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THE ANALYSIS OF FLUCTUATIONS AND CAUSALITY OF CURRENT DEFICIT - ECONOMIC GROWTH AND SHORT TERM CAPITAL FLOWS: THE CASE OF ORGANIZATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT

Yusuf Ekrem **AKBAS**
Adiyaman University, **Turkey**
akbasyea@gmail.com
Mehmet **SENTURK**
Kilis 7 Aralik University, **Turkey**
msenturk@kilis.edu.tr
Gokcen **OZKAN**
Gaziantep University, **Turkey**
ozkang@gantep.edu.tr

Abstract:
In this study, Wald tests are carried out based on the method of Panel Granger and GMM to determine whether the causal relationship between economic growth and current budget deficit, short-term capital flows in 20 OECD countries for the period 1990-2010. Also SURADF and CADF testing was performed with the CD_{LM} to test the stationary for these three variables. As a result of the panel causality tests, it has been determined a causal relationship from the current account deficit and short-term capital flows towards economic growth and from the current account deficit towards the short-term capital.

Keywords: current deficit, economic growth, short-term capital flow, CADF, SURADF, panel causality tests.

JEL Classification: C23, C33, F21, F32, F43.

1. Introduction

Short-term capital flows and current account deficit are extremely important issues for all economies. Current account deficit is adverse event because of the damaging country's economic balance, but it takes place in many of the developing economies. In this context, the problem is not having the current account deficit. The problem is how to finance the current budget deficit or whether economic growth will be sustainable with the deficit. Capital account balance is an extremely important matter for the balance of payments imbalances in the economies which have mostly the high current account deficit. The deficit that accrued in balance of payments on current account could fix with increasing of capital transaction. Exchange rates are determined according to exchange supply and demand, and intervention the central bank in balance of payments makes the official reserve account trivial under a flexible exchange rate regime. Therefore, capital flows is extremely important for economies that do not want to have problems in balance of payments and other macro-economic variables in an economy experiencing with current account deficit. One of the tools that can be used as a solution for current account deficit is the short-term capital flows. Short-term capital flows, also referred as hot money usually tend to flow into the markets with high interest and profitability rates. Short-term capital flows which are financed the current account deficit and although it has the positive effect on economic growth by strengthen the financial structure of companies in stock market, this effect is still subject of discussion because of it's the sustainability. Short-term capital flows is capable of suddenly input-output to an economy. Interest rate differentials between countries and co integrating the countries because of globalization cause that short-term capital flows suddenly lead to another country.

Therefore it could have negative effect on economies. Therefore some measures should be taken to prevent short term capital flows make sudden input-output into the markets. The purpose of this study is determining the relationship among the economic growth and short-term capital flows and the current account deficit in recent years in OECD countries. Portions of the study are organized as follows: The second section covers the literature review. The third section introduces the data and methods. The fourth section covers the empirical results obtained in the study as a result of econometric methods. Finally, the fifth section covers the results and evaluation of the study.

2. Literature Review

No serious empirical findings were ascertained about the relationship among short-term capital flow, current deficit and growth or all in one. But, the effect of foreign capital flow directed at developing countries on economic growth or current deficit separately was examined in many empirical studies. As a matter of fact, in this section, bilateral relationship literature on these three variables was studied.

Debelle, and Faruqee (1996) studied the effects of economic growth to current deficit for the period 1971-1993 in 21 developed countries. They determined the causality from economic growth to current deficit into the analysis that implements the cross-sectional data. Milesi - Ferretti, and Razin (1999) studied what starts continuous and large - scale reductions in the current deficits of five countries belonging to low and middle level income through EKK and Probit models. In the result of that study, it was not possible to find any systematic relationship between decreases in the growth rate and current account balance. Calderon *et. al*. (1999) carried out a study on the relationship between basic macroeconomic variables and current deficit for the period 1966-1994 throughout 44 developing countries by using panel data and Generalized Moment Method. As a result of that study, it was found that there is a weak relationship between growth rate and current deficit in the same way. Freund (2000) analysed the effect of economic growth to current deficit like Debelle, and Faruqee (1996). He concluded the same results with Debelle, and Faruqee (1996). Chinn, and Prasad (2000) looked for determiners of current deficit balance for 70 developed and developing countries between the years 1971-1995 throughout EKK and Stable Effects Method. They claimed that there is a weak relationship between growth rate and current deficit. Bussiere *et. al*. (2004) studied the determiners of current deficit balance in developed and developing countries for the year's between1980-2002 and 1995-2002 by using Fixed Effect Method, least squares dummy variables model and Generalized Moment Methods. In their studies, they found that there is a weak relationship in the same way, just as it was seen in Chin, and Prasad (2000). Yan (2005) analysed the causality relationship between the capital flow and current deficit in G7 and 7 emerging market economies for the period 1989Q1-2003Q4 by using Granger causality test. He concluded the causality from current deficit to capital flow. Prasad *et. al*. (2007) analysed the current deficit, investment and economic growth relationship of 56 countries including Turkey by panel data method using the data between the years of 1970-2004.

According to empirical results, in some of the countries mentioned in the country groups that conduct investments via domestic savings, there found faster growth rates and higher investment when compared to the countries that meet their investments via short-term capital inflow. Christian (2011), evaluated bilaterally the effects of money stock and current deficit on economic growth for the period 1975-1997. In his study, he tried to explain the situation of 27 OECD member countries using panel data and treatment type analysis putting forward that economic growth leads to instability in the money market rather than current deficit.

3. Data and methodology

In this study, current account deficit, short-term capital flows and economic growth were analysed, which are covers the period 1990-2010 in the 20 OECD countries. Those 20 OECD countries are: Australia, Austria, Canada, Finland, France, Germany, Israel, Italy, Japan, South Korea, Mexico, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, Turkey, UK and USA. This series that belongs to those countries has been provided from the electronic database of the World Bank. Explanation of the data used in this study is as follows:

Table 1. Data set

Variables	Explanations	Source
SCF	Short term capital flow covers only portfolio investment (USD)	World Bank
CD	Current account deficit (USD)	World Bank
EG	GDP (USD)	World Bank

3.1. CADF and SURADF Unit Root Tests

In order to carry out first generation unit root tests such as the Levin-Lin-Chu (2002), Im-Pesaran, and Shin (2003), Hadri (2000), and Breitung (2000) at Panel data analysis should not be cross-section dependency problem. If there is a cross-section dependency problem at panel data, 2nd generation of unit root tests such SURADF and CADF and CIPS tests allows to achieve more effective and consistent results. Cross-section dependency implies that the correlation among error terms used in the model equations. In this case, three tests can be performed which are developed by Pesaran (2004) CD_{LM}, Breusch-Pagan (1980) CD_{LM1}, and Pesaran (2004) CD_{LM2}. The first of these tests CD_{LM1} test is as follows:

$$CD_{LM1} = T \sum_{i=1}^{N-1} \sum_{j=i-1}^{N} \hat{p}_{ij}^2 \qquad (1)$$

Here; $\hat{p}_{ij}^2$ shows squared residuals estimates of the cross section.

$$\hat{p}_{ij} = \hat{p}_{ji} = \frac{\sum_{t=1}^{T} \hat{u}_{it} \hat{u}_{jt}}{\sqrt{\sum_{t=1}^{T} \hat{u}_{it}^2} \sqrt{\sum_{t=1}^{T} \hat{u}_{jt}^2}} \qquad (2)$$

This test is used in case of N constant and $T \to \infty$. For this test, zero and alternative hypotheses are as follows:

H_o: There is no relationship among the cross sections.

H_1: There is a relationship among the cross sections.

Accordingly, if p-value is found a significant as a result of CD_{LM1} test, it is concluded that there is a cross-section dependency.

Another test used to determine the dependence of the cross section dependency is CD_{LM2} test. This test is as follows:

$$CD_{LM2} = \sqrt{\frac{1}{N(N-1)}} \sum_{i=1}^{N-1} \sum_{j=i+1}^{N} \left(Tp_{ij}^2 - 1 \right) \sim N(0,1) \qquad (3)$$

The null hypothesis of this test is the same as CD_{LM1}. This test can be used in case of T and n (t $\to \infty$, N$\to \infty$).

Finally CD_{LM} test are as follows:

$$CD_{LM} = \sqrt{\frac{2T}{N(N-1)}} \left[\sum_{i=1}^{N-1} \sum_{j=i+1}^{N} \hat{p}_{ij} \right] \sim N(0,1) \qquad (4)$$

Null and the alternative hypothesis at CD_{LM} testing are the same as CD_{LM1} and CD_{LM2} testing. However, this test can be used when number of cross section of the test panel is larger then the time dimension which is subject to review. In other words, in case of N>T or T > N, result of this test is effective and consistent.

CADF and SURADF tests carried out in case of a cross section dependency. CADF test assumes that each section is affected separately from times effects which create the panel data. In addition, this test takes the spatial autocorrelation into account. CADF test can be used when the time dimension is larger then the number of cross-section at the panel data which is the subject analysis. In other words, CADF test can be used in the case of T> N. CADF test which developed by Pesaran (2006) is as follows:

$$\Delta Y_{it} = \alpha_i + b_i Y_{i,t-1} + \sum_{j=1}^{pi} C_{ij} \Delta Y_{i,t-j} + d_i t + h_i \overline{Y}_{t-1} + \sum_{j=0}^{pi} \eta \Delta \overline{Y}_{t-1} + \varepsilon_{i,t} \qquad i = 1, 2 \dots \dots \dots t \qquad (5)$$

The equation above, α_i the constant term, t trend, $\Delta \overline{Y}_{t-1}$ delay differences, $\overline{Y}_{t-1}$, $\overline{Y}_t$ are value of a time delay.

Null and alternative hypotheses for CADF testing are as follows:

$H_0 = \beta_1 = \beta_2 = \cdots \beta_n =$ (series are not stationary)

$H_A =$ At least one is different from 0 (series are not stationary)

P-value finds at the end of this equation for each unit. The result of statistic value of each test compared with Pesaran (2006) value table. As a result of this; if statistic value of CADF test is less than critical values table of Pesaran, the null hypothesis is rejected, and reached the conclusion that at least the series of one unit is static.

In the case of the cross-section dependency problem SURADF is other test which can be applied. SURADF test is also among the one of 2nd generation root test that evaluates stationary of each unit. The SURADF test which is developed by Breuer *et al.* (2002) can be used if there is a relationship between the error terms. The most important difference of SURADF test from CADF test is implementing of unit root test separately for each panel unit. Unit root test can be applied for all items of panel for other unit test. CADF test can be also implemented for each panel unit. But it can be applied for all panels only with CIPS test developed by Pesaran. In this study, we did not use to CIPS test. Therefore, CIPS test was not explained. The other difference is SURADF test has a bootstrap distribution and CADF test has an asymptotic distribution. SURADF test may be formulated as follows.

$$\Delta Y_{i,t} = \alpha_i + \beta_i Y_{i,t-1} + \delta_i t + \sum_{j=1}^{pj} \phi_{ij} \Delta Y_{i,t-j} + u_{i,t} \qquad i = 1, 2......T \qquad (6)$$

It is needed the critical values for interpreting SURADF test. Statistical values are compared with the critical values which are obtained by using the GAUSS program. As a result of this; if critical table values is greater than the value of SURADF test statistic, the null hypothesis is rejected and reached the conclusion that the series is stationary.

3.2. Panel Granger Causality Test and WALD Causality Test

The Granger causality test is the traditional causality test. However, in the panel analysis, Granger techniques may result in inconsistent parameter estimates (Hartwig 2009: 2-30, and Pham, and Tran 2009: 1-20). Granger Causality test depends on VAR model. When Granger Causality test is used for panel analysis, there might arouse a relationship between error terms and delayed values of explanatory variables. Therefore, there might be an endogeneity problem. Therefore, in order to test for the causal linkage among SCF and EG and CD we will apply the General Method of Moments (GMM) developed by Arellano, and Bond (1991) in addition to panel Granger causality test. In GMM method, instrumental variables are used so that there will not be any endogeneity problem. Whether there is a relationship between instrumental variables and error terms is defined by Sargan, and Hansen tests. In addition to this, GMM method can help reduce the estimation bias and control for problems often associated with cross-section estimators such as some unobserved problems and time-specific effects. To examine the panel causality, a time-stationary vector auto-regression (VAR) model is first constructed as follows:

$$SCF_{it} = \alpha_0 + \sum_{j=1}^{m} \alpha_j SCF_{it-j} + \sum_{j=1}^{m} \mu_j CD_{it-j} + \sum_{j=1}^{m} \delta_j EG_{it-j} + f_{yi} + u_{it} \qquad (7)$$

$$EG_{it} = \beta_0 + \sum_{j=1}^{m} \beta_j EG_{it-j} + \sum_{j=1}^{m} \gamma_j CD_{it-j} + \sum_{j=1}^{m} \theta_j SCF_{it-j} + f_{xi} + v_{it} \qquad (8)$$

$$CD_{it} = Y_0 + \sum_{j=1}^{m} Y_j CD_{it-j} + \sum_{j=1}^{m} n_j SCF_{it-j} + \sum_{j=1}^{m} \sigma_j EG_{it-j} + f_{zi} + e_{it} \qquad (9)$$

Where it SCF and it EG and it CD are the three co-integrated variables, i = 1, ..., 20 represents cross section panel members, u_{it} and v_{it} and e_{it} are error terms. This model differs from the standard causality model in that it adds individual fixed effects f_{xi} and f_{yi} and f_{zi} for each panel member i. In Equations 7 and 8 and 9, the lagged dependent variables are correlated with the error terms it u and it v and it e, including the fixed effects. Hence, Ordinary Least

Squares (OLS) estimates of the above model will be biased. The remedy is to remove the fixed effects by differencing. However, differencing introduces a simultaneous problem because lagged endogenous variables will be correlated with the new differenced error term. In addition, heteroscedasticity is expected to be present because, in the panel data, heterogeneous errors might exist with different panel members. To deal with these problems, instrumental variable procedure is traditionally used in estimating the model, which produces consistent estimates of the parameters. In this case, GMM method proposed by Arellano, and Bond (1991) has been shown to produce more efficient and consistent estimators compared with other procedure. Therefore, to test for causality, the GMM estimation procedure of Arellano and Bond (1991) is applied to the balanced panel. The estimated equations are following:

$$\Delta SCF_{it} = \alpha_0 + \sum_{j=1}^{m} \alpha_j \Delta SCF_{it-j} + \sum_{j=1}^{m} \mu_j \Delta CD_{it-j} + \sum_{j=1}^{m} \delta_j \Delta EG_{it-j} + \Delta u_{it} \tag{10}$$

$$\Delta EG_{it} = \beta_0 + \sum_{j=1}^{m} \beta_j \Delta EG_{it-j} + \sum_{j=1}^{m} \gamma_j \Delta CD_{it-j} + \sum_{j=1}^{m} \theta_j \Delta SCF_{it-j} + \Delta v_{it} \tag{11}$$

$$\Delta CD_{it} = \gamma_0 + \sum_{j=1}^{m} \gamma_j \Delta CD_{it-j} + \sum_{j=1}^{m} \eta_j \Delta SCF_{it-j} + \sum_{j=1}^{m} \sigma_j \Delta EG_{it-j} + \Delta e_{it} \tag{12}$$

To test for causality among current deficit, economic growth and short term capital flows into OECD country, we use results of Wald Causality test. The Wald test indicates that causality among current deficit, economic growth and short term capital flows as the rejects the null of no causality at the 1% significance levels. Besides, in order to make sure that our choice of instruments was ideal, we test for the over identifying restrictions using Hansen test, which is common test of the validity of instrumental variables used in estimation. If the instrumental variables are uncorrelated with residuals, the hypothesis being tested may be used in estimation. The statistic is asymptotically distributed chi-squared if the null hypothesis is true. If the null hypothesis is rejected the Hansen test will not reject the validity of instrument set in all equations. This implies the validity of the instruments used in estimation.

4. Empirical findings

In order to perform unit root tests SURADF and CADF at series, it must have cross-section dependency problem. CDLM tests results shown in Table 2 for the cross-section dependency problem:

Table 2. Test results for the cross section dependency for economic growth

Test	t-statistic	p-value
CD_{LM1}	309.983826	0.0000000
CD_{LM2}	6.15504045	0.0000000
CD_{LM}	0.80087555	0.0616018

The null hypothesis is rejected to be significant according to the results of tests. Therefore, there is cross-section dependency in the series of economic growth for 20 OECD countries. For that reason, 2nd generation unit root test application on a series of economic growth allows to have more consistent results. Table 3 shows SURADF and CADF test results for economic growth for 20 OECD countries.

Table 3. SURADF and CADF test results for economic growth

Countries	SURADF	0.01	0.05	0.1	*p*	Countries	CADF	*p*
Australia	-18.60*	-28.19	-18.78	-15.60	4	Australia	-4.476***	4
Austria	-17.04*	-27.27	-18.78	-15.56	1	Austria	-3.213	1
Canada	-17.96**	-25.08	-17.47	-14.75	1	Canada	-4.567**	1

Countries	SURADF	0.01	0.05	0.1	*p*	Countries	CADF	*p*
Finland	-10.68	-26.50	-18.05	-14.98	1	Finland	-4.97**	1
France	-17.38*	-30.52	-17.67	-13.73	3	France	-2.60	3
Germany	-13.82	-27.28	-18.67	-15.12	1	Germany	-3.951**	1
Israel	-23.96**	-28.89	-20.46	-16.93	2	Israel	-2.117	2
Italy	-19.90**	-26.87	-18.50	-15.38	1	Italy	-3.375	1
Japan	-11.73	-28.55	-20.19	-16.86	5	Japan	-4.583**	5
Korea	-13.07	-27.65	-18.84	-15.99	3	Korea	-0.852	3
Mexico	-9.91	-27.08	-17.24	-14.54	4	Mexico	-3.375	4
Holland	-10.43	-27.57	-19.46	-16.44	2	Holland	-1.983	2
Norway	-25.46**	-29.32	-19.76	-16.52	1	Norway	-1.683	1
Portugal	-15.46*	-24.83	-17.32	-14.39	1	Portugal	-3.019	1
Spain	-8.44	-26.00	-18.95	-15.96	1	Spain	-1.850	1
Swedish	-13.52	-34.28	-22.17	-17.64	2	Swedish	-2.246	2
Swiss	-15.62	-37.84	-26.61	-22.34	1	Swiss	-0.688	1
Turkey	-18.62	-40.09	-28.62	-24.31	1	Turkey	-2.032	1
UK	-15.02	-26.57	-19.58	-16.85	2	UK	-4.280**	2
USA	-8.77	-29.19	-21.69	-18.78	1	USA	-1.275	1

***, ** and * stand for significance at 1, 5 and 10% levels, respectively. The critical values for the SURADF test were generated using Monte Carlo simulations with 10 000 replications. The lag lengths (p) are selected according to Schwarz information criterion. The critical values for the CADF test were obtained from Pesaran (2006), Case III Intercept and Trend.

According to the results of SURADF and CADF unit root tests, that show in Table 3, null hypothesis cannot be rejected in most of the countries that are subject to analysis. Therefore, it can be said that in these countries economic growth data is in non - stationary process.

The unit root tests related to economic growth is shown above with detail. According to this, there is a unit root on series of economic growth of OECD countries which is evaluated in this study except some countries mentioned above in the period 1990-2010. Another variable that used in the study as a model is current account deficit. In this context, the cross section dependency which applied for economic growth and SURADF and CADF tests will be also implement for the current budget deficit. CD_{LM}, CD_{LM1} and CD_{LM2} test results which are related to the current account deficit data for 20 OECD countries are shown in Table 4.

Table 4. Test Results for the cross section dependency for current account deficit

Test	t-statistic	p-value
CD_{LM1}	315.9657450	0.0000000
CD_{LM2}	6.46190637	0.0000000
CD_{LM}	-1.30668625	0.0956596

The null hypothesis is rejected because of being significant according to the results of tests. Therefore, there is also cross-section dependency for the current account deficit same as in the series of economic growth for 20 OECD countries. For this reason, 2nd generation unit root tests should be conducted for the series of current account deficit series. There are results of CADF and SURADF unit root test for a series for current account deficit for 20 OECD countries in Table 5.

