therefore when analyzing what effect different stages of knowledge management have on the competitive ability of the company, it is necessary to review and analyze more researches which focus on all stages of knowledge management. The research carried out by Liu *et al.* (2004) showed the influence of knowledge management on the competitive ability of an enterprise. These authors identified knowledge management with proper technologies and experience in designing and manufacturing a product. They analyzed the ability of an enterprise to obtain, develop, reserve and share knowledge. While the competitive ability they measured choosing the following criteria: scope of sales, quality of product and service, company's image, possibilities of information technologies, possibilities of teaching, financial possibilities and capabilities of international management. The hypothesis, i.e., different abilities of knowledge management of various enterprises differently affect the competitive ability of enterprises, was proved applying the criterion of Chi squares' compatibility (see Table 1).

As we may see from the data of research made by Liu *et al.* (2004), all elements of knowledge management are tightly related to competitive ability of the enterprise. This research was performed in the companies possessing high technologies. The technologies are one of the factors allowing much more effectively managing the knowledge. In the enterprises featuring by a high level of technologies the knowledge is easier identified, quicker recorded, protected and of course if employees have access to database, this knowledge may be distributed more rapidly and used in a proper direction. However this research and its results not necessarily will be identical to all enterprises. Since in this case 500 largest companies in a world were researched, which are the strongest and it would not be fair to apply analogically the data obtained for not so big national enterprises. To ascertain that the results obtained in this research may be applied also for other enterprises, the enterprises of other sector could be researched and the derived results could be compared.

In 2004 and 2005 Karaszewski (2008) carried out the research the purpose of which was to determine the influence of knowledge management in development of international competitive potential of the enterprise. In opposite to other above mentioned researchers, he did not analyse separate elements of knowledge management and their influence on the competitive ability.

With a help of questionnaire it was tried to ascertain which of elements of knowledge management is the most important in the enterprise. The ability to use knowledge effectively is one of the basic warrantors for a successful activity for every organization, and the results obtained proved this, i.e., the employees understand that different stages of knowledge management are important for the enterprises. Under the opinion of respondents all named elements of knowledge management are significant for the activity of enterprise. All answers of the respondents are distributed almost evenly (standard deviation is 0.09). The most important element is application of necessary knowledge in a proper direction (4.48 points). The least important, according to respondents, is acquirement of new knowledge from external sources, however this element of knowledge management is also important for the enterprise in implementation of knowledge management (4.22 points). The knowledge management is a continuous process, interaction of all elements of knowledge management. The obtained results only prove the fact, that knowledge management is impossible without any of elements of knowledge management. An equal significance and importance should be given to all elements of knowledge management.

One of the most important questions to the respondents was to evaluate the influence of knowledge management elements applied in the company on the competitive ability (see Figure 1).

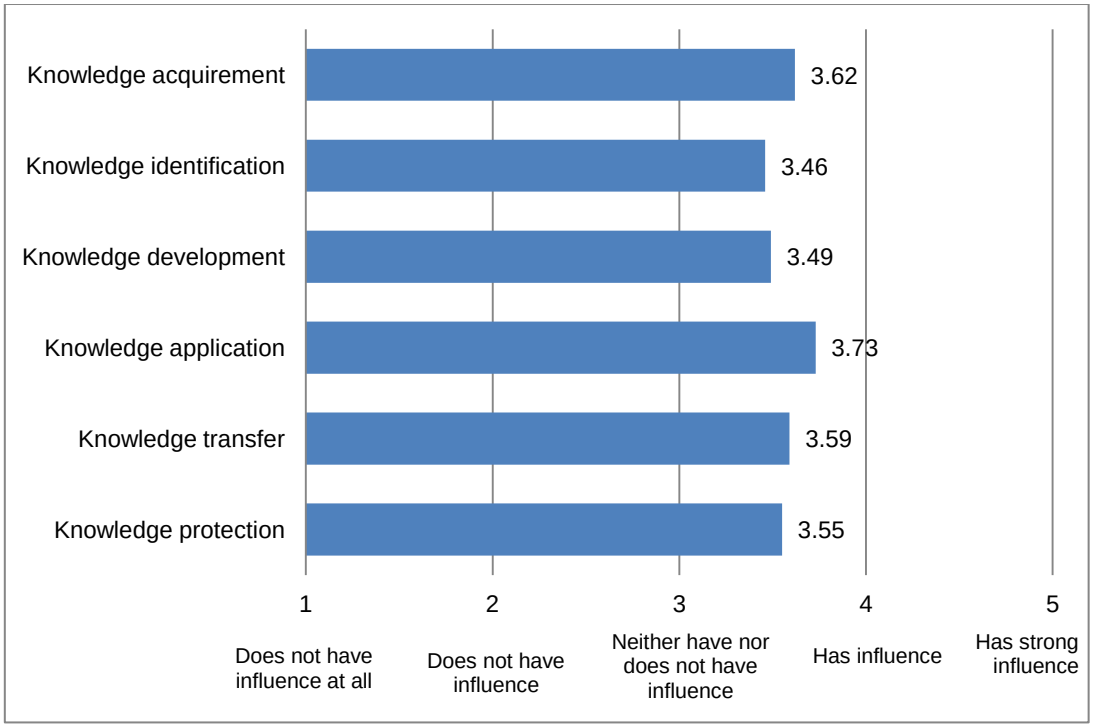

Figure 1: Distribution of the influence of knowledge management elements on the competitive ability of enterprises, average

The strongest influence, as we may see from data submitted, on a general competitive ability of enterprise is of knowledge application (3.73 points) and knowledge acquirement (3.62 points). We may notice that points are distributed almost evenly and there are no significant differences (standard deviation 0.10) and the results of research are statistically reliable (0.02). Though employees think that different knowledge is important to the company and knowledge management elements are also important in creation of knowledge management, however as for the influence of knowledge management elements on the competitive ability of enterprise the opinion of respondents is not so good. This may be explained by fact that employees are not informed about knowledge management, they do not know whether the enterprise has such an initiative, therefore evaluate the knowledge management itself only

moderately.

When comparing two separate enterprises it is necessary to note, that better results of both enterprises differ. In the first enterprise the competitive ability of the company is mostly influenced by knowledge application, while in the second enterprise the competitive ability of the company is mostly influenced not only by knowledge application, but also by knowledge acquirement. The elements of knowledge management in the first enterprise have the highest influence on a product quality (3.67 points), and in the second enterprise – on innovations (3.82 points).

Table 2: Calculation of correlation coefficient between the influence of knowledge management stages on competitive ability of enterprises and competitive ability of enterprises

Rates	**Influence of knowledge management stages on competitive ability of enterprise**	**Competitive ability of enterprises**
Innovations	3.74	3.5
Situation in the market	3.7	3.5
Production scope	3.48	3.5
Price of products	3.22	3
Quality of products	3.72	4
Average value	**3.57**	**3.5**
Standard deviation	**0.22**	**0.35**
Correlation coefficient	**0.79**	

The fact that knowledge management has impact on the company's competitive ability is also indicated by the correlation coefficient, which was calculated between the influence of knowledge management elements on competitive ability of enterprise, i.e., innovations, situation in the market, production scope, price of products and product quality, and between competitive ability of enterprise (see Table. 2).

The calculated correlation coefficient is 0.79, according to Ganiprauskas (2008), when correlation coefficient is higher than 0.71, the relation is strong. The result obtained shows that the knowledge management stages have a strong positive effect on the company's competitive ability. Such results are conditioned by the fact that in creation of competitive ability the most attention in the companies is paid on non-expressed knowledge, they namely influence the competitive ability. It is necessary to notice, that the implementation of knowledge management stages is evaluated better than the competitive ability of the enterprise. This indicates that the enterprise fails to exploit fully the stages of knowledge management to reach higher competitive ability of enterprise. The companies being researched should consider more the significance of knowledge management stages, to uphold them and to exploit more the knowledge for development and increase of long-term competitive ability.

4. CONCLUSION

After the analysis of scientific literature it came out that scientists when analyzing the influence of knowledge management on the competitive ability do not distinguish separate stages of knowledge management and usually generally analyze the relation between knowledge management and competitive ability. The knowledge used is a unique resource of

each company, which helps constantly introducing the innovations, to react rapidly to consumers' needs, and to deliver a competitive product into the market, to improve the rates of competitive ability in other ways. Each author analyzing the influence of knowledge management on the competitive ability of enterprise has considered different objects, however all solidly agree that knowledge management has a significant influence on the company's competitive ability, and they all must constantly improve and create knowledge management in order to make their activity more efficient and providing more benefit to the enterprises.

The results of research revealed the relation between a positive influence of separate stages of knowledge management on the competitive ability of enterprise. It was determined, that the knowledge acquirement and knowledge application have a strong effect on the companies' competitive ability, the knowledge identification and development have a significant effect, and the knowledge protection and transfer have a mean effect. Thus it may be stated that the most attention by the managers should be paid to the knowledge acquirement and practical use. A practical knowledge application is very important only because if knowledge is not used in this stage, the efforts made in all other stages will lose sense and instead of competitive advantage attained the enterprise will reduce it wrongly exploiting its resources.

It is suggested to increase the employees' consciousness about knowledge management and its benefit to the enterprise. Although the employees understand that diverse knowledge is important for successful activity of enterprise, however the research results have indicated that different stages of knowledge management could influence more the competitive ability of the company. The managers of enterprise should initiate the interest of employees themselves to exploit the company's knowledge as efficiently as possible and to apply it in the enterprise.

The research results have shown that different stages of knowledge management affect the competitive ability of enterprises in different ways. The enterprises should strive to ensure continuous process of all stages of knowledge management, to focus not only on upholding the knowledge acquirement and protection (strong influence of these elements on competitive ability was determined), but on a successful implementation of all stages. Only a systematic implementation of all stages is able to decrease the gap between different elements of knowledge management and to increase a total influence of knowledge management elements on the company's competitive ability.

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ECONOMIC RELATIONS OF GERMANY WITH BRIC COUNTRIES – THE ROLE OF GERMAN GOVERNMENT

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Abstract: The aim of the paper is to examine the role of German government in the promotion of German companies export in such markets as Brazil, Russia, India and China. In this context such measures as intensification of political relations, trade and investment guarantee schemes and use of development policy will be analysed. In the paper three types of data are used. Firstly, I analyse recent tendencies in the German trade with BRIC countries. Secondly, I examine the changes in the funds spent by the German government on export and investment guarantee schemes. Additionally, the next source of information constitutes evaluation of sector strategies of the German ministries involved in facilitating international trade.

Keywords: Germany, Russia, China, India, Trade, Investments

1. INTRODUCTION

German companies already after 2000 saw the potential of the emerging markets. During the last decade some hopes connected with expansion on the markets of the BRIC economies started to materialize, what is true especially for China.

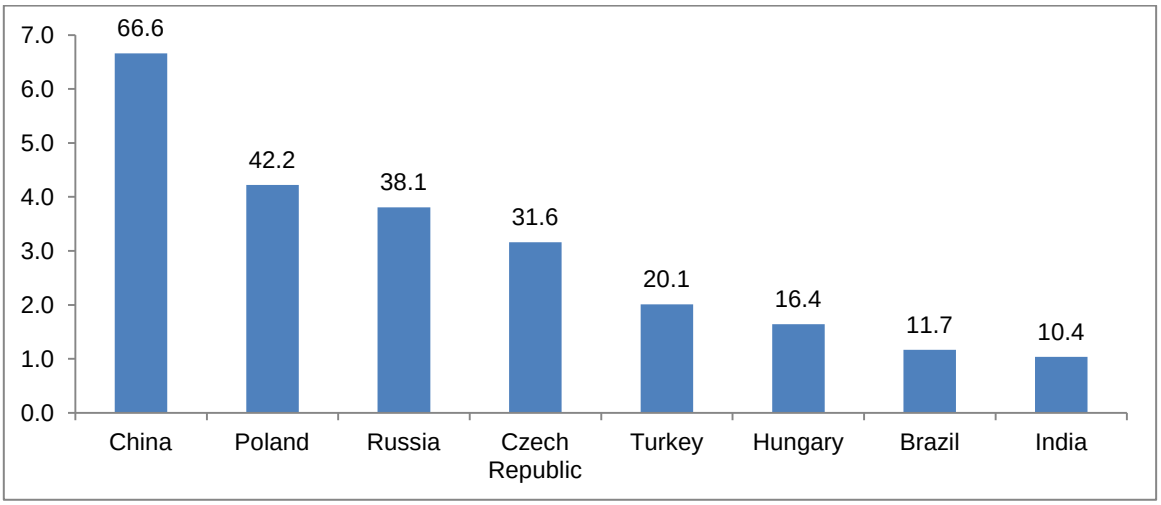

Figure 1: The most important emerging markets for Germany in 2012 taking into account export value (in billion euro)
Source: Federal Statistical Bureau of Germany

Recently China has been decisively the most important emerging market or Germany. German companies sold there good worth more than 66 billion euro. Thanks to their success on the Chinese market, China constitutes for Germany the fifth important export market. Russia is on the third place taking into account exports to the emerging economies with the

value of 38.1 billion euro (Figure 1). Brazil and India make consecutively 7th with 38 billion euro and 8th with 10 billion euro export market.

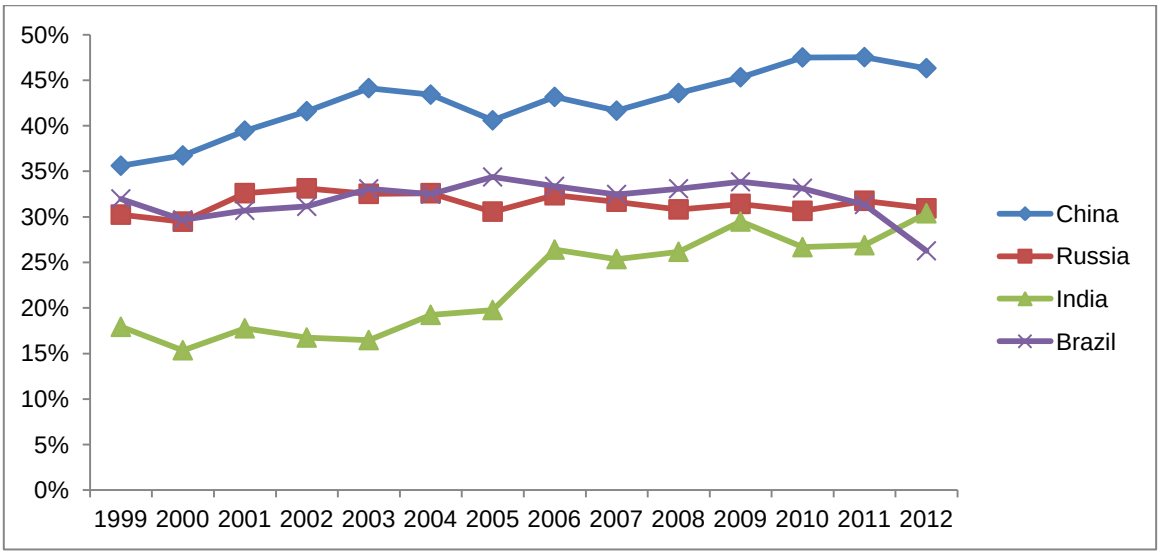

Figure 2: Share of German exports in export of the EU to the BRIC countries
Source: Federal Statistical Bureau of Germany, Eurostat

What is interesting, Germany has gained larger share in exports of the EU to 3 out of 4 BRIC countries. In the period of 1999-2012 Germany increased its share especially in EU exports to China and India. The exports to China have increased from 35.6% to 46.3%, whereas the sales in India improved from 17.9% to 30.4%. In case of Russia the share of exports maintained quite stable, as it has improved just by less than 1 p.p. to 30.9% (Figure 2). Brazil was the only country, which lost export significance for Germany as compared to the EU average – from 32% to 26.3%.

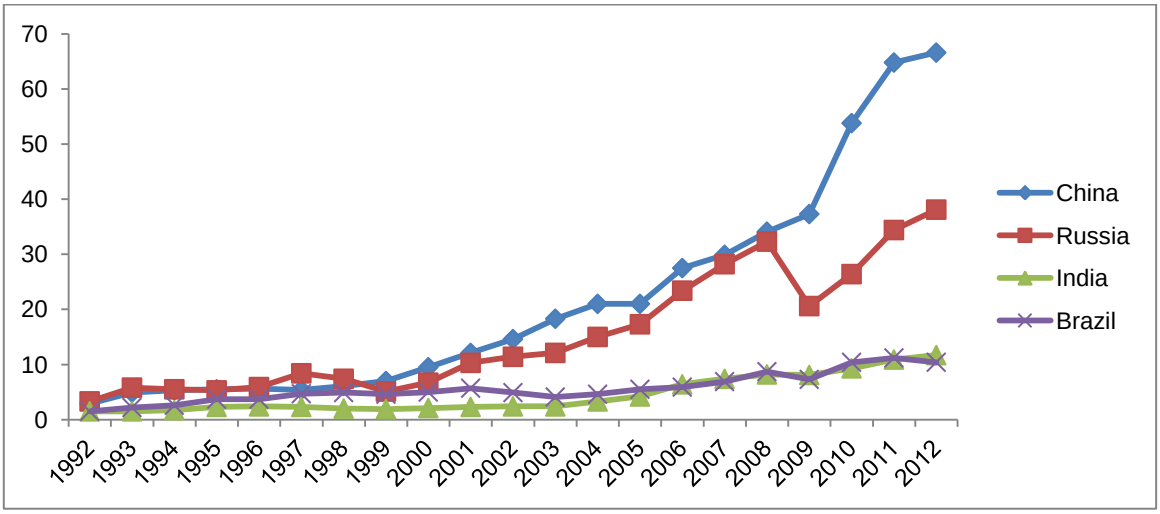

Figure 3: Exports of Germany to the BRIC countries (in billion euro)
Source: Federal Statistical Bureau of Germany

Focusing on the pace of growth of German exports to the BRIC markets the strong upward trend is also visible (Figure 3). Especially surprising is the dynamics of increase of sales in China, which have grown in the period of 2000-2012 by over 600% and have not stop developing even during the global financial and the eurozone crises and amounting to 66 billion euro in 2012. In case of exports to Russia the situation is different. Until 2008 the increase of sales of German companies there had been growing at similar pace to the

Chinese market. Nevertheless, 2009 the turnover of German companies in Russia collapsed by 1/3 and since then they have been slowly regaining the losses up to 38 billion euro in 2012. It seems that the breakdown on the market made German companies more cautious and they are not ready to invest as much as before. In case of India (11.7 billion euro) and Brazil (10.4 billion euro) the growth pace was positive and similar, however these markets do not constitute yet the most significant export markets for Germany.

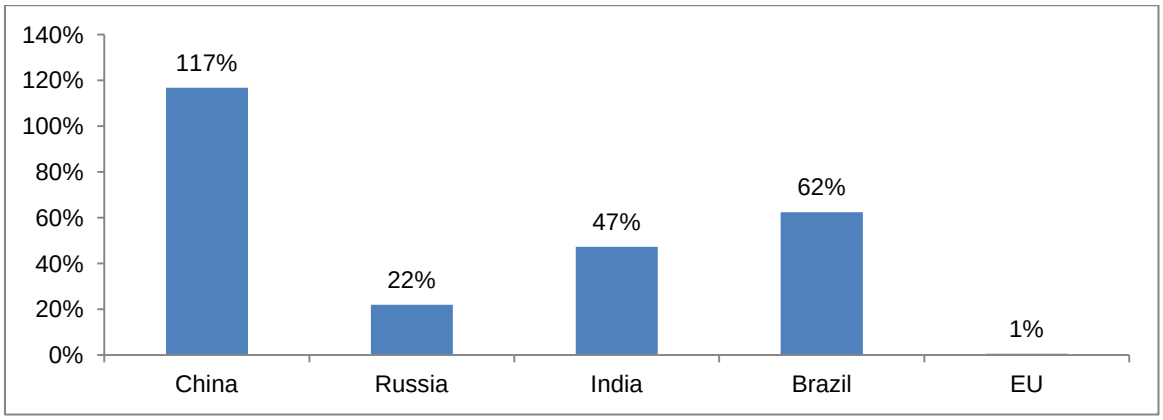

Figure 4: Dynamics of Germany exports to the BRIC countries in the period of 2007-2011

Source: Federal Statistical Bureau of Germany

Exports make an important driver of growth for Germany. This country in the recent years has recorded one of the largest trade surpluses in the world in relation to GDP. The expansion of German business in the BRIC markets was crucial to partly compensate stagnation in the European markets due to the eurozone crisis. Since 2008 Germany records much lower foreign sales on the European markets (1% of exports growth), as many countries have had to overcome problems with public finances stability and have been trying to limit their imports. In the period of 2007-2011 the German exports to the EU have stagnated, whereas the exports to the BRIC countries started to grow much faster than before. German companies recorded 117% increase in China, 22% increase in Russia, 47% increase in India and 62% increase in Brazil (Figure 4).

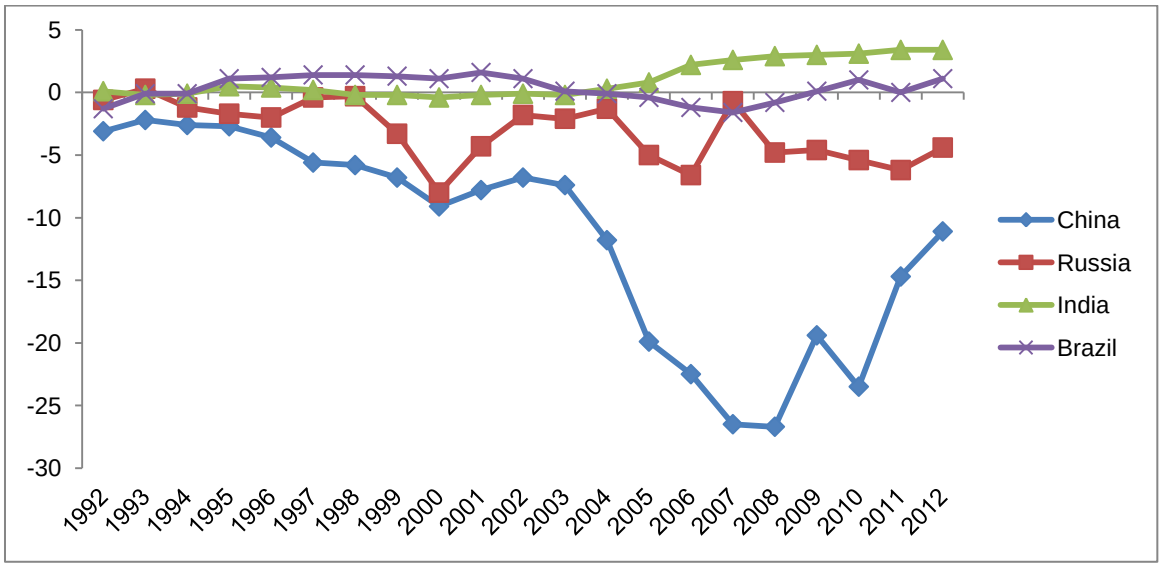

Figure 5: Trade balance of Germany against the BRIC countries (in billion euro)

Source: Federal Statistical Bureau of Germany

The German trade balance against the BRIC countries is quite diverse. The German trade relations with China are unbalanced, as China started increasing its trade surplus 2004, until it reached more than 26 billion euro in the years 2007-2008. Recently, it has been falling probably thanks to faster economic growth in China than in other parts of the world, what makes German producers more interested in investing in this country. German trade balance has maintained at the negative side against Russia (-4.4 billion euro) since the beginning of the 90s as this country is important supplier of gas and oil to Germany, what cannot be equalized by similar value of German goods sold on the Russian market (Figure 5). Against India Germany records quite stable trade surpluses (3.4 billion euro), whereas against Brazil German producers have been able to reverse the trend and to change the trade balance from the negative to the positive side (1.1 billion euro), although Brazil also constitutes an important supplier of resources for the German economy.

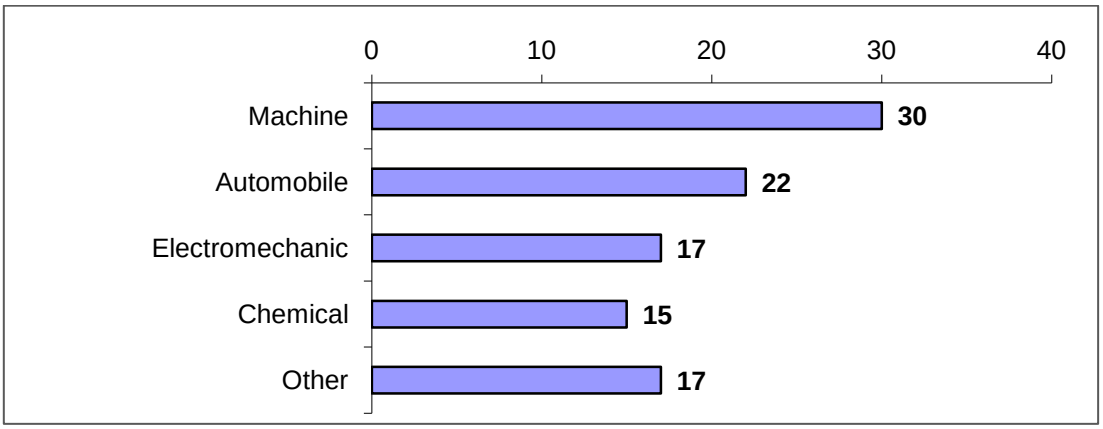

Figure 6: Structure of German exports to the BRIC countries (in per cent)
Source: Romer (2011)

What is worth noting, the expansion of German companies in the BRIC countries basically was based on the growth of German traditional industries such as machinery, automobile, electromechanic and chemical (Romer, 2011). They constitute more than 84% of German exports to these countries. Machine industry makes up 30%, electromechanics constitute 17% and chemical industry 15% (Figure 6). Therefore, the German companies could shift their focus to such countries from European markets, which are already more saturated and show no need for significant infrastructure investments. Large German companies pull small and medium enterprises to the emerging markets, as they make up their long-standing and reliable suppliers of components. That way also German SMEs have an opportunity to get to know and enter new markets.

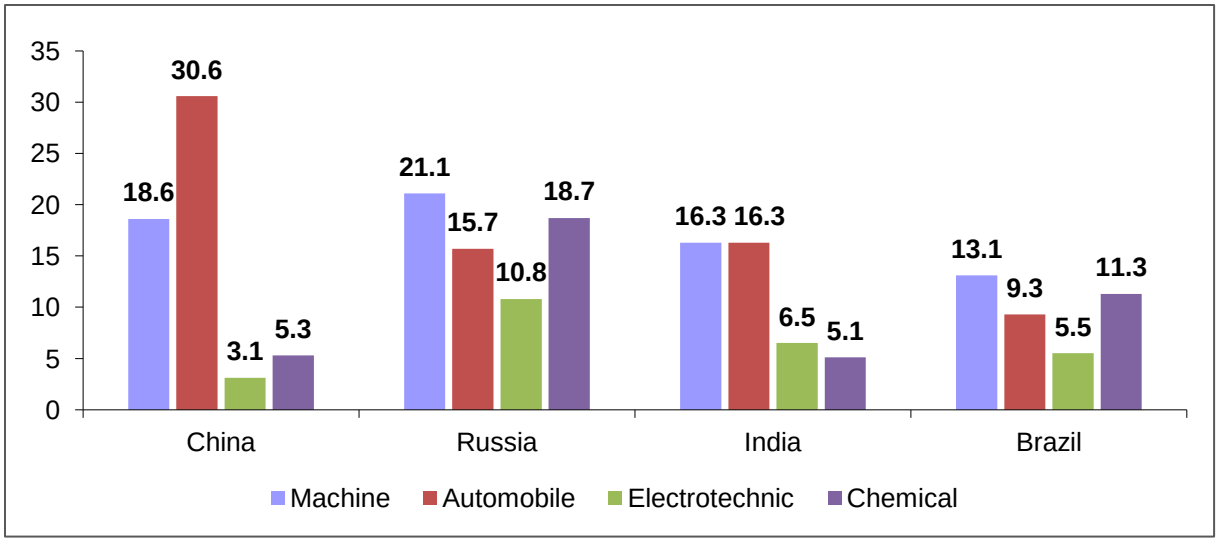

Figure 7: Share of German products in exports of specific products groups in the BRIC countries

Source: Romer (2011)

All the traditional industrial sectors of Germany play important role in whole imports of the BRIC countries. As seen from Figure 7, over 30% of Chinese cars imports are of German origin, whereas for Russia they account for 15% of car imports and for India 16%. Similarly strong position in the BRIC countries shows the machine industry, which is especially meaningful for Russia (21%) and China (19%). and slightly less significant for India (16%) and Brazil (13%). German goods have large share in imports of electromechanic goods of Russia (10.8%) and chemical industry has significant stake in imports of chemical goods of Russia (19%) and Brazil (11%).

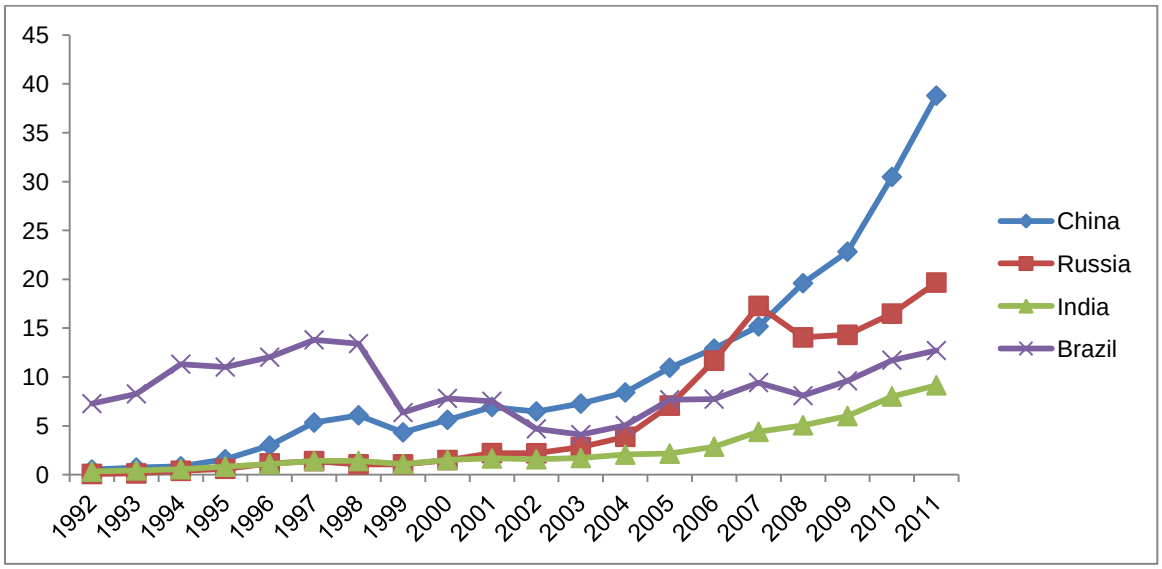

Figure 8: German accumulated direct investments in the BRIC countries (in billion euro)

Source: Bundesbank

In researching the German economic interest with the BRIC countries the analysis of capital flows cannot be omitted. German companies are important investor on the BRIC markets. They invested 2011 around 7.8% of their FDI in the BRIC economies. They were particularly important source of capital in Russia (5.7% of FDI invested in this country) and India (5.9%) and less significant for Brazil (2.5%) and China (2.9%) (Figure 8). German stocks of FDI have particularly increased in China, where they rose by 590% in the period of 2000-2011.

Even faster rate of growth could be observed in Russia, where the German FDI have grown by 1200%, but since 2007 the stabilization of investments inflow began. In India the FDI stock has risen significantly after 2005, whereas in Brazil after the period of slowdown German companies started to rebuild their stock. Generally, in this aspect the economic relations are quite asymmetric. None of the BRIC countries invest similar amount of funds on the German markets as it flows in reversed direction.

2. PROBLEMS OF GERMAN COMPANIES ON THE BRIC MARKETS

Good results of German business were so far connected with fast economic development of the BRIC economies. However, recently more and more important factor for German companies is becoming business situation, as they decide to invest more in the emerging countries at the expense of the stagnating European economy. Moreover, the BRIC economies are developing into interesting place for expansion for German small and medium enterprises, which are more sensitive to the market barriers.

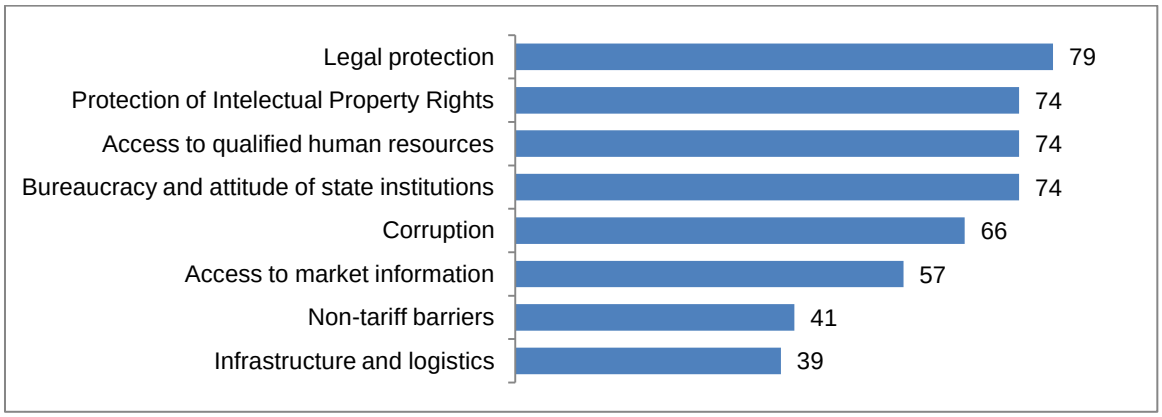

Figure 9: Investment barriers on the Chinese market perceived by German companies as problematic (in per cents)

Source: Own calculations on the basis of German Chamber of Commerce in China (2011)

On the Chinese market the largest problem for German companies constitute too weak legal protection (79%), protection of Intellectual Property Rights (74%), access to qualified human resources and bureaucracy (74%, German Chamber of Commerce in China, 2011) (Figure 9). A bit less significant factors are corruption and difficult access to the market. What is interesting, minority of companies see level of infrastructure as a problem.

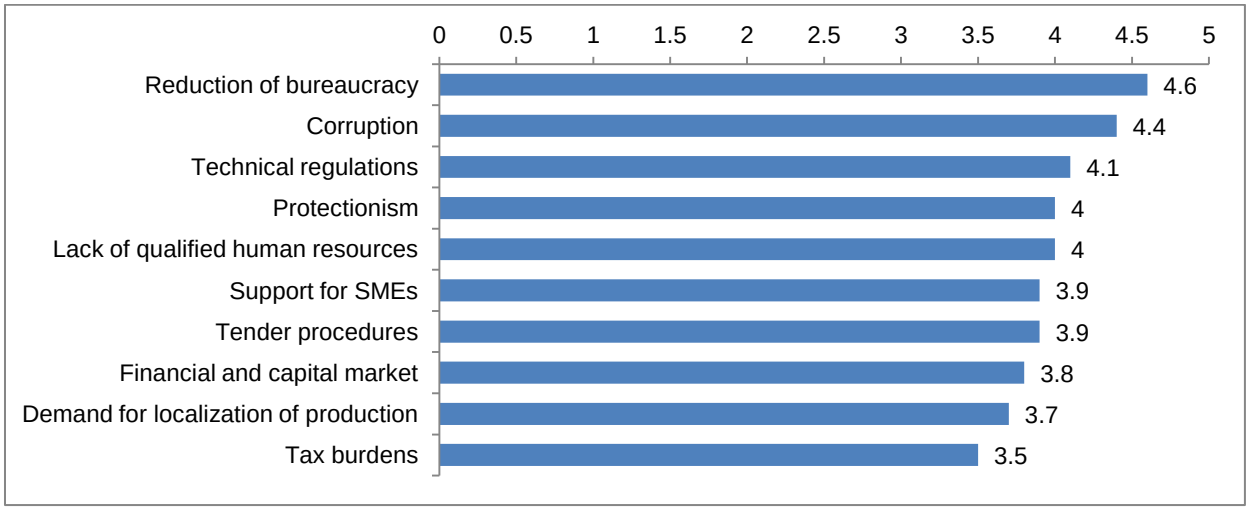

Figure 10: Areas with the greatest need to reform on the Russian market according to German companies representatives (a scale from 1 to 5)

In case of Russia German companies stress the need to take steps at lowering bureaucracy (4.5 points out of 5), reducing corruption and facilitating access to the market (4.4 points), educating workers and lowering protectionism (4 points, German Chamber of Commerce, 2011). They also perceive in Russia lower support of SMEs and weak access to financial and capital market as problems (3.8 points) (Figure 10). Similar to the situation in China, German companies do not treat level of infrastructure as especially problematic.

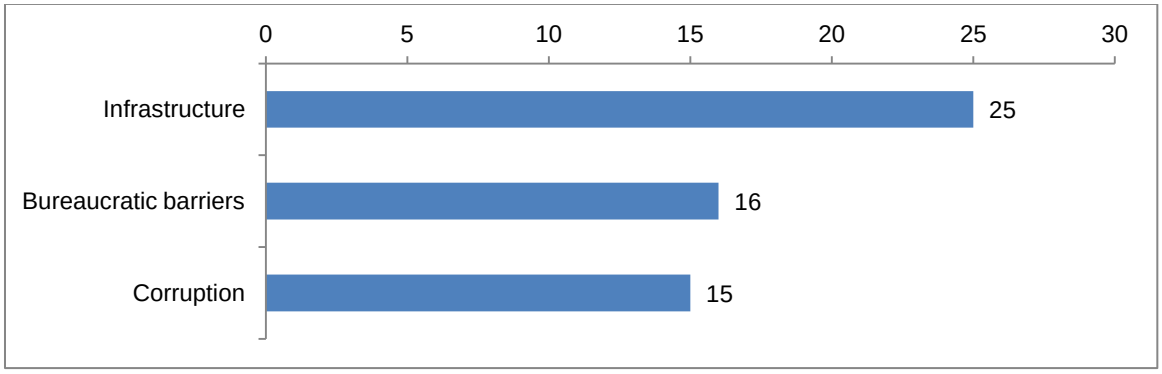

Figure 11: The largest problems for German investors on Indian market (in per cents)
Source: German Chamber of Commerce in India (2012)

In case of India companies mentioned the need to develop infrastructure (25%), reduce bureaucratic barriers (16%) and lower the corruption (15%, German Chamber of Commerce in India, 2012) (Figure 11). Due to methodological procedures of conducting the survey, the share of companies indicating these problems is lower than in case of German investors on other BRIC markets, what though cannot be treated as the evidence that India offers better market conditions.

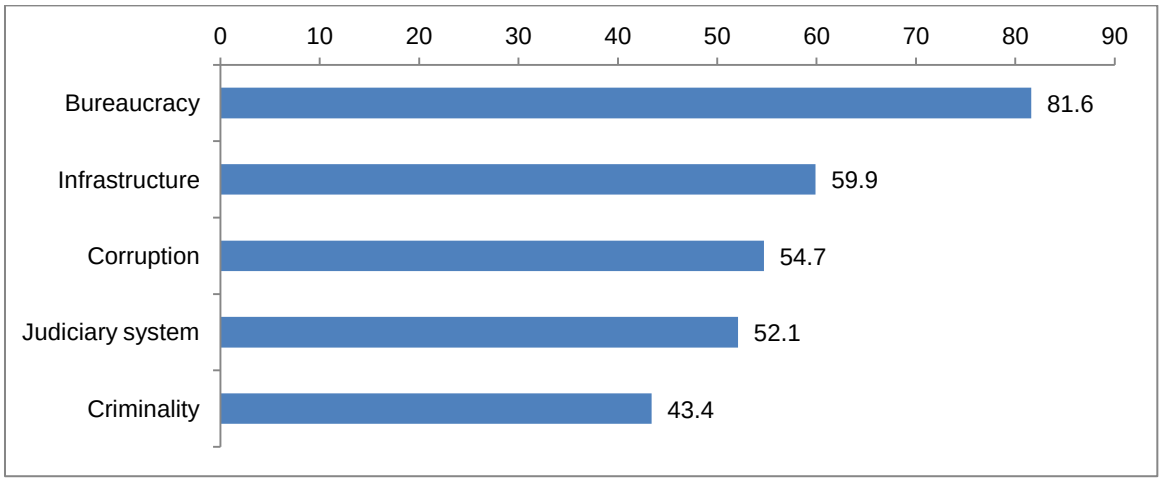

Figure 12: Important business barriers for German companies operating on the Brazilian market (in per cents)
Source: Going Global: Der deutsche Mittelstand in Brasilien 2012

In Figure 12, in case of Brazil decisively most important problem for German companies constitute bureaucracy (81.6%), followed by inadequate infrastructure (59.9%) and too high corruption (54.7%) (Felsner and Kuhne, 2012). Different than in case of the rest of BRIC countries, the companies underlined also the need to lower criminality and improve the judiciary system.

3. TRADITIONAL ROLE OF THE GERMAN STATE IN TRADE PROMOTION

The revival of the German state after the World War II was founded on the grounds of ordoliberalism, which assumed that the role of the state is to ensure fair rules of competition for all the companies and defend free market against cartels and monopolies. However, in the 70s the role of state was extended to ensure also a social justice by introducing new social transfers and benefits (Poplawski, 2011). Some German historians stress that in the beginning of the 70s the network of links between politics and business started to emerge (von Prollius, 2006). German companies started to build up organisations and associations representing their interest in contacts with the government. Already 1961 there was a network 5.000-7.000 federations of different business branches employing more than 50.000 employees.

From the beginning of the Federal Republic of Germany (FRG) the state was also involved in facilitating the conditions for trade as exports was since the beginning an important measure of shape of the economy and crucial factor for rebuilding of the country after the war. German political elites knew that the country, which had very low stock of resources and is strongly dependent on imports of food, but has well skilled workers, should concentrate on trade to regain the economic strength (Smith, 1994). Therefore, the state and its institutions were always focused on creating favourable conditions to export growth by keeping wage expectations and inflation low and promoting liberalization of trade barriers. This was particularly visible in the German strivings for the European integrations.

One of the most important arguments in Germany for the attending the Eurozone was improvement of the conditions for trade. German companies expected that the creation of the common monetary union would allow them to get rid of unfavourable currency devaluation between European countries. In the 90s such states as Spain. Portugal or Italy used this mechanism to reduce German export competitiveness and improve their trade balance against the FRG (Poplawski, 2012). German expectations related to the monetary union turned out to be right as after its creation the trade surplus improved from 65.2 billion euro constituting 3.3% of GDP of the FRG 1999 to 158.7 billion euro making 6.1% of GDP. Many economists argue that the package of reforms known as Agenda 2010 introduced in the period of 2003-2005 and wage restraints that followed after them led to unfair competition of German companies in the Eurozone and targeted at winning export markets in the monetary union (Lapavitsas *et al.* 2010). This line of argumentation assumes that the German government made social reforms such as limiting of unemployment benefits and increased flexibility of its labour market to restrain wages and in that uncoordinated way increased the competitiveness of German business at the expense of other Eurozone countries.

Apart from the government actions on the international arena, German state institutions can also support business expansion on foreign markets by export and investment guarantee schemes. Germany administers whole system of guarantees facilitating export and investments of companies, which is especially important for small and medium companies for which expansion on foreign markets can account for a significant risk. The guarantee system offers several instruments, which are at disposal of the federal government:

- Export guarantee scheme (so called Hermes guarantees) – it is the most important tool assuring companies in case of political risks of business activities in countries, which are not member of the OECD.
- Investment guarantee scheme – it helps companies to insure from political risks in investments.
- Not binding state financial credits – they basically target at securing strategic interests of Germany such as exploring resources abroad or insuring political risks of SME sector in investments in Central and Eastern Europe. realization of special economic interests at the request of the Chancellor of Germany.

- Financial guarantees for equalization of interest rate differences for German shipyard sector.
- Financial guarantees for special purposes of German development help.

4. THE ROLE OF THE GERMAN STATE ACCORDING TO THE LATEST GOVERNMENT CONCEPTS

In the last decade the role of the state in trade promotion was extended. One of the main reasons for that was acceleration of globalization processes in the world and faster rate of economic growth in such countries as Brazil. Russia. India and China, which started to chase up the Western world in the level of GDP. For Germany this process was especially conducive as this country was for long specializing in the production of investment goods. Whereas the market of the European Union besides the new member states from the Central Europe was becoming more and more saturated with such goods as vast infrastructure projects were already completed, the new emerging states represented with their modernization needs great opportunity for the German business.

The intensification of German interest in deepening the relations with BRIC countries was visible already during the second tenure of Gerhard Schroder at the chair of chancellor of Germany. He started to intensify relations especially with China and Russia searching for opportunities of German business expansion and facilitations for the German investments in these countries. The chancellor Merkel continued this line of conduct and her government decided to make EU adopt 2010 the strategy partnership for modernization with Russia. The aim of this strategy was to make better opportunities for German exports and investments in Russia in by expanding opportunities for investment in key sectors driving growth and innovation, enhancing and deepening bilateral trade and economic relations, and promoting small and medium sized enterprises; promoting alignment of technical regulations and standards. One year later the German government inaugurated regular government consultation with India and China 2011. The purpose was similar and Germany counted on expanding economic relations by tightening political ties.

The evolution of German attitude is also visible in the official strategies of various German ministries. Many of them stress more the need for economization of relations. In opposite to any other countries such documents and concepts are important for defining German economic interests and goals for German institutions. One of the first concepts stressing need for better use of relations with emerging economies was the paper of the Ministry for Economy: Aussenwirtschaftsoffensive: Chancen nutzen weltweit (Federal Ministry of Economy and Technology, 2010) published in 2010. This strategy underlined the necessity to support an expansion of especially German small and medium sized companies in the emerging countries. The ministry draw attention to the call for assisting also for non-traditional German industries such as transport, health, defence, aviation or energy in opposition to so far supported branches such as automobile, chemical and electromechanical. The ministry saw better export opportunities by using sports diplomacy and offering German technologies for instance the Football Championships in 2014. the Summer Olympic Games 2016 in Brazil or Winter Olympic Games 2014 in Russia. For the German goals could also serve energetic forums and dialogues with representatives of emerging countries.

New instruments of developing relations with some emerging economies such as India and Brazil were also proposed in the paper of the Ministry of Cooperation and Development under the title Proposal of Development and Political Cooperation with Global Cooperation Partner published 2011 (Federal Ministry for Development and Cooperation, 2011). This document foresees binding the economic and development aims of Germany by using the measures of development help to increase market chances of German companies. Thanks to that German companies would have better opportunities to gain business contacts, enter

market and increase their market share especially in such branches as health, renewable energy or infrastructure. German government treated China as good example of such a policy. Development help for this country led to better image and stronger market position of companies from Germany. It can also improve reputation of the donor country, which is going to follow Millennium Development Goals of the United Nations.

Another example of efforts of German government institutions to find new instruments of cooperation with emerging economies was the document Foreign Culture and Education Policy in time of Globalization: Seeking Partners, conveying values, representing interests) published 2011 by the Ministry of Foreign Affairs (Federal Government of Germany, 2012). It posited the need of the right targeting of cultural expenses at aims serving the interest of Germany with emerging economies. The ministry underlined the necessity to increase the image of German science and to tighten education and culture ties. To fulfil these aims the government should invest more in promotion of German language build more German scientific institution and organize cultural and educational events. Good examples of realization of this strategy are such activities as financing of German language courses in 1000 schools in India, building scientific campuses in China or German House of Science in Brazil and organization of such events as The Year of Germany in Brazil, China or Russia, the Year of India in Germany.

The German Ministry of Foreign Affairs published 2012 the paper summing up the considerations of various German institutions and the changed view how to develop relations with emerging economies under the title Creating Globalization – Building Partnerships – Sharing Responsibility (Federal Government of Germany, 2011). The document was a proposal targeting at emerging economies, which do not yet cooperate with Germany in framework of such institutions as the European Union, G8, NATO or Organization of Security and Cooperation in Europe, and which have a significant economic potential in their regions. The paper mentions 6 areas of interests to develop with such countries such as: security and peace; human rights and the rule of law; economics and finance; food and energy; labour, social issues and health protection and sustainable development. At least 4 last issues are connected with economic interests of Germany. The government has noticed that stronger international position of Germany after the outbreak of the Eurozone crisis creates better opportunities for the state to institutionalize relations with the most prospective economies. Generally, this paper accounted for a synthesis of the previous sectorial strategies, stressing the need of better economization of relations with emerging economies. The herald of this new perception of stronger focus on economic relations with most prospective countries from German point of view was visible already 2011, when the German government inaugurated bilateral government consultation with India and China. During these summits mostly the topics of intensifying economic relations and improving domestic rules and regulations of these countries.

5. GERMAN EXPENSES ON GUARANTEE SCHEMES AND DEVELOPMENT HELP

Analysis of total value of the German government expenditures spent on export and investment schemes in the BRIC countries lets see, what directions of trade were popular among the German companies and mostly supported by the government.