Table 5. SURADF and CADF test results for current deficit

Countries	SURADF	0.01	0.05	0.1	*p*	Countries	CADF	*p*
Australia	-19.58**	-25.22	-17.34	-14.75	1	Australia	-2.725	1
Austria	-17.43*	-24.27	-17.58	-14.92	1	Austria	-5.032***	1
Canada	-11.03	-22.81	-15.45	-12.82	5	Canada	-0.554	5
Finland	-6.073	-25.56	-17.82	-15.06	1	Finland	-3.063	1
France	-13.56	-24.57	-17.27	-14.57	2	France	-0.088	2
Germany	-10.79	-25.93	-17.63	-14.38	3	Germany	-1.627	3
Israel	-20.92**	-25.72	-18.39	-15.27	4	Israel	-1.516	4

Countries	SURADF	0.01	0.05	0.1	*p*	Countries	CADF	*p*
Italy	-26.19***	-24.24	-17.48	-14.41	3	Italy	-2.051	3
Japan	-13.18	-25.36	-17.94	-15.01	2	Japan	-2.813	2
Korea	-25.08**	-25.18	-18.00	-15.08	3	Korea	-2.292	3
Mexico	-12.02	-24.87	-17.96	-15.16	4	Mexico	-2.445	4
Holland	-19.11**	-22.76	-16.80	-14.06	5	Holland	-11.36***	5
Norway	-20.59**	-26.17	-18.06	-15.08	1	Norway	-1.540	1
Portugal	-10.58	-24.63	-16.65	-14.07	2	Portugal	-1.748	2
Spain	-7.998	-24.89	-17.28	-13.57	1	Spain	-2.657	1
Swedish	-12.18	-25.11	-18.05	-14.94	2	Swedish	-2.380	2
Swiss	-6.928	-25.51	-18.40	-15.13	3	Swiss	-0.308	3
Turkey	-30.49	-136.15	-81.20	-61.48	4	Turkey	-0.562	4
UK	-10.16	18.77	13.74	11.90	1	UK	-2.176	1
USA	-9.510	-24.92	-19.49	-17.10	1	USA	-0.671	1

***, ** and * stand for significance at 1, 5 and 10% levels, respectively. The critical values for the SURADF test were generated using Monte Carlo simulations with 10 000 replications. The lag lengths (p) are selected according to Schwarz information criterion. The critical values for the CADF test were obtained from Pesaran (2006), Case III Intercept and Trend.

According to the results of SURADF and CADF unit root tests which are shown in Table 5, the null hypothesis cannot rejected because critical values are greater than the test statistic values for most countries which are the subject for analysis. Therefore, it can be said that economic growth data is in the non-stationary process.

Finally, cross section dependency and 2nd generation unit root tests will be performed for short-term capital flows. In this context, it is shown the test results of cross section dependency for the short-term capital flows in 20 OECD countries in Table 6.

Table 6. The test results for the cross section dependency for SCF

Variables	t-statistic	p-value
CD_{LM1}	298.430591	0.0000000
CD_{LM2}	5.56237195	0.0000000
CD_{LM}	-0.52884972	0.0984548

CD_{LM1} and CD_{LM2} tests results are consistent with CD_{LM} tests that are conducted for current account deficit and other economic growth. Accordingly, the null hypothesis is rejected because it is significant. Therefore, there is a cross-section dependency problem for short-term capital flows same as in other series for 20 OECD countries. Hence, 2nd generation unit root tests should be conducted for a series of short-term capital flows. SURADF and CADF unit root test results are available for a series of short-term capital flows for 20 OECD countries in Table 7.

Table 7. SURADF and CADF test results for short-term capital flow

Countries	SURADF	0.01	0.05	0.1	*p*	Countries	CADF	*p*
Australia	-12.8	-28.03	-18.32	-14.60	5	Australia	-1.828	5
Austria	-24.95**	-31.92	-21.44	-17.09	2	Austria	-1.953	2
Canada	-15.0	-31.13	-20.82	-16.54	5	Canada	-3.436	5
Finland	-12.11*	-26.87	-15.29	-11.98	5	Finland	-0.103	5
France	-14.3	-28.46	-19.57	-16.00	1	France	-2.177	1
Germany	-20.69*	-29.93	-21.02	-18.07	1	Germany	-4.294**	1
Israel	-14.5	-28.48	-19.24	-15.95	5	Israel	-1.812	5
Italy	-18.46*	-31.07	-21.05	-17.19	2	Italy	-3.343	2
Japan	-12.96	-29.96	-20.06	-16.79	1	Japan	-2.78	1
Korea	-6.2	-25.83	-17.72	-14.28	3	Korea	-2.20	3
Mexico	- 9.7	-27.72	-18.72	-15.13	3	Mexico	-1.694	3
Holland	-28.66***	-26.11	-16.27	-12.78	4	Holland	-4.20**	4
Norway	-6.85	-26.70	-18.03	-15.17	3	Norway	-0.917	3

Countries	SURADF	0.01	0.05	0.1	*p*	Countries	CADF	*p*
Portugal	-10.81	-27.70	-19.26	-15.73	5	Portugal	-0.98	5
Spain	-16.7	-32.04	-21.53	-17.72	2	Spain	-2.623	2
Swedish	-17.4*	-30.08	-20.35	-16.73	2	Swedish	-2.279	2
Swiss	-34.22***	-27.91	-18.88	-15.95	2	Swiss	-1.534	2
Turkey	-10.75	-36.28	-24.15	-19.92	1	Turkey	-2.371	1
UK	-17.73	-31.91	-23.17	-20.15	1	UK	-2.630	1
USA	-15.87	-39.24	-27.94	-23.32	1	USA	-1.817	1

***, ** and * stand for significance at 1, 5 and 10% levels, respectively. The critical values for the SURADF test were generated using Monte Carlo simulations with 10 000 replications. The lag lengths (p) are selected according to Schwarz information criterion. The critical values for the CADF test were obtained from Pesaran (2006), Case III Intercept and Trend.

According to CADF and SURADF unit root tests results which are shown in Table 7; the null hypothesis cannot rejected because critical values are greater than the test statistics values in most countries which are the subject for analysis. Therefore, it can be said that short - term capital flows is in the non-stationary process. Causality tests will be conducted afterwards the unit root tests for short -term capital flows, current budget deficit and economic growth series. In this context, Firstly panel Granger causality test was performed which is consisting of three variables for the model. Accordingly, the panel Granger causality test results are shown in Table 8.

Table 8. Panel Granger causality test results

Causality Direction	Wald Chi2	F value	P value
SCF→CD	0.15	0.38	0.697
CD→SCF	10.40	10.36	0.013**
SCF→EG	7.16	7.17	0.007***
EG→SCF	0.013	0.000	0.970
CD→EG	5.956	5.96	0.015**
EG→CD	0.623	0.62	0.429

Note: 1 delay length is assumed for all variables.
** , *** shows the 5% and 1% significance level.

According to Granger causality test results, there is a causality relationship from current account deficit to economic growth.
This case has shown to the theory of economics. In an economy even if the import of goods and services exceeds the export of goods and services, it still increases the foreign trade volume. However, if the gap between import and export raises, namely, a huge export volume for a small import volume, it will increase the demand of exchange money. It will eventually increase the exchange rate that will weaken the value of domestic money. Moreover, the price of domestic goods drops. Economic growth cannot be managed unless more goods and services can be sold. Besides, if the exchange rate increase- caused by increase in current account deficit- would not be met by the capital entrance or some other way, the demand on exchange money cannot be decreased which would lead to a crisis in exchange market.
OECD countries form panel have shifted their production lines to countries like China, India, Korea, Indonesia, and Malaysia. An increase in current account deficit in OECD countries will increase the exchange rate in these countries. If a decrease is observed for the value of currency of OECD countries, that are using Dollar, Euro, Yen or Pound that have the highest convertibility, will not only decrease the price of the goods produced by the countries mentioned above, but also increase the production cost as well. It will negatively affect the economic growth.
According to Table 8, other than the causality from the current account deficit towards economic growth, there are two causality relationships among the variables. One of them is between short term capital movements and economic growth, the other one is between current account deficit and short term capital movements.
Most of the OECD countries are accepted as developed countries. Therefore the services sector is the most popular one. Financial markets are the leading branch of services market so a change in this market heavily influences the economic growth in developed countries. Short term capital movements are very

important in financial markets. The causality between short term capital movements and economic growth can be explained by this importance. Next, the causality relationship between current account deficit and short term capital movements is not conflicting with the theory of economics. Current account deficit is triggering the rise in interest rate. This increase will attract foreign capitals to the country that will loosen the demand for exchange currency. Short term capital movements can be utilized to finance the current account deficit.

Variables such as current account deficit, economic growth and short term capital movements are not static due to their structures. These variables are constantly evolving and being affected by their previous states. Therefore they can be called dynamic. In order to analyse dynamic variables, Dynamic Panel Data Model should be used for a better estimate so we have used Wald test based on GMM method for checking the results of Granger causality test or finding possible different results. Results of Wald test based on GMM method is shown in Table 9.

Table 9. Arellano Bond Two Step GMM estimate and causality test

Coefficients	Dependent Variable		
	EG(1)	CD(1)	SCF(1)
EG$_{it-1}$	-0.3544	2084.5	973.17
	(0.001)	(0.040)**	(0.631)
SCF$_{it-1}$	0.00008	0.00581	-0.30773
	(0.068)*	(0.884)	(0.000)
CD$_{it-1}$	-0.0001	0.1487	0.26712
	(0.036)**	(0.000)	(0.000)***
Hansen Test			
Dependent Variable	EG	CD	SCF
Chi2	19.08	17.26	16.13
p-value	(0.770)	(0.740)	(0.820)
Wald Causality Test			
Chi2	18.48	128.36	83.86
p-value	(0.002)	(0.000)	(0.000)

Note: Values in parentheses shows p values.
***, **,* shows the 1% , 5% and 10% significance level.

In the study where the economic growth was dependent variable, both variables of current account deficit and short term capital movements had causality relationship with economic growth. Moreover, the model is statistically significant. Although coefficients of current account deficit and short term capital movements are statistically significant, the signs of the coefficients are different. There is a positive causality relationship for short term capital movements and negative relationship with current account deficit. For the OECD countries that were subject to the study, short term capital movements affect the economic growth in a positive way whereas current account deficit has a negative effect on economic growth.

This case is confirming the Granger causality test results. In the where current account deficit is dependent variable, model is generally significant. According to the results depicted in Table 9, there is a positive causality relationship between economic growth and current account deficit. Whenever a rise is seen in economic growth, it increases the current account deficit. The reason of this causality relationship can be explained by the fact that total quantity of consumption is increasing with economic growth. As mentioned above, it is safe to assume that OECD countries are developed countries. They do not import raw materials, intermediate goods or investment goods in order to grow like developing countries. They are producing in other countries in order to save from the labour and energy cost.

Since OECD countries are investing in technology, they need more energy consumption to maintain the growth in these sectors. That eventually increases the total consumption. The global economic crisis which was initiated by one of the most important country's -USA's- mortgage system, showed that the people of US has allocated their future incomes that produced bubbles in different areas. In such a case, economic growth increases the total consumption. Current account deficit tends to rise when total supply no longer meets total demand. Finally, the model is statistically significant when short term capital movements are assigned as dependent variables. Therefore, it is safe to mention that current account deficit and economic growth causes short term capital movements. The causality from current account

deficit towards short term capital movements is also statistically significant. The relationship is in positive direction due to the sign of the coefficient. In other words, when current account deficit increases, it causes an increase in short term capital movements. In this context, the OECD countries seem to finance the current account deficit via short term capital movements.

Conclusion

In this study, economic growth and dependence on short-term capital flows and deficit in 20 OECD countries were examined for the years of 1990-2010, CDLM tests were used to analyse the cross-section dependency. As a result of these tests it is concluded that there is a cross-section dependency at the series. Therefore, taking into account cross-section dependency SURADF and CADF, panel unit root tests were used in order to analyse if there are unit root series. As a result of SURADF and CADF panel unit root tests it has been found that there is a degree of stability in the different countries of panel. Finally, in order to analyse the causal relationship between variables whether the panel Granger causality test and GMM Arellano-Bond test is based on the method used. Panel Granger causality test of short-term capital flows and economic growth in the current account deficit as a result of unidirectional causality has been determined.

In addition, the short-term capital flows one-way causal relationship has been found towards economic growth. According to GMM Arellano-Bond test method based on two-way causality relationship between economic growth and the current account deficit has been determined. However, the causality positively to economic growth in the current account deficit is selected. The causality from economic growth towards a positive current account deficit is selected. Arellano-Bond test, the other is a causal relationship between the variables determined to economic growth in the short-term capital flows realized. This causal relationship is positive. Finally, the current account deficit and a positive short-term capital flows marked with unidirectional causal relationship have been determined.

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"THE MORAL CAPITALISM" A SOLUTION FOR THE INTERNATIONAL ECONOMIC AND SOCIAL CRISIS?

Petru BARDAŞ
bardastehnorob@yahoo.com
Simona ROTARU
simona_rotaru_ro@yahoo.com
Mirela GHIŢĂ
mire_ghita@yahoo.com
Mihaela COCOŞILĂ
cocosila_mihaela@yahoo.com
Spiru Haret University
Faculty of Financial Accounting Management, **Romania**

The world will be led by the people able to learn,
to break of learn, and learn again.
Alvin Tófler

Abstract:

In an European and international economy, seized by the perpetual globalization fever, with an appetite for consumption, a culture was born, one of "the adolescentism" that stimulates greed, where the contemporary man is determined by the will of possession, not ideals, a culture that has contaminated the whole world.

Greed is responsible for the economic power excesses; the immoral actions of Enron and WorldCom, other abuses from the speculative investments area and also the increased poverty in important areas of Africa, Asia and Latin America are sources of powerful social agitations.

This has led to the need of changing the governmental principles of the "wild capitalism" theorized by Andrew Carnegie, and Erbert Spencer, with principles of a moral capitalism, based on the Caux Round Table governmental principles, that remained since its publication, nine years ago, the only set of standards of corporation social responsibility, proposed by leaders from the entire spectrum of business leaders.

Keywords: adolescentism, rebel without reason, social Darwinism, wild capitalism, popular capitalism, principles of the Caux Round Table.

JEL Classification: **M15**

1. Introduction

In the European and world economy, the globalization promotes a culture that discourages the individual and collective options to the "own interest taken into consideration from the perspective of the whole".

The appetite for consumption has developed a global culture of the "adolescentism" that stimulates greed.[1]The development of the production capacity makes the contemporary man determined by his will to possess as many fortunes as possible, for his comfort and material safety. He's not led by ideals anymore.

As a result, "the adolescentism" has appeared a phenomenon that characterizes the middle class category, marked by the impetuous consumption, the lack of responsibility, the indifference to our own kind; the culture that has contaminated the whole world. The "rebel without a cause" type, like James Dean, Elvis Presley, The Beatles, has conquered the world through American radio and TV channels. The parental authority reduces its authority, with the exception of the Muslim, Protestant and Judaic religious communities.

The adolescentism, specific to an age between childhood and adulthood, is characterized by the temptation to overspend in order to satisfy the identity need, by avoiding the responsibility of adulthood.

The Americans from the adolescentism era are old aged by now; their children, born after the fifties, maintain these attitudes and create around them the cultural space, looking for the material resources needed to avoid the adulthood responsibilities.

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[1] Cashmann, K. 2001. *Leadership from the Inside Out,* Provo,Utah, Executive Excellence Publishing, pp.18

In business, they use their careers exclusively to their personal purposes, being oriented towards their own identity deficiencies.

Greed is responsible for the economic power excesses; the immoral actions of Enron and WorldCom, other abuses from the speculative investments area and also the increased poverty in important areas of Africa, Asia and Latin America are sources of powerful social agitations.

2. The bases of adolescentism in the wild capitalism culture

In 1840, Karl Marx, and Friedrich Engels have published their urge to revolution in the "Communist Party Manifest", after years of objections to the capitalist way of property. In these conditions, Herbert Spencer contradicts Karl Marx and proposes a new discipline, sociology, and a new way of approaching the social problems.

Applying Darwin's theory, Spencer scientifically argues that men are a branch detached from the animal reign, whose laws should be applied to their activity, too. Each human being should be considered a natural biological organism, too, which competes in an inevitable fight to survival with other human beings and other autonomous biological organisms. Competition would be a nature law and would stand at the natural selection basis; each human being, each animal must fight for survival. A tough capitalism is analogue to a no rules boxing game, therefore the need for power and freedom of the species alpha male, "homo sapiens", which plays the head of family, but also the conqueror role.

The birth and unexpected fall of the Enron Company can be seen as a case study of applied "social Darwinism", a name that will be later given to Spencer's theory.

In 1888, Andrew Carnegie writes in "Triumphant Democracy" that human beings are different, determined to live their life in their own way, as per their own nature. According to Andrew Carnegie, the survival of the strongest principle speaks about those plants, animals and human beings exceptionally gifted with the needed elements that distinguish them from the standard; they are the fertile forces that animate everything[2].

After the Second World War, the social Darwinism has evolved under the conservatory movement form that had as objective the limitation of the state, as law authority. Spencer's theme has been resumed by Fredrich Hayek, Russell, Kirk, Leo Strauss, the intellectual founders of the modern conservatorism.

Professor Milton Friedman, of University of Chicago, has stated, with logical arguments, that the best way to obtain social justice was to eliminate the regulations and to relate exclusively to the market forces.

In politics, Berry Goldwater's company brought the Spencer way of thinking in elections in 1964.

Sixteen years later, Ronal Reagan will win the presidential elections on the basis of a softened Spencer conception, by promoting the fiscal relaxation and the free market based individualism. That Spencer influence was present in the youth movements of the late sixties, through the need to self-express, to free themselves of any social constraints, since they were in conflict with any form of authority, inclusively their parents. There is something natural, wild or even brutal in these movements, trying to destroy the formalism that characterized the society.

Robert Green, one of the new theoreticians of the wild capitalism, flirts with the idea that only deception and manipulation survive in the life competition for trophies. Instead of winning through arguments, complying or feeling guilty, he advises us to impose ourselves through force. There is no word about reciprocity, moral sense or obligations correctly and loyally fulfilled, with desired abilities to success.

Therefore, the wild capitalism restricts the role of the law and the state's institutions, by decreasing the role of the moral self-control and the concern towards the others.

Being an extreme form of behaviour in business, it prioritizes the interest, in relation to law and virtue.

We experience, directly or indirectly, the costs of the wild capitalism, through the series of financial bankruptcy and fakes at ones of the most powerful companies in the entire world:
- Enron- frauds, registered in the company balance sheets with losses of billions of dollars, because of the devaluated stocks;
- Enron and other energetic companies-the manipulation of the energy market in California during the 2000-2001 crises;

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[2] Carnegy, A. 1993. *Problems of today.* New York, Doubleday, Doran & Co, pp.12

- Xerox- billions of dollars of incomes obtained through the overestimate of the financial value of some actives;
- Credit Suissfirst Boston- practices of preferential stocks allocation for a freshly established stock society, launched on the stock market;
- ABB Sweden- the sale of obligations at half of their value has led to the stock's price reduction from 55 to 30 Swedish crowns; the clients have abandoned the company and the main production lines have been closed;
- The insurance HIH Australia group has gone bankrupt as a result of 3.1 billions of dollars debt, after having underestimated some debt-claims and financial debts;
- SK Global, South Korea- the overestimation of the 2002 incomes, with a cash crisis.

The list is very rich in examples; there are some bankruptcies and reorganizations from our country to be included, also.

In conclusion, the wild capitalism is a form of business behaviour, which prioritizes the private interest in relation with the public one. On the other side, the communism rejects the free market and the human being dignity. There is also a third solution, between those two extreme variants: the moral capitalism**.**

3. The moral capitalism: using the private interest to serve the public good

The free markets promote the moral behaviour

The German philosopher, Hegel, thought the private property was necessary to the moral behaviour[3]. According to Hegel, people need to imprint the world, which is possible only when a part of it becomes ours, out of the other's power of control.

The private property on things has an important place in the moral theory, as possessing a property enforces more obviously the dignity of each one of us.

The moral choice implies that people be in the position to choose, that they dispose of the needed force or power to change things. Since it allows more people to obtain the necessary ways to express their values and moral inclinations, the capitalism serves a moral purpose.

The free market really promotes the moral behaviour in the relationship between buyers and salesmen. This capacity of the free market offers a second ethical foundation for capitalism, that can establish a bridge between virtue and own interest. The market cannot survive the lack of trust; the law states that contracts achieved through fraud, deceit or inequitably transactions are null. In the capitalist system, free marked based, the individualism is well received. This system rewards innovation and free initiative, the individual capacity of being in step with standards, in order to fulfil the market needs and demands.

A culture of responsibility: the path to the moral capitalism

The free markets aren't always capable to balance the actions of the moral capitalism representatives. In order to develop the moral capitalism, the business men must share an adequate culture.