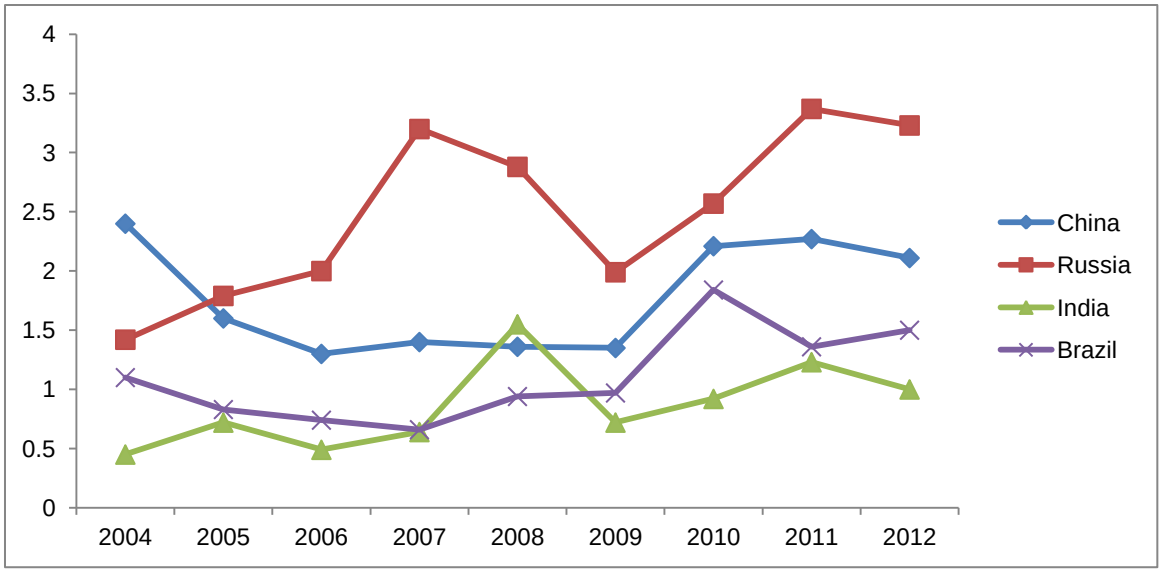

Figure 13: Total Hermes export guarantees granted for companies operating in the BRIC countries (in billion euro)

Source: http://www.agaportal.de

The value of export guarantees for all the BRIC countries was subject to fluctuations. but mostly an upward trend in these spendings was visible in the period of 2004-2012 (Federal Ministry of Economy and Technology, 2012). Since 2004 Russia has been a dominant market taking into account value of total export guarantees insured by the German government. However, in the period of 2007-2009 sharp decline of this amount was noticed, what could have been caused by the consequences of the financial crisis, which strongly affected Russia until they rebounded and were rising in the next years up to 3.2 billion euro (Figure 13). In case of China the trend was quite constant in the period of 2005-2009 and then the value of export guarantees increased and stayed at the level of 2.1 billion euro. Quite similar tendencies were recorded on the Brazilian market with value of guarantees of 1.5 billion euro, whereas in case of India export guarantees were constantly growing to 1 billion in 2012 except for 2008, when the amount significantly rose. Summing up, 27% of the government export guarantees secured 2012 export contracts in the BRIC countries. What is interesting, whereas out of the total German exports only 2.6% was secured by the government guarantees 2012, in case of the BRIC states this indicator reached 6.5%. In the period of 2004-2012 the share of transactions secured, however, decreased from 12.2% 2004.

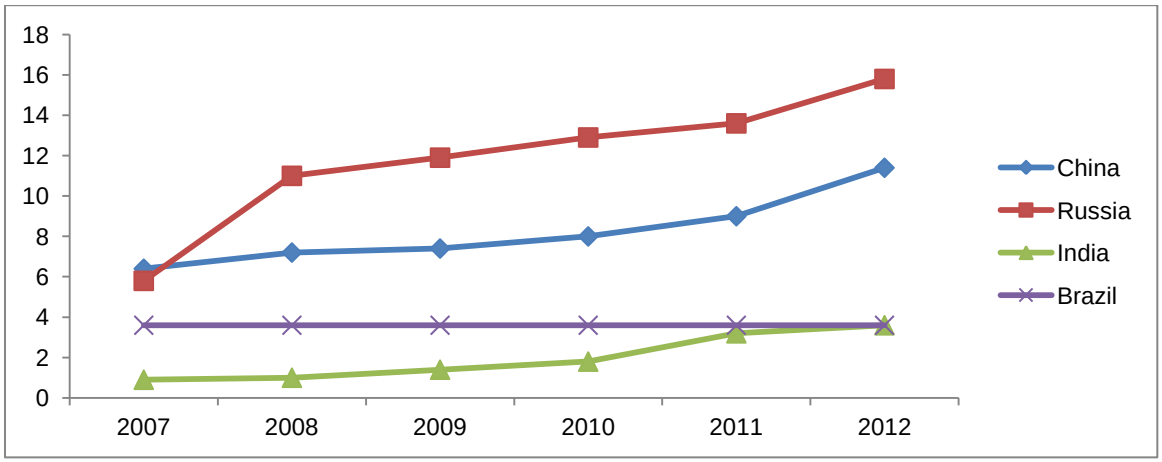

Figure 14: Total investment guarantees granted for companies operating in the BRIC countries (in billion euro)

Source: Investitionsguarantien der Bundesrepublik Deutschland. KfW Bank

Much more stable tendencies could have been observed in the value of investments. In case of Russia (15.8 billion euro), China (11.4 billion euro) and India (3.6 billion euro) the amount of transactions secured was constantly growing (Federal Ministry of Economy and Technology, 2011) (Figure 14). Only value of investment guarantees on Brazilian market stayed almost unchanged in the years 2007-2012 amounting 3.6 billion euro in 2012. As the result 2012 out of total 66.4 billion euro intended for security of German investments the foreign markets 51.8% guaranteed the companies ventures in the BRIC economies. The government secured 2012 42.8% of German investments in the BRIC countries, whereas this indicator for total foreign direct investments amounted to only about 12.1%. As opposed to export guarantee schemes, the ratio of investments guaranteed in the BRIC countries increased in the period from 36.2%.

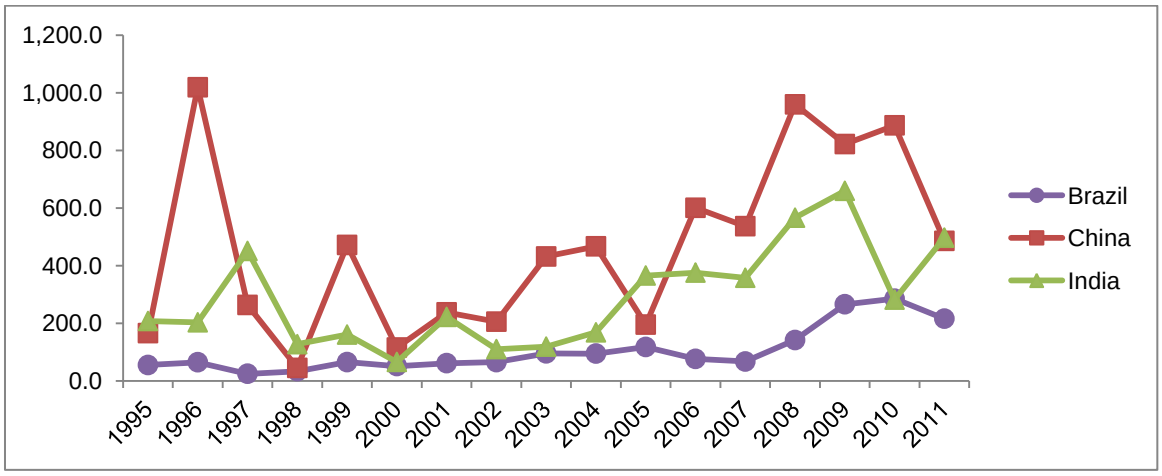

Figure 15: Inflow of German development funds to Brazil. India and China (in million dollars)

Source: OECD database

The German development help has changed it objectives recently. Russia cannot be taken into account of German development funds as it has not been a benefactor of such support. Under the pressure of German public opinion 2010 the government decided to stop financing new development projects in China, nevertheless, permitting to continue donating the projects already planned. In case of German development help significant fluctuations were observed. Most of the time in the perspective of 1995-2010 China was the biggest benefactor of development cooperation. From 2002 the funds accessible for China started to increase, reaching the amount of more than 800 million dollars though it seems it was a peak of German cooperation help for China and it should decrease in the next years. Despite some instability also the funds intended for India were rising reaching 496 million dollars and overtaking China. The value of projects realized in Brazil was constant until 2007 but from that year it started to grow. In 2011 the German development help equalled 485 million euro in China, 496 million euro in India and 215 million euro in Brazil.

The value of funds intended to support development help seems to be not significant enough to influence, however, the German government tries to target these funds at most prospective branches as for example health or renewable energy sector. Thanks to that, even not meaningful financial sources can help companies to establish business contacts or enter the new and often quite new for them market. There are also data showing that better political ties could improve the eagerness of German companies to invest also research-based sectors in BRIC countries (Eickelpasch, 2012). BRIC countries except for good opportunities to invest demand from German companies strong need for adjustments to local standards and some of them such as institutional inefficiency and lack of good infrastructure are becoming bottlenecks for further growth (Erber and Schrooten, 2012), so the activities of

the German government try to address these problems. Other researchers also pay attention to the fact that an expansion of companies in the BRIC markets is facilitated, when the industry is considered to be important in home country and when government supports those plans (Holtbrugge and Kreppel, 2012). Apart from that the consequences of the financial crisis cause problems also for the BRIC countries and in times of slow-down of growth they can be more prone to criticism and suggestions of investors especially when they are supported by the German government (Jaeger, 2013). In case of Chinese-German relations there are growing hopes that better political ties of both countries and structural match of German technology and Chinese strong demand for modernization will result in some reforms of the Chinese market conducive for the German industry (Kundnani and Parello-Plesner, 2012).

6. CONCLUSION

In summary it is important to note that the German government has been increasingly aware of growing role of the emerging markets for the German economy. The recent economic tendencies in the world as for example destabilization of European economies due to the eurozone crisis can stimulate German companies to shift their exports dependence from Europe to other parts of the world. In this context from the BRIC countries especially China and India seems to offer good prospects for German companies. The economic situation of Russia is too much dependent on the growth in Europe, therefore this market cannot account for a substitution for lower dynamics of GDP in the EU. On the other hand the Brazilian economy significantly slew down during the recent crisis and the government of this country do not exclude using protectionist measures such as increasing tariffs for car imports last year, what cannot be conducive for German exporters.

The German government will try to influence governments of the BRIC countries to facilitate market access and business conditions for German companies. For this sake it will try to use more efficiently the financial sources from the development help and guarantee schemes. Especially, investment guarantees should be used more extensively, as the security of investments will be main requirement for German enterprises to engage more actively on the BRIC markets. The German government will also try to make up new institutional arrangements to increase predictability and legal security of German companies operating on the markets of emerging economies. The German institutions seem to be more interested with intensification of economic relations and economization of relations at the expense of other areas of cooperation.

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THE EFFECTS OF HEDGING STRATEGIES ON THE PROFITABILITY OF TURKISH FIRMS

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Abstract: Turkey had the most serious financial crisis in 2001. Turkish Lira had devaluation very sharply. The interest rate increased up to 4.518 % overnight at the beginning of the crisis. Many firms and even banks went into to the bankruptcy as a result of devaluation and sharp increases in interest rates. Before 2001 financial crises, firms did not have opportunity to hedge their risk on fluctuations of foreign currencies in Turkish Future Market. This paper will analyse the profitability of leading firms operating in Turkey during the last five years. This will provide comparison of profitability of the firms during the period before the future market started operation at 2005 and after 2005.

Keywords: Turkish Firms, Profitability, Hedging Risks, Foreign Currency, Devaluation

1. INTRODUCTION

In the last decades, due to the changes in information technologies, production technologies, communication methods, global trade became three times larger than the level in the early 1950s. Raising mobility of capital, raising international trade raised the risks company faces. Since basic aims of the companies are to maximize the profit; maximize the revenue, minimize the cost, to maximize the value of shares, the companies should manage the risks they face on management of cash, foreign exchange and the value of shares. The use of financial derivatives has steadily increased to hedge these risks in the last decades. In this paper, firstly, hedging strategies will be given in the first part. The risk rising from exchange rate volatility and international trade will be given in the second part. In the third part, shortly, Turkish economy and the crisis experienced in the last decade will be explained shortly to be able to describe the circumstances Turkish companies in.

2. HEDGING STRATEGIES FOR RISK ON LIQUIDITY, INTEREST RATES, SHARE'S VALUE AND COMMODITY TRADE

Companies face different types of risk in their operation. Some of these risks would be specific to firm, the others specific to market or specific to the general economy they operate in. The risks firm faces would be categorized under the groups of operational risk and financial risk. Especially, financial risk in terms of liquidity, interest rates on credits, foreign exchange rate volatility would be considered as important sources of risk. These groups would be enlarged according to subject of operation. Commodity price changes would be the one of the important risks in the operation of the firms while change in stock prices is the other one.

At the end of December 2009, Bank of International Settlement (BIS) stated, increase of the notional value of outstanding interest rate (IR) and foreign exchange derivatives held by nonfinancial customers all over the World from $ 6.1 trillion in 2000 to $35.6 trillion in 2009 and $3.3 in 2000 and $8.8 trillion in 2009, respectively (Campello *et al.* 2011). Derivative

markets include futures, forward or option markets. A firm can hedge by trading in a particular futures, forward or option market even though it has no identifiable cash position in the underlying commodity (Smith and Stulz, 1985).

The Modigliani-Miller theorem states, hedging would no value to the firm in a perfect financial market where there is no asymmetric information, taxes or transaction costs. They argued if a firm chooses to change its hedging policy, investors would change their holding of risky assets to offset any change in the firm's hedging policy. So they would leave the distribution of their future wealth unaffected. Thus, if the hedging policy affects the value of the firms, it must do so through taxes, contracting costs or the impact of hedging policy on firm's investment decisions (Smith and Stulz, 1985). Derivative markets often provide the most liquid and convenient instruments for managing risk. Many corporations and firms today engage in hedging activity, but it is not clear whether this has a positive effect on their market value of the firm. Both theory and evidence is inconclusive with regards to the possible impact derivative hedging has non-financial companies firm value which makes the observed high hedging activity. The value of hedging depends on the design of the hedging strategy. Mainly, firms have problems on liquidity, cash flow timing, and foreign exchange volatility. In many of the papers, main focus was on the currency risk exposure and enhancing the understanding of the mechanism through which exchange rate shocks influence firm value. In general these analyses, highlight the importance of a large and complex set of parameters of a company, including cost and revenue structure, its competitive position and environment, the elasticity of its input and output markets as well as the pricing strategies adopted by the company itself and its competitors in the determination of a firm's sensitivity to exchange rate fluctuations (Muller and Vercshoor, 2006).

A large numbers of studies focused on the management of risk rising from liquidity. In their model, Mello and Parsons (2000) studied the optimal hedge ratios. They found out that non-financial firms do not report risk management instruments on their balance sheet. Additionally, the inter-temporal costs of financial constraints are not considered as a straightforward task for capturing hedging as value maximizing behaviour. They also found out firms prefers to hedge at certain time periods. This is important to hedge depending on a time varying pattern. Mello and Parsons also argued a hedge does not necessarily create its own liquidity however the financial risk created by the hedge itself is an important factor in determining the value of the hedge.

3. EXCHANGE RATE VOLATILITY AND INTERNATIONAL TRADE

One of the most important sources of risk in firm operation is the management of foreign exchange changes. Exchange rate fluctuations are an important source of macroeconomic uncertainty. The real exchange rates which are the relative prices of tradable to non-tradable products have a potentially strong impact on the incentives to allocate resources (capital and labour for example) between the sectors producing tradable and non-tradable goods. Real exchange rates are also a measure of real competitiveness, as they capture the relative prices, costs and productivity of one particular country with the rest of the world (Aubain and Ruta, 2011). Dodd Frank Act in the USA and the European Market Infrastructure Regulation stimulate use of clearing (Melo and Parsons, 2012).

Exchange changes can have strong effects on the domestic absorption and external trade, influence labour market and prices and alter external accounts. Exchange rate affects international trade directly and indirectly. Since the breakdown of the Bretton Woods fixed parity system in the early 1970s, the volatility of exchange rates and its associated risks have become an increasingly important part of international financial management. Exchange rate movements affect both the cash flow of a firm's operations and assessment of firm's value. The wide currency fluctuations experienced during the last few decades put forward the potential weakness of multinational firms to foreign exchange risk.

In several models, the effect of increased volatility of exchange rates was set on the level of risk aversion of traders. Risk neutral traders are unlikely to be affected by exchange rate uncertainty but risk adverse ones will in different degrees. Exporters could prefer more of export as adverse to increased volatility of foreign exchange in order to compensate for the expected fall in revenue per exported unit (Aubain and Ruta, 2011). The existence of a positive relationship between exchange rate volatility and exports was later confirmed theoretically by the other research. The export strategy is like an option because the domestic market is certain whatever the realized exchange rate turns out to be. The domestic price is the "strike" price of the real export option".

4. HEDGING STRATEGIES

Exchange rate exposure is an important source of risk for multinational corporations. It has been claimed that multinational corporations can employ risk management strategies not only through financial derivatives, but also through operational hedges. The number of studies analysed different hedging strategies.

Allayanis *et al.* (2001) analysed case of Schering Plough company as an example: They recognized exclusive use of operational hedge: "The company operates in a large number of foreign countries, the currencies of these countries generally do not move in the same direction at the same time" (Allayanis *et al.* 2001). Companies engaging multinational operations may face high volatility on foreign exchange risks. The global economic environment has been made firms to be able to forecast their business and earning in the future. Risk management theories motivate hedging as a means to increase firm value. In their study, Chiang and Lin (2005) found out that foreign currency derivatives are effective in implementing a currency hedge strategy and foreign denominated debts always increase exchange rate exposures when compared to foreign currency derivatives.

Guay and Kothari (2003) analysed 234 large non-financial corporations using derivatives. They found out that the median (75th percentile) firm's derivative cash flow sensitivity is $15 ($81) million, and the market value sensitivity is $30 ($126) million. That is, when the median derivatives-user firm simultaneously experiences a three standard deviation change in interest rates, exchange rates, and commodity prices, the entire derivatives portfolio rises in value by at most $30million, with $15 million of this amount being realized as cash flow in the current period. For most of the sample firms, the cash flow and market value sensitivities are small relative to the magnitudes of operating and investing cash flows, the absolute values of the changes in operating cash flows and accounting income, cash holdings, and firm size. For example, the median derivatives-user's annual operating cash flow and investing cash outflow are $178 million and $178 million, respectively. As another example, it is estimated that the sensitivity of the median firm's equity value to a three standard deviation change in interest rates and exchange rates is $825 million and $458 million, respectively. They also examine whether the firms that theory predicts benefit most from hedging hold derivatives positions with relatively larger share cash flow and market value sensitivities. They found out that evidence of increased use of derivatives for larger firms and for firms with greater investment opportunities. They observed increased derivatives use among more geographically diverse firms and among firms for which the CEO's sensitivity of wealth to stock price is relatively large. However, the magnitudes of the derivatives position are quite small for all data.

Kiyota *et al.* (2008) discussed how multinational companies utilize foreign exchange as well as foreign direct investment to hedge their global operations: the impact of foreign exchange volatility on firms with agent affiliates in Japan was negative and the greater the amount of evident volatility, the lower will be the trade between those Multi National Companies. Yin and Han (2011) discussed the advantage and disadvantage forwards and options in hedging

of international portfolios. Yin and Han (2011) found that across all circumstances, the optimal combination of forward contracts should overtake the use of a single protective put in currency foreign exchange. They also argued foreign exchange options are more important in competitive financial environment and it is an appropriate tool for currency hedge strategies. Forwards generally should be used in place of single option strategies, but when options are distributed similar to straddle or other call/put relationship. The performance is sharply increased.

Berrospide *et al.* (2008) had analysis on groups of firms in Brazil. Many firms in the sample they start to use foreign currency derivatives, the change on using hedging strategies. The change from a state of no hedging across the hedger firms in the economy offers an attractive empirical setting to assess the casual effect of hedging on firm performance and value (Berrospide *et al.* 2008). Brazilian economy changed fixed exchange rate regime to a floating exchange rate regime by 1999 just after a severe currency crisis in 1998. Brazilian firms that had accumulated foreign currency liabilities in the fixed exchange rate regime suddenly found themselves exposed to significant currency risk. The temporary disequilibrium created by this shock allows us to trade the causal effect of currency hedging on corporate performance and firm value. There is gradual increase in the number of firms that hedge after the regime switch. This pattern is reliable with firms gradually learning and adjusting to their new optimal policy in the floating exchange rate regime. They also analysed the determinants of the time to switch for firms that begin to use currency derivatives. They found out that firms with a higher benefit or lower costs to hedging do so more quickly. The size of a firm and the extent of its foreign debt as of 1998, the last year of fixed exchange rates are critical in determining the likelihood that a firm will begin to hedge sooner. After establishing the role of hedging in investment and increasing debt capacity, they found out the derivatives usage results in a value gain of about 10% (Berrospodi *et al.* 2008).

The availability of financial hedging through forward exchange markets helps reducing the uncertainty generated by fluctuations of nominal exchange rates, although firms have unequal access to hedging facilities and may display different behaviour according to which side of the hedging position they stand (Aubain and Ruta, 2011).

Tax incentive for corporations to hedge is another important issue. Graham and Rogers analysed the tax incentives for corporations to hedge: to increase debt capacity and interest tax deduction and to reduce expected tax liability if the tax function is convex. They analysed whether tax incentives affect the extent of corporate hedging with derivatives. However, their analysis showed that firms used derivatives to increase their debt capacity (Graham and Roger, 2002)

5. TURKISH ECONOMY AND FIRM'S HEDGING STRATEGIES IN TURKEY

Turkey followed liberalization policy since the beginning of 1980s. The main regulations to change the structure of economy were made during 1980s. However, the influences of these radical changes were felt more during 1990s. 1994 crisis were so severe that TL was devaluated three times in a day. Many companies just suffered because of increased debts in terms of foreign exchanges. The rate of growth fluctuated severely as the economy was trapped within mini cycles of growth crisis stabilization and renewed growth. Inflation rates were around of 65-70 per cent till 1995 and 80-90 per cent after 1995. The nominal rates of interest were more than 100 per cent. The Central Bank was committed to controlled peg foreign exchange regime (Yeldan, 2003). The borrowing requirement of the government was so huge as the stock of domestic debt intensified rapidly. Yeldan refers these years, the 90's as a "lost decade for Turkey" (Yeldan, 2003). Following 1999 earthquake where the most of the manufacturer's factory buildings were destroyed in Marmara Region. It means Turkish economy lost very important factors of production where almost represents 1/3 all producers in Turkey. Following earthquake, the government initiated program of austerity to stabilize

the economy, price increases to lower the interest rate and to stabilize the foreign exchange rates volatility at the beginning of 2000. However, just eleven months after start of this program 6 billion of short term capital escaped the country and caused a severe liquidity shortage in the domestic commodity and asset markets. The government applied for the Supplementary Reserve Facility from the IMF. The Central Bank was forced to sell a large portion of its foreign reserves in an attempt to support the Lira as the short term interest rates where increased up to above per cent overnights. The government changed the policy to recover the crisis and let the exchange rates to float freely. This was one of the turmoil on Turkish economy. This severe crisis was the second important crisis after 1999 earthquake. This severe crisis influenced Turkish economy deeply. Firms operating in Turkish economy faced foreign exchange risk and interest rate risk, commodity price risk, stock exchange risk at the same time, unexpectedly. The companies already had liquidity risk arising in 1999 economic recession. Therefore large number of companied went into bankruptcy. 22 banks were some of them.

Similarly, the study made by Ozturk and Acaravci (2002) supports the negative relationship between an instability and Turkish export. Turkey had the most serious financial crisis in 2001. Turkish Lira had devaluation very sharply. The interest rate increased up to 4.518 % overnight at the beginning of the crisis. Many firms and even banks went into to the bankruptcy as a result of devaluation and sharp increases in interest rates. Before 2001, and at 2001, firms did not have opportunity to hedge their risk on fluctuations of foreign currencies in Turkish Future Market at that time

Previously, Gonenc *et al.* (2003) made a research on Turkish industrial Firms listed in Istanbul Stock Exchange. They tested the hypothesis that combined effects of fluctuation real exchange rates with net foreign currency position of Turkish firms affect their investment decisions and then investments affect the firm value. They found out that Turkish industrial firms had decreases in their investment at the time of t scaled by the total amount of tangible assets at time t-1 decreases for the firms with negative balance sheet exchange rate when the change in the real value of TL is negative for the period between 2000-2003 (Gonenc *et al.* 2003).