The social capital is a necessary component in the business society. The nations that dispose of a bigger and richer social capital will enjoy more prosperity in business. Although business plays an important part in sustaining a nation social capital's vitality, the governments have the most important responsibility in creating the progress's necessary conditions. The popular capitalism cannot be developed in a country with a corrupt government that violates laws and wastes its tax payer's money. An indispensable condition of the moral capitalism is a government that implements well thought norms of social justice: the private capital investments cannot defeat an irresponsible government's poverty and corruption.

The most important conditions to develop the social capital are:
- the political stability, the assurance of a high level of safety;
- the governmental clerks must not let themselves tempted by corruption, the "godfather-ship capitalism" is a curse in a prosper economy development;
- the assurance of a basis infrastructure, capable so ensure the business needs;

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[3] Hegel, G.W.F. 1996. *Principiile filosofiei dreptului sau Elemente de drept natural şi de ştiinţa a statului*, Editura IRL, *in Romanian.*

- a functional civil society that must ensure the reign of the state subject to the rule of law, by respecting the law of contracts;
- an adequate level of education to sustain the economy constant development

4. The Caux Round Table: a plea to moral capitalism

The moral capitalism cannot emerge out of thin air; business men must be encouraged to embrace its central principles, in order to set into motion the economic activities. The creation of the moral capitalism is an act of culture. Starting from this premise, the "Caux Round Table Principles" were published for the first time in 1994, in order to improve the world business culture.

The "Caux Round Table" organization gathered for the first time in 1986, at the initiative of Frederick Philips, the Philips Company CEO, who invited several business men and distinguished personalities from Japan, Europe and America to discuss about the xenophobe behaviours that divided the electronics and cars industry. The Japanese industries were very successful on the international markets. Frederick Philips initiated a dialogue to appease the fury that kept the Japanese companies out of the European and American markets and the American products out of the Japanese market. Olivier Giscard d'Estaing, vice-president of INSEAD, the famous French business school, also joined the project.

The true fellowship atmosphere of 1986 convinced the participants to annually return to Caux, in order to raise the professional level of international business. In that moment, the group leadership was taken by Ryuazaburo Kaku, Canon Inc. CEO, who shared his strategic vision to the "Caux Round Table" personalities, named by him "kyosei", that meant, in a simplified translation, "to live and work together for the common good". In 1991, at Minnesota, Kaku presented his kyosei management conception, on the bases of which were drawn up the "The Caux Round Table Principles" in a first draft, based on the Minnesota principles regarding responsibility towards the co interested groups, its vision about the Kaku type management according to "kyosei" and the human dignity principles, proposed by Pope Joan the Second.

"The Caux Round Table Principles" document contains an introduction, a preamble, a set of seven general principles and six sets of principles dedicated to the relationship with the co interested groups, special principles that aim at the companies responsibility towards employees, owners and investors, suppliers, competitors and communities.

In the preamble of „the business CRT principles" it is asserted that the market and law forces represent necessary behaviour directions, but they are not sufficient. It is also supported the necessity of moral values when making decisions in business.

Action principles in business are:
- Regarding the business responsibilities: besides the shareholders, we are responsible for the co-interested groups;
- Regarding the economic and social business environment: focus on innovation, justice and global community;
- Regarding business behaviour: law and trust are to be followed;
- Respecting the moral regulations and law;
- Support manifold marketing;
- Respect the environment;
- Refuse illegal operations.

A company that respects all these principles can be called socially responsible. As a consequence of the collapse of the currencies of Thailand, Indonesia and of the financial crises in Malaysia and The Republic of Korea, many financial experts met in order to establish standards of good behaviour that can help different states to avoid or diminish the negative impact of the financial crises on the states' economies.

The institutions that are to be nominated worked together to establish these regulations: International Monetary Fund (IMF), World Bank, International Agreement Bank (IAB), Development and Economic Co-operation Organization (DECO), G20 Group, International Federation of the Accountants (IFA), Accountancy Standard Committee (ASC), etc.
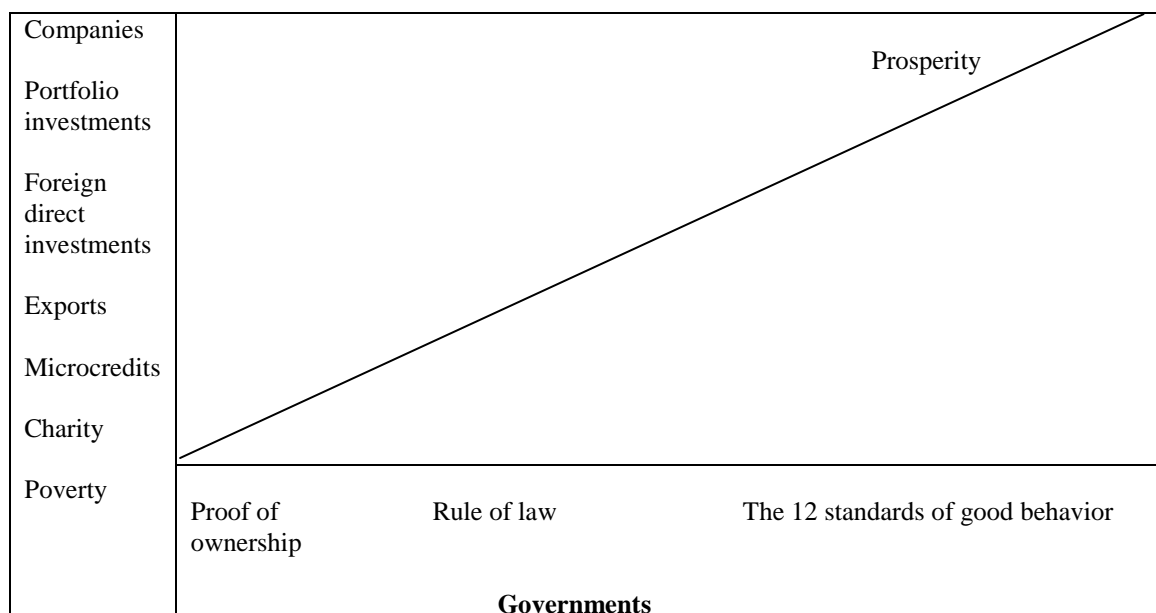
When the government applies to the 12 standards of good behaviour, there is economic progress and good protection against financial disturbance. This leads to a motivation of the local capital not to leave the local market and to attract foreign capital, thus having profits for the previous investments.

The 12 standards include the following financial and contractor activities:
- Transparency in the contractor and financial activities;
- Transparency in the fiscal policies;
- Publish the information of public use;
- Accounting system of the economic agencies;
- Corporation government;
- Insolvency procedures and company reorganization in order to diminish the investors' loss;
- Repay loans;
- Fight against evasion;
- Bank surveillance;
- Regulating the real estate markets;
- Insurance company surveillance.

Responsible and transparent management represents the basis of these standards, thus increasing credibility and reducing the risks in the economic and bank fields. Generally, there are fears about the globalization process. The poor countries are constantly accused of wasting the natural resources, of lacking regulations about protecting the environment, of maintaining low wages which leads to the reducing of production costs in poor countries and, consequently, eliminating the production places in rich countries. People doubt the sincerity of the rich countries when they declare that they wish to support the countries that lack resources, but, on the other hand, they refuse their access on the rich markets of agricultural and textile products. But the traditional societies in poor countries fear that by opening their markets to globalization, they will allow to be invaded by foreign products, forcing thus their own products not to develop or their own firms to go bankrupt.

Despite these fears, the investments of the private firms, part of the globalization, are the only way the poor countries can improve their living standards, in exchange of the globalization and of the increase of the work productivity. The moment the private capital and the public power act in a responsible way, respecting the CRT principles, the conditions to have economic progress and correct distribution of prosperity are fulfilled. The table below shows the above mentioned.

Companies	
Portfolio investments	Prosperity
Foreign direct investments	
Exports	
Microcredits	
Charity	
Poverty	Proof of ownership　　Rule of law　　The 12 standards of good behavior
	Governments

Conclusions

It is remarkable that, in the nine years since its publication, "The Caux Round Table Principles" have remained the only set of standards of social corporation responsibility, proposed by business leaders, the most complete decision instrument built on principles of business social responsibility.

In the transition economies case, the development of a moral capitalism, instead of a "godfather ship" or wild one is a proper solution in order to apply these principles.

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EFFECTS OF SINGLE MONETARY POLICY ON THE SELECTED ECONOMIC AND MONETARY UNION COUNTRIES. CASE OF SO-CALLED "PIIGS" COUNTRIES

Ludmila BARTOKOVA
Faculty of Economics
Technical University of Kosice, **Slovakia**
ludmila.bartokova@tuke.sk

Abstract:

Monetary policy represents one of the most important policies of each country's policy mix. Understanding how monetary policy works and affects real economy is essential in understanding how changes in the settings of monetary instruments such as interest rate increase or decrease will affect the real economy and which variables will react. In this paper we analyse the implications of monetary policy shocks in countries of monetary union in Europe. The focus is on the estimation of the response of economic variables such as a gross domestic product, exchange rate and price level. The model used is based on the vector autoregression approach that enables to estimate the extent and the persistence of monetary policy shocks for tested variables in case of selected European economies.

Keywords: interest rate, monetary transmission mechanism, VAR, Cholesky decomposition, impulse-response function.

JEL Classification: F36, F41, E53

1. Introduction

Monetary policy represents one of the most important policies of each country's policy mix. Its main focus nowadays is on achieving price stability with base interest rates serving as the primary monetary instrument. In literature we can find many studies analysing the speed and the extent of transmission of monetary measures to real economic variables. For central bankers, it is essential to know how and when the changes in the settings of their monetary instruments will affect the real economy and which variables will react. They must be equally aware of possible time lags with which the various effects will manifest themselves. Thus policy makers face uncertainty about the extent of the changes in the settings of their monetary tools.

In case of monetary union, such as European Economic and Monetary Union (EMU), this uncertainty is increased by the fact that the EMU economies can be considered similar only to some extent. EMU main asymmetries arise from the fact that EMU is a monetary union without common fiscal policy framework. As a result, national governments are allowed to issue debt in a currency over which they exert no control, increasing even more existing divergences in macroeconomic development. (De Grauwe 2012) This can subsequently create contradictory pressures on the common currency and threaten its stability.

This paper will focus on analysis of the transmission process of monetary policy in euro area in general as well as for the selected EMU countries. Considering recent debt crisis in EMU we have selected five highly indebted EMU countries, often called "PIIGS" countries[4], in order to verify their similarity in responses to monetary policy shocks. The results will be compared with general results computed for average euro area variables. In our case the transmission process of EMU's monetary policy, carried out by European Central Bank (ECB), is represented by the changes in short-term interest rates. Subsequently, these changes are transmitted by various channels to real economy and affect macroeconomic variables, namely gross domestic product, exchange rate and price level. We estimated vector autoregression (VAR) model using the Cholesky decomposition of innovations in order to identify the effect of the monetary shocks on selected variables. This analysis allows computing impulse-response functions for estimation of interest rate pass-through to macroeconomic variables.

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[4] The term PIIGS (or PIGS) is an acronym used in reference to the southern European countries of Portugal, Italy, Greece and Spain with Ireland equally included. The use of this acronym has become well known with regards to the European sovereign - debt crisis in 2009 and nowadays it is used as a name for a group of European most heavily - indebted economies.

The paper is structured as follows. Firstly, an overview of the literature is presented. The next, third section explains and presents the VAR model which is followed by the section 4. Data and results. The last part offers conclusions of presented analysis.

2. Overview of the literature

Monetary policy and transmission of its measures to real economy remains the focus of many analyses. Over the last thirty years there have been many important shifts in monetary policy strategies as well as the instruments that are used. It can be mainly viewed as a reaction to changes in traditional monetary transmission channels due to e.g. structural changes in economy and the interaction between changes in monetary policy actions and the way expectations are formed. (Mishkin 2009; Boivin 2010) Most central banks use their key interest rates to indicate the changes in their monetary stance. By doing so, they also influence the expectations of the market subjects and direct those towards a desired level of inflation what is the basis of the monetary regime of inflation targeting. (Ďurčová 2008) Modifications in key short-term interest rate are transmitted to money market rates and consequently to banking sectors and the real economies. Even though nowadays there is a general agreement on the fact that monetary policy can influence significantly real economy, the debates on the particular mechanism, the channels of transmission or time lags remain.

The monetary transmission processes are often analysed using vector autoregression (VAR) models. The standard VAR approach assumes that the dynamics of the economy can be described by a set of macroeconomic variables. Some authors may argue that this approach cannot be considered realistic as the real economic activity and economic processes might not be perfectly measured by any observable macroeconomic indicators. Despite many debates, the VAR model remains one of the most often used in modelling of monetary transmission processes.

A VAR approach enables to study impacts of monetary shocks on selected variables and allows a cross country comparison. Even though the monetary conditions and thus the transmission processes may be different in various countries, the studies show that these differences are not significant. (E.g. Gerlach, and Smets 1995, Baran, Coudert, and Mojon 1996) The methods used by these authors were based on different estimation strategies but their findings are rather similar. They showed that the response of output to interest rate shocks was not completely identical for a group of EU countries. However the differences in transmission of monetary policy among the countries (such as Germany, France, Italy and United Kingdom) were not very large (IMF 1997).

More recent paper by e.g. Angeloni, Mojon, Kashyap, and Terlizzese (Angeloni, Mojon, Kashyap, and Terlizzese 2003) shows that out of the three monetary channels (interest rate channel, asset price channel and credit rate channel) the interest rate channel is the most important for monetary policy transmission in the euro area as it enables the direct pass-through of the monetary shocks (such as tightening or loosening of the monetary policy). Their results also show that the effects of the monetary policy on the output and the prices of the euro area aggregate are consistent with the effects of monetary policy shocks identified within each country. The reaction of the output to an unexpected increase in the short-term interest rate is only temporal and the response of prices is delayed up to four quarters.

Nowadays, there seems to be an increased interest in analysing the functioning of the monetary policy transmission mechanism with regards to the recent financial and debt crises. For example Lyziak (Lyziak 2011), and Demchuk (Demchuk 2012) use the VAR approach to test the impacts of the crisis on the effectiveness of transmission of monetary policy in case of Poland. One of the most important findings being the fact that the traditional, interest rate channel can be considered as the most affected by the crisis. The VAR approach is equally used by Hurník, and Arnoštová (Hurník, and Arnoštová 2005) in their analysis of the transmission mechanism in Czech Republic for period of 1994 - 2004. Their results show that the unexpected tightening of the monetary policy leads to a fall in output, whereas the prices remains persistent for a certain time and start to fall after approximately two quarters. The exchange rate reacts by immediate appreciation.

Generally, the economic theory suggests that after a monetary contraction output as well as the prices should fall and the exchange rate is expected to appreciate shortly after. However, as noted by various authors, the evidence for opposite behaviour of prices or exchange rate can be found in many studies. In case of exchange rates, the reaction may be dependent on the monetary regime. The changes of exchange rates systems or currency crisis may also cause the unusual behaviour of exchange rate, when the monetary contraction leads to immediate depreciation instead of appreciation of the exchange

rate. This unusual response is sometimes regarded to as the "exchange rate puzzle" (Hurník, and Arnoštová 2005; Popescu 2012; Mirdala 2009).

As for the behaviour of the prices, the atypical behaviour appears quite often and is documented by many studies analysing the impact of monetary policy shocks on the price level. This "anomaly" was first noted and "named" price puzzle by Sims, and Eichenbaum in 1992 (Castelnuovo, and Surico 2006). Here, the studies offer several possible explanations to the problem of price puzzle; one of them being the misidentification of the monetary policy shock during the regimes associated with a weak response of interest rates to inflation. In other words, what is referred to as a policy shock is actually a combination of a genuine policy shock and some endogenous policy reaction. The other approach by Balke, and Emery (Balke, and Emery 1994) explains the existence of the price puzzle in case of US by the fact that FED systematically responds to signals of higher future inflation by raising federal funds rate, but the scope of this reaction is not important enough to prevent inflation from actually rising.

The effect of financial crisis on interest rates pass-through are also analysed in IMF's Global Financial Stability report (IMF 2012). The report compares the interest rate pass-through to the short-term interest rates as well as to the long-term interest rates in case of euro area and the United States. According this report, the transmission of the interest rate to the long-term interest rates was much more disrupted in both the United States and the euro area while the interest rate pass-through to the short-term interest rates has been less affected in the euro area.

3. Econometric model

The vector autoregression model is an approach commonly used for modelling the effects of monetary policy on the set of endogenous variables over the sample period of time. For our analysis we estimate the following model:

$$CY_t = A(L)Y_{t-1} + u_t \tag{1}$$

where a vector $Y_t = [y_t, e_t, p_t]$ is a N x 1 vector of the contemporaneous endogenous variables with y_t corresponding to GDP, e_t representing nominal effective exchange rate (neer) and p_t denoting consumer price index. C is a N x N matrix that includes all the coefficients describing the simultaneous relations among endogenous variables of the model, $A(L)$ corresponds to a N x N polynomial with coefficients representing relationships among endogenous variables on lagged values. Shocks are represented by u_t - a N x 1 normalized vector of shocks to the model.

Contrary to standard VAR models used to identify monetary shocks we did not include money aggregates in the model. The tested contractionary monetary policy shock is commonly followed by a fall in money for most of the countries. What is more, analyses of other authors indicate that the inclusion/omission of a money aggregate in a model did not affect the impact of the short-term interest rate shock on output and prices (For more details, see Mojon, and Peersman 2001).

By multiplying equation (1) by an inverse matrix C^{-1} we obtain the reduced-form of the VAR model (this adjustment is necessary because the model represented by the equation (1) is not directly observable and structural shocks cannot by correctly identified). Thus the VAR model described by the equation (1) can be rewritten to following representation:

$$Y_t = C^{-1}A(L)Y_{t-1} + C^{-1}u_t = B(L)Y_{t-1} + e_t \tag{2}$$

where

$$B = C^{-1}A \tag{3}$$
$$e_t = C^{-1}u_t \tag{4}$$

B(L) is a matrix describing the relationship among variables on lagged values and et is a N x 1 vector of serially uncorrelated errors of the model.

To verify the soundness and accuracy of our results, we estimated and compared three VAR models identified through the restriction resulting from the recursive Cholesky decomposition of the residuals for each of the selected countries. Three models A, B and C corresponded to various time periods: model A (2002-2007), model B (2002 - 2009) and model C (2002 - 2011). By applying same

method on a time periods of various length we were able to analyse possible impacts of the economic and financial crisis on the transmission process of monetary policy.

4. Data and results

The VAR model is estimated using data samples for three time periods. The first one (model A) covers the period from the first quarter of 2002 to the fourth quarter 2007 (2002Q1 – 2007Q4). The second sample (model B) corresponds to the longer period, covering also the first year of the economic crisis (2002Q1 - 2009Q4). The third model (C) covers the years 2002 - 2011. By applying the VAR model to three periods, we try to verify whether the financial and economic crisis caused the change in the response of selected economic variables, namely output, prices and exchange rate. We suppose that the crisis would disrupt the transmission processes in monetary policy and the effects of the monetary tightening would be transferred to economic variables only partially or with important time delays. Data used in this analysis were obtained from the International Financial Statistics of the International Monetary Fund, European Central Bank Database and Bank for International Settlements. We have used the quarterly data ranging from 2002Q1 to 2011Q4 (40 observations) for the following variables: gross domestic product, nominal effective exchange rate, price level and short- term interest rate for each country analysed (Portugal - PT, Spain - ES, Italy - IT, Greece - GR and Ireland - IE as well as EMU averages). Series for output were seasonally adjusted in order to eliminate possible seasonal factors.