In their study, Kandil *et al.* (2007) investigated interaction between exchange rate fluctuations and macro economy in Turkey. They analysed annual time series data or real output, the price level and specific demand components in Turkey for the period 1980-2004. According to their analyses, they found out that a positive shock to the exchange rate, an unanticipated appreciation of the domestic currency, decreases net exports and money demand and increases the output supplied. The growth of government spending is an important determinant of economic conditions in Turkey. An increase in government spending stimulates real output growth and private demand for consumption and investment. An increase in the interest rate may result in an increase in capital inflows that appreciates the exchange rate. The increase in government spending decreases the growth of real exports. The transmission mechanism of monetary policy appears less effective compared to fiscal policy due to long time lag on monetary stimulus. Producers shrink the output when appreciation has been expected; this also generates expectation of a loss in competitiveness in supply side. However, anticipated depreciation has deeper effect on export. This stimulates Turkish export (Kandil *et al.* 2007)

In this paper, the leading five companies in the list of 500 industrial companies in Turkey have been analysed. The list is prepared by the Istanbul Sanayi Odası (Istanbul Chamber of Industry. As shown in table 1, Turkiye Petrol Rafinerileri A.S(TUPRAS)., Ford Otomotiv Sanayi A.S.(FORD) Oyak-Renault Otomobil Fabrikaları A.S.(OYAK RENAULT), Arcelik A.S. (ARCELİK) and Elektrik Uretim A.S.(EUAS) are the companies analysed.

Table 1: The largest 500 companies in Turkey 2012

Ranking 2012	Ranking 2011	Companies	Place of Headquarter	Sales Revenue
1	1	Tupras- Turkiye Petrol Rafinerileri	Kocaeli	40.118
2	2	Ford Otomotiv	İstanbul	8.164
3	3	Oyak Renault	İstanbul	7.529
4	6	Arcelik A.S.	İstanbul	7.229
5	4	Elektrik Uretim Anonim Sirketi	İstanbul	6.939

Source: Istanbul Chamber of Industry Turkey's Top 500 Industrial Enterprises

The data from financial statements of Tupras; Ford, Arcelik and EUAS will be given in the following Table 2, Table 3, Table 4, Table 5 (Tupras 2013; Ford, 2013; Arcelik 2013; EUAS, 2013). The financial statements of OYAK Renault are not available on their website.

TUPRAS is Turkey's largest industrial enterprise, only company operating in the refining sector and the seventh largest refiner in Europe, TUPRAS has remained Turkey's largest industrial corporation for many years, operating with four refineries with a total of 28.1 million tons annual crude oil processing capacity. The following Table 2 gives the foreign exchange earnings and losses, derivative financial investment, derivative financial instruments, Net profit, total assets and total revenues in each of column. TUPRAS had no investment on derivative financial investment until 2008. However, at 2007 and 2008, the firm had financial earnings due to foreign exchange change in their operation. Only at 2008, TUPRAS used the derivative financial instrument as financial investment. It is so low in comparison its total assets. The sound assessment would not be done for the investment since the investment is low. During the period from 2008 to 2012, the company had lower amount of investment to the derivative financial investment. At 2011, for the first time, the company had liabilities in terms of derivative instruments. Since, the financial statements and the endnotes related to the financial position did not state type of financial investments, clearly, it is very difficult to have an idea about the risk the company faced. Determining the relationship between investment to financial derivatives and the profitability seems difficult since the frequency of investment is limited. TUPRAS has been privatized by 2006. This would also be important to understand the change in the policy of the company to investment to financial derivatives.

Table 2: Derivative financial investment at TUPRAS financial statements (Million TL)

Years	Foreign Exchange earnings-losses	TUPRAS Derivative Financial Investment	Derivative financial Instruments Liabilities	Net Profit	Total Assets	Total Revenue	Price per stock
2005		0		681	5.736	14.844	2.62
2006	0	0		822	7.026	20.112	3.28
2007	3	0		1.304	9.082	22.520	5,18
2008	3	2		439	8.637	30.404	1.73
2009		0,4		816	10.223	20.330	3.24
2010	7	0,2		741	13.918	26.166	2.94
2011	(4)	1,3	0,1	1.242	14.758	40.747	4.96
2012		0,03	0,2	1.461	17.114	47.033	5.83

Source: TUPRAS Financial Statements (http://www.tupras.com.tr/detailpage.en.php?lPageID=5242)

The well-known rating company FITCH assessed TUPRAS with "BBB". The affirmation reflects Tupras's leading position in the Turkish oil refining and marketing sector and above average cash flow from operations for a refining business, primarily dues its domestic sales margin and favourable position in terms of crude oil supply cost and product slate. Fitch views Tupras's financial policy as moderate, which is reflected in the company's focus on organic growth and low financial leverage in the past few years.

The second largest companies in Turkey, is the Ford Otomotiv Sanayi A.S. It manufactures, assembles and sells motor vehicles, primarily commercial vehicles, imports and sells passengers cars; manufactures and imports and sells spare parts of those vehicles. The Company was established in 1959 and presently operates as a joint venture between Ford Motor Company, the US and the Koc Group of Companies in Turkey. The Company is listed on the Istanbul Stock Exchange where 17.92 % of its shares are currently quoted (Ford, 2012). As it can be seen from the Table 3, the company did not invest to derivative financial instruments at all during the period from 2004 to 2012. However, the company suffered from the foreign exchange losses since 2008

Table 3: Derivative financial investment at FORD Otosan (Million TL)

Years	Foreign Exchange earnings-losses	Derivative Financial Investment	Derivative financial Instruments Liabilities	Net Profit	Total Assets	Total Revenue	Price per stock
2005	-	0	N.A.	-	-	N.A.-	-
2006	-	0	-	501	2.824	6.521	1.43
2007	-	0	-	484	3.038	7.230	1.38
2008	86(1)	0	-	436	2.707	7.007	1.24
2009	1(1)	0	-	333	2.814	5.574	0.95
2010	0	0	-	505	3.335	7.649	1.44
2011	0,3(2)	0	0,4	662	4.421	10.445	1.89
2012	1,2(2)	0	1,7	675	4.647	9.767	1.92

Source: FORD Turkey, Financial Statements[1] (http://www.fordotosan.com.tr /en/financialstatements.htm)

At 2011 and 2012, the company had liabilities in terms of financial derivatives. However, this is not sufficient to have significant relationship between profitability and investment to financial derivatives and liabilities in terms of financial derivatives. In 2012, the third largest company in Turkey was Oyak- Renault Automobile Company. It was set by Renault France, OYAK and Yapı Kredi Bankası to produce automobile at 1969. The total revenue obtained from the main activity was 7.529 million TL at 2012 (Oyak-Renault, 2013).The company do not announce financial statement to public as multinational company.

Arcelik Anonim Sirketi (Arcelik) operates in production of sales and marketing, customer services after sales, exportation and importation of consumer durable goods and consumer electronics.since1961. It is the pioneering company and market leader in Turkish home appliance sector (Arcelik, 2013). The Company invested to financial derivatives regularly since 2008. Similarly, the company involved on financial derivative liabilities since 2009 regularly. Although, the company's profit increased after 2008, she kept the same profit level since 2009. The increase in revenue would be due to the increase in assets. The amount to the investment to futures, forward or option markets are negligible.

[1] 2012- Foreign Currency transactions and balances: Transactions in foreign currency during the year have been translated at the exchanges rates prevailing at the dates of the transactions. Monetary assets and liabilities denominated in foreign currencies have been translated into TL at the Central Bank of Turkey exchange rates. At 2012, the company covers liquidity risk by maintaining sufficient cash and marketable securities, the availability of funding from an adequate amount of committed credit facilities and the ability to close out market positions. The Company has entered into swap transactions in order to manage its interest rate risk Swap transactions (Ford, 2012)

Table 4: Derivative financial investment on Arcelik A.S.'s financial statements (000TL)

	Foreign Exchange earnings losses	ARCELİK Derivative Financial Investment	Derivative Liabilities	Net Profit	Total Assets	Total Revenue	Price per stock
2004				290	3.485	4.907	0.72
2005				312	5.137	6.245	0.78
2006				324	6.370	6.959	0.81
2007				137	6.527	6.622	0.39
2008				6	6.860	6.852	0.09
2009		4	0,7	503	6.427	6.592	0.86
2010	(12)	1	0,2	549	7.322	6.936	0.76
2011	(59)	3	0,1	506	9.198	8.437	0.75
2012		2	3	525	10.228	10.556	0.77

Source: Arcelik A.S. Financial Statements Arcelik Investor Relations[2] (http://www.arcelikas.com/page/142/Financial_reports_PPTS)

Elektrik Uretim A.S (EUAS) is a state owned company which is founded to generate electricity in compliance with the energy and economic policies of the state and in accordance with the principles of efficiency and profitability (EUAS, 2013). In 2012, EUAS manages 43,4 % of the installed capacity of Turkey. This was 38% of Turkey electricity generation. In table 5, The summary of the financial statements have been given. In the announced financial statements, there is no evidence of using derivative instruments as an asset or liability at all.

Table 5: Derivative financial investment on EUAS 's financial statements (Million TL)

Years	Foreign Exchange earnings-losses	EUAS Derivative Financial Investment	Derivative financial Instruments Liabilities	Net Profit	Total Assets	Total Revenue	Price per stock
2004				N.A:		N.A	
2005							
2006							
2007			0	63	21.148	5.514	0
2008				-592	29.139	9.902	0
2009				1.498	29.139	10.584	0
2010	N.A.	N.A.	N.A.	N.A.	N.A:	N.A.	0
2011	N.A.	N.A.	N.A.	1.295	25.054	10.393	0
2012	N.A.	N.A.	N.A	474	25.797	10.594	0

Source: Financial Statements of EUAS (http://www.euas.gov.tr/)

Having detailed information for the five largest companies in Turkiye was difficult. These firms were elected according to ranking made by Istanbul Chamber of Industry at 2012. 8 years financial statements are available for Tupras, Ford and Arcelik. However, Financial S for Oyak Renault, EUAS, it was not possible to access the financial statements. In Tupras, Ford and Arcelik financial statements shows investment amount, the loss or earnings arising from derivative financial instruments, only in last two years. It was not possible to measure the relationship between profitability and to the investment to the derivative financial

[2] 2010 -2011 Foreign Currency Hedge of net Investment in foreign operations: Derivatives financial instruments are initially recognized at the acquisition cost reflecting the fair value on the date on which a derivative contract is entered into and are subsequently re-measured at fair value. Derivatives are carried as financial assets when the fair value is positive and as financial liabilities when the fair value is negative. Any gains or losses arising from changes in fair value on derivatives are taken directly to the income statement except for the effective portion o cash flow hedges.

instruments with limited two years data. Despite the widespread use of derivatives by firms and the remarkable growth in the derivatives market all over the world in the last two decades, empirical evidence on the effect of derivatives usage on firm value is limited. There are several reasons: a lack of data on the extent and direction of a firm's exposure to risk; difficulty to identify the roughness that hedging may help to overcome; data on the kinds of derivatives used by a firm and indeed on whether firms are hedging or speculating are not available. Finally, hidden or unobservable firm characteristics introduce additional complications that affect the interpretation of empirical results (Berrospide *et al.* 2008).

7. CONCLUDING REMARKS

In this paper, five of the largest 500 firms in Turkish economy listed by Istanbul Chamber of Industries, have been analysed in terms of hedging strategies. The data have been collected from the official websites of the Companies. 8 years financial statements are available for Tupras, Ford, Arcelik, EUAS. However, it was not possible to access the financial statements for Oyak Renault individually. In Tupras, Ford and Arcelik, the investment amount, the loss or earnings arising from derivative financial instruments were given in the financial statements of last two years. In EUAS, there was no information about the derivative financial statements. It would be considered, the largest 5th company of Turkey did not use financial derivative instruments in its operation. It was not possible to measure the relationship between profitability and the investment to the derivative financial instruments.

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ENERGY BEHAVIOUR IN HOUSEHOLDS: BASIC PATTERNS OF BEHAVIOR AND THEIR IMPACT ON ENERGY SAVINGS IN HOUSEHOLDS

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Abstract: Over the last three decades, energy savings in households is recognized as very relevant and important research topics by different authors. At present, the development of science in the world economy plays an important role in behavioral economics research for irrational market behavior insights. Behavioral changes primarily related to the implementation of the principles of sustainable consumption. The objective of this paper is to examine behavioral concepts, modeling them from the energy perspective, conveying them to show the behavior of links with energy consumption, developing patterns of behavior reprehensible. Studies have shown that behavior can affect and attitude in certain situations. The analysis of studies dealing with behavioral patterns revealed that the patterns of behavior overcame some of the cultural theory ideas, and stressed that the different environmental policy choices require hierarchical (preferred by traditions or institutions) or individual (preference for innovation and individual choice) types option. All of these theories and models have certain limitations, and to develop energy saving potential in changing people's behavior, the evaluation model is necessary to take advantage of all of these theories strengths and to pay attention to their limitations.

Keywords: Behavior, Households, Energy Savings, Impact

1. INTRODUCTION

Energy consumption is a major source of greenhouse gas emissions, and energy savings by changing the behavior of a sustainable energy direction can achieve remarkable energy efficiency and greenhouse gas emission reductions without additional spending and investment, it is important to investigate the energy saving potential due to behavioral changes in households and offer the best policy measures to realize these opportunities.

Though there are several authors addressing energy saving and GHG emission reduction aspects in Lithuania households (Streimikiene and Mikalauskiene, 2008) however in Lithuania there are no energy-saving opportunities created for the behavioral changes in households of valuation methodology, is not even a preliminary assessment of Lithuanian households energy consumption and greenhouse gas emissions reduction potential due to behavioral changes, although it should be one of Lithuania's most important climate change mitigation policies aimed at the consumer side, goals. Therefore, the objective of this paper is to examine behavioral concepts, modeling them from the energy perspective, conveying them to show the behavior of links with energy consumption, developing patterns of behavior reprehensible.

Over the last three decades energy savings in households is recognized by different authors as a very relevant and important research topics. The 1970s oil crisis and the inevitable lack of energy was the main reason which prompted the household energy consumption survey. At present, the development of science in the world economy plays an important role in behavioral economics research for irrational market behavior insights (Brekke and Johansson-Stenman, 2008; Maibach *et al*. 2008, Akerlof and Shiller, 2009, Stern, 2000; Lutzenhiser, 2009; Tonglet *et al*. 2004; Koppl and Whitman, 2004). In the climate change mitigation economy there is also a big focus on behavioral economics and psychology area (Marechal, 2007; Oikonomou *et al*. 2009; Poortiga *et al.* 2003). Energy-saving and greenhouse gas emissions by households can take place in two ways: by changing the behavior and implementing product innovations (Steg, 2008; Schiller *et al.* 2008). Behavioral changes primarily related to the implementation of the principles of sustainable consumption (Abrahamse *et al.* 2007; Poortiga *et al.* 2003; Godwy, 2007, Girod and de Haan, 2009). Product innovation is energy-inefficient appliances and the old cars replacement with new ones, renovation of heating systems, renewable energy resources at home, etc. (Faiers and Neame, 2006; Zarnikau, 2003; Ek, 2005). Product innovation is related to the cost, but the change in behavior does not require any input, but instead saves residents money (Borchers *et al.* 2007; Reusswig, 2010; Abrahamse *et al*. 2005; Benders *et al.* 2006). Most of the studies and their authors, such as Abrahamse and Steg, (2009), Stern (2000) focused on the social and psychological factors influence energy-saving behavior by examining cognitive variables, such as values, outlook and attitudes impact on energy performance. Other authors have emphasized the importance of social processes (Homans, 1961; Garmendia and Stagl, 2010) and the formation of communities for sustainable behavior. Also a significant part of study was to reveal the information of different types of feedback on energy conservation behavior (Roberts and Baker, 2003; Ueno *et al.* 2005; Darby, 2006; Faruqui *et al*. 2009).

Another important research unit includes environmental behavior shaping ethical, cultural and world view and human capital aspects (Bamberg and Schmidt, 2003; Barnet and Serletis, 2008). Despite extensive research, there is still a lack in a unified and based on the energy-saving potential of behavioral changes in households evaluation methodology field that can be adapted to each particular country. While in Lithuania behavioral studies of energy-saving and greenhouse gas emissions in households reduction and sustainable consumption and sustainable lifestyle areas were formed to carry out, while Lithuania's dependence on imported fuels grows, and also the energy prices increase. The paper presents the concept of behavior, modeling them from the energy perspective; conveying them to the apparent behavior of the interface energy. Therefore, this article defines the concept of energy consumption behavior, analyzed and distinguished criticize aspects of the behavior patterns.

2. THE CONCEPT OF ENERGY CONSUMPTION BEHAVIOUR

It can be said that the energy concept equivalent to the behavior is not accurate; on the contrary, it is possible rather to describe as behavioral effects, such as turning on the lights or thermostat-level reduction. In this article attention is concentrated to the behavior, which is related to the direct energy needs (electricity use, fuel consumption), the assessment of such behaviors as turning on a light, the use of electrical appliances, food preparation, washing and etc. It should be noted that the authors distinguish between household energy-saving behavior types into two main groups (Table 1):

Table 1: Energy conservation behavior types

Behavior type	Examples
Productive behavior	The explicit nature of the investment • Installation of ceiling insulation • Installation of wall insulation • double glazing
Reducing energy consumption behavior	Repetitive operational actions • turn the lights off • zip curtains • shut able devices

Source: Abrahamse and Steg (2005)

It is important to not e that these types of behavior can be considered from an economic perspective - eg. household energy consumption behavior may be related to the monetary aspect, or, on the contrary, relates to value point of view - eg., the energy consumption behavior can be caused by environment protections motive, which concerns (Streimikiene *et al.* 2012). It is said that the investigators of behavior did not find which types of behavior – productive behavior, or reducing energy consumption behavior, is more efficient in energy-saving aspect. Some authors argue that reducing energy consumption behavior creates conditions behavior all changes which actually occur, and they are implemented and main tainted from a long-term perspective, while other authors argue, on the contrary, productive behavior is more effective to energy saving and conservation (Abrahamse *et al.* 2005).

In order to make the best prescribing behavior such as reducing energy consumption is a complex case. Nevertheless, the empirical energy research makes a number of signs, and evidence that the correct conditions affect behavioral change, and they can also be formed into public policy (Streimikiene *et al.* 2012).

3. THEORETICAL SOLUTIONS OF ENERGY PERFOMANCE IN HOUSEHOLDS MODEL

Examining patterns of behavior, it should be noted that most of them are created by the help of conceptual assumptions, and others - are formed with the relationships between dependent and independent variables. Indeed, many models have been widely criticized for its permanence and its lack of specificity of the variables concerned. One of the most widely known theories is the neoclassical economic rational choice model. Rational choice theory is based on the fact that consumers weigh the expected costs of different actions, and selects the ones who give the most benefit or causes the least cost. This theory is also based on the principle that, in order to weigh the costs and benefits of the various options, one has to obtain information on possible actions or goods that they need to choose to make a rational choice of action. It is necessary to mention that the theory has been widely used in the 1970s energy conservation studies, in which scholars have been widely used such tools as an information campaign and seminars, in support in exchange of experiences in order to highlight the energy saving methods in households.

One of the reasons explaining the well known theory is that it is similar to, and built on the classical economic base. For example, it can be argued that the cost-benefit analysis is nothing else than the rational choice model, in a quantitative form. Rational choice theory is described as limited, because it doesn't take factors such as habits, emotions, social norms, moral behavior, and cognitive features of the impact of reservations that previous researchers were described as poor operating behavior (Streimikiene *et al.* 2012). Traditional economic theory relating to consumer preferences is based on four key elements: user yield, the market price of goods, consumer tastes and preferences and behavioral assumption of the maximum benefit. With limited income, a specific group of goods from which you can choose from an array of tastes and preferences, a person selects goods in such a way as to ensure and achieve his or her likely to benefit and which is consistent with his or her limited income (Changing behavior, 2009).

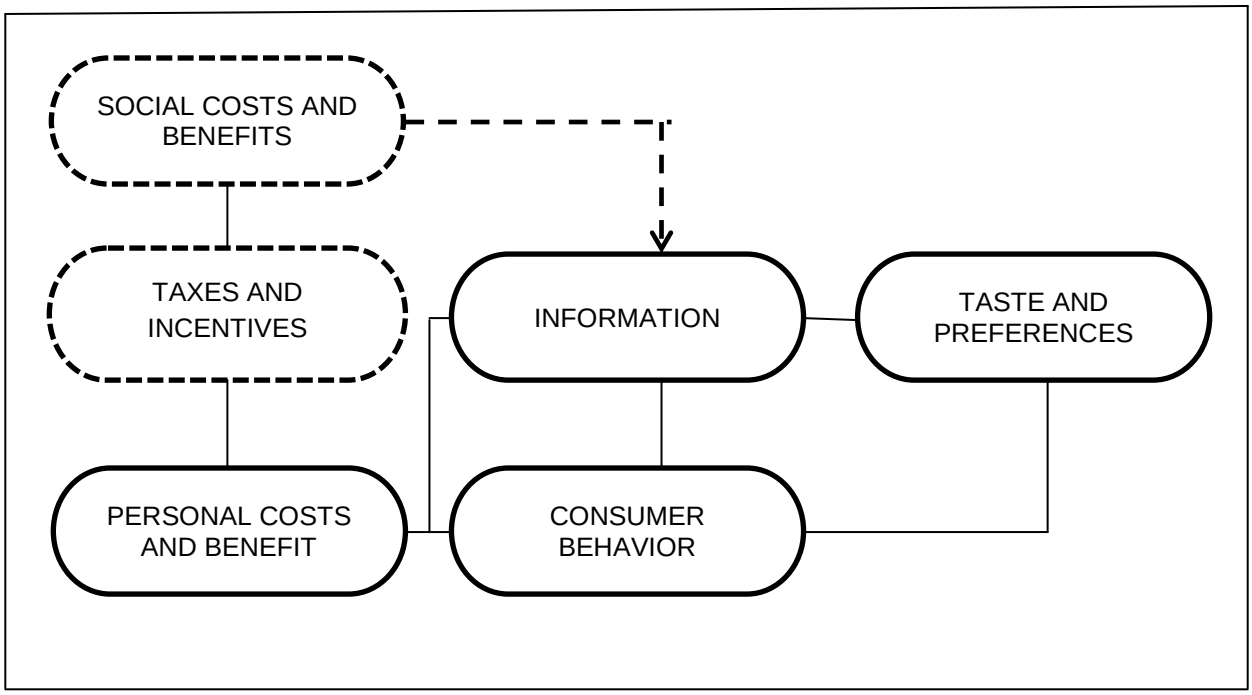

Figure 1: A simplified economic model of consumer preferences
Source: Barnett and Serletis (2008), p. 211

It is necessary to mention that there is a certain pattern of variation in consumer preferences - one of them is called Lancaster or attributes of a model, which was presented by the author Lancaster in 1966. Lancaster argues that consumer preferences given goodness, shape not the products themselves, but the attributes and values that these products have. The mentioned statement was much more holistically based on the economic choice theory. Nevertheless, this theory has been widely used to determine consumer preferences granted to the product attributes of luxury machinery, health care and renewable energy investment (Andersen, 1983).

A causal action theory is a generic social action theory, and its one of the points of abutment is the idea that individuals expect a full assessment of the consequences of their behavior. Effects and beliefs evaluation create the conditions for the formation of attitudes and lead to further behavior. Attitudes of individuals are recognized as one of the main factors that influence individuals' intentions to act in one way or another way. The most rational action theory takes into account an individual's subjective norms - eg. as the other individuals of his / her behavior - this is the opposite of personal norms - eg. individual's personal opinion about a certain behavior. Although rational action theory can serve as a tool to understand the environmental behavior, but on the other hand, that model has limitations because of

disregard of such objects as the habits and the emotional and moral factors.

Planned behavior theory was based on the theory of rational behavior, but the fundamental difference between these two theories is perceived behavioral control - a new variable has been introduced into the theory of planned behavior. Perceived behavioral control is based on the principle that the individual beliefs, how easy or difficult it will affect his / her solution to manage behavior, taking into account each individual's choice of action (figure 2).