In our model we supposed that the monetary decisions concerning the variations of the European key interest rate (two - week interest rate for main refinancing operations) are transmitted to market interest rates, thus the evolution of 3 - month Euribor rate mirrors the evolution of ECB's monetary policy stance (see Figure 1). When compared, the 3 - month Euribor rate shows high level of correlation to ECB's two - week key interest rate; therefore it can be used for an estimation of the evolution of monetary policy decisions without posing any problem for the analysis.
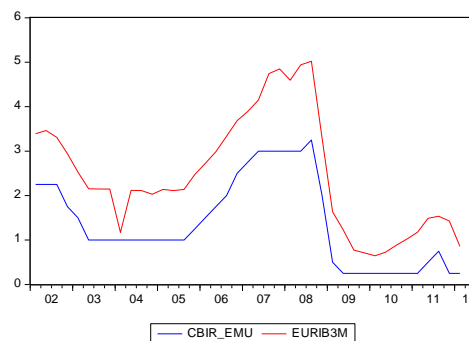

Figure 1. Interest rates

Source: ECB

For our model we have selected a group of highly indebted countries of euro zone, the group that is often, not very favourably, denoted as "PIIGS" countries. Currently, there are many debates going on concerning these countries and many critics point out that deepening economic disparity among the euro area economies weaken the common currency and threaten to cause a breakup of monetary union. Even though there have been continuous attempts to bring and keep all euro area members at the same economic level in order to avoid possible problems, differences and asymmetries among countries could not be avoided. The financial and economic crisis expanded these asymmetries while unveiling other, more severe problematic areas. The most visible these issues seem to be in so -called "PIIGS" countries. Collectively, they account for approximately 25% of GDP of European Union. At the same time they are considered to have a big risk of being not able to pay their national debts. It may be attributed to previous years of expansionary fiscal policies creating high levels of indebtedness. Since the crisis was accompanied by declines in national incomes and at the same time increasing governmental expenditures, fiscal positions of these countries deteriorated dramatically. The economic situation worsened and unemployment rates increased considerably over the last few years. As can be seen on following figures depicting the evolution of unemployment rate and governmental debt (as % of GDP), the evolution did not show any significant problems prior 2008. Until this year, the variables followed a

"national path", characteristic for each selected country. The financial crisis unveiled many problematic areas and the share of the general government debt increased rapidly. The same happened in case of unemployment rate with some of the countries seeing their rates to triple. However, these variables were not included in our model; they are to illustrate the economic situation in "PIIGS" countries.
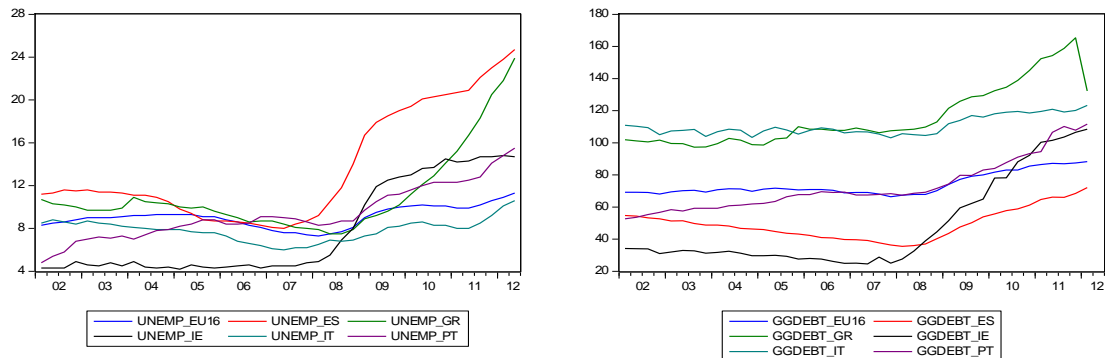
Figure 2. Variables

Source: Eurostat

As for the evolution of tested variables used in the model (output, exchange rate and price level) we can see that to some extent it may be considered similar. For each variable the evolutions by countries are following the same trend, mirroring the economic cycle, the crisis in 2009 and the further after-crisis development (Figure 3).
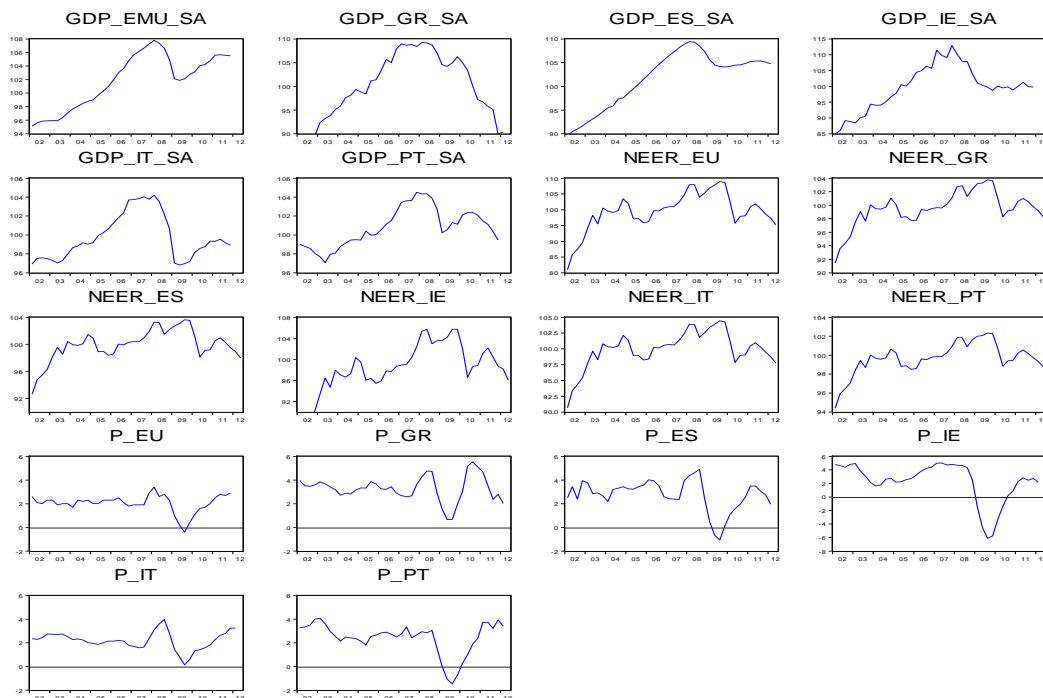
Figure 3. Evolution of the selected variables

Source: IMF, ECB, BIS

However, as members of monetary union, these countries are unable to employ a monetary policy in order to help battle the economic downturn. On the contrary, they are all exposed to same monetary measures. And considering the existing differences among the economies the ECB's policy may be too strict or inversely too loose depending on the particular situation.

This paper will not focus on the analysing whether the monetary measures adopted by ECB were appropriate or did bring expected results but rather will focus on the differences in process of monetary

policy transmission to selected economic variables in countries that are highly indebted and experience serious economic problems.

4.1 Model A (2002Q1- 2007Q4)

Before estimation of the model it is important to test selected time series for stationarity and cointegration. To verify the presence of the unit roots we have used augmented Dickey - Fuller (ADF), and the Phillip - Perron (PP) test. Both tests verify the hypothesis that the time series are non-stationary. In our case, ADF and PP tests indicated that some of the series were stationary at the values. Testing variables on the first differences indicated the time series were stationary. We can conclude that the variables are I (1).

As most of the endogenous variables were not stationary on the values and thus had the unit root, it was necessary to test these time series for cointegration. The existence of the cointegration relations between variables was verified by Johansen cointegration test (using two lags as recommended by the Akaike Information Criterion and Schwarz Information Criterion). The results of the cointegration test by both trace and maximum eigenvalue statistics indicated no cointegration among the endogenous variables of the model. The results of unit root and cointegration tests are not reported in this paper. Like any other results, they are available upon request from the author.

The stability of the VAR model was tested with the help of AR roots test as a graph and a table. This test verifies whether the inverted roots of the models for each country lie inside the unit circle. Using the AR roots test graph we can see that none of the points exceeds the circle, even though some of the roots are near unity in absolute value. Nevertheless, the estimated VARs for each of the selected countries were considered stable (see Figure 4).
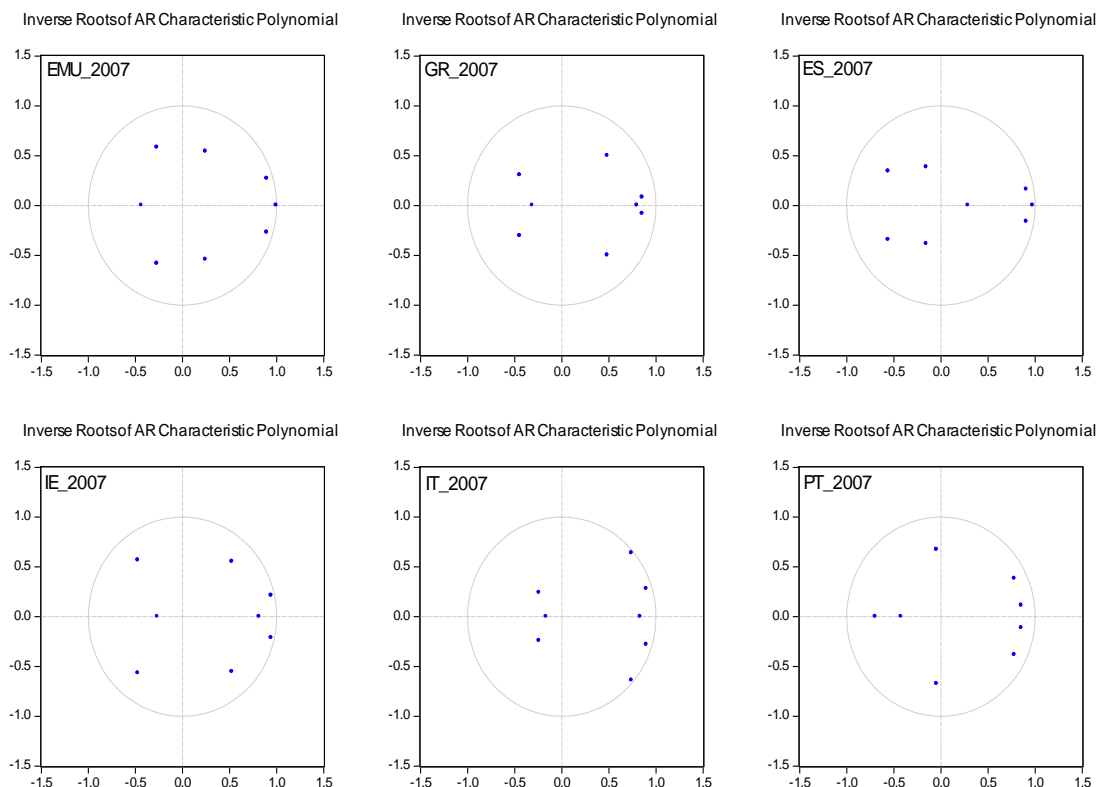
**Figure 4.** VAR stability condition check (EMU and "PIIGS" countries)

Source: author's calculation

Following the results of the unit root and cointegration test we estimated the model using the variables in the first differences. We calculated the impulse-response functions for each of the selected countries. The results are summarised in the following figures.

4.2. Impulse response functions for model A

The figures in this part show the estimated impulse-response functions that represent the responses of interest rate shocks for "PIIGS" countries as well as EMU. The results are grouped by variables so as to be able to compare the similarities or differences in responses for each country. The estimated response of variables on monetary policy shock is observed over the period of 10 quarters after initial shocks. As mentioned previously, in case of unexpected monetary tightening (monetary policy shock in the form of sudden increase of interest rate) the theory suggests the following behaviour of surveyed variables over the short time: an output decline, a price level decline (with possible time lags) and the appreciation of the country's exchange rate.

As for the evolution of GDP, its response on interest rate shock is expected to follow a downward trend in short term. This was equally confirmed by the tests. We can therefore say that the unexpected monetary tightening in the form of the short-term interest rate increase caused the fall in GDP in Greece, Spain, Italy, Portugal and EMU. As for the response of Ireland, the figure indicates the lagged decline of output that appears after two quarters. When compared, the response of the GDP in EMU 12 and in selected countries, we can see the response is very similar. These results confirm that the tightening of the monetary policy in EMU did constrict the GDP growth and can be considered as being effective over the surveyed period. However the differences can be found in the intensity of the response (strongest response in case of Portugal and Spain).
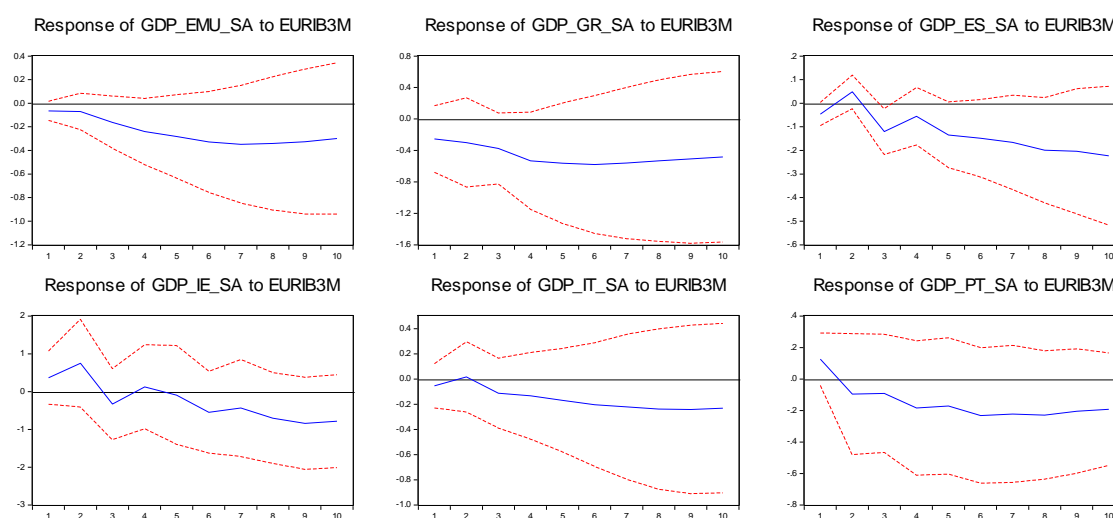
Figure 5. Response of GDP (Model A)

Source: author's calculations

We also tested the response of the prices to interest rate shock. Here the theory indicates that the increase of interest rate should slow down the increase of prices causing the inflation rate to drop down. However, as explained previously, the unusual behaviour in the form of sluggish or even positive response of prices (labelled as the prize puzzle) after an unexpected monetary tightening is not a completely atypical result.

The following figures depict the impulse-response function for inflation rate. We can see that the expected downward trend appears but not immediately as for the output series and as expected not in all analysed countries. The observed lag of 1-3 quarters for a price decline is present in case of Portugal, Italy, Ireland and Greece. It can be explained by the time delays in the transmission mechanism of monetary policy. These time lags are common and may cause that the changes in interest rates settings manifest themselves in some countries sooner than in the others. As a result, transmission processes in countries of monetary union cannot be considered as identical in speed and exact results. The figures for Ireland, Italy and EMU show the opposite behaviour of prices what may be explained either as an imprecise identification of the model or as a result of the way a monetary policy is conducted in EMU as suggested by Balke, and Emery (Balke, Emery 1994) in their study realised for Fed. When we compare the objectives of FED and ECB, this explanation seems reasonable even in our case. ECB's sole monetary objective is the price stability with a clearly defined target level of the inflation. In times when

key monetary indicators show an upward trend in European inflation, ECB always reacts by adjusting the short-term interest rate equally upward. Balke and Emery point out that such a behaviour of central bank in some cases may not be important enough to prevent inflation from actually rising. Using this logic we can argue that due to existing differences and asymmetries between EMU countries, ECB's restrictive monetary policy may not be restrictive enough to really assure the expected price response (or on the contrary, may be too restrictive given the country's particular economic situation). This explanation seems to be valid especially in case of Ireland (after year 2000) that experienced high levels of economic growth accompanied with inflation levels exceeding the ECB's inflation target of 2%. ECB's monetary policy with low short-term rates might have been considered as counterproductive for Ireland.
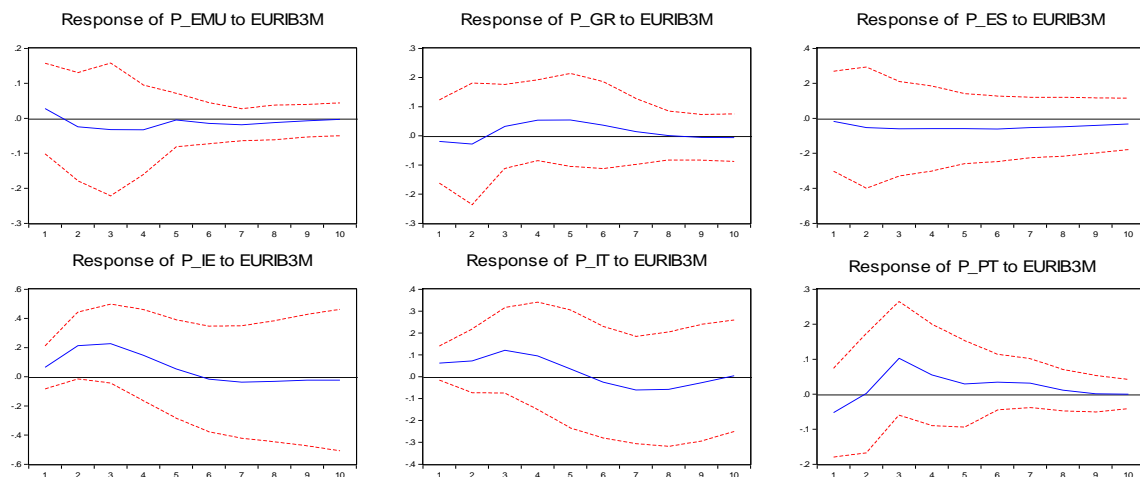
Figure 6. Response of P (Model A)

Source: author's calculations

The last variable tested for impulse-response functions was exchange rate. Here the theory indicates that the increase of interest rate should be accompanied by the inflows of foreign capital causing the appreciation of country's exchange rate. The following figures show the response of NEER after the positive interest rate shock. Here again, we can see that the NEER's response (increase) is not identical in every analysed country. In some cases the appreciation of the exchange rate is lagged by several quarters. What is more, the reactions differ in their volume.
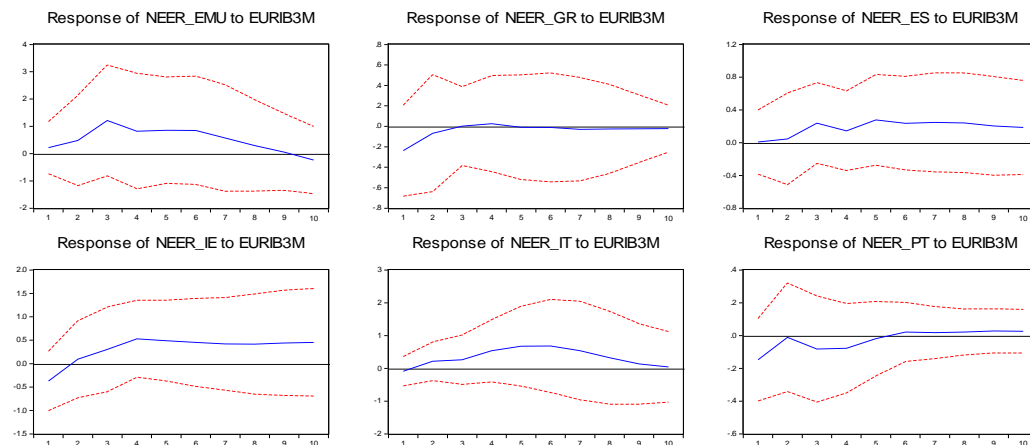
Figure 7. Response of NEER (Model A)

Source: author's calculations

4.3. Models B (2002Q1- 2009Q4) and C (2002Q1- 2011Q4)

The same approach and calculations were applied to longer periods covering the years 2002 -2009 (model B) and 2002 - 2011 (model C). By applying the VAR model to different time periods, we tried to verify whether the financial and economic crisis that hit the EMU countries in 2008 - 2009 affected the

transmission processes. As already mentioned some authors showed the crisis affected the traditional transmission channel of interest rate and may have caused disruptions in the pass - through process in short - term interest rate.

For both model B and C impulse - response functions were computed. However, the figures indicated that the responses of the tested variables did not correspond to expected evolution (decline in both output and prices and increase in exchange rate). The variables reacted exactly in the opposite direction, i.e. the output increased after the positive monetary shock and the decline was lagged by 4-7 quarters. In case of prices, there again an initial increase appeared after the monetary tightening for every country analysed. The impulse - response functions for exchange rate showed the immediate depreciation of the exchange rates and the expected appreciation came only as a delayed reaction after several quarters. However, the figures for models B and C are not presented here to save space. Like any other results, they are available upon request from the author.

When compared, these three models (A: 2002-2007, B: 2002-2009, C: 2002-2011) show that the crisis affected the way the tested variables reacted to the monetary shock, creating longer time lags before the variable effectively responded to the change in the interest rate.