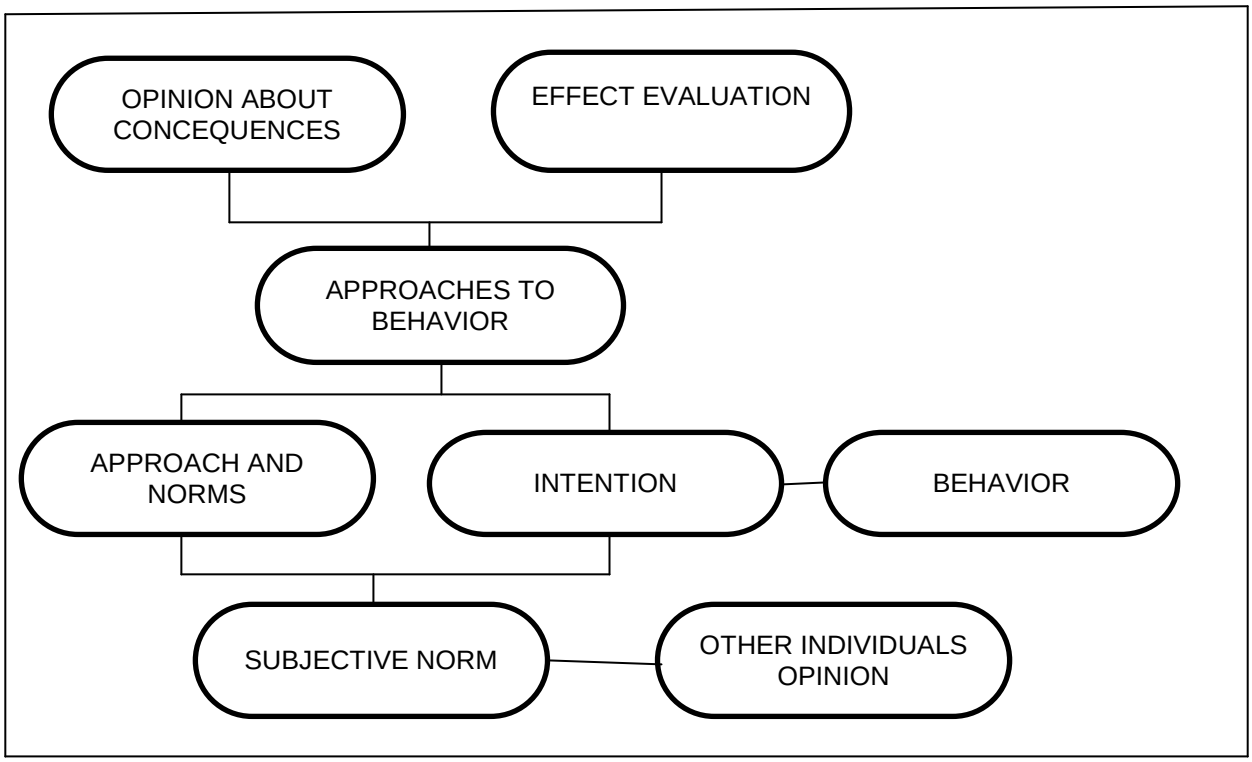

Figure 2:Rational behavior theory
Source: Koppl and Whitman (2004)

It should be noted that the planned behavior theory is widely used in environmental behavior studies which include such as sorting, travel mode choice and energy consumption, as well as blood donation and use of the Internet. It should be mentioned that this model has been used to measure the relationships between attitude, intention and behavior perceived control than measuring actual behavioral change (Tonglet *et al.* 2004). According to the ecological value theory, those individuals who are more concerned with egoistic and selfish interests are less likely to comply with the environmental behavior binding rules than those that follow social values. However, it is also necessary to note that compliance with social values and behavior, according to nature, is not a sufficient condition for the environmental behavior to occur. The latter statement is illustrated by the household energy-saving behavioral studies that show that households with higher environmental liabilities, mostly belong to the higher social group, which also owns and higher power consumption. Thus, by examining the environmental attitudes and using behavior changes theories, it is also necessary to take into account the factors that influence the context and situation (Steg *et al.* 2005).

Value belief theory pioneer is named P. Stern and this theory is based on the principle that social attitudes and personal moral standards are considered to be key supposed environmental behavior to promote. Theory was based on five variables representing the causal chain and influencing behavior (personal values, ecological worldview, perceived ability to reduce the risk of personal and environmental standards). Table 2 shows the structure of value belief theory. According to Stern, the causal chain begins with a relatively

constant central elements of personality and belief structure that will eventually evolve to a more focused beliefs about human nature and relationships, and their potential effects on individual responsibility through restorative actions.

It is argued that the three variables, starting from the values and continuing to personal standards that promote environmental behavior are identified as beliefs. As a consequence, the information can play an extremely important role in influencing beliefs, which in turn changes the environmental standards, and latter finally leads to environmentally meaningful behavior. The above variables affect the causal variables such as personal skills, habits, routine, contextual factors or treatment factors (Hamid *et al.* 2007).

Table 2: Value belief theory

Value belief theory			
Values	Beliefs	Personal environmental norms	Behavior
• Biosphere • Altruistic • Egoistic	• Ecological world view • Perceived ability to reduce the risk	• Binding act to follow and carryout environmental actions	• Activity • Personalized behavior • Organizational Behavior

Source: Stern (2000)

According to symbolic interaction theory, the purchase of goods and consumption help construct an individual's identity and to use the goods as a means to present their view of the outside world. By the point of view of some authors (Changing behavior, 2009), consumer behavior is associated with the desire to shape their public image and to show to the society in the adequate light.

The approach context behavior model is based on the explanation that behavior is a function of the organism and the environment. In other words, the behavior consists of interacting variables and personal view and the factors resulting from situation. The attitude variables include beliefs, norms and values, which have a tendency in certain ways can make an impact, while situational factors include financial incentives and costs, as well as physical abilities and limitations of social norms, institutional, and legal factors. The main dimensions of the model are the interaction between the internal and external factors (Guagnano *et al.* 1995). On the other hand, it should be noted that the approach behavioral context model does not regard factors such as habits, which are widely considered by Triandis (1977) social behavior theory.

It should be noted that, Triandis (1977) interpersonal behavior theory is also considered one of the most interesting. By examining this model, it can be said that the intentions and habits affects behavior, which is also affected by extenuating reasons (external factors). Based on the above model, the behavior of each situation is considered to be a feature that an individual is going to use, what are the individual's habits and what are the possible situational factors and conditions under which an individual is functioning. This model has been used in environmental studies, for example to reveal the moral principles and habits influencing students using cars. Based by Triandis (1977) model, personal intentions are influenced by rational thought, social, normative, and emotional factors. On the other hand, the more difficult complex model level is, the less it can be used in experimental studies, so Triandis model was not as widely used as compared with the previously analyzed concepts. Regarding how it is shaped and influenced behavior and how it can be changed, policy makers must pay attention to external and internal factors, not least the nature of social and regulatory context in which individuals live and how it relates to society and the political environment.

It is necessary to note that the previously introduced concepts indicates the need for paying attention not only to external but also to internal factors, taking into account the attitudes,

beliefs, and norms influence. Persuasion and social learning theory specifically focuses on how internal factors can be influenced.

So, as stated above, the approach can also influence behavior, but research shows that behavior can affect and attitude in certain situations. Behavior is functioning as predecessor of approaches. On the other hand, there are many situations in which social identity, in other words, intergroup behavior determines our future behavior. For example, households not engaged in sorting, can explain the fact that they do not depend to a certain population group, which includes individuals involved in sorting. Studies exploring the behaviors revealed that behavior overcome some of the cultural theory ideas patterns, and stressed that the different environmental policy choices require hierarchical (preferred by traditions or institutions) or individual (preference for innovation and individual choice) types option. On the other hand, changes in behavior as well as social activities or so-called "early followers" initiating social change. In conclusion we can distinguish the following factors influencing behavior, as reflected in Table 3.

Table 3: Factors influencing behavior

Factors influencing behavior		
Internal	External	Habit / routine
• Beliefs • Attitudes • Values	• Institutions • Adjustment • Social context	• "Operation with outthinking"

Despite the factors that determine and influence behavior, our behavior often changes and this continuous exchange is based on social trends, or other human influences. Mobile phones, personal computers, and the increased popularity of organic food may be recognized as one of the rapid changes of behavior. Despite the many factors influencing the behavior for the latter promoting change in certain methods and instruments is used. It should be noted that, ideally, behavioral changes to promote, every measure assesses both the internal (attitudes, values, habits, and personal norms) and external (regulatory and fiscal legislative initiatives, institutional constraints, social practices) factors. It should be mentioned that such theories as value beliefs, interpersonal behavior or rational choice theory takes both the internal and the external factors. On the other hand, the belief theory or community based social marketing tools provided positive results in promoting the environmental performance such as sorting or water storage. Table 4 shows the behavior and their change model theories summary, highlighting the main authors, the basic principles and limitations.

Behavioral models showed the need for paying attention not only to external but also to internal factors, taking into account the attitudes, beliefs, and norms influence. Studies have shown that behavior can affect and attitude in certain situations. The analysis of studies dealing with behavioral patterns, revealed that the patterns of behavior overcame some of the cultural theory ideas, and stressed that the different environmental policy choices require hierarchical (preferred by traditions or institutions) or individual (preference for innovation and individual choice) types option.

Summarizing it can be said that the main behavior models and theories covers rational choice, cause of action, planned behavior, ecological value, symbolic interaction, Triandis interpersonal behavior, persuasion and social learning concepts. All of these theories and models have certain limitations, and to develop energy-saving potential of behavioral changes in households evaluation model is necessary to take advantage of all of these theories strengths and to pay attention to their limitations.

4. CONCLUSIONS

The main patterns of behavior and theories include rational choice, causal action, planned

behavior, ecological value, symbolic interaction, Triandis interpersonal behavior, persuasion and social learning concepts. All of these theories and models have certain limitations, and to develop energy saving potential in changing people's behavior, the evaluation model is necessary to take advantage of all of these theories strengths and to pay attention to their limitations.

Based on the theoretical sources and empirical analysis of the study, the theoretical energy savings in households, changing people's behavior evaluation model was developed, the essence of which the theoretical assumptions of the population, changing behavior and energy-saving policy measures aimed at the population behavior change in the selection and implementation of an impact assessment, the calculation of the energy-saving and greenhouse gas emission reduction potential and recommendations for new energy and climate change mitigation policy implementation development.

Table 4: Summary of behavioral change and its models theories

Behavioral theory / model	Main authors	Main idea	Limitations
Rational choice theory	Homans (1961)	Users weigh the expected costs and benefits before performing different actions, and selects those most beneficial or slightest cost- effective	The theory does not take into account the habits, emotional, moral norms and cognitive eliminations
A causal action theory	Ajzen and Fishbein (1980)	Individuals expect a certain value from the consequences of their behavior	Theory does not evaluate cognitive reflection, habits and moral factors
Theory of planned behavior	Ajzen (1991)	Base don't he causal action theory, however, introduces a new variable – perceived behavioral control, based on an individual's belief, at what level will be affected by the decision	Theory of planned behavior used to measure the relationship between attitude, intention and perceived behavior control, and general behavior.
Ecological value theory	Stern (2000)	Individuals, who are more concerned with egoistic and selfish interests are less likely to comply with the environmental behavior binding rules than those that follow social values	Environmental behavior can promote altruism, certain interests.
Value belief rate theory	Stern (2000)	Socialattitudesandpersonalmoralnormspromoteenvironmentalbehavior	All variables must be analyzed in order to identify the factors affecting the main
Symbolic inter action theory	Blumer (1969); Mead (1934); Wicklund and Gollwitzer (1982)	Wealth acquisition will not only serve as a practical value purpose, but it also helps to constructor identity and take advantage of the goods as a means to introduce yourself to outside world.	Studies show that individuals' reactions to goods and symbols also occur at extremely self-conscious level
Attitude - Behavioral – Context Model	Stern (2000)	Behavior is a consequence of the inter play between the personal additional variables and context factors.	Excludes habits affect
Inter personal behavior theory	Triandis (1977)	Intentions and habits determine behavior, which is also affected by the mitigating conditions (external factors).	Not widely used among researchers
Persuasion theory	Hovland *et al* (1953)	Persuasion theory is based on the following three principles: the speaker's credibility, argument report's reliability and sensitivity, takingintoaccountthefactthatthemessageswillpersuadetherecipientsandtheirbehaviorandattitudeswillchange	A simple theory has several limitations, but its version, such as cognitive is resonance theory, which imposes a higher weight the individual as active users in the process of persuasion, showed more positive results in explorations
Social learning theory	Bandura (1977)	Individuals learn from their experiences (test failures), as well as other social models that are around us (family, friends, colleagues, famous people).	The theory deals with a limited, factors operating in the individual behavior level.

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CUSTOMER EXCLUSION IN EUROPE: THE CAUSES AND CONSEQUENCES FOR FINANCIAL MARKETS

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Abstract: Social exclusion appears as a problem of both individual and social character. The concept of social exclusion denotes living conditions of individuals with respect to their material situation and psychical condition. On the other hand, social exclusion presents an important aspect of contradictions existing in the society. It is revealed as a social issue when situations which determine it grow at such a considerable scale that they become attributes of living conditions of whole societal groups. They also exert destructive influence on social and economic development of a country. Social exclusion affects different markets and reduces numbers of potential customers. Customers have limited access to the products or services. This article discusses social exclusion and customer exclusion to highlights its importance for financial markets in selected countries in Europe. This paper aim is to investigate the nature of customer exclusion and present different aspects, scale and consequences related to financial markets. The paper uses theoretical and conceptual analysis method based on an extensive survey of literature and statistics. It greatly draws from the theoretical and empirical insights of social policy sub disciplines of social inclusion/exclusion and behavioral aspects of finance.

Keywords: Customer Exclusion, Financial Markets

1. INTRODUCTION

Social exclusion appears as a problem of both individual and social character. The concept of social exclusion denotes living conditions of individuals (a single individual, a family, a household) with respect to their material situation and psychical condition. On the other hand, social exclusion presents an important aspect of contradictions existing in the society. It is revealed as a social issue when situations which determine it grow at such a considerable scale that they become attributes of living conditions of whole societal groups. They also exert destructive influence on social and economic development of a country (Danecki, 1997). Moreover, social exclusion is often a result of past and present erroneous decisions in the social policy of a country.

2. SOCIAL EXCLUSION – CONCEPT AND CHARACTERISTICS

The concept of social exclusion was first used by R. Lenoir, the French Minister of Social Welfare, with reference to people who were not adapted to living in the industrial society, who were forced to live on the margin of social life, and who were excluded from the insurance protection (Panek, 2011). Today, the term is used in the European social policy and first appeared in the document of the European Commission on the program of combating social exclusion in 1990 (Golinowska and Broda-Wysocki, 2005).

The category of exclusion is not unequivocal and can be defined in different ways. H. Silver (1994) in his description of social exclusion recalls three basic concepts - paradigms of the category, referring to three mainstream views on the state and society: the republican, the

liberal and socio-democratic. In the solidarity paradigm, which refers to republicanism, social exclusion is defined as “severing a bond between an individual and the society, the bond which is described as social solidarity” (Szarfenberg, 2008). According to this approach, an individual is excluded form the society when he or she dos not participate in the collective life or is socially passive. In another paradigm, referred to as a specialization paradigm and based on liberal views, social exclusion occurs as a consequence of specialization: differentiation, economic labor division, separation of various forms of social collective life (Szarfenberg, 2008). In this approach, an individual is ousted from the society when he or she does not take part in the social favorable exchange process, which may result in discrimination or in affiliation to certain social groups and loyalty towards them. Finally, in the monopoly paradigm based on socio-democratic views, social exclusion results from formation and operation of group monopolies (Szarfenberg, 2008). This concept is characterized by social division into dominant and dominated groups. The dominant group monopolizes access to various resources, and consequently benefits from affiliation to this group. An individual is socially excluded on account of limitation of societal and social rights which are reserved for dominant groups only (Haughton and Khandker, 2009).

The category of social exclusion is of multifaceted character. It considerably goes beyond the lack of material and financial resources, and refers to other limitations which prevent individuals (a single individual, a family, household) from living on a level which is acceptable for a given country. Through identification of poverty with social exclusion the phenomenon can be looked upon not only in terms of money, abilities and opportunities, but it can also be considered as deprivation, i.e. lack of access to something. Thus, the category of social exclusion appears as extension of the concept of poverty introduced by A. Sen (2000).

In most definitions social exclusion is defined as an inability to participate in essential aspects of social, economic, political and cultural life of a particular country (Panek, 2011). Moreover, this social absence is not a consequence an individual choice, but of obstacles that an individual encounters. Particular dimensions of poverty often overlap, thus pushing an individual to more distant social margins.

The EU Commission has adopted the definition of social exclusion as a process due to which certain individuals are pushed to the fringe of the society and prevented from full participation in the social life on account of lack of basic qualifications, of permanent learning opportunities or discrimination. All these factors take individuals away from work, income, education prospects and social as well as local relations and activities. Such individuals have limited access to the central decision-making bodies and consequently, feel helpless and unable to affect decisions which have direct influence on their daily life (Golinowska and Broda-Wysocki, 2005). Experts of the project group for Social Reintegration by the Ministry of Economy, Work and Social Policy define social exclusion as a situation which grossly hinders or prevents an individual or a group from legitimate fulfillment of social roles, from use of public resources and social infrastructure or from decent achievement of profits (Golinowska and Broda-Wysocki, 2005). According to the authors, it is worth focusing on three elements of the definition: excluding situation, being a sum of excluding factors or conditions – an answer to the question: what excludes, an individual (a person or a group) under exclusion - an answer to the question: who is being exclude, and finally social functioning and the use of public resources (services, infrastructure, etc.) and the securing of one's own existence in a decent and respectful way (obtaining profits and collecting resources), which, due to the excluding situation, is difficult, if not impossible.

3. METHODS OF IDENTIFICATION OF SOCIAL EXCLUSION

Methods of analysis of social exclusion depend, among others, on the approach to the concept (absolute approach or relative approach) and on adopted social exclusion criteria (classic approach where need satisfaction is assessed entirely through the level of income

(expenses) expressed in a monetary form or multidimensional approach in which social exclusion is determined not only by money-based income, but also by the possibility of need satisfaction on the basis of income and resources assessed in a non-monetary way (Panek, 2011). Methods of identification of socially excluded households are based on different understanding of social exclusion, on diverse criteria of social exclusion and on the approach to measurement of social exclusion (objective and subjective approach).

In the classic approach, socially excluded sub-population is formed on the basis of a critical income or expenditure level, referred to as a poverty level below which satisfaction of basic needs is impossible. In the multidimensional approach socially excluded sub-population can be identified in different ways (Coudouel *et al*. 2002). Burchard *et al.* (2002) distinguished two main areas (aspects) where an individual can be subject to social exclusion:

- economical integration, including consumption (income / financial) – an individual is bound to be socially excluded on account of insufficient income, as well production - an individual is excluded due to unemployment and lack of opportunities to improve qualifications necessary for obtaining work,
- social integration – an individual is socially excluded as a consequence of the abstaining from social contacts as well as political engagement, which means exclusion from the society due to restrictions put on individuals passive or active electoral rights.

Bearing in mind the above considerations, social exclusion should be measured and evaluated with respect to those two aspects.

4. ECONOMIC-BASED SOCIAL EXCLUSION IN EUROPE

As was mentioned in previous sub-chapter one of the most important type of social exclusions is based on account of insufficient income or even lack of income. The analysis of income-based social exclusions in EU could be done on EU-SILC results obtained within the year 2009 and takes into account both monetary index of household income and non-monetary determinants of social exclusion symptoms. Equivalent disposable income of households and symptoms values of social exclusion of particular households was attributed to their members in purchasing power standards (PPS can be interpreted as the equivalent of the euro with respect to purchasing power).

The lowest equivalent income expressed in PPS was recorded in Romania (3,646 PPS), Bulgaria (5,762 PPS), Slovakia (7,114 PPS) and Hungary (7,235 PPS). The highest equivalent income, in turn, was observed in Luxemburg (30,743 PPS), Great Britain (22,792 PPS) and the Netherland (21,897 PPS). Consequently, the equivalent income expressed in PPS was almost 8.5 times higher in the richest country (Luxemburg) as compared to the least wealthy state (Romania). In Poland this income was relatively low in comparison with other EU countries (and totaled 7,973 PPS) and accounted for 26% of Luxemburg equivalent income.

Table 1: Equivalent disposable income of households and relative level of social exclusion in UE members

No.	Country	Equivalent disposal income of households during (yearly)		Relative level of exclusion in PPS*
		Euro	PPS	
1.	Austria	21,380.50	20,915.40	11,200
2.	Belgium	19,986.20	18,453.60	10,100
3.	Bulgaria	2,662.30	5,762.20	2,800
4.	Cyprus	18,934.80	20,916.30	11,300
5.	Czech Republic	6,809,60	10,910.10	5,800
6.	Denmark	26,030.00	18,947,90	10,500
7.	Estonia	6,333.10	8,667.50	4,700
8.	Finland	22,074.20	18,412.10	9,600
9.	France	20,004.20	18,513.50	9,700
10.	Germany	21,086.20	20,683.00	10,600
11.	Greece	12,766.40	14,075.50	7,200
12.	Great Britain	22,804.10	22,791.70	11,600
13.	Hungary	4,827.20	7234.60	4,000
14.	Ireland	26,808.90	21,265.80	10,900
15.	Italy	17,734.40	17,235.00	9,000
16.	Latvia	5,942.30	8,919.90	4,400
17.	Lithuania	4,944.60	8,242.80	4,200
18.	Luxembourg	35,448.10	30,745.20	16,500
19.	Malta	10,585.40	14,011.40	7,800
20.	The Netherlands	22,302.60	21,897.10	11,300
21.	Poland	4,939.50	7,973.30	3,900
22.	Portugal	10,288.00	12,004.50	5,800
23.	Romania	2,323.30	3,646.10	1,900
24.	Slovenia	11,709.30	14,817.10	8,400
25.	Slovakia	5,179.60	7,114.40	4,000
26.	Spain	14,582.90	15,713.20	8,400
27.	Sweden	21,804.90	18,846.60	10,400

Source: (European Commission, 2010)

* The **purchasing power standard**, abbreviated as **PPS**, is an artificial currency unit. Theoretically, one PPS can buy the same amount of goods and services in each country. However, price differences across borders mean that different amounts of national currency units are needed for the same goods and services depending on the country. PPS are derived by dividing any economic aggregate of a country in national currency by its respective purchasing power parities

Identification and determination of the range of social exclusion in EU countries may take place in two benchmark settings. In the first one, favored by Eurostat analyzes, the limits of social exclusion are set independently for each EU country. Values of limits for the year 2009 have been presented in Table 1. It is surprising that differentiation of social exclusion limits is quite considerable despite the fact of referring to equivalent income levels expressed in comparable monetary units with respect to purchasing power standards of country currencies. The highest limits of social exclusion were observed in Luxemburg (16,500 PPS), Norway (13,700 PPS), the Netherlands and Cyprus (11,300 PPS) as well in Austria (11,200 PPS), whereas the lowest ones were recorded in such countries as Romania (1,900 PPS), Bulgaria (2,800 PPS) and Poland (3,900 PPS). Referring to different social exclusion limits by particular countries is reflected in assessments of the range of social exclusion, where differences in the level of citizens' wealth of the countries are ignored, and focus is put solely on the degree of inequality of income distribution inside these countries.

Another aspect of economical economical-based social exclusion is related to area of production, when an individual is excluded due to unemployment and lack of opportunities to

improve qualifications necessary for obtaining work (Smyczek, 2008). With respect to the labor market, assessment of social exclusion was based on symptoms such as long-term unemployment rate, permanent unemployment rate and percentage of people living in households with out-of-work members (Table 2).

Table 2: Scale of social exclusions in area of labor market in EU members in 2009

No.	Country	Percentage of excluded according to different symptoms		
		long-term unemployment rate	permanent unemployment rate	percentage of people living in households without workers
1.	Austria	0.9	0.5	7.0
2.	Belgium	3.3	2.2	12.0
3.	Bulgaria	2.9	2.0	9.0
4.	Cyprus	0.5	0.1	4.9
5.	Czech Republic	2.2	1.3	6.0
6.	Denmark	0.5	0.2	6.8
7.	Estonia	1.7	0.9	6.2
8.	Finland	1.2	0.6	8.1
9.	France	2.9	1.5	9.8
10.	Germany	3.8	2.8	9.0
11.	Greece	3.6	2.1	7.5
12.	Great Britain	1.4	0.7	10.7
13.	Hungary	3.6	1.9	12.5
14.	Ireland	1.7	0.9	9.0
15.	Italy	3.1	1.9	9.6
16.	Latvia	1.9	1.1	6.4
17.	Lithuania	1.2	0.8	9.0
18.	Luxembourg	1.6	0.5	7.9
19.	Malta	2.5	1.3	8.1
20.	The Netherlands	1.1	0.6	5.9
21.	Poland	2.4	1.1	10.1
22.	Portugal	3.7	2.1	5.5
23.	Romania	2.4	1.1	10.5
24.	Slovenia	1.9	1.0	6.4
25.	Slovakia	6.6	5.1	7.5
26.	Spain	2.0	0.9	7.4
27.	Sweden	0.8	0.3	-

Source: Eurostat

The highest long-term unemployment rate was recorded in Slovakia, Germany and Portugal (with 6.6%, 3.8% and 3.7% respectively). The lowest one, in turn, was observed in Denmark, Cyprus, Sweden and Austria (0.5%, 0.5%, 0.8% and 0.9% respectively). In analyzed period, the permanent unemployment rate within European Union amounted to 1.5%, with the highest values recorded by Slovakia (5.1%), Germany (2.8%) and Belgium (2.2%). In the same year the lowest permanent unemployment rate was obtained by Cyprus (0.1%), Denmark (0.2%) and Sweden (0.3%). In 2009, 9.2% people in EU lived in households without employed people. The highest percentage of the people was observed in Hungary and Belgium (12.5% and 12% respectively), the lowest one was recorded in Cyprus, Portugal and Holland (4.9%, 5.5% and 5.9% respectively). In Poland this value was relatively high and equaled 10.1%.