Conclusions

In this paper we analysed the transmission process of monetary policy in case of selected EMU countries. Firstly we analysed these processes at the level of overall EMU, using the EMU average values for selected variables of gross domestic product, inflation level and the nominal effective exchange rate. These results were compared to those computed for several selected countries. For this analysis we have decided to look closely at the highly indebted EMU countries, often called as "PIIGS" countries: Portugal, Italy, Ireland, Greece and Spain. So - called "PIIGS" countries do share some common characteristics especially in the domain of fiscal indicators, such as high indebtedness and the general doubts about their ability to pay these national debts as well as high unemployment rate. These indicators mirror mainly the decisions of the national government that determines the level of national governmental expenses as well as revenues. Countries having the negative fiscal balances for longer periods of time are bound to experience economic problems.

On the other hand these countries are part of the European Economic and monetary union, EMU, with one single monetary authority regulating the conduct of the monetary policy in each member country. That is why it was interesting to verify whether similar fiscal conditions and economic situation of these countries may influence the ways "PIIGS" countries react to common monetary policy. We aimed to find out whether their reaction corresponds to the EMU average. The comparison to other EMU countries would be more accurate; however we did not test it for this paper. It will be subject to further testing.

In our model we used a VAR approach which enables the testing of the responses in case of sudden monetary shocks. We compared the results of VAR testing for three periods of time (2002 -2007, 2002 - 2009, and 2002 - 2011) or for three models respectively (models A, B and C). Based on the results of the tests we can conclude that a monetary policy shock caused a response as expected from economic theory for a period 2002 - 2007. GDP and exchange rate responded immediately. In case of a price response, the results indicated certain time lags and in some cases the atypical behaviour (so - called "price puzzle") appeared. As for the models B and C where the VAR approach was applied to longer periods of time in order to verify whether the crisis would affect the reactions, the tests results show a modified behaviour of tested variables. The intended responses of variables after a monetary tightening appeared but only after several quarters for all tested variable and countries. These results may be considered consistent with our initial supposition that crisis would cause only partial transmission of interest rates to economic variables or it will create time lags in transmission process. As for the fact that we used highly indebted EMU countries for our analysis, results show that the worsened economic situation does not play an important role in monetary transmission process. These countries do not differ significantly from the EMU average reactions.

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PUBLIC RELATIONS IN SPORTS MANAGEMENT

Marian BONDREA
Faculty of Financial Accounting Management, Craiova
Spiru Haret University, **Romania**
marian.bondrea@yahoo.com

Abstract:
One of the main features of the communication process is effective coordination of them. Information available should be: complete, exact, timely. Successful response to each message depends on the precision of the original message, its interpretation and understanding by the receiver and by reverse connection.
Misinterpretation of the message in sports can seriously affect a team's performance, creating tension and distracting athletes from the main objective.
The paper tackles the issue of public relations and communication inside sports organizations as well as the importance of proper managerial communication.

Keywords: managerial communication, public relations, sports organizations.

JEL Classification: L83, M12, J53.

1. Introduction

In the course of historical phases of society's evolution, of the exchange of international values, public relation became an asset of common interest the information conveyance including fields from economy, administration, finances to sports. In each area, domain or field public relations served various and often complex goals and found the most sophisticated ways of manifestation.

The concept of public relations defines a range of activities an institution or organization makes use of in the course of the relations it develops with both its employees and partners from outside the structure.

Public relations pursue that, by the activities of an organized group, a civilized communication be establish between the members of the group as well as between the group and other organizations belonging to social, administrative, sporting sectors. As public opinion must become aware of the importance of organization, public relation specialists should help organizations build a plan for public image.

Things are far from being simple if we consider linguistic, cultural, legal differences, which necessitates diplomacy to be solved so as not to impede upon the image of the company or organization and to avoid potential conflicts or incompatibilities.

2. Organization of public relations activity

There is no international company or organization that can do without public relations support; it is about the relationships with organizations in other countries, the impact on public opinion in other countries, clear and positive communication objectives. Considering material interest, public relation in sport has a double role: on one hand to maintain relationships with investors, supporters, media or professional organizations and on the other hand to attract new practitioners and to protect the image of sports organizations and athletes themselves in crises.

In sports, as in business world, public relations imply both the contact with all types of media available and the promotion of most productive forms of communication with the staff – athletes, technicians, sports clubs.

Public relations have either a domestic, internal character – inherent to the organization, town, county or country or an international character. It is important to emphasize the distinction between public relations and publicity. While the former conveys information and communicates news of public interest the latter is meant to support the commercial side through the instrumentality of posters or banners, advertisements in newspapers and on the radio and television, distribution of promotional items and so on. In the activity of a public relation sector inside a sports management organization one should draw a demarcation line between the internal goals - these refer to the relations with the organization's staff and are established for the unity's sake and the intention to create a working environment - and the

external ones - that are directed at the sundry partners with the purpose of setting out profitable partnership. To achieve all these one appeals to the means of communication – visits, discussions, films, videos.
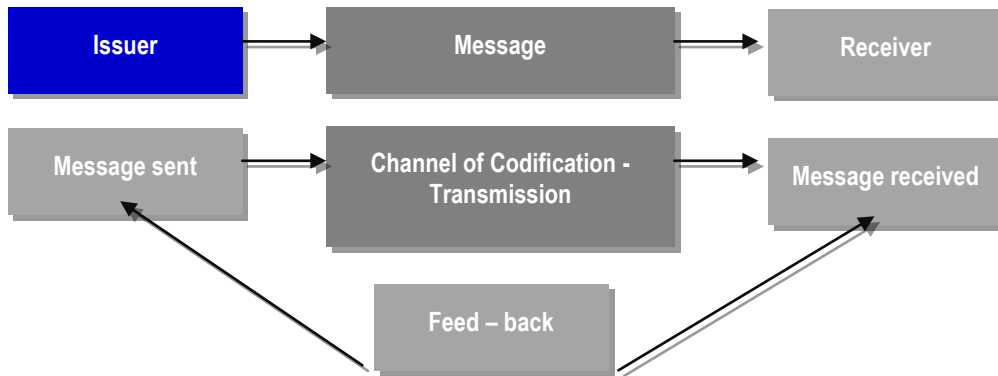
Figure 1. Communication scheme in an organizational system

Consultancy or advice provided by a public relations agent, as well as the public relations department or agency - depending on the size of the sports organization this can only have a section with a corresponding number of employees - are forms of organization of public relation services in sports management activity. The size of organization also imposes the employment of some experts who will elaborate programs or contracts or collaborators to solve some staff, judicial and documentation issues.

Nevertheless, irrespective of the organization's specificity or size the public relation specialists must be recruited from the most competent.
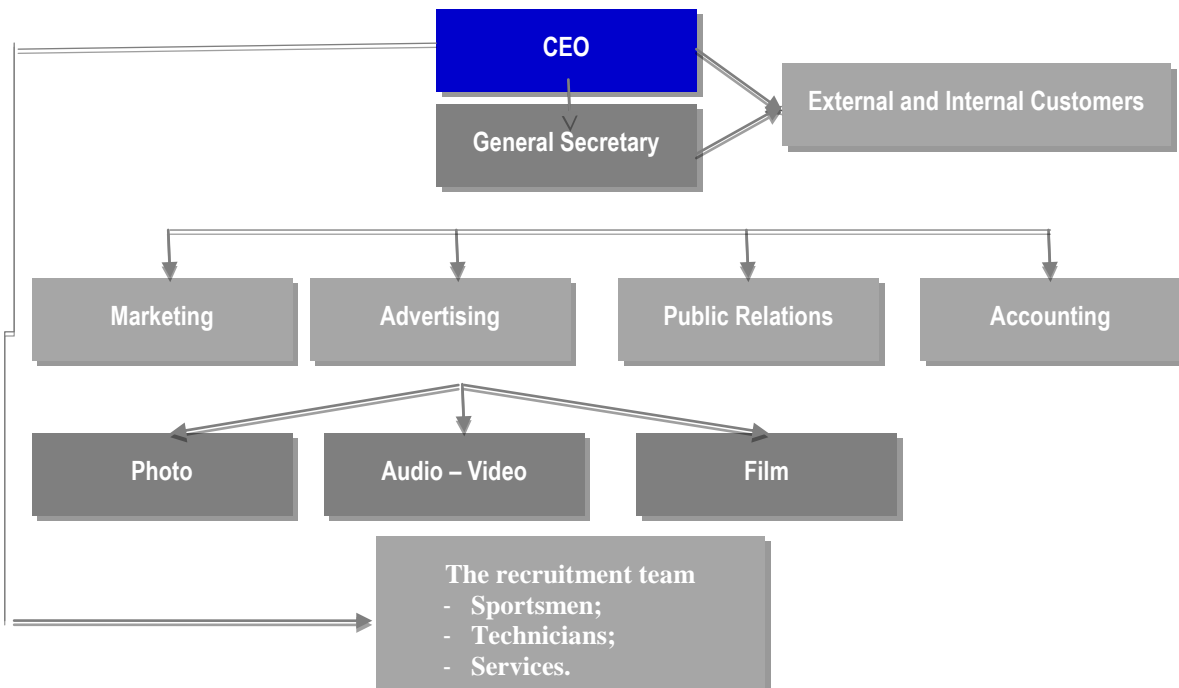
Figure 2. Organizational structure of a public relations agency in sports management

Press conference – where they meet mass media representatives and where they explain the subject tackled, followed by answers to possible questions, *press release or a press ad* – via phone, fax, telegram, e-mail, *press kit* - one of the most important instruments used in the process of relation with media considering the great number of materials sent to media about an athlete, a club, a sport federation, *internet* and *newsletter* the leading means of communication for those interested are the most common ways to keep the public informed nowadays.

3. Management of sports group

In sport group is represented by a number of persons who perform a certain type of activity that pursues the achievement of a sports or physical education objective. The members of the group are in a relation of managerial hierarchy the framework being stipulated by internal rules. It is the sports manager of the organization that establishes responsibilities for every member so as the planned sports objectives are fulfilled and all behavioural norms obeyed, it is he who takes decisions, gives orders, watches and gives account for the way objectives are carried out.

A competitive manager is one who manages to choose from a large number of problems the ones that are the most urgent and cannot be delayed and to take the most appropriate and efficient measures to achieve goals.
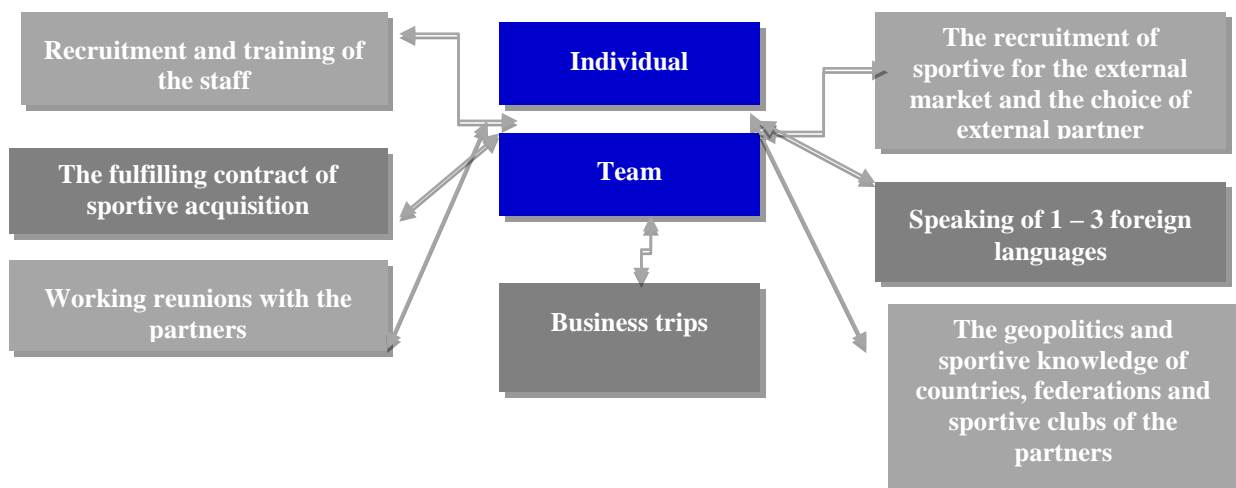
Figure 3. Schematization of managerial activities of sports group

Besides the fact that a sports manager must be a strong personality, capable to work and deal with people, and in his capacity of a leader he must be concerned with both current and future activities that are ahead of the group, there are also certain rules that the sport manager should comply with in relation with the members of the group. Namely, he should be a model, an example for the others, he should enjoy professional respect, he should respect the others in order to be respected, he should be honest and impartial, a good, trustworthy co-worker, able to manage the possible conflicts inside the group.

4. Psycho - sociology in public relations of sports organizations

Communication - is defined as a relationship in which interlocutors can understand and influence each other through continuous exchange of encoded differently information, but also as a process of transmitting information in order to form representations. There are two types of communication: negative and positive. In positive communication managers are required to have knowledge outside their expertise, such as psychology, pedagogy, philosophy and so on. A sports manager needs to be a cultivated person and his communication skill must be sound so that his message should be understood by the sundry types of people he deals with inside his organization; especially the athletes are intellectually and emotionally different.

Communication in sports and physical education means a continuous circulation of information with the purpose in view to keep dynamic a certain activity. In the field of public relations, communication, as intrinsic part of human existence, has a high practicality, a lack of activity being unconceivable. Interpersonal relationship is represented, in sports management, by communication between two or more persons - the sender and the receiver of information. Communication is carried out by dialogue where each part uses the other's message as an indication to express one's own thoughts. Communication, characteristic for the managerial activity in sport, is efficient when interlocutors got acquainted with each other before and when the subject is of joint interest as, conversely, the dialogue is encumbered when the persons involved in communication hardly know each other or there were prior

differences of opinion between them. In public communication, the group - as a homogeneous communication agent ranging in number between three to thirty people united by the same goal and information of mutual concern - is the most regular message receiver.

Debate and analysis, typical for meetings and workshops where there is a *key speaker,* who moderates discussions, are the most ordinary practices of communication. Speaking about sports organizations we refer to large groups led by officials – president, vice - president, secretary, accountant, legal advisor and in this case the communication networks vary

- descending networks from the president - manager to subordinates,
- ascending networks from sports population to the top,
- horizontal networks between persons or groups that are on the same hierarchical level,
- the means of conveying information being different with advantages and disadvantages.

On one hand, written communication – in our case regulations, federation standing orders is somehow slower in terms of time and costs but it is more reliable if we think that *scripta menent* on the other hand, verbal communication is faster but *verba volant*.

In case of a descending network of communication, messages are accurate to the smallest detail. As a matter of fact this network is responsible for the efficiency of the system in both the contents of the message conveyed and the means by which it circulates and reaches those who are targeted. Communication is meant to persuade, to inform, to motivate, to solve problems so, a good communication in sports organizations is, as a matter of fact, one of the keys to reach performance. That is why managers have to communicate in a direct, exact, clear, concise, courteously way both verbally and non-verbally, he has to make his messages appropriate to the receiver's level of understanding and eventually to make himself sure that his message was accurately received attention. And most important is to give everyone equal

The top-down circuit compulsorily triggers an ascending direction having as a source the response of those interested. This ascending flow is of utmost importance being a valuable source of information for the managers and leader of an organization, grounds for a future communication.

The horizontal network, with individuals that share the same interests and close possibilities of action, concerns debates on current issues of work, on views exchange, recommendations and proposals of mutual interest. Discussing more casually, from equal positions those involved clarify ambiguities, take advice from one another and support mutually advantageous views.

Conclusions

Public relations found the most sophisticated ways of manifestation, from the strategies of preserving and improving communication with various governmental and professional agencies, to the image campaigns, public relations cover a huge range of activities.

As a human interrelation communication - is represented as the relationship where interlocutors understand and influence one another through the instrumentality of continuous information. The managerial process requires knowledge from various fields and more, in sport managers need sound communication skills to make themselves understood by the different types of people or athletes who are intellectually and emotionally different. In sports communication means a continuous circulation of information with the purpose in view to keep dynamic a certain activity. In the field of public relations, communication is highly practical, a lack of activity being unconceivable.

Interpersonal relationship is represented, in sports management, by communication between two or more persons - the sender and the receiver of information. One of the main features of the communication process is effective coordination of them.

Information available should be: full, exact, timely, a successful response to each message depending on the precision of the original message, the interpretation and understanding by the receiver and by reverse connection.

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THE REAL IMPACT OF PROJECTS FINANCED THROUGH EUROPEAN SOCIAL FUND – SECTORAL OPERATIONAL PROGRAMME FOR HUMAN RESOURCES DEVELOPMENT - OVER TARGET AUDIENCE

Ioana Bianca CHIŢU
Transilvania University of Brasov, **Romania**
ioana.chitu@unitbv.ro

Abstract*:*

Considering the European Union objectives to increase the economic competitiveness through innovative actions, but also the funds used within the European Social Fund (ESF) - financed projects, measuring beneficiary's satisfaction shall be taken as a priority. In such context, this paper aims to measure, through a marketing quantitative research, using the survey research method (based on an evaluation questionnaire applied on services provided to beneficiaries), the level of impact of a project financed through ESF- Sectoral Operational Programme for Human Resources Development (SOPHRD) over the target audience.

Keywords: consumer satisfaction, European fund, quantitative marketing research.

JEL classification: J58, M31

1.Introduction

In the contemporary context marked by a continuously growing competition on market, satisfaction of certain products/services customers or beneficiaries is an extremely important aspect for companies' existence. They should meet customers' needs and requests as promptly as possible. In this respect, their satisfaction follow up is necessary in order to provide better, faster and more various services. Understanding satisfaction management way of use for companies and services general improvement represents the main issue of this paper. Customer satisfaction understanding and measurement represent a central concern. Satisfaction is a wide concept accepted despite real difficulties of measurement and interpretation faced by typical approaches of its assessment. The most common approach is by using general satisfaction surveys, performed from time to time and created in order to detect changes that take place in time. The final step within the evolution towards general satisfaction management is customer's involvement within the phase of assessment. The fact that companies currently try to assess the results of demarches in respect of quality is very encouraging; they do not consider objective data of performance only, but also service user perceptions.

2. Research context

a. *Customer satisfaction shall be regarded as a priority also in case of beneficiaries of projects financed through EU programmes taking into account the extremely important objectives proposed by it and the funds involved as well.*

Starting from these grounds, the paper aims to measure the level of impact of a project financed through EFS- SOPHRD among the target audience. The project implementation as a case study begun in 2009 in "Center" Region, it was co-financed from the European Social Fond through Sectoral Operational Programme Human Resources Development 2007–2013, Priority axis 3 Increasing adaptability of workers and enterprises, Major filed of intervention 3.1 "Entrepreneurial culture promotion". Priority axis 3 aims to promote the entrepreneurial culture as an important factor of economic competitiveness increase, through training actions in order to ensure the basic level in management of those who want to start a business, through managerial skills improvement at the level of Small and Medium Enterprises, through training and support for employees from those fields affected by economic reorganizations. In the same time, actions aiming to improve companies (especially Small and Medium Enterprises) and employees adaptability will be financed as well, as a response to changes occurred following the global implementation of modern technologies. Partnership development is supported and initiatives of social partners and civil society are encouraged.

The idea of implementing this project occurred together with the identification of a need within the management activity of several organizations, a gap between two essential links of business activity: accounting and management. Thus, an online system was developed through which any manager may easily access company's account or in order to obtain financial balances or statistics just in a few seconds and, moreover, these are graphically displayed so as to conveniently analyse performances and draw up estimations.

The activities carried out within this project were aimed to achieve the general objective: development of managerial and entrepreneurial competences in order to improve the current performance and professional training of enterprisers, employees, heads of companies or individuals intending to start a business in "Centre" Region as to develop the entrepreneurial spirit and generate an increased number of businesses. The project targeted especially individuals intending to start or develop a business or who want to improve their skills in using certain modern tools of company management and it provided to beneficiaries a set of services consisting in free marketing and management consultancy.

3. Opinions and attitudes of beneficiaries of a project financed through SOPHRD regarding the satisfaction acquired following the participation to this project

For this purpose, a survey was carried out among participants in order to determine the extent to which they are satisfied with the services provided and the way of performance of activities which they took part to. In the same time, it was aimed to identify the impact of this project over their business or professional activities.

Research general hypotheses
- In general, project beneficiaries' satisfaction towards the way in which activities were carried out is high.
- In general, beneficiaries are satisfied with the services provided within this project.
- A relatively high percent of beneficiaries recommended project's services to other persons.
- A relatively low percent of beneficiaries faced difficulties in using the services provided.
- Face-to-face meetings at provider's office are considered the most efficient way to communicate with the consultants within the project.
- In general, the 6 months period of free access to project services is considered insufficient.

b. Research objectives

The objectives were established according to the theoretical methodology which consists in dividing the process of setting the research objectives in its three essential steps: setting the basic aspects from the management and marketing point of view, researcher's questions formulation and setting the research objectives (Lefter 2004). Further on we will present the research objectives, as they resulted from this specific process:
- to determine the extent to which beneficiaries are satisfied with the services provided;
- to measure the beneficiaries attitude towards the offer of services made available;
- to identify the most suitable ways to promote the project;
- to determine the beneficiaries attitude towards the way in which the activities were carried out;
- to identify the difficulties faced by the beneficiaries throughout the project;
- to determine the extent to which the project had a positive impact over the beneficiaries;
- to determine the extent to which beneficiaries have identified new entrepreneurial opportunities;
- to determine the extent to which beneficiaries agree that the project has contributed to economic crisis overcoming and business development;
- to determine the extent to which the project was recommended or not by the beneficiaries to other persons;
- to determine the interest towards the continuation of collaboration with providers on a fee basis.

Considerations regarding the research methodology

For the performance of this study it was used the quantitative research with the survey analysis as method, based on a questionnaire of beneficiaries satisfaction evaluation towards their participation to this project. Thus, considering the main topic, the nature of decisional issue and in order to achieve the objectives established, a survey-based descriptive research was carried out. The analysis is based on a highly structured questionnaire mainly composed of closed questions.

Data were collected through the self-questioning method, the filling in process being carried out personally by the subjects of research by accessing a website specially designed for this purpose. This is a very effective method as we may send the questionnaires to those persons included in the sample only. The target group components were contacted in advance through an email and those who failed to answer within the first 5 days from the invitation receipt were contacted by phone. Data were collected within 9 calendar days.

Subject population

The research or relevant population definition takes into consideration the identification of a group of persons which the research is focused on and which the research results will have an impact upon. The research population is composed of all beneficiaries of "IT for managerial and entrepreneurial competences development" project implemented within "Center" Region and financed by ESF through SOPHRD. Thus, the basic population is composed of 500 persons who benefited from at least one out of the 7 services offered free of charge within this programme.

Sampling

The stratified sampling was used as method, this being one of the random sampling methods which represents that sampling technique according to which research population may be divided into layers or groups depending on certain features. In such context, subsamples will be extracted out of each layer using the systematic sampling procedure.

The main reason for using the stratified sampling is obtaining a sample with a higher level of representativeness for the research collectivity. In this case the sample size is n = 100 and because the basic population size is reduced N = 500, a sample which represents 20% out of it was chosen. So we opted for a sampling proportionally stratified on two levels, the bases of stratification being: status on labor market and gender. Thus, based on data that group the project beneficiaries depending on the two criteria, the sample structure was established so that each subsample was represented within the sample in the same proportion with the one of the layer where it was extracted from, into the total of project beneficiaries.

Quantitative research results

Each question was analysed within the research process, but this report presents the results of the most relevant questions only. Questionnaire data process was performed with the set of statistical data analysis programs SPSS – Statistical Package for Social Sciences.

One of the first questions considered the way, in general, of performance of activities which those questioned were involved in within the project.
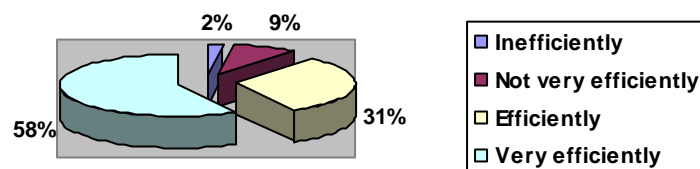
Figure 1. Assessment of project activities way of performance

Thus, participants' answers reveal the fact that most respondents, namely 58 out of 100 (i.e. 58%), appreciate the way in which activities they took part to were carried out as being a very efficient one, 31 respondents considered the activities way of performance as being an efficient one, far-away, on third place, resulted the version according to which activities within the project were not carried out very efficiently, this one being chosen by 9% out of the respondents (9 individuals), and finally only 2 persons out of those questioned were unsatisfied regarding the way in which were carried out the activities they

tool part to within the project, considering this process as inefficient. We may note also the fact that no respondent chose the completely inefficient option.

Other aspects analyzed within this research were the level of accessibility of information about the project, assessed by respondents with an average score of 4.39, fact which indicates an assessment between good and very good; the level of accessibility of services provided within the project – average score of 4.48, fact which indicates also an assessment between good and very good; a higher average score was registered by the consultants' professionalism – 4.73, and the forth aspect analyzed got an average score of 4.09, fact which represents a good assessment of the real impact that participation to this project had over the activity/business carried out by beneficiaries. These average scores were computed using scales from 1 to 5, where 1 represents a "Very low" level and 5 represents a "Very high" level.
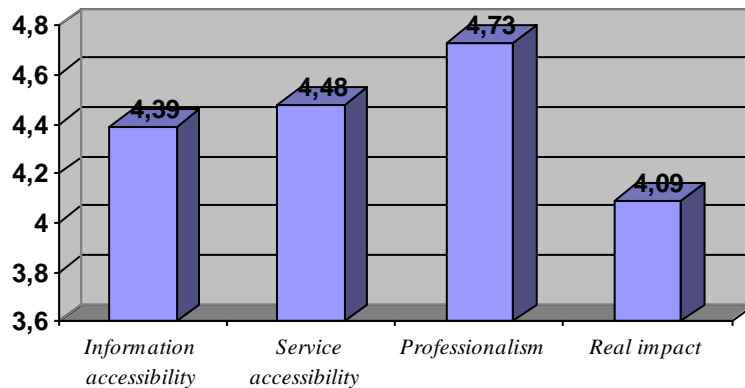
Figure 2. Subjects assessment regarding information accessibility, service accessibility, consultants' professionalism, real impact over business/professional activity

An extremely important question for this study was the one related to satisfaction acquired following the services provided within the project, and data collected reveal that most respondents, i.e. 61, are very satisfied with the services offered, they being followed by 29 satisfied individuals, while the rest stands between not very satisfied – 8 persons – and unsatisfied – 2 persons.
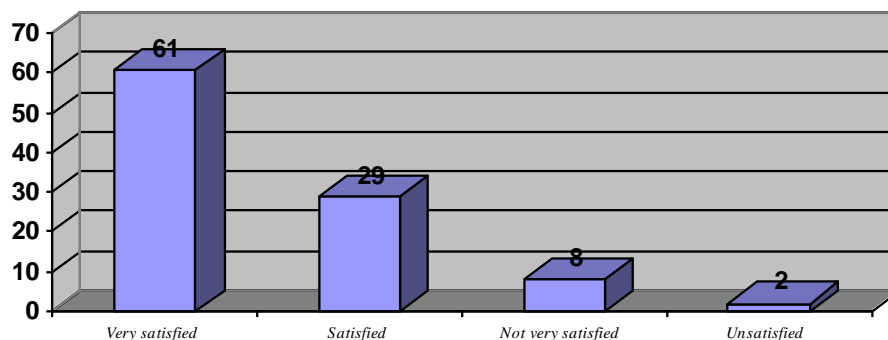
Figure 3. Satisfaction acquired following the services provided

Relevant for research topic is also the answer to question related to the decision of recommending one of the services provided within the project to friends/colleagues/business partners, question to which the module is indicated by the "YES" option. According to the answers obtained following the analysis 58% out of respondents, i.e. 58 out of the 100 interviewed, recommended the services provided within the project to friends/colleagues/business partners, while the rest of 42%, i.e. 42 persons did not recommend the project services to others.
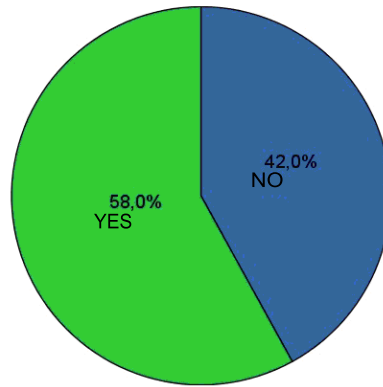
Figure 4. Recommendation regarding the services provided

This question may offer information both about the utility of services provided through the project and about the level of beneficiaries satisfaction, the reasons for which those questioned did not recommend the services provided being the fact that respondents do not know persons interested about such services (25 answers), the second reason regarding the fact that interested individuals do not make part from the target group was pointed by 9 respondents, and out of the other reasons were indicated the period too long between the service request and its provision, option chosen by 8 respondents, and, finally, the lack of responsibility of partners involved represented the reason for which the services were not recommended to other persons in case of 6 respondents.

Subjects' satisfaction is closely related also to the performance of human resource involved. Thus, subjects were asked: "How would you assess the relation of collaboration between you and project service provider?", and the answers showed a good general assessment – more than half of respondents (68%) assessing the relation as being a very good one.
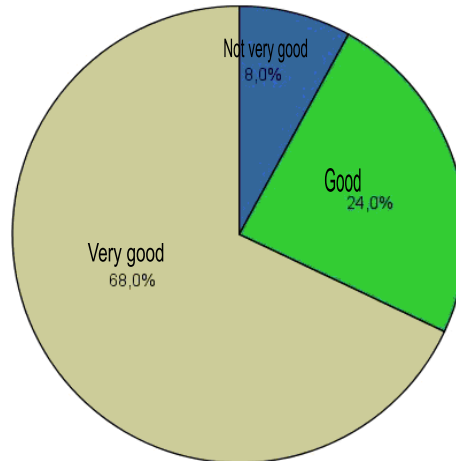
Figure 5. Relation with service providers

Beneficiaries of such project assess their participation to its activities through the knowledge/skills/ideas that could help them in developing a business. Thus, those interviewed were asked to make a series of assessments related to the extent to which the project helped them: to identify new entrepreneurial opportunities, to acquire the capacity to manage a business, project's real support in the attempt to overcome the economic crisis. For this question it was used a Likert type ordinal scale, codification of which starts from -2 – total disagreement, up to +2 – total agreement, so that the difference between the negative attitudes (codified through negative numbers) and positive attitudes (codified through positive numbers) be more evident. The neutral level has the value zero, but this does not mean the absence of the respective characteristic, not being zero absolute.
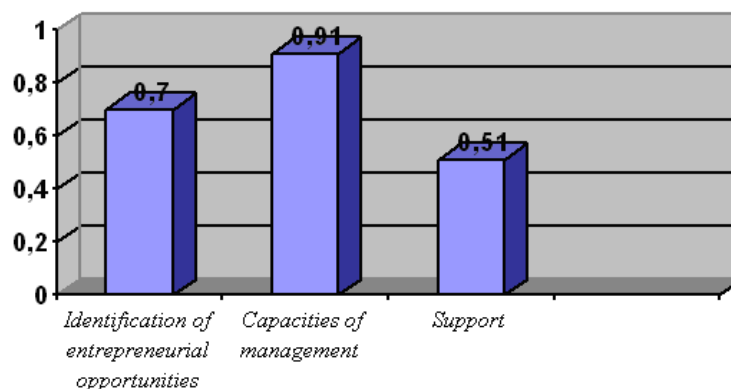
Figure 6. Utility of participation to project activities

In the case of first assertion (identification of new entrepreneurial opportunities), 36 respondents totally agreed with it, being closely followed by the option no agree, no disagree chosen by 35 respondents, 15 persons agreed with the assertion, 11 persons disagreed with it, and the rest of 3 persons totally disagreed with the assertion. The average score of 0.7 indicates the fact that respondents somehow agree with this assertion, but the agreement is quite week, being very close to the level of indifference. Most of respondents show a positive attitude towards the capacity acquired to manage a business (the second assertion), somehow agreeing with it, i.e. 37 persons out of those 100 questioned have indicated the option of answer according to which they agree that, as this project beneficiaries, they acquired the capacity to efficiently manage a business, and 32 persons have chosen the option totally agree with this assertion. The rest of attitudes are split, revealing the indifference of 23 respondents (23%) towards the assertion, and a negative attitude of the rest, 6 out of them choosing the option of answer disagree with the assertion, while 2 individuals totally disagree with this assertion, the average score resulted being 0.91 which shows the fact that respondents somehow agree with this assertion, the level of agreement not being however very high. Regarding the project's real support in the attempt to overcome the economic crisis, the average score of 0.51 indicates the fact that in this case the assessments are positive, and the level of agreement is between the level of indifference and the one of agreement.

Conclusions

Following the analysis of results obtained by questioning the subjects in relation with the satisfaction obtained following the services provided within the project, we may conclude upon the importance to maintain the target group within the project in order to get feedback in relation with the utility of facilities provided within the project and opinions and suggestions in order to improve the services provided; intensification of promotion activity through more accessible, more visible among the target audience, means of communication considering that for most of respondents, 38%, the main source of information about this project was represented by the debates with company representatives, being followed by the option discussions with friends/acquaintances, which represented the source of information for 22% out of those questioned; a better organization of service provision, especially regarding the period of time between service request and its provision; a closer collaboration with the beneficiaries.

The opinions of those interviewed represent a very valuable source of information in respect to what shall be done for improving the satisfaction of EU - financed project beneficiaries: first of all, organizing intensive promotional activities and drawing up certain packages of integrated services available at attractive rates that should keep further on the project beneficiaries as customers of respective companies, in general, and in particular a strategy could be defined in order to continue the activities initiated through projects after the termination of non-reimbursable financial support as well.

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CONSULTANCY SERVICES IN MARKETING AND MANAGEMENT - GROWTH FACTOR OF COMPETITIVENESS FOR SMALL AND MEDIUM ENTERPRISES

Ioana Bianca CHIȚU
Transilvania University of Brasov, **Romania**
ioana.chitu@unitbv.ro
Alina Simona TECĂU
Transilvania University of Brasov, **Romania**
alina_tecau@yahoo.com

Abstract:

Small and medium enterprises have played and still play a vital role in any national economy, representing an important factor of economic growth. European Union attached and still attaches a great importance to entrepreneurial spirit development and puts a considerable accent on innovative practices development for the purpose of enterprises establishment and development. Given these considerations, the paper proposes that through a qualitative marketing research, focus-group, to highlight the need for consulting services in marketing to Small and Medium Enterprises.

Keywords: Small and Medium Enterprises, European Union fund, consultancy services, entrepreneurship, competitiveness.

JEL Classification: L26, M13, M31

1. Introduction

Small and medium enterprises have played and still play a vital role in any national economy, representing an important factor of economic growth. Both in EU and the rest of the world SMEs are defined considering a series of criteria such as: number of employees and turnover / net assets. Thus, Article 2 of the annex of Recommendation 361/2003/EC stipulates that "The category of micro, small and medium-sized enterprises (SMEs) is made up of enterprises which employ fewer than 250 persons and which have a net annual turnover not exceeding 50 million euro and/or hold assets not exceeding 43 million euro in total".

The reference literature defines several categories of SMEs: micro enterprises, with less than 10 employees and an annual turnover or a registered capital not exceeding 2 million Euro, small enterprises – with 10 to 49 employees and an annual turnover or a registered capital not exceeding 10 million Euro and medium-sized enterprises with 50 to 249 employees and an annual turnover not exceeding 50 million Euro (or a registered capital not exceeding 43 million Euro).

2. Concerns of the European Union regarding Small and Medium Enterprises (SMEs)

European Union attached and still attaches a great importance to entrepreneurial spirit development and puts a considerable accent on innovative practices development for the purpose of enterprises establishment and development. The main large fields where European Union is active in supporting the SMEs are:

- improving the business environment in order to make it more "friendly" both for the existing SMEs and for all those who want to start a business (in many situations, in collaboration with the member states, the European Commission promotes "good practice" cases just to make them known so that small entrepreneurs learn from them);
- promoting the entrepreneurship – the European Commission continuously looks for new ways and methods to encourage the potential entrepreneurs to establish their own companies acting on different plans; thus, the aim is to develop an entrepreneurial culture starting even the youths, through the education regarding the entrepreneurship concepts acquired even in school, creation of certain facilities, beginning with the reduction of administrative requirements, of bureaucracy;
- developing and promoting the SMEs activities through the access to international markets.

Beside their proven importance and their essential role in the European economy, EU concern regarding SMEs is also based on a series of statistical figures and data. Thus, in the 27 EU member states there are currently 20.7 million SMEs, which represent 98% out of the total of European companies. These SMEs provide employment for more than 87 million persons (67% out of the total of EU places of work) and make 58% of the gross value added (GVA). Most of SMEs from EU are micro enterprises (92.2%).

At this moment, within the global economic context, that of passing a period of economic crisis, it is considered that SMEs have the potential to re - establish the economic growth (Antonio Tajani – European commissioner for industry and entrepreneurship). At the European Union level, the measures of national policy to support SMEs kept to develop, in 2011 the number of measures adopted was 38% more as compared to 2010, with accent put on the promotion of entrepreneurship spirit (18% out of the total of measures), promotion of competencies improvement and encouragement of SMEs innovation (16%) and improvement of financing access (15%).

The importance attached by EU to SMEs is visible even from the decision to adopt on June 28th, 2008 of "Small Business Act for Europe" (SBA), a strategic instrument which reflects the EU policy to recognize the central role of SMEs within the European economy, and for the first time the design of a comprehensive policy for SMEs in EU and member states. "Small Business Act for Europe" embeds a set of 10 principles that should guide the implementation in EU and member states of the policy related to SMEs. These 10 principles are:

- Creating an environment where small entrepreneurs can thrive and entrepreneurial spirit is rewarded;
- The right to second chance;
- "Think small first" principle;
- Public administrations shall react to SMEs needs;
- Adapting the public tools to SMEs needs, facilitating SMEs' participation in public procurement and increasing the chances for SMEs to benefit from state aid;
- Facilitating SMEs access to financing and developing a legal and business environment supportive for timely payments in commercial transactions;
- Supporting SMEs to benefit more from the opportunities offered by the single market; Promoting skills development and all forms of innovation within SMEs;
- Supporting SMEs to turn environmental challenges into opportunities;
- Encouraging and supporting SMEs to benefit from the growth of markets.
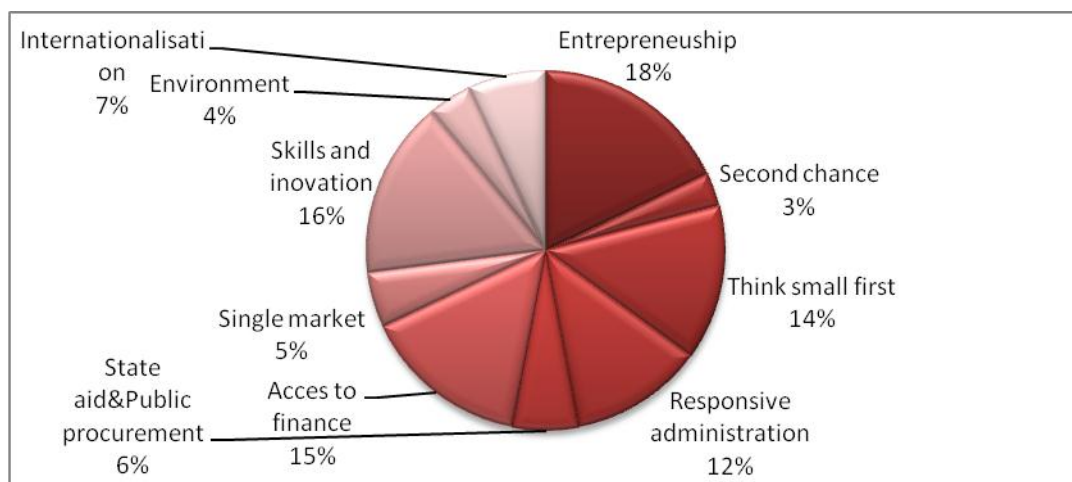
Figure 1. Distribution of policy measures across SBA principles (2011)

Source: http://www.immromania.ro/imm-urile-din-europa-la-rascruce-un-nou-impuls-politic-este-necesar-pentru-a-stimula-redresarea-6370.htm#!prettyPhoto[6370]/1/

All these measures are necessary to create a field of action favourable to SMEs form the point of view of legal and administrative environment. In the same time, "Small Business Act for Europe"

proposes a set of legislative measures both al the level of EU and at the level of member states guided after document's basic principle "Think small first" and last, but not least, a series of measures are proposed for these principles implementation and monitor.

The European Commission published the results of 2012 report regarding the analysis of SMEs performances, with the occasion of "European SME week 2012" (held in Bruxelles, October 5th – 12th), together with informative data presenting the progress registered by SMEs across all EU member states. The purpose of this reunion between member states was to present the measures provided by EU to the local, regional and national authorities, SMEs and micro enterprises; promoting the entrepreneurship and raising the number of individuals, especially youth, seriously thinking to an entrepreneurial career; recognizing the entrepreneurs contribution to welfare growth, to creation of work places, to competitiveness improvement and innovation development.