Another aspect of economical-based social exclusions is connected with process whereby people encounter difficulties accessing and/or using financial services and products in the mainstream market that are appropriate to their needs and enable them to lead a normal social life in the society in which they belong (Collard and Kempson, 2005).

There is also a widespread recognition that financial exclusion forms part of a much wider social exclusion, faced by some groups who lack access to quality essential services such as jobs, housing, education or health care. Beside the fact that use of financial services makes more and more part of a standard life, the way to access and use those services may be more and more over demanding on various aspects as geographical, technical, cultural, educational or about guarantee and risk analysis criteria. This leads to a large range of access and use difficulties that are deeply related to each country's market structure (Anderloni and Carluccio, 2006).

Financial products will be considered "appropriate" when their provision, structure and costs do not lead the customer to encounter access and/or use difficulties. These difficulties are caused simultaneously by the characteristics of the products and the way they are sold (supply side) and the situation and the financial capability of the customer (demand side). The analysis of each structure (both demand and supply sides) may, for each country, highlight the way supply meet demand, and how appropriate it is (Carbo *et al.* 2004).

Table 3: Levels of financial exclusion in selected European countries in%

Country	Unbanked	Marginally banked	No revolving credit	No savings	Financially excluded
Austria	9	11	36	11	3
Belgium	3	3	37	13	1
Czech Republic	29	11	62	35	17
Denmark	5	7	18	15	1
Estonia	27	8	80	67	16
Finland	11	6	48	34	6
France	3	1	14	39	2
Greece	36	42	76	41	28
Germany	5	2	46	21	3
Hungary	43	6	78	58	34
Italy	19	7	56	50	16
Latvia	62	3	80	76	48
Lithuania	53	12	86	61	41
Luxembourg	6	6	18	28	1
Poland	56	2	73	60	40
Slovakia	37	12	81	40	26
Slovenia	11	2	36	32	6
Spain	11	30	46	25	8
Sweden	8	9	33	7	2
UK	9	6	30	22	6

Sources: Eurobarometer (2010)

The analysis of data from Eurobarometer shows that 22 per cent of adults aged 18 of adults in the European Union had no bank account at all. We describe these people as *'unbanked'*. A further 7 per cent in those countries had only a deposit account with no payment card or cheque book – these we have called '*marginally banked'*. Generally, adults were less likely to hold revolving credit than savings. In all 56 per cent of European Union adults had no access to revolving credit (credit card or overdraft) whilst 42 per cent respectively did not have a savings product. Putting this together, we find that around 20 per cent of all adults in the EU countries had none of these three types of financial product and might, consequently, be considered '*financially excluded*'.

Levels of financial exclusion varied widely, ranging from one per cent or less in Denmark, Belgium, Luxembourg and Holland to 41 per cent in Lithurania and 48 per cent in Latvia. Indeed, the countries with large proportions of adults who are financially excluded feature

among those with the highest proportions of people excluded from each of the three types of financial services we have studied in detail: banking, unsecured credit and savings.

Moreover, there was a broad a correlation between levels of financial exclusion and the levels of affluence (measured by the GDP per capita) and inequality (Gini coefficient), which is consistent with other research (Kempson, 2006). Where affluence was high and income inequality was low, levels of financial exclusion tended also to be low.

The Eurobarometer analysis shows wide variation in exclusion from transaction banking services across the European countries – ranging from 2 per cent of individuals in Holland and 4 in France to 65 per cent in Latvia or Lithuania and 78 per cent in Greece. It should be noted, however, that in Estonia, a high proportion of individuals had a deposit account even though they lacked a transaction account, so the proportion lacking an account of any kind was a good deal lower.

Using the Eurobarometer data it is possible to compute two variables to measure the level of exclusion from unsecured credit. The first is the proportion of people with no credit in the form of an overdraft, credit card or loan; the second is a narrower definition – of access to mainstream revolving credit facilities (overdrafts and credit cards). Both measures, however, tend to provide an over-estimate of credit exclusion as they will include people who are opposed to borrowing and so decline such facilities or they simply did not need them. Importantly, the extent of this will vary from country to country, depending on the prevailing attitude towards borrowing. It should also be noted that there are three quite distinct types of credit card in Europe, and also that the Eurobarometer survey puts charge cards together with credit cards even though they do not offer extended credit. Secondly, the Eurobarometer survey excludes some forms of credit that are quite prevalent in some countries – including goods bought on credit through mail order catalogues and, in Poland, a form of credit known as hire purchase. Despite these concerns about the Eurobarometer data, it does offer at least some insight into levels of access to credit across the European countries. These should, however, be kept in mind when interpreting the findings of the analysis.

Across the European countries 56 per cent of adults aged 18 or over did not have any revolving credit facilities. Again there was wide variation across countries. The proportion of people with no revolving credit was lowest in Denmark (18 per cent) and Luxembourg (19 per cent). The highest proportions were found in Lithuania (86 per cent), Estonia and Latvia (80 per cent).

As we saw earlier, around 42 per cent of European customers had no savings account at the time of Eurobarometer survey. Once again there were wide variations across individual countries. Sweden was the country with the highest incidence of saving account-holding – only 7 per cent of adults lacked a savings account. At the other extreme, countries in the Europe where a large proportion of the population did not have a savings account included Latvia (76) and Estonia (67).

To sum up, we can grouped the European countries according to their levels of financial exclusion. These were as follows: low level of financial exclusion (Luxembourg, Belgium, Denmark, France and Sweden), medium-low level of financial exclusion (Austria, Germany, UK, Spain, Slovenia and Finland), medium-high level of financial exclusion (Estonia, Italy, Greece, Czech Republic and Slovakia), and finally high level of financial exclusion (Hungary, Poland, Lithuania and Latvia).

5. METHODS OF FINANCIAL EXCLUSION PREVENTION

The scale of financial exclusion is determined by macro-and micro factors. The basic method, although insufficient, to fight against the present phenomenon is therefore striving

for economic development, increasing the wealth of the society and to provide job opportunities for citizens. A key role in the fight against finacial exclusion plays the goverment and the state. They should put a special emphasis on raising public awareness and education which can be a starting point of financial inclusion. Financial inclusion means building a financial system that serves as many people as possible in a country. Developing country policymakers have recognized that the complex and multidimensional factors contributing to financial exclusion will require a variety of providers, products, and technologies that work within and are a reflection of the socio-economic, political, cultural, and geographic conditions in their countries. This method, however, will not have the day-to-day effect; it is a long process that can produce results in the long run.

Financial inclusion cannot be addressed by a single product or technological innovation, and therefore policymakers are focusing on a set of solutions best fitting to their national contexts in pursuit of increased financial access for poorer populations. There is no a single pre-determined recipe for improving financial inclusion and developing country policymakers are in the best position to evaluate their unique institutional, socio-economic, financial and political circumstances and pursue the strategy that best fits (AFI, 2010). Nevertheless, some survey results highlighted some methods that define and typify the landscape of financial inclusion policies.

Education. Common education and information on banking, money management and the use of credit. Both on EU and national level a lot of national educational projects are launched. On 18 December 2007, the European Commission adopted a Communication on Financial Education. This Communication underlines the Commission's support for the provision of financial education delivered through Member States, national and regional authorities, non-governmental agencies and the financial services sector. In the same time results from the ING International Survey (IIS) (2013) on financial competence show overwhelming support for financial education to be taught in schools. Around 90% of more than 11,000 respondents in 11 countries in Europe think that financial education should be taught at schools. Support for school-based financial education was revealed as the survey showed weakness in knowledge of financial concepts. In total across Europe, 89% said financial education should be taught in schools – and at a country level, support was also strong. In Poland, 96% agreed, the highest rate of 11 countries in the survey. Even in France, which had the lowest rate, there was 74% support. Forty-one percent of respondents to the IIS said they had not received any financial education (either taught at school, by friends and family or self-taught).

Banking. Access to banking - and in particular to transaction banking (i.e. ability to make lodgements and payments through a variety of mechanisms) - needs to be the primary priority because it is a key to accessing other financial services such as insurance, personal loans, saving and investment packages and home mortgages, for example, and so widening access to accounts can also be seen as a commercial opportunity for financial service providers and provide access to other services for customers (OFT, 1999). Another important elements is how the accounts are design and if there is physical access to the account.

Loans and savings. To a large extent, saving and borrowing have not been considered central to debates on financial exclusion, albeit for different reasons. Access to, and use of, savings products are perceived to be desirable rather than essential. Even so, it is generally recognised that savings provide security (actual and psychological), act as a safety-net in the face of unforeseen events and smooth the household budget during imes of financial constraint.

Loans for micro-entrepreneurs. People who have had an insecure work history often see self-employment as a route into work or into more secure employment. But the types of micro-businesses that are set up by people in deprived communities often face problems of access to financial services that are every bit as great as those faced by individuals. As a

consequence, there has been a strong policy focus on improving access to financial services by micro-businesses (usually defined as those with between one and five employees and a modest turnover) (Bilinska, 2006).

As the microfinance sector has grown and matured, it has necessitated the development of policies to support financial intermediation, and cope with non-bank financial actors that have started to take deposits or otherwise intermediate funds. Many of the countries surveyed have a national microfinance strategy in place, but may not yet have identified an overall financial inclusion strategy or approach (AFI, 2010). In EU microfinance means small loans of up to €25,000 provided by banks and savings institutions to business customers. The main EU microfinance initiatives:

- Competitiveness and Innovation Framework Programme supports micro-entrepreneurs to start up or expand their business.
- European Progress Microfinance Facility provides microloans to people who lost their jobs and want to start up their own business or to people who want to develop their existing business, but do not have access to traditional banking services.
- Joint European Resources to Micro to medium-sized Enterprises allows EU countries to use EU structural funds to support small and very small businesses. In some EU countries, microcredit providers benefit from guarantees, loans and equity.
- Joint Action to Support Microfinance Institutions in Europe improves the capacity of microcredit providers and helps them become sustainable and viable operators in the credit market (for non-bank microcredit providers).

The EU microfinance market is immature and fragmented, but of growing importance as a market segment.

Financial services and different religions. Since the middle of the 1990's, international migration started to grow rapidly in most developed countries, with features indeed unique from several viewpoints: size, complexity, diversity and social implications. The implementation of effective policies to ensure immigrant integration, to attract the required skills to satisfy domestic needs and to fight against irregular entry and employment has become important issue for EU countries. One of the aspects is that of financial inclusion of migrants in respect to their religion. This problel is quite new in Europe, for example Islamic finance is still at a fairly embryonic stage and in some countries do not exist at all. Responding for that need can influence especially the financial exclusion level among immigrants in EU.

6. CONSEQUENCES OF FINANCIAL EXCLUSION FOR ECONOMIC DEVELOPMENT IN EUROPEAN MARKET

Two main dimensions of financial exclusion consequences under the umbrella of economic consequences on affected people can be determined. First, financial exclusion can generate financial consequences by affecting directly or indirectly the way in which the individuals can raise, allocate, and use their monetary resources. Secondly, social consequences can be generated by financial exclusion. These consequences are affecting individuals' patterns of consumption, the way they participate to economic activities or access social welfare and the distribution of incomes and wealth. They impact the way in which people behave both in terms of purchase decisions and the way in which they choose to spend their time, as well as their overall quality of life.

These are the consequences affecting the various links that are binding the individuals: link to you corresponding to self-esteem, links binding to the society and links binding to community and/or relationships with other individual or groups. A single financial exclusion situation can of course generate at the same time financial, socio-economical and social consequences for the person facing it. The different dimensions of financial exclusion

consequences identified in the country reports are listed summarized below regarding each one of the keys areas of essential financial services: transaction banking, credit and savings. For transaction banking, a further distinction can sometimes be made between access difficulties and use difficulties consequences. People with no bank account at all face difficulties dealing with cheques made out in their name by a third party. Often they have to pay to have the cheque cashed and in some countries there are networks of cheque cashing companies whose main purpose is to offer this service (Anderloni and Carluccio, 2006; Hogarth and O'Donnell, 1999; Kempson and Whyley, 1998; Kempson, 2000). Lacking a transaction bank account with payment facilities can make payment of bills costly – particularly when such accounts are the norm and outlets for paying in cash are closed (BMRB, 2006; Corr, 2006; Kempson and Whyley, 1998; Kempson, 2000). Moreover, the cost of banking services bought separately is generally higher than those accessed within a stable relationship with the bank. Consequently, occasional payments of utility bills, payment of taxes, bank transfers to third persons, cashing cheques and money orders at the banking counter are more expensive for those who are not customers of the bank. Therefore there are relevant negative economic consequences of dealing occasionally with banks, not only of using alternative commercial profit-oriented financial services providers.

Many utility companies offer discounted rates for people paying their bills electronically each month (BMRB, 2006; Corr, 2006; Kempson and Whyley, 1998; Kempson, 2000). People lacking a payment card (debit or credit card) are also unable to take advantage of the lower prices of goods and services bought in this way. It is also difficult to take employment in countries where payment of wages is by electronic transfer into a bank account (CAB, 2006; Treasury Committee, 2006b).

Not having access or not knowing how to use properly bank services can, depending on history, status and life experience of people facing it, have an impact on self-esteem and lead to (self)-isolation and depravation of social connections and social relationships with friends or family (Gloukoviezoff, 2004). In some places, having to pay in cash generates the feeling that the money is not clean or has been stolen. People concerned by this situation can feel humiliated by it and lose their self-esteem (Gloukoviezoff, 2004).

People unable to get credit from banks or other mainstream financial providers often have to use intermediaries or sub-prime lenders where the charges are higher and the terms and conditions may be inferior (Anderloni and Carluccio, 2006; Collard and Kempson, 2005; Corr, 2006; Kempson *et al.* 2000; Treasury Committee 2006a). Customers of alternative commercial profit-oriented financial services can face a number of negative consequences (as do customers of mainstream services). Those who are totally "credit excluded" and who cannot gain access to any type of credit also face negative consequences. In Germany, those who cannot access credit have to depend on informal borrowing (Social Watch, 2010). However, Rogaly *et al.* (1999) stress that 'relational capital', accessed through networks of neighbours and kin is 'double-edged' as it can cause conflict with friends and family. Another strategy used by low-income consumers who are credit impaired in Germany is to delay utility bill payments in order to 'inject flex into their budgets' (Social Watch, 2010). Consequently, consumers in Germany are more likely than those in Sweden or Finland to lose utilities and housing because of non-repayment.

As already stated, the main disadvantage of sub-prime lending is the high costs involved. Customers can fall into greater financial difficulties and over-indebtedness as a result of terms and conditions applied to some sub-prime products. For example, alternative financial service providers rarely carry out credit ratings and therefore, customers can be at greater risk of defaulting, given that the lender is unaware of their capacity to repay the loan. Some alternative financial providers (e.g. sub-prime lending companies; chequecashers) also apply extra fees for extending a loan or issue penalties for defaulting.

Evidently, the most negative consequences are experienced by those lending from illegal financial service providers. In Germany, (Social Watch, 2010) highlighted that one of the major risks associated with borrowing from illegal lenders arises when borrowers find themselves in financial difficulties with lenders likely to use violence and intimidation. In Poland, when customers do not fulfill their repayments, unlicensed lenders pass on the information to an outsourcing company who then use harsh methods to recoup payments.

Without savings, people have no means of coping with even small financial shocks or unexpected expenses and those who keep savings in cash do not benefit from interest payments (Kempson *et al.* 2004. Moreover, those who keep savings in cash at home are vulnerable to theft (Kempson and Whyley 1999; Kempson, 2000).

Summarizing these analyzes it should be underline that financial exclusion is tightly linked to social exclusion. Different studies throughout this region demonstrate the importance of these links. Indeed, the access and use of basic a bank account and simple transactions are decisive to the integration of people in the European Union society. There is also a widely made argument that access to banking is important for the economic development of a country (World Bank CGAP). Policy makers should consider financial exclusion issues in all courses of action regarding social exclusion or poverty.

The same certainty goes for the links between financial exclusion and overindebtedness. Indeed, that the most important link is that over-indebtedness could be understood as a result of access and use difficulties. Similarly, it has been shown that access difficulties to bank accounts, means of payments or credit, can lead to use difficulties and vice versa. Nevertheless, it has to be clear that over-indebtedness is not always a result of access and use difficulties simultaneously: it could be a result of only one of them. Besides customers, it is necessary to consider the role of the state and other types of financial commitments (e.g. subscriptions) as part of the same process.

It is necessary to distinguish between unbanked people, marginally banked people or over-indebted people when looking for respective solutions. However, it would be damaging not to take into account that they are part of the same process as financial exclusion when examining global solutions (i.e. solutions which try to prevent access and use difficulties at the same time).

Finally, the main policy recommendation regarding social, socio-economical and financial consequences of financial exclusion is to fill in the gap regarding information available on the subject in most of the European states. Research on the impact of financial exclusion on people facing it is essential to better understand the financial inclusion issue and its place and necessity within the wider frame of the social inclusion policy of a country. Moreover, that knowledge is essential to underline and justify the important role that financial institutions corporate social responsibility can play to ensure financial inclusion. All stakeholders (researchers, NGOs, financial institutions and policy makers) should therefore aim to carry out or/and finance further research on the subject (Smyczek, 2012).

7. CONCLUSIONS

To sum up it can be concluded that social exclusion is one of the biggest problem in contemporary societies. This phenomenon afflicts not only poorer countries or world regions, such as Latin America, Africa or Asia. In fact, it is becoming more common in highly-developed countries of Europe and North America as a result of immigration of poorer people and consolidating processes in business. It can be underline that social exclusion, from European Union perspective, is a very complex problem, and should be analyzed from both perspective: economical and non-economical.

To prevent social exclusion group of complex tools need to be undertaken. Otherwise, there is a danger of ghettoization and stigmatization whenever we introduce new labels for social problems. Calling attention to spectacular forms of cumulative disadvantage may distract attention from widespread problems like rising inequality and family dissolution and undermine broader social programs. Indeed, there is a worry that the "social exclusion" framework is replacing a "social class" perspective. Any discourse can serve a variety of political purposes, but ensuring widespread participation may overcome these downsides. Although people argue about the precise nature and measures of exclusion and cohesion, these ideas do provide a framework for discussing the new, complex forms of disadvantage. If appropriate, easily understood indicators could be found for these notions, benchmarking our progress as a society could go beyond the simple, intuitive, and familiar poverty line to track multiple forms of disadvantage.

It should be borne in mind that this research has some limitations. The key limitation of this study is connected with the choice of the Eurobaromenter as source of data. The Eurobarometer surveys provide a broad international comparison based on "standard" functioning of markets and economies more than a perfectly accurate picture of the relative levels of financial exclusion across European Union countries. Although many of the discrepancies with national surveys can be explained in terms of differences in sampling or the timing of surveys, it does seem that Eurobarometer may slightly over-state the levels of banking exclusion.*

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THE ECOTOURISM POTENTIAL OF KAZAKHSTAN: RECREATIONAL RESOURCES AND ECOTOURISTIC VALUES

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Abstract: The paper features the values of ecotourism as resources and objects of the functional economy in the territory of Kazakhstan. Using special pieces of literature, the direct and indirect impacts of tourism and the persons participating in tourism on the natural environment and the landscape are introduced; also, applying these for the somewhat peculiar circumstances in Kazakhstan, the objects of the tourism industry and their impacts on the economic and socio-cultural environment are specified.

Key words: Ecotourism, Ecosystem, Territorial Units, Ecological Balance

1. INTRODUCTION

An intensive touristic impact can have irreversible consequences for the ecosystem of a respective natural area and even on the traditional culture of the local inhabitants. In addition, in the recent years many efforts have been made for the development of faraway areas located at a significant distance form the main sources of origin in tourism. One of the major attractions of these areas, just because of their relative underdevelopment, is their almost untouched natural conditions (Fennel, 2008; David, 2010).

The economic and other public organs, and the legal entities and private persons of a given area – also the territory of the Republic of Kazakhstan of course – generate impacts on their environment because of the following principles:

1. The creation of the harmony of the interests of the society, economy and ecology, and featuring sustainable development and the favourable environmental impacts among the objectives of the state, on scientific grounds;

2. Protection, reproduction and rational use of the natural resources, which means the preservation of the environmental and ecological safety;
3. Costs of the use of environment and the neutralisation of environmental damages;
4. Priority of the protection of the natural ecosystems and the preservation of natural landscapes;
5. Organisation and development of ecological education, training of ecological culture.

Of course Kazakhstan and its state organs, being a young state, cannot have enough experiences as regards the local organisational background of the management activities related to tourism, but these experiences exist as good practice, applicable elsewhere (PRISMA, 2005; Raffay, 2008; Huszti, 2012).

The impacts of tourism on the units of nature and landscape can be either direct or indirect, but their extent and development level are hard to differentiate (Atishev and Turdumambetov, 2005). In this local approach direct impacts may include 1) annihilation of the flora and fauna by hunting and angling (use of space for hunting and angling), or their decay because of the integration of the natural resources into industrial/agricultural or other economic production etc.; 2) disturbance of plants and animals in their natural way of life, in their growth and feeding, in reproduction and migration; 3) damage and infections done by the consequences of human life processes (by human excrement, remains of organic foods, breathing etc), and the direct damage caused by the economic activity itself (deforestation, erosion of soil etc.).

Indirect impacts may be as follows: 1) the nature transforming impact of our everyday life; 2) global anthropogeneous impacts on environment (contamination of soil and water, increased erosion of soil induced by deforestations, climate change, pollution of the air etc.); 3) construction of physical barriers blocking the natural migration and movements of animals, in fact, even the creation of anthropogeneous creatures today (keeping domesticated animals, genetic modifications, mutations), whose effects on natural environment and thereby on human kind itself are unknown for the time being.

The unavoidable changes of living nature carry a palpable environmental stress, a touristic burden on the environment which, if reversible, allows forest habitats to return to a quasi natural original condition within a certain interval of time (Egorenkov, 2004).

The negative impacts of recreational activities can be classified as follows, e.g. for the forest ecosystems:

1. Recreation related to constructed paths – building of roads and paths, touristic infrastructure, buildings and locations of sports activities,
2. Recreation without constructed paths – paths created by the use of very many tourists, leading to the deterioration of the upper humus layer of soil, damage of the porous structure of soil and deterioration and disintegration of the vegetation, also to the decrease of the vegetation cover, and to desertification and deflation. All these may lead to the worsening of the quality of the conditions of natural ecosystems;
3. Recreation including gathering activities – picking and gathering mushrooms, berries, flowers and herbs, hunting and angling in themselves;
4. Nomadic camping (camping outside official designated camping sites) – this usually coincides with lighting fire, gathering dry branches and wood-waste, the treading of the upper layers of soil;
5. Motorised recreation – use of cars or other motor vehicles (quads, off-road bikes etc.) outside the paved roads, the results of which include contamination of the air with exhaust emissions, contamination of the soil with oil products etc.;
6. Temporary dwellings and settlements (specifically in Kazakhstan) related to the erection of yurts: in the temporary residential areas damages may be caused by the construction of buildings in the forest and related to transhumant pastoralism.

The most frequent negative impacts of the tourists are then as follows: treading and compaction of soil; planned and uncontrolled removal of the living and non-living elements of the natural ecosystem (animals, plants, minerals etc; lighting campfires that may result in forest fires; noise and light pollution caused by tourists and transport tools, disturbing the activities and natural life of the habitats; contamination of the natural areas with chemical substances from our everyday objects.

In addition to the disturbance of the ecological balance, mass tourism may have and impact on the condition of the objects of cultural heritage, so the touristic use of pace requires a considerate and precautious behaviour.

2. MASS TOURISM IN KAZAKHSTAN – DEVELOPMENT CHANCES OF ECOTOURISM

The general impacts of ecotourism are not featured in this paper; they are thoroughly discussed elsewhere in literature (e.g. PRISMA, 2005; Ratz and Puczko, 2000). Kazakhstan is a young country with a great past, a long history. The Eurasian and Central Asian region does not – yet – receive a large number of tourists from the major countries or origin, the most advanced countries (Weawer, 1998; Boniface and Cooper, 2007; Mitchell, 1989). One of the most important attractions of the country is the varied and unspoilt natural environment and the versatile values of the cultural heritage. In addition, it is very important for the tourism sector of Kazakhstan that one of the neighbouring countries China, a country becoming a more and more important sender of tourists.

Many regions of Kazakhstan are rich in values of cultural history: ancient cities and buildings with different cultic functions are scattered all over the country. During the development of infrastructure all efforts must be made in order to avoid the deterioration of the quality of the landscape (Fennel, 2008). On the organisation and implementation of guided tours, the vandalism of tourists must be avoided, if possible, and the hikers and tourists must be given all information related to the cultural values and traditions; what is more, pride and a love of their nation must be planted in them so that they respect the achievements of their motherland – i.e. the history and traditions of Kazakhstan. In addition to these products of culture, visited by masses of tourists, the natural environment surrounding these locations are also impacted by the influx of tourists, the possible consequences of which may range from the deterioration of soil through littering to the loss of animal and plant species – including relict and endemic species that partly represent a great scientific value.

In Kazakhstan, natural environment is preserved mostly by the areas of special protected status (strictly protected natural areas). For these areas, the highest possible value of recreational stress tolerable by the respective area is defined (Hall and Page, 2002), on the basis of which the area is classified into a certain category. Tourists visiting the area pay smaller sums to the bank account of the foundation of the area, which is spent on the maintenance of the landscape, the natural values, and thereby not only the aesthetic values of the surrounding areas is preserved but the attraction of the areas for tourists is also increased.

Ecotourism is a real alternative of mass tourism especially if the changeability of the biocenosis in the given area is considerable. We must have in mind, however, that even the relatively nature friendly forms of tourism can cause irreversible changes in the social and cultural environment, especially by their impacts on the economic activities and the living standards of the local population. Also, both positive and negative socio-ecological impacts induced by the development of tourism must be studied from several aspects, and on the planning and implementation of touristic activities all these must be taken into consideration.

The paragraphs below give a summary of the most important socio-economic aspects of the tourism industry that are most closely related to the development of ecotourism (www.biodiversity.ru). These impacts can be classified in the following way:

Support of economic development – positive impacts: inclusion of external resources (income) for the development of tourism; multiplier effect of the supplementary income; development of the local economy.

Support of economic development –negative impacts: economic instability due to seasonality, with all its consequences (political instability, natural disasters due to environmental stress, epidemies); significant distortion of the local economy; filtering out of incomes by the purchase of imported goods necessary for serving tourists, high costs of advertisements and marketing.

Increased welfare of local society – positive impacts: creation of new jobs; birth of a new market for local products.

Increased welfare of local society – negative impacts: increased disparities of incomes between tourists and local inhabitants; increase of prices and changed price structure.

Development of social infrastructure – positive impact: modernisation of infrastructure available not only for tourists.

Development of social infrastructure – negative impacts: seasonal operation of a large part of infrastructure; local inhabitants are seasonally excluded from the use of goods.

Increase of employment – positive impact: services sector absorbs a large amount of low or medium trained labour force.

Increase of employment – negative impacts: jobs are seasonal; limited chances of career; highly skilled labour is often imported, due the deficiencies of the educational system.

Impacts on the cultural medium – positive impacts: increased level of tolerance; strengthening of the sense of national sovereignty and identity.

Impacts on the cultural medium – negative impacts: spread of featureless mass culture; commercialisation; increased crime; violation of human rights (prostitution and sexual slavery, production of drugs).

The more local products and materials used and more local labour force employed, the higher the added value and positive contribution of tourism to the economic development of the respective region. It is only possible, of course, if local economy is developed enough to supply tourists with basic products and services made locally. Deficits from purchases can also be decreased if the foundation of local small and medium-sized enterprises is supported, and parallel to this all efforts are made to make international companies invest in the development of local businesses through the organisations or education and through innovations. A well considered taxation policy can also assist the utilisation of advantages of tourism by the local economy and society. Also in Kazakhstan, businesses employing local labour, using local products and producing their goods/services within the country are given tax and other allowances. The main objective of measures like this is to prevent assets generated by tourism from leaking out of the respective region. Ecotourists are especially keen on consuming local products and services, because for many tourists from advanced industrial countries it is a real attraction to live in almost natural circumstances and to get in touch with “primitive” ways of life and people living a “primitive” life. This is in very sharp contrast to their homes. This way, by the development of ecotourism we can also increase

the revenue of the given region, using local products and employing local labour force. In addition, ecotourism can result in currency revenues by the consumption of the tourists.

In a part of the cases tourism will only enrich a narrow layer, although without tourism the rich would be even richer and the poor even poorer, i.e. the social disparities would further expand. Of course this can make local population reject tourism if the necessary steps (e.g. information campaigns and trainings) are not made and if locals are nor made aware of the personal opportunities in tourism for them. During the planning process of the development of ecotourism then, it must be made clear which sectors and groups of people will be especially involved.

The flow of incomes may happen both in a desired direction (i.e. the expansion of the circle of locally made foods) and in a non-desired one (e.g. the increase of the import of fuels). It may supplement the incomes of the locals, it can be spent on aids given to the local poorer layers but vice versa, the incomes generated can also be spent on increasing social disparities. The correlations of the local economic relations must be very seriously analysed, in order to have the positive effects and avoid the negative ones.

If we look at values and models outside Kazakhstan, we can see that tourism often deteriorates the traditional socio-cultural environment and strengthens disequilibria.

Socio-cultural impacts are among the most far-reaching effects of tourism, which are rather hard to assess (Ratz and Puczko, 2000). On the other hand, different forms of tourism controlled by local organisations may have positive impacts that promote the strengthening of the traditional culture of Kazakhstan.

Thus a survey of the impacts of tourism on the assets of recreation allow us to say that the concept of the development of ecotourism strategy makes the utilisation of the positive impacts of tourism even more effective in the socio-economic development of the respective region, and minimises the negative impacts of the presence of tourists on the social, natural and cultural environment. A condition necessary for this is to plan the development of ecotourism in a scientifically grounded and professional way.

The development of an ecotourism strategy in a region allows not only the decrease of the negative impacts on the environment but, if well organised, may even become a supplementary source of financing for the environmentalist activities. The concept of ecotourism in Kazakhstan allows the foundation of the future scenario of the whole of the tourism sector on the principle of sustainable development, built on the renewable use of the resources of recreation.

3. THE ECOTOURISM POTENTIAL OF KAZAKHSTAN

The most valuable and most attractive areas in Kazakhstan are under state protection. The strictly protected areas have and enormous recreational and scientific potential and are in the focus of the interest of tourists. On the other hand, the huge values of the ecological systems require serious limitations and special measures of the visits paid to and touristic services provided in these protected areas.

Areas under protection have survived for ecotourism as unique values. The concept of ecotourism, however, is probably not the only chance for financing environmental protection activities in strictly protected areas and decreasing the negative environmental impacts.

Looking at the possibilities of ecotourism in the strictly protected natural reserves of Kazakhstan we can see that one of the most important tasks for Kazakhstani legislation is just in the field of tourism: to make the country a developing tourism destination in the Central

Asian region. The least problematic area of development that requires the smallest amount of resources is ecotourism, as it has been proved by the findings of researches on touristic potential that Kazakhstan has excellent possibilities for the development of ecotourism. The foundation of this is the presence of the unique values of the environment and nature, the special landscape in the heart of Eurasia, and the diverse natural and historical, cultural and ethnic heritage of the peoples that lived here at different times of history.

The basic destinations of ecotourism in the territory of Kazakhstan are the strictly protected natural complexes, which are the following:

- national parks and landscape protection areas (nature parks), places of state-owned gene reserves, natural monuments;
- arboretums, botanical gardens;
- destinations of medical and health tourism;
- ecological core areas, protected areas serving as gene banks, natural monuments;
- nature protection areas.

The world's researchers all agree that the harmonisation of the ecological balance takes the preservation of at least one-third of the ecosystems of the Earth. There are approximately 2000 national parks and bioreserves on our planet, for the time being. In Kazakhstan, 2.8% of the territory is protected, while the proportion of strictly protected areas is less than 0.5%. In this relation Kazakhstan lags far behind the average of the world's countries, it is true on the other hand that the basic condition of Kazakhstan's environment is much better, much less spoilt than in e.g. Western Europe.

Areas under strict protection are the following:

1) 10 state-owned nature protection areas (Table 1):
2) 7 national parks (Table 2);
3) 24 state-managed natural monuments;
4) 56 state-managed gene preservation areas;
5) strictly protected urban areas – botanical gardens, zoos, arboretums.

Table 1: State-owned nature reserves in Kazakhstan

	Name of nature reserve	County	Year of foundation	Total territory (hectares)	Number of planned and/or operating touristic paths
1	Aksu-Djabagly	South Kazakhstan county	1926	74,400	4 planned
2	Alakol	Almaty county	1998	20,743	5 operating
3	Almaty	Almaty county	1960	71,700	6 planned
4	Barsa-Kelmes	Kizil-Orda county	1939	30,000	-
5	West Altai	East Kazakhstan county	1992	56,078	2 planned
6	Karatau	South Kazakhstan county	2004	34,300	2 planned
7	Korgalzhyn	Akmola county	1968	258,963	-
8	Markakol	East Kazakhstan county	1976	75,040	3 planned
9	Naurzum	Kostanay county	1931	87,694	6 planned
10	Ustyurt	Mangystau county	1984	223,300	1 operating, 3 planned

The issue of nature protection is especially problematic in those regions that are in the competency areas of more than one administrative unit, as this necessitates negotiations

and also the harmonisation of the interests of the different administrative entities (Buday-Santha, 2007; Raffay, 2010).

Table 2: National parks (state-owned nature protection areas) in Kazakhstan

	Name of national park	Year of foundation	Territory (hectares)	County
1	Bayanaul	1985	68,453	Pavlodar county
2	Ile-Alatau	1996	199,703	Almaty county
3	Altyn-Emel	1996	161,153	Almaty county
4	Kokshetau	1996	182,076	Akmola county; North Kazakhstan county
5	Karkaraly	1998	112,120	Karagandy county
6	Burabay	2000	129,935	Akmola county
7	Katon-Karagay	2001	643,477	East Kazakhstan county
8	Charyn	2004	127,050	Almaty county
9	Sayram-Ugam	2006	149,053	South Kazakhstan county
10	Kolsay Lakes	2007	161,045	Almaty county
11	Zhongar-Alatau	2010	356,022	Almaty county
12	Buyratau	2011	88,968	Akmola county and Karagandy county
a	Tarbagatay	planned	144,627	East Kazakhstan county
b	Merke	planned	n. a.	Zhambyl county
c	Turkistan	planned	71,144	South Kazakhstan county
d	Ulytau	planned	54,460	Karagandy county

In addition to the above, the 1997 Act of the Republic of Kazakhstan on “Natural areas of special protection” (15 July 1997) defined new categories of natural areas under special protection: these are “wetland habitats of national or special scientific value”; “wetlands of international significance” (Ramsar areas), “special forest associations”, “ecological, scientific, cultural or other values, geological values, geological formations”.

The 2008 figures of these protected areas are as follows: there are 109 protected areas, with a total territory in excess of 221,151 square kilometres. These areas have 3,610 hiking paths, and the annual number of visitors was 598,400 (Table 3). From 2004 to 2008 the number of visitors to strictly protected areas (including inbound and domestic tourists) varied as indicated in Table 4. Income from products and services in strictly protected areas was only 3.8 million Kazakh Tenges in 2008 (Table 5), which was 60% less than the revenue in 2007 (calculations by the authors on the basis of the data from the National Statistical Agency of Kazakhstan).

The number of guest per businesses operating in the strictly protected areas is 5,500 people, but some businesses boast of outstanding figures: those working in Akmola County (1:12,000), Almaty County (1:11,000) and Pavlodar County (1:29,000) – it is true, though, that the major part of the population and settlements is also in these counties. The weight of the revenues generated by these firms is negligible within touristic incomes, less than 0.02 per cent. This shows the inadequate development level of touristic activities, in which the main problem is the lack or weakness of infrastructure.

Table 3: Main indices of strictly protected areas in 2008

Name of administrative unit	Companies operating in the area	Total size of area (1000 hectares)	Guides working in the area	Guided excursions	Visitors (1000)
Akmola county	15	828	21	657	178.7
Aktobe county	2	1059.5	4	2	0.16
Almaty county	18	5753.4	78	995	204.9
Atyrau county	2	745	-	-	-
West Kazakhstan c.	3	160	-	-	-
Zhambyl county	3	1020.6	-	-	-
Karagandy county	11	188.2	2	294	15.4
Kostanay county	4	354.4	5	17	0.141
Kyzyl-Orda county	3	192	-	-	-
Mangystau county	5	1761.9	-	-	-
South Kazakhstan c.	10	7053.8	18	988	5.7
Pavlodar county	5	783.5	3	30	145.5
North Kazakhstan c.	16	430.1	-	-	-
East Kazakhstan c.	10	1784.5	8	24	41.9
Almaty city	2	0.243	2	603	6
Total:	**109**	**22,115.143**	**141**	**3,610**	**598.401**

Source: Statistical Agency of the Republic of Kazakhstan 2009

Table 4: Number of visitors to strictly protected areas, 2004–2008 (in thousand)

	2004	2005	2006	2007	2008	Total	Average
Inbound international tourists	81.6	130.4	173.6	168.2	179.9	733.7	146.74
Domestic tourists	163.1	261.2	283.9	275.1	418.9	1402.2	280.44
Tourists total	244.7	391.6	457.5	443.3	598.8	2135.9	427.18

Source: Statistical Agency of the Republic of Kazakhstan 2009

Table 5: Revenues and expenses in strictly protected areas (in million KZT)

	2004	2005	2006	2007	2008
Revenues	5.8	8.6	3.3	9.5	3.8
Expenditure	5.8	8.7	5.5	13.7	7.3
Tax revenues and other budgetary incomes	0	0.4	0.3	0.5	0.5

Source: Statistical Agency of the Republic of Kazakhstan 2009

5. CONCLUSION

Ecotourism has a great development potential in the Kazakh Republic. Although the proportion of protected areas seems to be negligible compared to the main countries of origin of tourists, the relatively unspoilt nature of Kazakhstan, and the very low density of population in the country results in cleaner and more natural environment than in most industrialised countries of the world. Developments, on the other hand, must be implemented in a way that the natural heritage of this huge country should not be overused, biodiversity not impacted and the general attraction of the scenery, the diverse flora and fauna not harmed.

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TURKEY'S NEW COMMERCIAL CODE TO HAVE BROAD IMPACT ON FINANCIAL REPORTING AND AUDITING: A NEW ERA

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Abstract: During more than half a century The Turkish Commercial Code (TCC) has been regulating business life in Turkey. Nevertheless new concepts overarching beyond geographical borders like "information society" and "corporate governance" came to the forefront, and inevitably the legislation that regulates the business life started to become insufficient. Accordingly modifying, updating, and advancing the TCC became a necessity in order to be capable of addressing the contemporary challenges of today's world. The new law was promulgated in the Official Gazette on February 2011. As stated in the New Turkish Commercial Code No.6102 it has come into effect as of 1 July 2012. Amendments made to the New TCC in June were promulgated in the Official Gazette on 30 June and became effective on 1 July 2012 as well. It constitutes a major reform of Turkish commercial law and thoroughly changes the entire legal framework for the ways in which commerce and investment are carried out in Turkey. Therefore New TCC sets fundamental changes in financial reporting and auditing. The objective of the law is to enable Turkish companies to use financial reporting generally accepted in international markets and enable them to be competitive players in these markets. At the same time the new law introduces a fundamental system change with a reformist understanding and a contemporary evolution in the auditing of companies. These changes make a substantial contribution to establishing trust in national and international markets and creating a new perspective for Turkey. It also increases the sustainable competitive advantage of Turkish enterprises by using an international language and facilitates Turkey's strategic depth in economic politics. In this study evolution of the financial reporting and auditing in Turkey is examined by the perspective of the New TCC.

Keywords: Turkish Commercial Code, Financial Reporting, Auditing, Turkey

1. INTRODUCTION

Turkey is a vibrant emerging market with a network of developed infrastructure and an internationally competitive work force. Its unique position at the crossroads of the world trade routes and its proximity to the energy producing regions in Central Asia are factors that further raise its potential for the coming years.

Turkey's dynamic economy is a complex mix of modern industry and commerce. Privatization of state economic enterprises has been and still is the major goal of the Turkish Government in an effort to increase efficiency and productivity in the economy. Except for the defense industry, all sectors are under consideration for privatization.

There has been significant progress in recent years in improving the environment and framework for financial reporting in Turkey and currently further wide-scale reforms are in progress. **New Turkish Commercial Code (New TCC)** was enacted on 14 February 2011 and entered into force on 1 July 2012. It includes many significant changes, in particular for capital stock companies. A number of innovations and revisions will be introduced into business life regarding a wide range of topics such as minimum number of shareholders, preparation of financial statements, minimum share capital amount, website creation and information society services. The Commercial Code of 1956 contains basic minimal requirements for accounting, auditing, and financial reporting in Turkey. In particular, a new commercial code will modernize statutory regulation of company financial reporting and will set a major challenge for the accounting and auditing professions in Turkey through the requirement to apply Turkish Accounting Standards[1] based on International Financial Reporting Standards (IFRS) and audits based in international Standards of Auditing (ISA).

The rest of the paper is organized as follows: Section 2 provides a summary of evolution of accounting in Turkey and Section 3 presents overview of auditing regulations in Turkey before New Commercial Code while the New Commercial Code of Turkey presented in Section 4. Finally, Section 5 gives the conclusion.

2. EVOLUTION OF ACCOUNTING IN TURKEY

At the time of the collapse of the Ottoman Empire during World War I and the subsequent birth of the Republic, the Turkish economy was not developed sufficiently: Private enterprise and private investments were still inadequate at that time to achieve a satisfactory rate of growth and industrialization. In the early years of the Republic the economy was trying to be developed under the leadership of the State. Agriculture depended on outmoded techniques and poor-quality livestock, and Turkey's industrial base was weak; the few factories producing basic products such as sugar and flour were under foreign control as a result of the capitulations. World War I and the War of Independence (1919–22) also had extensively disrupted the Turkish economy. The loss of Ottoman territories, for example, cut off Anatolia from traditional markets. Agricultural output – the source of income for most of the population – had dropped sharply as peasants went to war. Even the production of wheat, Turkey's main crop, was insufficient to meet domestic demand.

Turkey's economy recovered remarkably once hostilities ceased. From 1923 to 1926, agricultural output rose by eighty-seven percent, as agricultural production returned to pre-war levels. Industry and services grew at more than nine percent per year from 1923 to 1929; however, their share of the economy remained quite low at the end of the decade. By 1930, as a result of the world depression, external markets for Turkish agricultural exports had collapsed, causing a sharp decline in national income. Growth slowed during the worst years of the depression, except between 1935 and 1939 when it reached six percent per year. During the 1940s, the economy stagnated, in large part because maintaining armed neutrality during World War II increased the country's military expenditures while almost entirely curtailing trade. The 1950s, the private sector is beginning to evolve. Turkish economy started to be in more relations with Western economies. Nevertheless, this situation created new problems in Turkish economic and financial structure. In particular, the Law came into force in 1950 concerning income tax reforms, created a larger taxpayer

[1] These standards are literal translations of IFRS.

community which had to deal with accounting issues (Orten, 2006). Despite the Suleiman the Magnificent had kept all records of all the works of the 16th century and there were an excellent governmental accounting private sector accounting did not proceed further because the economy was not developed sufficiently.

2.1. Turkish Commercial Code (1956)

The Turkish Commercial Code No.6762 was prepared by German born Turkish law professor Dr. Ernst Eduard Hirsch. Prof. Hirsch prepared the TCC parallel with the German Commercial code. The TCC was enacted by the Grand National Assembly of Turkey on June 12, 1956 and came into force on January 1, 1957. Almost sixty years The Turkish Commercial Code regulated business life in Turkey.

In these years,

- Accounting valuation rules (accounting standards) are very limited, there is not the idea of an independent auditing(the auditing is done by two auditors who are determined by the companies) (those have not any qualification)
- Accounting is seen as the only tax accounting.

In 1970s Although there is still no change in the accounting point of view and in terms of applications in Turkey standardization and harmonization of accounting practices around the world is began to be considered a fundamental element of a global business environment. Achieving this is a complex process that involves technical and political negotiation. **The International Accounting Standards Committee (IASC)** was the organization that pioneered this process on a world-wide basis. In June 1973 The International Accounting Standards Committee (IASC) was founded in London and replaced by the International Accounting Standards Board on 1 April 2001. It was responsible for developing the International Accounting Standards and promoting the use and application of these standards. By the year 1975 the IASC prepared the way for the International Accounting Standards Board (IASB) and its International Financial Reporting Standards, which since 2005 have held the dominant influence over the financial reporting of thousands of listed companies in the European Union, as well as in many other countries.

The 1980s can be expressed as Turkey's economic turning point. These years were years of transition to a market economy. Turkey reversed a longstanding policy of extensive state intervention in the economy and launched a concerted effort to open its economy more fully to the dictates of the marketplace (Gold, 1989). Depending upon the development stages of the markets and the state of the country's economy important developments and regulations have taken place in Turkey.

Capital Markets Board of Turkey (CMB) is the regulatory and supervisory authority in charge of the securities markets in Turkey. Empowered by the Capital Markets Law (CML), which was enacted in 1981, the CMB has been making detailed regulations for organizing the markets and developing capital market instruments and institutions in Turkey. Based on the main objectives of fair and orderly functioning of the markets and protecting the rights of investors, the CMB has a wide range of responsibilities. However the major objective remains the same: to take the necessary measures for fostering the development of capital markets, and hence to contribute to the efficient allocation of financial resources in the country while ensuring investor protection. Mission of the CMB is to make innovative regulations, and perform supervision with the aim of ensuring fairness, efficiency and transparency in Turkish capital markets, and improving their international competitiveness. Within the scope of its mission the CMB has established its main strategic objectives as to: (Capital Markets Board of Turkey, 2013)

- enhance investor protection,
- adopt the norms of the international capital markets and fully integrate them into regulations,
- promote and enhance the effectiveness of both the supply and the demand side of the markets,
- promote transparency and fairness in the capital markets,
- facilitate modernization of the market structure,
- enhance the infrastructure of the capital markets,
- enhance the quality of the work products and staff members of the Board.

The objective of the CML is to regulate and control the secure, fair and orderly functioning of the capital markets and to protect the rights and benefits of the investors. Following the enactment of the CML in 1981, the necessary regulations have been made by the CMB in order to organize the markets and the capital market institutions. Joint stock corporations with more than 100 shareholders or which offer their shares to the public were subject to the CML. According to the amendment to the CML made in 1999, the shares of joint stock corporations having more than 250 stockholders are considered to have been offered to the public and such companies are subject to the provisions applicable to publicly held joint stock corporations. In addition to these, issuing of securities by the State Economic Enterprises (SEEs) -including those within the scope of the privatization program- municipalities and related institutions are subject to the disclosure requirements of the CMB as regulated by the amendments to the CML.

In 1985, The Istanbul Stock Exchange (ISE),(Borsa Istanbul (BIST) as the new name), the only corporation in Turkey for securities exchange established to provide trading in equities, bonds and bills, revenue-sharing certificates, private sector bonds, foreign securities and real estate certificates as well as international securities, was founded.

1990's were the years of a high volatile environment. Banks were increasingly investing in government bonds, also taking huge currency mismatches. This excessive risk taking cost a lot to the system when Turkish economy experienced 1994 currency crisis, in which Turkish Lira depreciated 12 % within a day. The effects of the crisis, coupled with other structural problems in the system, were so severe that 11 banks were taken over during 1994-1999 (Banking Regulation and Supervision Board, 2013b)

2.2. Central Bank of Republic of Turkey (CBRT) Regulations

In order to strengthen the banking system, substantial changes were made in the Banking Law in 1985. It introduced new requirements regarding capital and problem loans, improved accounting and reporting standards and deposit insurance. Since this is the first time that the concepts of the IFRS and auditing are occurred it can be defined as the very important milestone. Four important regulations are listed as;

- Auditing became mandatory for banks. (Since there is not such a profession in Turkey, Central Bank has authorized the Independent Audit Firms to the international companies (most of them are foreign) by its own criteria. According to Law 1211 article 43, banks submit their balance sheets, income statements and audit reports approved by independent audit firms to the Central Bank. The aim of having the reports prepared by independent audit firms is to determine whether the banks' financial reports' have been prepared in accordance with generally accepted accounting principles and to ensure the reliability of these reports in internal and external financial circles.
- International Accounting Standards made mandatory rule in reports of Banks which are presented for the CBRT.

- Regulations made on the allowances for loans.
- Uniform Chart of Accounts for banks is issued.

In 1986, the CMB has brought the auditing mandatory for listed companies, however did not have Accounting Standards in 1989; the CMB has made a limited regulation of accounting standards which are not related with the IFRS. During the period of 1989-2003 CMB have its own accounting standards. Many of the listed companies prepare its financial statements using both CMB's principles and IFRS. There are many valuation differences in those standards. This may be called two standards system in Turkey. The dramatic examples of using two standards are shown below. In addition to this CMB also issued IFRS based accounting regulations in 2003. But in these regulations' actuality was missing and also their names were not IFRS.

These are the very important real cases of two big companies in Turkey that may be called the "world records".