The report presented with this occasion shows that there are significant differences between the member states in respect of SMEs development. Thus, SMEs form certain countries like Germany and Austria succeeded in overcoming the levels before crisis related to both gross value added and employment, while in other countries only recovering tendencies are noted.

The European Commission definition was also imported in the Romanian law through law no. 364/July 14th, 2004, with its additions through law *175/2006*. (Chiriac 2009)

In Romania, the number of SMEs incorporated this year (2012) was 62.249, the balance between the number of new companies and that of those suspended being positive after the first 6 months (8.511 SMEs), fact which shows a positive trend as compared to previous years (decrease by 175.800 in 2010 and by 79.000 in 2009).

In Romania there is a series of institutions that take care of the SMEs issue: National Council of Small and Medium sized Private Enterprises (CNIPMM), Agency for the Implementation of Projects and Programmes for SMEs (ANIPPIMM), Territorial Offices for Small and Medium sized Enterprises and Cooperation (OTIMMC). However, the officials (Nicolescu July 2012) state that our country is among the few countries that has not implemented SBA, strategic document for SMEs development, and only now, in 2012, a law of small and medium sized enterprises is prepared.

The activity of consultancy may be defined as "a complex economic activity which represents the experts/professionals/connoisseurs actions for providing special fee-based or free of charge support to individuals or economic or nonprofit organizations in the field of enterprise functions, without power of decision and implementation, but playing an important role within their structure". (Vaduva, Fotea 2007). The need for consultancy occurs to SMEs as it occurs to large companies; SMEs need information related to the way of action in respect of management and marketing activities in order to become competitive in market.

The small enterprisers' need for consultancy results also from the conclusions of study presented in "White paper on SMEs" (Cartea Alba a IMM-urilor Nicolescu, Haiduc, Nancu, *in Romanian*), study carried out on a representative sample of 1723 SMEs. During October 2008 – March 2011, 44.44% out of SMEs participating to the study restrained their activity, 42.87% stagnated and only 12.69% registered a certain growth. Another important element of the analysis is the fact that 49.25% out of those questioned do not perform planning activities and only 8.84% draw up strategic plans covering three to five years.

3. Qualitative marketing research (focus group) about the need for consulting in marketing services for SMEs

Research context

Some of us, those who compose the civil society, prove in a certain moment of life the meaning of facing difficulties on the labour market, i.e. to become unemployed. At the end of 2012, the global number of unemployed individuals reached 200 million according to certain sources from the International Labour Organization (Guy Riders ILO), over 10.000 out of them leaving in Braşov, the city where the research representing the subject of this paper was performed. From the moment when they become unemployed, a race for a new job starts for most of people and for others a chance for a new beginning occurs as, for different reasons that we will try to highlight throughout the research, they decide to stop looking for a place of work but for a business that suits and provides them a reasonable income. Because European Union through European Social Fund, Sectoral Operational Programme For

Human Resources Development (SOPHRD) finances programmes in order to provide support for those persons facing difficulties on labour market and who want to start a business, in Braşov were also implemented a series of projects aimed to ensure a set of business consultancy services for such individuals. The concrete results of such projects financed through European Social Fund are of general interest and also information regarding the extent to which different management and marketing services were useful to small entrepreneurs or are needed in the business development part. This research aimed especially to explore the motivations, ideas, expectancies, concerns that accompanied the start of some small entrepreneurs towards the world of business.

Objectives:
- to determine the way in which subjects perceive the idea of business;
- to determine the extent to which subjects perceive financing programmes provided by the European Union as a support for their business;
- to identify the reasons or the needs that determined the subjects to start their own businesses;
- to determine the specific needs in the field of marketing and management consultancy had by the small entrepreneur when starting a business;
- to identify the entities, organizations, means that could provide support for small entrepreneurs;
- to determine the level of optimism of subjects regarding the way in which the business they conduct will evolve during the period to come;
- to determine the extent to which subjects consider that small entrepreneur needs support at the beginning;
- to identify the entities that could provide support for small entrepreneurs;
- to identify those marketing and management services necessary for small entrepreneurs for their business development.

Considerations regarding the research methodology

Because the objectives of this research aimed to determine certain aspects related to motivations, motives and attitudes that could not be communicated through simple answers within present closed scales, a focus group qualitative research has been carried out consisting in ample discussions with two relatively homogenous groups composed of 18 persons who, being in the position of an individual looking for a place of work, started this year their own business. The first focus group, which 10 persons took part to, was carried out on October 17th, 2012, and the second, which 8 persons took part to, in October 22nd, 2012. Both were organized in Brasov, between 16:30 – 18:30 hours, in a room complying with the requirements for performing such a type of research. The focus group moderation has been carried out by a qualified person who conducted the semi-structured discussions as to get the target information, but without influencing the participants' positions by expressing personal value judgments or other imposed by the beneficiary. The discussions were also assisted by a co-moderator. The moderators succeeded in creating a framework that stimulates the group's emergence of ideas, each participant having the possibility to express and develop his own position, favourable or contrary to other expressed opinions. Participants to interviews were previously informed about the topic and it was intended that they have common characteristics in order to form a relatively homogenous group. Moreover, the aim was to get together individuals without knowing each other or at least without permanent contact and without taking part to a similar discussion in the last six months.

The *research limits* are those imposed by the chosen method. Like all qualitative method approaches, this research does not ensure the conclusion generalization from a statistical point of view as it researches theoretical samples built so as to provide a selection of subjects depending on their level of representativeness for the consolidation of theoretical information acquired during the activity of information, analysis and research. The synthesis of information obtained within the two focus groups will be presented further on, as well as the general conclusions of the qualitative study. Complying with the professional deontology, the conclusions will not be drawn as value judgments, but maintaining the position of the impartial researcher who transposes concrete information obtained through scientific methods into abstract conclusions.

4. Research data analysis and conclusions

After the participants' presentation and the initial discussions launched to make the introduction to the research topic, in order to identify the way in which subjects perceive the idea of new business,

within this research it was used the technique of word spontaneous association. In this respect, subjects were asked to mention the first word or expression that came to their minds when they heard the notions of "entrepreneur" and "new business". The answers analysis revealed the fact that, although the image associated with the entrepreneur and new business was, in general, a positive one, the presence of some concerns, fears towards such a beginning was felt. Subjects consider the potential entrepreneurs as people with strong personality, full of energy, who can easily adapt to new situations, intuitive and open-minded, individuals motivated by success and willing to invest both time and money in order to achieve their objectives. The notion of "entrepreneur" was most frequently associated with the following words: own business, success, courage, decisions, business plan, and "new business" expression was associated with the following words: courage - intuition, a new beginning.

The technique of word spontaneous association was also used for determining the way in which subjects perceive financing programmes provided by the European Union through words "European Union", "Financing programmes" and SOPHRD (Sectoral Operational Programme For Human Resources Development). Thus, focus group participants associated "European Union" with: occident, funds, support, new opportunities, collaboration, crisis; focus group participants associated "Financing programmes" with: help, money, solutions, eligibility, work/energy, and "SOPHRD" was associated with: chance, for people and training. At the end of exercise, participants were stimulated to try an explanation for their answers. Interpreting the results, we may state that the participants to these debates find European Union a support for development with the aid of financial resources made available for entrepreneurs through structural funds. In the same time, they note difficulties and financial blockages from the European Union faced by the entrepreneurs existing on the Romanian market within the current context of economic crisis. These aspects/facts determine subjects to become reserved as related to their actual chances to obtain financial support from the European Union for their businesses.

In order to identify the reasons or the needs that determined the subjects to start their own businesses it was used the technique of story continuation. It has been concluded that persons who in a certain moment of life face difficulties on the labour market identify the opportunity to become entrepreneurs as a new beginning, with much more chances of success than the possibility to be simple employees. Among the reasons that determined them to decide to start a business we noticed: wish to be their own boss, wish to be independent, disappointments related to previous jobs, hope to be able to select their own collaborators, to have the opportunity to put in practice their ideas, to have a place of work. As a leitmotiv, it thrillingly and repeatedly appeared the idea according to which subjects decided to become entrepreneurs because they did not have any other solution. The fear of rejection at job interviews on reasons of advanced age or lack of professional expertise in case of youths transform a state that should have been temporary into a no-way-out situation. The discussion reached very high emotional dimensions when one of the participants stated: "After around 100 interviews I said to myself: Why am I trying to convince other people that I'm intelligent, full of energy and skilful in order to get a job or another despite the age that some consider too advanced? Then I made an irreversible decision that I should stop looking for a job but an opportunity to start a business. From that moment the only person I had to prove something was me." (This participant is currently one of the two associates within a construction company which currently has 6 employees. Later on, within the same debate, he declared: In order to employ 6 people I held 50 interviews. The only criteria that we were interested in were candidates' skills and professionalism. We wanted to have the best people, no matter their age, years of service or ethnicity.)

In order to emphasize subjects feelings towards their business, it was used the technique of Chinese portrait through the business association with a colour, animal and personality.

The business specificity influenced the subjects associations. Regarding the first type of association, we notice the occurrence of warm colours, colours of hope: red, pink, yellow, orange, green that make the link with nature, but also grey and brown that signal the wish for stability, need for roots and membership, insecurity or the fact of being in a situation difficult to manage, powerful need for getting over an unpleasant situation which causes extreme discomfort both physically and emotionally.

The association with an animal brought forward the sensation of protection which participants feel as a result of their business existence. Business is most often associated with a dog, man's oldest and most loyal friend. There are also mentioned animals like cat and canary, close to man but with needs for care, love and caress.

Regarding the association with a personality, we notice that in only few cases the associations were made to show power, security, durability (associations with personalities such as Leonardo da Vinci or Ion Țiriac). The most of associations reveal the fact that business is perceived as a beautiful, bold, successful person but who always wants to be the others' center of attention and concern (Madonna, Mihaela Rădulescu, Angelina Jolie, Demi Moore, Monica Bellucci, Jennifer Lopez, etc.)

Another aspect analysed was the image over the subject business future. They were asked to tell in meteorological terms what will happen to the company in the next 6 months, and with the technique of filling in phrases emphasizing certain aspects related to business evolution during a period of 3 to 5 years was thus possible. From the weather forecast we conclude that participants know their business very well. When they think of the future, they consider aspects such as seasonality or potential favourable contexts generated by culture or habits of acquisition around holidays.

In order to identify the difficulties they faced when started their business, but also the specific needs of small enterprisers and in order to emphasize the entities that could support them, the moderator conducted free discussions through specific questions.

Thus, from the free discussions, the following main ideas were extracted:

Among difficulties faced by small enterprisers in starting their business we mention: precarious knowledge about applicable laws, commercial law, but also marketing tools that could be used in order to create a good business image, difficulties caused by banks and potential partners lack of trust in small, new companies. For instance, it was underlined the fact that leasing acquisition of devices is impossible without a history on the market. There were also mentioned the extremely few financing possibilities, including European Union financing programmes, excessive taxation, the feeling that small enterpriser is chased for possible breaches and regarded by authorities as a criminal.

Thus, following the analysis, we may conclude that the main problems are caused by the poor system and bureaucracy existent in our country, which instead of stimulating the initiatives to start an own business, they demoralize those who want to become entrepreneurs right from the very beginning.

According to participants opinions, an ideal situation would be represented by an European Union financed project that provides consultancy regarding business start (support in choosing the right CAEN code for the activity they wish to perform, intermediation in the process of obtaining the company name, the certificate of fiscal record, documentation check, fiscal consultancy for company incorporation, drawing up estimations regarding company's incomes and costs); financial and accounting consultancy services and an accounting program adapted to small companies and registered sole traders; designing and hosting a website for business promotion, including web promotion services (on search engines such as Google and launching a promotion campaign on the Internet), marketing consultancy (set of market studies – focus groups organization for beneficiaries, customer satisfaction surveys, consultancy for drawing up business plans and documentation in order to obtain financing, beneficiaries information about special exhibitions), legal consultancy regarding agreement drawing up procedure (collaboration agreement, commission agreement, employment agreement, etc.), support when negotiating agreements with potential collaborators, support for acquisitions when needed, and access to a package of laws (with periodical information regarding the legal effective changes), a full package of promotion services for those who want to start their own business (drawing up a promotion plan: website, catalogues, posters, flyers, etc. and recommendations regarding their distribution).

It was also mentioned the need of drawing up an "Entrepreneur's guide from A to Z" which should contain the steps to be followed when starting a new business (necessary documents, to what institutions they shall be submitted, taxes and authorizations that need to be paid for each case and where, definitions for new terms, etc.); possibility to have internships near experienced managers in the field of the new business; possibility to contact specialists for a periodical analysis which should provide entrepreneurs with a general view over the new company (strengths, weaknesses, opportunities and threats identification and analysis), periodical focus group meetings with small entrepreneurs in order to share expertise.

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INTRADAY PRICE DISCOVERY IN EMERGING EQUITY MARKET: ANALYSIS OF SET50 INDEX, SET50 INDEX FUTURES AND THAIDEX SET50 (TDEX)

Chiraphol N. CHIYACHANTANA
Western University, **Thailand**
chiraphol@gmail.com
Julaluck CHOOCHUAY
Chulalongkorn University, **Thailand**
julaluck.choochuay@gmail.com
Tanakorn LIKITAPIWAT*
Chulalongkorn University, **Thailand**
tanakorn@cbs.chula.ac.th
*Corresponding author

Abstract

This study employs Vector Error Correction Model (VECM), information share and conditional information share methods to investigate price discovery in SET50 Index (cash index), SET50 Index Futures (futures index) and ThaiDex SET50 (exchange traded fund). Our findings indicate that there exists a long run relationship among three markets and a multi-market trading of derivatives markets and its underlying asset helps improve price efficiency. With respect to the degree of price formation process, SET50 Index Futures contributes most in price discovery process, followed by SET50 Index and ThaiDex SET50.

Keywords: Price discovery; cointegration; common factor; error correction model; Information share; conditional information share.

JEL Classification: G3, G5, G14

1. Introduction

Price discovery is a central function of the efficient financial markets. It serves as a crucial tool in driving price toward equilibrium by increasing the speed of price adjustment to fundamental value. Prior research suggests that multi-market trading of similar underlying asset and its derivatives improve price discovery by reducing the variability of the underlying asset. In frictionless market, prices can reach the equilibrium by simultaneously impounding new information into the asset price. In reality, however, the presence of market frictions such as illiquidity, transaction costs and market restrictions impedes the process of price formation which results in delay of price adjustment or mispricing.

In this paper, we examine the joint dynamic of price discovery process in SET50 Index (*cash index*), SET50 Index Futures (*futures index*) and ThaiDex SET50 (*exchange traded fund*) using high frequency intraday data from the Stock Exchange of Thailand. We examine whether (i) there is the long run relationship between SET50 Index Futures, ThaiDex SET50 and SET50 Index, (ii) the introduction of ThaiDex SET50 contributes to price efficiency of index markets, (iii) SET50 Index Futures and ThaiDex SET50 have the critical role in the production of efficient price. We adopt Vector Error Correction Model (VECM) to test the lead lag relationship, information share model of Hasbrouck (1995), and conditional information share of Grammig, Melvin, and Schlag (2005) to examine the extent to which derivative markets contribute to price discovery.

2. Literature Review
2.1 Futures and price discovery

Prior research on price discovery between the futures market and the cash market suggests that price transmission moves from futures market to cash market since derivatives provide greater liquidity, higher leverage, less restriction, and lower transaction cost. Using an autoregressive moving average (AR) model, Stoll, and Whaley (1990) analyse returns over five minute intervals for the S&P500 index and MMI index futures. They show that return of S&P 500 index and MMI index futures lead cash market. Using twenty shares in MMI index and underlying asset, Chan (1992) shows that futures return leads cash return by up to fifteen minutes. Tse (1999) examine the price discovery between the Dow Jones Industrial Average (DJIA) and DJIA futures from the Chicago Board of Trade (CBOT). He finds

the evidence to support the notion that large portion of price discovery occurs in the futures market and information tends to flow from futures to cash market. Similar findings are reported for the international markets, Abhyankar (1998) employs AR and EGARCH model and show that FTSE 100 index futures leads underlying index by five to fifteen minutes in London market. Min, and Najand (1999) employ Granger causality approach to investigate the lead-lag relationship in returns between cash and futures markets in Korea. Consistent with the studies in U.S. and London markets, futures market leads the cash market by as long as 30 minutes. Similarly, Zhong, Darrat, and Otero (2004) examine the short-run dynamic between the futures market and stock market in Mexico and document evidence that the futures market helps improve price discovery of underlying assets in the cash market.

2.2. Exchanged trade funds (ETFs) and price discovery

Much of prior research has concluded that exchange trade funds have crucial effect on price discovery. Using information share to analyse the intraday price formation of the S&P500 index and Nasdaq100 index, Hasbrouck (2003) shows us that ETFs play an important role in the price discovery process. Specifically, the electronically traded mini futures (E-minis) contribute the most to price discovery, second in ETFs and the least in cash index. Tse, Bandyopadhyay, and Shen (2006) investigate DJIA index price formation by comparing floor based exchange to electronic exchange using information share model. They suggests that informed traders tend to use electronic trading market rather than floor trading and price discovery from ETFs should be greater than that documented in Hasbrouck (2003). Specifically, E-minis still contribute the most to the price discovery but the contribution of ETFs is much higher than previously documented. Chu, Hsieh, and Tse (1999) finds that the introduction of ETFs improves the price formation efficiency of underlying securities and those index futures still have the most significant effect on the price discovery process on a daily basis, followed by ETF (SPDR) and the spot index. Yu (2011) documents that an ETF plays an important role in price discovery of the underlying stocks. Using the decompositions of the variance of efficient price innovations, he shows that the returns innovations of SPDR, the most liquid ETF in the U.S., have a substantial contribution to the stock's return innovation.

3. Data and Methodology
3.1. Data

We obtain the intraday quoted price for SET50 Index and traded prices of SET50 Index Futures and ThaiDex SET50 (TDEX hereafter, TDEX) during July 4th, 2011 to March 30th, 2012 from Bloomberg. *SET50 Index* represents the overall market performance and is computed from the top 50 largest and most liquid stocks in Stock Exchange of Thailand. *SET50 Index Futures* were introduced in 2006 as the first derivative instrument in the Thailand. Currently the SET50 Index Futures is the most popular product traded on Thailand Futures Exchange (TFEX) with the total trading volume of approximately 50% of total derivative market. There are four series of SET50 Index Futures with the maturity in March, June, September and December. In order to avoid illiquidity problem, we use futures contracts with nearest maturity to investigate the price discovery since it refers to the most active contract with highest liquidity and trading volume. *ThaiDex SET50 (TDEX)* is exchange traded fund which tracks performance of SET50 Index. It maintains the tracking error of less than 1.0% per year. The special characteristics of ETF are the combination between diversification of open-mutual and liquidity of stock.

Table 1 presents the descriptive statistics of the SET50 Index, SET50 Index Futures and ThaiDex SET50 from July 4th, 2011 to March 30th, 2012. Panel A reports the nature of price by providing the maximum, minimum and average of trading price. The price of TDEX needs to be multiplied by 100 in order to make it comparable to other markets. There are four series of futures with different maturity dates and contract multiplier is 1000 THB per index point. Panel B reports daily trading value of the sample during the study period. Trading value of futures is calculated from contract size multiply by contract value. Unlike ETFs in developed markets, the volume traded of ThaiDex SET50 of SET50 Index is relatively small compared to futures index.

Table 1. Descriptive statistics of the SET50 Index, TDEX and SET50 Index Futures

Descriptive statistics			
Panel A: Prices			
Price series	Trading Price (Baht)		
	Max	Min	Average
SET50 Index	852.25	592.57	738.28
TDEX	8.63	5.95	7.43
SET50 Index Futures (September)	802.5	628.3	738.96
SET50 Index Futures (December)	737.3	587.6	681.15
SET50 Index Futures (March)	853.8	709.3	782.67
Panel B: Trade values			
Price series	Trading Value (Million Baht)		
	Max	Min	Average
SET50 Index	49915.53	4434.51	19963.52
TDEX	109	0.85	9.9
SET50 Index Futures (September)	23663.1	2830.67	12691.56
SET50 Index Futures (December)	25849.93	3311	13010
SET50 Index Futures (March)	15911.66	3096.43	9432.06

3.2. Methodology

In our empirical test of price formation process of SET50 Index, SET50 Index Futures and ThaiDex SET50, we adopt three commonly used approaches; Vector Error Correction Model (VECM), information share, and conditional information share model. VECM determines a speed of price adjustment and price discovery. Although the coefficient in error correction term may appear to show that a market has dominant role in price discovery, it does not explicitly implies the dynamic price discovery or how market behaves to the changing of its innovation or other market's innovation. Therefore, we employ information share (IS) of Hasbrouck (1995) and conditional information share of Grammig *et al.* (2005) to provide more insight on dynamic price discovery.