TURKCELL: *As of December 31, 1999, net profit of the company is 157 million USD according to Capital Markets Board (CMB) standards. However, the company announced a net profit of 369 million dollars in New York Stock Exchange. (NYSE). The year 2000 is more interesting than the previous year; the company announced "profit" in Istanbul Stock Exchange (ISE) whereas it announced "loss" in NYSE. The most important valuation differences of the company are the borrowing costs, foreign exchange losses and depreciation.*

TURKISH AIRLINES: *As of December 31, 2001 according to Capital Markets Board (CMB) standards total assets of Turkish Airlines is 400 million USD where as it is 2.4 billion USD (6 times greater) according to IRFS. On the other hand, according to Capital Markets Board (CMB) standards a total liability of the company is 300 million USD while it is 2.1 billion USD (7 times greater) according to IRFS. These differences may be called the "world records". There are several reasons for these differences, but the most important valuation differences are the inflation and the financial lease.*

The Law Numbered 3568 which was approved by TBMM (The Grand National Assembly of Turkey) on 06.01.1989. "The Law of Independent Accountancy, Certified Public Accountancy and Sworn-in Certified Public Accountancy"[2] was enacted. The Law establishes accounting and auditing as a profession and defines those who are rendering services in these fields as professionals. But on that day and still Turkey could not get past the limits of tax accounting. Subjects of the profession of Certified Public Accountancy comprise the following services rendered to enterprises and business concerns owned by real and legal persons.

a. To keep books; prepare the balance sheets, profit and loss statements, tax returns and other relevant documents in compliance with generally accepted accounting principles and the provisions of the relevant legislation.

b. To establish and improve accounting systems: to regulate administration, accounting, finance, financial legislation and to perform the jobs related to their applications and to provide advisory services in the related fields.

c. Based on the relevant documents on issues specified in the aforementioned paragraph, to perform investigations, analyses and audit, to present written opinions regarding financial statements and tax returns, to prepare reports and similar documents, to perform arbitration, expertise and similar services.

Persons, who perform the activities mentioned above independent from a business entity, are defined as Certified Public Accountants.

[2] Available at: <http://www.turmob.org.tr/Arsiv/turmobwebdb/dosyalar/ingilizce7.pdf>

In addition to the duties of certified public accountant, the subject of the profession of Sworn-in Certified Public Accountancy also includes the application of certification within the framework of the regulation to be promulgated in compliance with the Law.
Sworn-in Certified Public Accountants cannot keep books related to accounting, cannot establish an accounting office and cannot become partners to the accounting offices already established.

In 1990's big companies have started to use IFRS for their international relations and themselves. In these years, legal information is not available for financial analysis due to high inflation. During the 2001 crisis, 20 banks transferred to the Savings Deposit Insurance Fund (SDIF) due to the erosion of their equity. This situation indicated a defect in the banking sector with regard to transparency.

In year 2000, Turkish Government decided to remove the fragmented structure in banking regulation and supervision, and to establish an independent body which will be the sole authority in banking sector. The main aim was to improve the effectiveness of regulation and supervision and to establish an independent decision-making mechanism. As a result, Banking Regulation and Supervision Agency (BRSA) was established in June 1999 according to Banks Act Nr. 4389 and began to operate in August 2000. (Banking Regulation and Supervision Board, 2013a) The BRSA produced a regulation related improving the banking sector and ensuring the transparency of banks on February, 01, 2002 in accordance with the law amended to improve banks' equity. With this regulation independent audit procedures were rearranged, the banks' balance sheets were cleared from window dressing; financial statements of 2001 period were audited twice by another independent auditing firm. (Ozyurek, 2002).

After bankruptcy of 20 banks, BRSA, (is now regulating banking sector instead of CBT) is issued the accounting standards based on IFRS (but not exactly). Disclosure of financial reports by the banks to the public is required in accordance with the standards. Turkish Accounting and Auditing Standards Board (TAASB) was founded in 1994 with the support of Union of Chambers of Certificated Public Accountants in Turkey. TAASB was the first step taken to determine the accounting principles that should be followed by all companies and to accomplish uniformity in Turkey. In 2006 TAASB issued 19 Turkish Accounting Standards (TAS) which had never become effective. These standards were compatible with both international accounting standards and economic conditions in Turkey. However TAS were not included in to legislation, so they were not mandatory.

Two regulatory bodies also define accounting standards in Turkey: the Banking Regulation and Supervision Agency (BRSA) for the banking sector and the Capital Market Board (CMB) for publicly traded companies. Effective from 2007 BRSA made using Turkish Accounting Standards mandatory for banks and effective from 2008 CMB made using Turkish Accounting Standards mandatory for public companies.

Required for consolidated and standalone/separate financial statements; effective from January 1, 2008, all listed companies started to prepare its financial statements according to the EU endorsed IFRS. Until the announcement of the differences between IFRS and EU endorsed IFRS by the Turkish Accounting Standards Board, IFRS may be used by the listed companies. IFRS is also required for companies that operate in the specific sectors announced in the list of the Council of Ministers. Otherwise, companies must prepare its financial statements per Uniform Chart of Accounts which is mainly tax based rules.

Turkey is a candidate country to join the European Union. Consequently, in September 2008 the Turkish Capital Markets Board issued Communiqué Serial: XI, No: 29, of which Article 5th requires listed companies to use IFRSs as adopted by the European Union. Turkish Capital Markets Board Communiqué Serial: XI, No: 29, adopted under Capital Markets Law

No. 2499 and published in the Official Gazette dated 4 September 2008 and numbered 26842 requires the following companies to use IFRSs as adopted by the European Union: (Capital Markets Board of Turkey,2013)

- all enterprises that issue securities that are traded on the stock exchange;
- financial intermediaries;
- portfolio management companies; and
- the subsidiaries, associates, and joint ventures of those enterprises.

3. OVERVIEW OF AN AUDITING REGULATION IN TURKEY

In Turkey, given its civil law tradition, most of the companies perform audits of the accounts for tax purposes only, and specific auditing requirements exist only for the companies in the capital markets and for the regulated financial institutions, including banks and insurance companies. As indicated in the 2007 European Commission (EC) Screening report, the Turkish authorities admit that "the auditors and the audit as required in the Turkish Commercial Code, do not conform to internationally-accepted audit practices and that there are inadequate sanctions for non-compliance" Turkish law allows regulators including the Capital Markets Board, the Banking Regulation and Supervision Board, and the Under secretariat of the Treasury (GDI) to set their own auditing requirements for the entities under their respective jurisdictions (Commission of the European Communities, 2007)

Auditing practices of companies operating in the capital markets are regulated by the CMB. Audits of publicly-held companies are to be conducted by audit firms licensed by the Union of Chambers of Certified Public Accountants of Turkey (TURMOB) and authorized by the CMB. Communiqué Serial: X, No: 22 issued in 2006 and later amended in 2007 by the Communiqué No: 23 mandates publicly-held companies and brokerage firms to have their accounts audited in accordance with the International Standards on Auditing (ISAs) as translated by the CMB. Prior to 2006, the CMB-issued standards applied for audits in the capital market had been also based on ISAs; however, they failed to address a number of complex topics arising from the application of International Financial Reporting Standards (IFRSs). The 2006 OECD report commended the introduction of ISA-based standards; however, it pointed out two potential problems remaining. Firstly, the new standards do not apply to listed banks and insurance companies which are regulated by the BRSA and the GDI, respectively. Secondly, the CMB did not use the translation policy approved by the International Federation of Accountants (IFAC) and thus the new standards are not fully compliant with their international counterparts (OECD, 2006).

Further, under Article 39 of the Banking Act No. 5411, annual financial statements of banks are to be approved by an independent audit firm authorized by the BRSA. In addition, there are two by-laws regulating independent audit for banks - the by-law on Independent Audit of Banks and the by-law on Authorization of Independent Audit Firms. Audits of the banks are to be conducted in accordance with the rules established by the BRSA. Similar to the Banking Act, the Insurance Supervision Law No. 7397 (superseded by Insurance Law No. 5684 of 2007) stipulates that auditors of insurance companies are to be authorized by the GDI. More detailed requirements for the conduct of independent audits of insurance companies are laid down in the Regulation on Conduct of Independent Audit in Insurance and Reinsurance Companies and in the Regulation on Principles Applicable to Independent Audit of Insurance Companies of 2003.

While there had been significant progress in improving the country’s financial reporting framework, further wide-scale reforms were still in progress. A number of bodies including the Turkish Accounting Standards Board and the Turkish Auditing Standards Board (TUDESK) were addressing this issue. Subsequent to this assessment, the Turkish

authorities established the National Steering Committee for accounting and auditing reform in order to advise all stakeholders on the implementation of international platform.

The TUDESK, established by the TURMOB, is responsible for developing and promulgating auditing standards in Turkey. TUDESK in 2002 translated ISAs into Turkish, in adherence with the IFAC Translation Policy. These standards, with modifications, were incorporated into the Turkish Standards on Auditing (TSAs) in 2004. These TSAs are not based on the most current version of ISAs. The most recent international auditing standards are the Clarified ISAs, which resulted from the International Auditing and Assurance Standards Board's (IAASB) Clarity Project. As stated by TURMOB in its action plan, there are intentions to update TSAs in accordance with the clarified ISAs. Turkey's new Commercial Code require that audits be conducted in accordance with TSAs, "which are consistent with the ISAs" the new Code is expected to significantly improve financial reporting requirements in Turkey. In the area of auditing, firstly the new Code will require that all companies have their financial statements audited by the auditors or audit firms authorized by the Code.

4. THE NEW COMMERCIAL CODE OF TURKEY

There has been significant progress in recent years in improving the environment and framework for financial reporting in Turkey and currently further wide-scale reforms are in progress. The goals of the New Law are to establish and sustain a system of commerce, industry and service supply at a consistently high level; to provide justice; to protect society and safeguard its ethical values, and to focus on modern traders and companies, investors, transporters, the insured and small and medium-sized enterprises (SMEs) – all areas in which competitive enterprises shape our economic environment and where the language of international markets is spoken. In particular, a new commercial code will modernize statutory regulation of company financial reporting and will set a major challenge for the accounting and auditing professions in Turkey through the requirement to apply Turkish Accounting Standards based on IFRS and audits based in international Standards of Auditing (ISA).

The new law was promulgated in the Official Gazette on February 2011. As stated in the New Turkish Commercial Code No.6102 it has come into effect as of 1 July 2012. Amendments made to the New TCC in June were promulgated in the Official Gazette on 30 June and became effective on 1 July 2012 as well. With the New TCC Amendment Law No. 6335, the time granted for amending the articles of association has been extended to twelve months as of the effective date of the New TCC (which corresponds to 1 July 2013). (PricewaterhouseCoopers, 2013b)

The new Turkish Commercial Code, effective for accounting periods beginning on or after 1 January 2013, requires companies meeting certain criteria determined by the Council of Ministers to report under Turkish Accounting Standards, which is basically the Turkish translation of the International Financial Reporting Standards (IFRS).

In addition to the list announced by the Council of Ministers, a Company that meets two of the following three criteria:

(1) total assets of 150 million Turkish liras and greater;
(2) net sales of 200 million Turkish liras and greater; and
(3) average personnel 500 people and greater will prepare its financial statements per Turkish Accounting Standards.

4.1. Public Oversight Accounting and Auditing Standards Authority

In November 2011, the TASB was disbanded, and its responsibilities were transferred to the Public Oversight Accounting and Auditing Standards Authority. “Public Oversight, Accounting and Auditing Standards Authority’s Organization and Responsibilities Decree Law” numbered 660, issued on November 2, 2011 and has the authority to set and issue Turkish Accounting Standards compliant with the international standards, to ensure uniformity, high quality and confidence in statutory audits, to set the auditing standards, to approve statutory auditors and audit firms and to inspect their audits, and perform public oversight in the field of statutory audits. The Public Oversight, Accounting and Auditing Standards Board of Turkey (POAAB) was established as a consequence of the new code. POAAB holds the authority to prepare and declare the Turkish Accounting and Auditing Standards, which are in line with IFRS and the International Standards on Auditing; to authorize licenses of audit firms and to oversee the profession. It is also entitled to prepare and declare secondary legislation for the implementation of the new commercial code. The POAAB has not announced any adoption to IFRS for SMEs. (PricewaterhouseCoopers, 2013a)

The main duties and authorities of the POAAB are as follows: (The Public Oversight, Accounting and Auditing Standards Board of Turkey, 2013)

- To set and issue Turkish Accounting Standards in compliance with the international standards in order to ensure relevance, transparency, reliability, understandability, comparability and consistency of financial statements of the parties who are liable to keep books in accordance with the laws they are subject to.
- To make secondary legislation and take necessary decisions for implementation of the Turkish Accounting Standards, and approve legislation to be prepared by the institutions and bodies having authorization to regulate in respect of their own fields.
- To set and issue national auditing standards in compliance with the international standards including the audit of information systems by means of overseeing the public interest in order to ensure fair submission of financial statements, financial status, performance and cash flows of entities, and their relevance with needs of users, reliability, transparency, comparability and understandability in accordance with Turkish Accounting Standards.
- To determine establishment requirements and working principles of statutory auditors and audit firms, to authorize the entities satisfying these requirements and members of profession who would perform statutory audit, then announce them in form of lists, and record them in the official registration to be created and continuously keep open for public access in the web site of the Authority.
- To supervise and oversight the compliance of the operations and audits of statutory auditors and audit firms with the standards and regulations issued by the Authority.
- To suspend or withdraw the approval of statutory auditors and audit firms which have been determined as contradictory as a result of investigations and supervisions.
- To carry out examination, approval and registration for members of profession who would perform statutory audit, execute discipline and investigation procedures, determine continuing education standards and professional ethic rules, organize a quality assurance system oriented to them and ensure to take necessary measures to remove deficiencies in these fields.
- to cooperate with authorized bodies of foreign countries in the issues related with field of engagement of the Board; announce foreign auditing firms and auditors approved to carry out statutory audit in Turkey in accordance with the principle of reciprocity in form of lists and record them in the official registration to be created and continuously keep open for public access in the web site of the Authority.
- To make regulations in order to ensure independency and impartiality of audit and improve the confidence and quality of audit and take necessary measures.

- To follow-up international practices and developments related with its field of engagement, cooperate with the International Accounting Standards Board and International Auditing and Assurance Standards Board and other international organizations working in field of accounting and auditing, draw up license and copyright agreements and affiliate to these organizations if required.

4.2. Major Changes in Financial Reporting and Auditing

Major changes contained in the New TCC Amendment Law No. 6335 are related to accounting and auditing as follows: (PricewaterhouseCoopers, 2012)

- The New TCC charges all capital stock companies with independent audit liability; however, with the New TCC Amendment Law No. 6335 a new paragraph has been added to Article 397 of the New TCC and it has been ruled that the Council of Ministers will determine the companies that will be subject to independent audit.

- The New TCC obliges all capital stock companies to open a website and arrange its content in line with the Law. This regulation was probably unique in the world. There are approximately 800.000 companies in Turkey. If this regulation had come to effect in this way and all of these companies opened a website and arranged its content in line with the Law, this would have been an important development of disclosure and transparency concepts in the world. However, the New TCC Amendment Law No. 6335 solely requires capital stock companies subject to independent auditing to open a website, in addition to restricting the information to be posted on the said website. Upon this amendment it will no longer be necessary for companies to publish their financial statements and related reports on their websites. The amendment states that solely the announcements that should be made public as per the law, are required to be posted online. (The obligation to open a website has to be met within three months following 1 July 2013.)

- In accordance with the New TCC Amendment Law No. 6335, paragraph two of Article 39 of the New TCC which regulates the contents to be included in all types of documents has been amended as follows: *"The registered trade name shall be written in a legible format at a place that is visible in the commercial enterprise. Commercial letters issued by the merchant with respect to his/her enterprise and documents on which the records in the commercial books are based shall indicate the merchant's registry number, trade name, headquarters of the enterprise as well as the registered website address in case the merchant is liable for opening a website. This information shall be posted on the company website as well. This website shall also include the full names of the chairman and members of the board of directors ("BoD") and subscribed and paid-up capital in joint stock companies; full names of the managers and subscribed and paid-up capital in limited liability companies; and full names of the company executives and subscribed and paid-up capital in commandite companies with share capital."*The second, third and fourth sentences of Paragraph 2 of Article 39 of the New TCC, as given in quotes above with its latest version, will be effective as of 1 January 2014.

- Article 358 of the New TCC No. 6102, which was introduced in line with the principle on protection of capital and prohibits shareholders from borrowing from their company, has been amended with the New TCC Amendment Law No. 6335 in the following manner:*"Unless shareholders pay their debts due to the company that arise from their capital subscription and the company's profit including free capital reserves does not meet the prior year losses, shareholders shall not borrow from the company."* Moreover, **Paragraph 2 of Article 395** of the New TCC No. 6102, which prohibits company's BoD members and their relatives from borrowing from the

company, is amended as follows: ***"****BoD members who are not shareholders, as well as their relatives who are not shareholders, and who are listed in Article 393 cannot borrow cash from the company. The company cannot issue guarantee, warranty and collateral for these persons, nor can the company assume their liability and take over their debts. In cases to the contrary, creditors of the company can legally pursue these persons for the company debts in the amounts for which the company is liable."*

- With the New TCC Amendment Law No. 6335, the time granted for amending the articles of association has been extended to **twelve months** as of the effective date of the New TCC (which corresponds to 1 July 2013).

- With the New TCC Amendment Law No. 6335, provisions requiring a **transaction audit** and a report from a **transaction auditor** for transactions such as incorporation of a company, capital increase, merger and spin-off were repealed from the New TTC.

- The New TCC No. 6102 regulated how to keep the commercial books according to Turkish Accounting Standards; however, the New TCC Amendment Law No. 6335 has repealed the regulations on obligation of bookkeeping according to Turkish Accounting Standards and brought in an obligation of bookkeeping according to provisions of the Tax Procedural Law. However, according to Article 88 of the New TCC, it is compulsory to comply with and apply Turkish Accounting Standards, accounting principles and accompanying interpretations while issuing separate and consolidated year-end financial statements. Within this context, **financial statements** to be presented at the General Assembly should be prepared in line with the Turkish Accounting Standards, which are prepared in line with the international standards and will be announced by the Public Oversight, Accounting and Auditing Standards Board. The references to international standards were International Financial Reporting Standards prior to the latest amendment.

- It was obligatory to register and declare the financial statements, annual report, general assembly decision regarding dividend distribution and the independent auditor opinion on the trade registry gazette and to promulgate them on the website of the Company pursuant to **Article 524** of the New TCC No. 6102. However, this obligation has completely been repealed by the Law No. 6335 amending the New TCC.

- Whilst closing approval was going to be applied on all commercial books in accordance with the New TCC No. 6102; it is regulated by New TCC Amendment Law No. 6335 **that the closing approvals will only be obtained for the journals and BoD resolution books**, from the notary public by the end of the third month of the following financial period.

- The deadline for companies subject to independent audit to appoint **their first independent auditor** has been extended from 01 March 2013 to **31 March 2013.**

- Definition of the auditor and auditor rotation has been rearranged and Article 400 of New TCC No. 6102 has been regulated as follows: The first and second paragraphs of Article 400 of the New TCC No. 6102 have been amended as follows and the fourth paragraph of the same article has been repealed.
- *"An auditor performing an independent audit can be a sworn financial advisor or certified public accountant licensed in accordance with Law No. 3568 on the Professions of Certified Public Accountants and Sworn Financial Advisors, dated 1 June 1989, and persons and/or equity companies the partners of which are*

composed of these persons appointed by Public Oversight, Accounting and Auditing Standards Board. In case one of the following situations exists, a sworn financial advisor, a certified public accountant and/or the capital stock company and one of its shareholders, and persons working with its shareholders or person(s) with whom the persons mentioned in this sentence are working together cannot be an auditor in the concerned company.

- *If one of the above-mentioned falls into one of the following categories, he/she cannot be an auditor.*

a) shareholder in the company to be audited
b) managing director or an employee of the company to be audited, or someone who has held this title within the last three years before being appointed as auditor,
c) the statutory representative or representative, board member, managing director, owner or shareholder owning more than 20 percent of the shares of a legal entity, of a commercial company or of a commercial enterprise having a connection with the company to be audited; or if he/she is a lineal consanguinity or is spouse or one of blood or in-law relation up to and including the third degree from a board member or a managing director of the company to be audited,
d) works for an enterprise which is connected with the company to be audited or which has more than 20 percent of the shares in such a company, or is working for a person holding more than 20 percent of the shares in the company of which he/she is to be the auditor,
e) is active in or has contributed to bookkeeping or organizing the financial statements of the company to be audited, without carrying out an audit,
f) the statutory representative, representative, employee, board member, partner, owner of the legal entity or real person, or of one of its shareholders, who cannot be the auditor in accordance with paragraph (e) or is personally him/herself as the real person due to being active in or contributed to bookkeeping or organizing the financial statements of the company to be audited, without carrying out an audit,
g) works for an auditor who cannot be an auditor because of meeting the conditions in paragraphs (a) to (f),
h) has earned more than 30 percent of his/her total income from his/her occupational activities related to auditing within the last five years from his/her auditing and consulting activities provided for the company to be audited, or to companies who have participated in such company through shares corresponding to more than 20 percent of the capital and if they expect to earn the same in the current year.

4.3. New Concepts in New Turkish Commercial Code

New concepts overarching beyond geographical borders like “information society” and “corporate governance” came to the forefront, and in this new TCC these concepts are taken part.

4.3.1. Corporate Governance

Corporate governance is the dominant concept in the New Turkish Commercial Code. No longer does corporate governance mean a system of rules applicable onlyto publicly traded companies; it is a principle that should be applied to all enterprises. It aims to inspire investor confidence and ensure sustainable development. The New Law introduces material provisions regarding good management and internal and independent audit that are to be applied to all capital stock companies. Thus the New Law will embed in Turkish law, simply and understandably, the concept of corporate governance – which has become common in recent years around the world and has grown in complexity, reflecting differences in the economic, financial, political and cultural structures of the countries applying it. The regulation of corporate governance under the New Law can be summarized as follows:

- The corporate governance approach of the New Law is based on four pillars that have universal characteristics within the context of corporate governance. (1) full transparency, (2) fairness, (3) accountability, (4) responsibility.
- Full transparency has been sought in (1) financial statements, (2) boards of directors' annual reports, (3) independent audits, (4) transactional auditors, (5) all audit reports of individual companies and group of companies.
- Fairness has been ensured by establishing a balance of interests and by objective justice.
- Accountability has been embodied in the Board of Directors reports, flow of information, right to information and oversight.
- Responsibility has been regulated in parallel with accountability.
- The rights of shareholders to sue, obtain information and perform oversight have been created along with smooth-running legal mechanisms.
    - The minority rights list has been expanded.
    - Privileged shares have been restricted.
    - Representation opportunities for group of shareholders and the minority in the Board of Directors have been increased.
    - The Capital Markets Board (CMB) has been provided with exclusive authority to regulate corporate governance. This authorization will ensure it remains dynamic and up-to-date.

4.3.2. Information Society Services

Under the New Law, companies which are obliged to create a Web site; if the company already has a Web site, it must allocate part for "information society" services. The New Law defines "information society" as a society with access to information. The following conditions apply to company Web sites:

- All data that is relevant to the company and in which shareholders, minorities, creditors and stakeholders have an interest
- documents and calls regarding General Assembly (GA) meetings
- year-end and interim financial statements and merger and division balance sheets
- audit reports (reports of auditor, operational auditor, special auditor, etc.)
- valuation reports
- offers for exercising pre-emptive right
- announcements related to liquidation
- announcements related to action for cancellation

5. CONCLUSION

The financial reporting and audit has never been more important. In today's business environment there is more scrutiny and skepticism of a company's financial statements than ever before. Investors have lost faith in corporate governance and reporting and they expect more: greater reliability, more oversight and clear evidence of internal controls. The TCC that regulates the business life started to become insufficient by this meeting investor expectations begins with the completeness and accuracy of information contained in a company's financial statements. In recent years, progress has been made in the accounting and auditing environment but much remains to be done for Turkey to achieve compliance with international good practices. There has been significant progress in recent years in improving the environment and framework for financial reporting in Turkey and currently further wide-scale reforms are in progress. In particular, a new commercial code will modernize statutory regulation of company financial reporting and will set a major challenge for the accounting and auditing professions in Turkey through the requirement to apply

Turkish Accounting Standards based on IFRS and audits based in international Standards of Auditing (ISA).

Also the other very important regulation is in this law is the New TCC obliges all capital stock companies to open a website and arrange its content in line with the Law. This regulation was probably unique in the world. There are approximately 800.000 companies in Turkey. If this regulation had come to effect in this way and all of these companies opened a website and arranged its content in line with the Law, this would have been an important development of disclosure and transparency concepts in the world. In the future, this regulation will be argued by the entire world. However, the New TCC Amendment Law No. 6335 solely requires capital stock companies subject to independent auditing to open a website, in addition to restricting the information to be posted on the said website.

Therefore New TCC sets fundamental changes in financial reporting and auditing. By the light of new regulations and concepts, Turkish companies will prepare and use financial reports generally accepted in international markets and enable them to be competitive players in these markets so we can easily say that the new era is beginning with these changes.

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