3.2.1 Vector error correction model (VECM)

In general, the price discovery measurement begins with the vector error correction model (VECM). Following Engle and Granger (1987), the cointegration of price series can be shown as:

$$\Delta p_t = \gamma z_{t-1} + \sum_{j=1}^{k} A_j \Delta p_{t-j} + e_t \tag{1}$$

where $\Delta p_t = \begin{bmatrix} p_{1,t} - p_{1,t-1} \\ p_{2,t} - p_{2,t-1} \end{bmatrix}$, the error correction term, $z_{t-1} = p_{1,t-1} - \beta_t\, p_{2,t-1}$ and e_t is a vector of serially uncorrelated residuals that have covariance matrix Ω,

$$\Omega = \begin{bmatrix} \sigma_1^2 & \rho\sigma_1\sigma_2 \\ \rho\sigma_1\sigma_2 & \sigma_2^2 \end{bmatrix} \tag{2}$$

while $\beta = [1, -1]$ is the cointegration vectors and γ is error correction vector that should be non-zero to indicate the adjustment of long-run equilibrium from the error occurring in the short-run.

VECM relies on the assumption that underlying assets and their derivatives have a common trend or their prices are cointegrated. The characteristics of the error correction terms for all three logarithms of price series can be specified by using VECM:

$$\Delta F_t = \delta_F + \gamma_F Z_{t-1} + \sum_{i=1}^{l} a_{Ft-i}\Delta F_{t-i} + \sum_{i=1}^{l} a_{Et-i}\Delta E_{t-i} + \sum_{i=1}^{l} a_{St-i}\Delta S_{t-i} + \varepsilon_{F,t} \tag{3}$$

$$\Delta E_t = \delta_E + \gamma_E Z_{t-1} + \sum_{i=1}^{l} a_{Ft-i}\Delta F_{t-i} + \sum_{i=1}^{l} a_{Et-i}\Delta E_{t-i} + \sum_{i=1}^{l} a_{St-i}\Delta S_{t-i} + \varepsilon_{E,t} \tag{4}$$

$$\Delta S_t = \delta_S + \gamma_S Z_{t-1} + \sum_{i=1}^{l} a_{Ft-i}\Delta F_{t-i} + \sum_{i=1}^{l} a_{Et-i}\Delta E_{t-i} + \sum_{i=1}^{l} a_{St-i}\Delta S_{t-i} + \varepsilon_{S,t} \tag{5}$$

$$Z_{t-1} = F_{t-1} - \beta_{1t-1} E_{t-1} - \beta_{2t-1} S_{t-1} \tag{6}$$

where $\Delta F_t, \Delta E_t, \Delta S_t$ are the natural logarithm of return for SET50 Index Futures, TDEX and SET50 Index at time *t*, respectively. Z_{t-1} is the error correction term which measures the differences in prices of three securities in the previous period. *l* is the optimum number of lags. δ is *(3×1)* constant vector. β = [1 -1 -1] is cointegrating vector and $\gamma = [\gamma_F \ \gamma_E \ \gamma_S]$ is a coefficient matrix for the error correction terms measuring the adjustment process of each market toward the long-run equilibrium. a is the coefficient matrix of the lag difference terms that measures dynamic price adjustment among three markets. ε_t is *(3×1)* column vector of white Gaussian noises with zero mean and finite variance.

VECM determines price discovery from the coefficients matrix of the error correction terms (γ) and the coefficient matrix of price adjustment (a)[5]. Regarding to the Granger representation theorem, the sum of absolute value of all error correction coefficients (γ) must be greater than zero and at least one of them must be statistically significant to confirm that prices respond to the error deviation from the long-run equilibrium of previous period. The magnitude of coefficient in error correction term refers to the speed of price adjustment and price discovery. The small absolute value of coefficient (γ) implies that market dominates in price discovery while the high absolute value shows that market is strongly adjusting its price to long run equilibrium. The coefficients of price adjustment (a) and error correction terms (γ) capture the relationship of those markets which can be either bidirectional or lead-lag relationship.

3.2.2. Information share (Hasbrouck 1995)

The information share is used to examine the contribution of each market to price discovery. It suggests that those price series are cointegrated since they share a common component of their price innovations. The information share is estimated as the proportion of efficient price innovations that contribute to price discovery. This approach bases on VECM equation and transform to vector moving average (VMA):

$$\Delta p_t = \Psi(L)\varepsilon_t = \varepsilon_t + \psi_1\varepsilon_{t-1} + \psi_2\varepsilon_{t-2} + \ldots \tag{7}$$

Integrated form:

$$\Delta p_t = i\psi\left(\sum_{\tau=1}^{t}\varepsilon_\tau\right) + \Psi^*(L)\varepsilon_t \tag{8}$$

From the equation, $\psi\varepsilon_\tau$ is the permanent component of common price change impounded into the price due to new information. The first term of the right-hand side is the random walk component that is common to all prices or efficient price. Even though the efficient price is not observable without further identification restrictions, its innovations have the property of linear in the disturbances. Ψ^* is a matrix polynomial in the lag operator while $\Psi^*(L)\varepsilon_t$ is the transitory component with zero-mean and stationary covariance. *i* is a column vector of ones, ψ is a common row vector of $\Psi(1)$ in which its element can be computed by using impulse response functions.

$$\Psi(1)\varepsilon_t = \begin{bmatrix} \psi_{11} & \psi_{12} & \psi_{13} \\ \psi_{21} & \psi_{22} & \psi_{23} \\ \psi_{31} & \psi_{32} & \psi_{33} \end{bmatrix} \begin{bmatrix} \varepsilon_t^F \\ \varepsilon_t^E \\ \varepsilon_t^S \end{bmatrix} \tag{9}$$

where ψ_{ij} are the element in $\Psi(1)$. Each of these terms represents the permanent impact of innovation from a particular market which have been impound into the price. In other words, ψ_{ij} is the long run impact of one unit innovation in market *j* on price series *i*. Since the underlying assumption of information share states that the rows of coefficient matrix $\Psi(1)$ and innovations may be identical, it implies that those markets show the same efficient price. Thus, it is sufficient to consider only one price or one row of coefficient matrix.

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[5] Kitov, Kitov, and Dolinskaya (2009) adopt VECM to examine evolution of real GDP per capita in the United States. They report that the deviations of real economic growth in the US from the growth trend, as defined by constant annual increment of real per capita GDP, are driven by the fluctuations around the growth trend.

$$\Omega = \begin{bmatrix} \sigma^2{}_F & 0 & 0 \\ 0 & \sigma^2{}_E & 0 \\ 0 & 0 & \sigma^2{}_S \end{bmatrix}$$ (10)

If the innovation covariance matrix is diagonal, the decomposition of long run variance used to compute the innovation is shown in the following.

$$var(\psi\varepsilon_t) = \psi\Omega\psi' = \psi_{11}^2\sigma^2{}_F + \psi_{22}^2\sigma^2{}_E + \psi_{33}^2\sigma^2{}_S$$ (11)

Information share of each market is the proportion of variance of its common factor's innovations to the total common factor's variance.

$$IS_j = \frac{\psi^2{}_j\Omega_{jj}}{\psi\Omega\psi'}$$ (12)

However, the price innovations are generally correlated across multi-market trading so the matrix of innovation covariance is not diagonal. Thus, this method is too restrictive to measure the price discovery. Baillie *et al.* (2002) argue that by performing a Cholesky decomposition of $\Omega = MM'$ to lower bound and upper bound, the correlation between the innovations can be eliminated. That is, if the price innovations are correlated (i.e. $\sigma_{ij} \neq 0$ for $i \neq j$), triangularization of the covariance matrix may be used to establish upper and lower bounds.

$$\Omega = MM' = \begin{bmatrix} m_{11} & 0 & 0 \\ m_{21} & m_{22} & 0 \\ m_{31} & m_{32} & m_{33} \end{bmatrix}\begin{bmatrix} m_{11} & m_{12} & m_{13} \\ 0 & m_{22} & m_{23} \\ 0 & 0 & m_{33} \end{bmatrix}$$ (13)

The information share of the market can be present as:

$$IS_j = \frac{([\psi M]_j)^2}{\psi\Omega\psi'}$$ (14)

The variance attributed to a particular market is $([\psi M]_j)^2$ and $[\psi M]_j$ is the jth element of the row matrix ψM. The information share of each market is normalized between 0 and 1, and their sum is equal to 1. Besides, the variance decomposition depends on the variable ordering because it provides the upper (lower) bound of information share with series being the first (last) series. Therefore, we need to permute all possible orderings and the average value should be used to determine information share of each market.

3.2.3. Conditional information share (Grammig *et al.* 2005)

Grammig *et al.* (2005) argue that the rows of $\Psi(1)$ for three price series with one cointegration may not be identical and only one row of $\Psi(1)$ may not be sufficient to compute the information share of each market as in Hasbrouck (1995) model. They suggest alternative approach to obtain conditional information share for each market by decomposing each of the variances to the contributions of each market. The conditional information share of market k with respect to the shock in market j can be computed as;

$$CIS_{jk} = \frac{([\Psi(1)M]_{jk})^2}{(\Psi(1)\Omega\Psi(1)')_{jj}}$$ (15)

Since the result of this approach relies on the Cholesky factorization of innovation variances, it should permute across possible orderings of variables and use the average value to determine conditional information share of each market.

4. Empirical result
4.1. Univariate unit root test

In Panel A and B of Table 2, we examine the stationary of the log prices using ADF method and the cointegration of price series using Johansen's cointegration test (1988). The result indicates that we cannot reject the presence of a unit root for all of the log price series at 1% significance level, therefore, the first difference or the return of SET50 Index Futures, SET50 Index and TDEX is used instead. Besides, there are at least two cointegration ranks among these price series and the cointegrating equation shows that β values of TDEX and SET50 Index are statistically significant which implies that there are long run relationships in these three markets.

Table 2. Test results of stationary and cointegration of sample price series

Test results of stationary and cointegration			
Panel A. Unit root test			
Log price series	Test statistic	Critical value (1%)	
SET50 Index Futures	-0.921	-3.43	
TDEX	-0.56	-3.43	
SET50 Index	-0.737	-3.43	
Panel B. Cointegration rank			
Cointegration rank			
Maximum rank	Trace statistic	Critical Value (5%)	
0	75.8875	29.68	
1	35.0116	15.41	
2	0.8770*	3.76	
Cointegrating Equation			
Estimate β Value	SET50 Index Futures	TDEX	SET50 Index
β Value	1	-.3422**	-.6962**
		-0.1226	-0.1283

Note: "*" by trace statistic of cointegration rank indicates there are two or fewer cointegrating equitions with a 5% significance level. "**" indicates significantly different from zero at 5% significance level.

4.2. Price discovery: VECM estimation

We employ VECM estimation to investigate price discovery of pair markets; SET50 Index Futures versus SET50 Index, SET50 Index Futures versus TDEX and TDEX versus SET50 Index.

Panel A of Table 3 presents the VECM estimation of SET50 Index Futures and SET50 Index returns. The results indicate that the coefficients in error correction terms of SET50 Index Futures and SET50 Index returns are statistically significant, and thus two markets respond and adjust to long run equilibrium. The sign of error correction term can be interpreted as follows. If the equilibrium error between SET50 Index Futures and SET50 Index prices is positive (negative), SET50 Index Futures price will decrease (increase) and SET50 Index price will increase (decrease) to meet the equilibrium price. The speed of price adjustment can be calculated by taking 1 over the absolute value of coefficient in error correction term. Based on five minutes time interval, the speed of price adjustment of SET50 Index Futures to long run equilibrium is 100 periods (500 minutes), and SET50 Index is 125 periods (625 minutes). Furthermore, SET50 Index Futures return dominates in price discovery process since all lags of SET50 Index Futures return are able to explain SET50 Index return but only several lags of SET50 Index return can predict the return of SET50 Index Futures.

Panel B shows the relationship of SET50 Index Futures and TDEX returns. SET50 Index Futures return does not react to the equilibrium error, whereas TDEX return does by increasing (decreasing) its price when the error of long run equilibrium between SET50 Index Futures and TDEX prices is positive (negative). The speed of price adjustment to equilibrium of TDEX is 100 periods (500 minutes). Considering the dynamic of price adjustment, SET50 Index Futures return dominates in price discovery since all lags significantly explain the return of TDEX but only the first lag of TDEX return can explain the return of SET50 Index Futures.

Panel C shows us that only TDEX return reacts to the equilibrium error. With the negative sign of error correction term, TDEX decreases (increases) its price when long run equilibrium error between TDEX and SET50 Index prices is positive (negative). The speed adjustment to equilibrium of TDEX is

77 periods (385 minutes). SET50 Index return dominates in price discovery since its all lags have power to explain the return of TDEX but only some lags of TDEX return can predict return of SET50 Index. Overall, our findings indicate that SET50 Index Futures has a dominant role in price discovery, followed by SET50 Index and TDEX contributes the least to price discovery.

4.3. Price discovery: information share

Table 4 presents the coefficients of moving average, $\Psi(1)$, residual correlation matrix and information shares per market. Panel A reports the results between SET50 Index Futures and SET50 Index. SET50 Index Futures shock has a larger long-run impact on itself and SET50 Index than the shock from SET50 Index. There exists the significant correlation of innovation variances. On average, SET50 Index Futures has a major contribution on price discovery accounting for 59.89% of information share, while SET50 Index takes a minor role in price discovery of approximately 40.11%. Panel B replaces SET50 Index with TDEX to investigate the relationship between futures market and ETF market. SET50 Index Futures dominates in permanent effect for both markets with residual correlation of 0.4628. Moreover, SET50 Index Futures accounts for 80% of information share while TDEX accounts for approximately 20%. Panel C reports the relationship between TDEX and SET50 Index, the permanent effect of TDEX and SET50 Index is very similar with the residual correlation significantly exists at the value of 0.5292. The average information shares of TDEX and SET50 Index are 41.26% and 58.74%, respectively. SET50 Index dominates in price discovery process with higher degree in information share. Overall, our findings are consistent with the general consensus in that futures market contributes more to price discovery process than cash market and ETF market.

4.4. Price discovery: conditional information share

Table 5 presents the conditional information shares of three markets. Panel A shows the permanent effect of innovations from SET50 Index Futures, TDEX and SET50 Index. There are the strong correlations between markets, especially in SET50 Index Futures and SET50 Index with the value of 0.8289. Panel B presents the average conditional information shares. SET50 Index Futures has the most contribution to price discovery since it accounts for 50% of information share while SET50 Index and TDEX contribute approximately 35% and 10%, respectively. Panel C shows the upper and lower bounds of information shares. After permuting all orderings of variables in the Cholesky decomposition, the results demonstrate that the bounds of information shares for both upper and lower bounds of each market are not sensitive to the alternative orderings of variables. The results from the conditional information share reemphasis the important roles of futures, exchange traded funds and cash market index in price discovery process.

Table 3. Test results of VECM for SET50 Index, SET50 Index Futures and TDEX

Panel A : VECM estimation of SET50 Index Futures and SET50 Index				Panel B: VECM estimation of SET50 Index Futures and TDEX					Panel C: VECM estimation of TDEX and SET50 Index				
	Coef.	Std. Err.	Coef.	Std. Err.		Coef.	Std. Err.	Coef.	Std. Err.		Coef	Std.Err.	Coef.	Std.Err.
Z_{t-1}	-0.010**	0.005	0.008**	0.004	Z_{t-1}	-0.006	0.004	0.010**	0.003	Z_{t-1}	-0.013**	0.003	0.001	0.003
L1.	0.001	0.018	0.317**	0.015	L1.	0.017	0.011	0.422**	0.009	L1.	-0.321**	0.012	0.003	0.013
L2.	0.014	0.019	0.180**	0.016	L2.	-0.030**	0.013	0.246**	0.010	L2.	-0.191**	0.012	0.039**	0.014
L3.	0.073**	0.019	0.147**	0.016	L3.	-0.003**	0.014	0.180**	0.010	L3.	-0.153**	0.013	0.039**	0.014
L4.	0.049**	0.019	0.117**	0.016	L4.	0.013	0.014	0.178**	0.010	L4.	-0.134**	0.013	0.034**	0.014
L5.	0.042**	0.019	0.087**	0.016	L5.	0.030**	0.014	0.147**	0.011	L5.	-0.099**	0.013	0.036**	0.014
L6.	0.102**	0.019	0.091**	0.016	L6.	0.060**	0.014	0.112**	0.011	L6.	-0.096**	0.013	0.023	0.014
L7.	0.030	0.019	0.058**	0.016	L7.	0.012	0.014	0.102**	0.011	L7.	-0.083**	0.013	0.042**	0.014
L8.	0.048**	0.018	0.062**	0.015	L8.	0.012	0.014	0.091**	0.011	L8.	-0.065**	0.013	0.021	0.014
ΔS_t					ΔE_t					ΔS_t				
L1.	0.002	0.021	-0.230**	0.018	L1.	-0.032**	0.015	-0.311**	0.011	L1.	0.513**	0.011	0.099**	0.012
L2.	-0.084**	0.022	-0.224**	0.018	L2.	-0.004	0.016	-0.210**	0.012	L2.	0.220**	0.012	-0.080**	0.013
L3.	-0.095**	0.022	-0.191**	0.018	L3.	0.001	0.016	-0.180**	0.012	L3.	0.159**	0.012	-0.082**	0.014
L4.	-0.031	0.022	-0.111**	0.018	L4.	0.004	0.016	-0.164**	0.012	L4.	0.181**	0.013	-0.021	0.014
L5.	-0.013	0.022	-0.092**	0.018	L5.	-0.007	0.016	-0.129**	0.012	L5.	0.118**	0.013	-0.031**	0.014
L6.	-0.074**	0.022	-0.089**	0.018	L6.	-0.025	0.016	-0.113**	0.012	L6.	0.121**	0.013	-0.012	0.014
L7.	-0.014	0.021	-0.038**	0.018	L7.	0.016	0.016	-0.099**	0.012	L7.	0.108**	0.013	-0.002	0.014
L8.	-0.047**	0.020	-0.053**	0.016	L8.	-0.003	0.016	-0.079**	0.012	L8.	0.073**	0.013	-0.023	0.014

Note: "**" indicates significantly different from zero at 5% significance level.

Table 4. Test results of information shares for SET50 Index, SET50 Index Futures and TDEX

Panel B: Price discovery in SET50 Index Futures and TDEX

Vector moving average coefficients, Ψ(1)

	SET50 Index Futures Shock	TDEX Shock
SET50 Index Futures	0.0021	0.0006
TDEX	0.0021	0.0007

Residual correlation matrix

	SET50 Index Futures	TDEX
SET50 Index Futures	1	
TDEX	0.4628	1

Information Shares

	SET50 Index Futures	TDEX
Upper bound	0.9704	0.3702
Lower bound	0.6298	0.2960
Average	0.8001	0.1999

Panel A: Price discovery in SET50 Index Futures and SET50 Index

Vector moving average coefficients, Ψ(1)

	SET50 Index Futures Shock	SET50 Index Shock
SET50 Index Futures	0.0020	0.0006
SET50 Index	0.0019	0.0006

Residual correlation matrix

	SET50 Index Futures	SET50 Index
SET50 Index Futures	1	
SET50 Index	0.8280	1

Information Shares

	SET50 Index Futures	SET50 Index
Upper bound	0.9863	0.7885
Lower bound	0.2115	0.1370
Average	0.5989	0.4011

Panel C: Price discovery in TDEX and SET50 Index

Vector moving average coefficients, Ψ(1)

	TDEX Shock	SET50 Index Shock
TDEX	0.0012	0.0018
SET50 Index	0.0013	0.0018

Residual correlation matrix

	TDEX	SET50 Index
TDEX	1	
SET50 Index	0.5292	1

Information Shares

	TDEX	SET50 Index
Upper bound	0.6715	0.8464
Lower bound	0.1536	0.3285
Average	0.4126	0.5874

Table 5. Test results of conditional information shares for SET50 Index, SET50 Index Futures and TDEX

Test results of conditional information shares			
Panel A: Price discovery in SET50 Index Futures, TDEX and SET50 Index			
Vector moving average coefficients, $\Psi(1)$			
	SET50 Index Futures Shock	TDEX Shock	SET50 Index Shock
SET50 Index Futures	0.0020	0.0005	0.0006
TDEX	0.0019	0.0008	0.0004
SET50 Index	0.0020	0.0003	0.0007
Residual correlation matrix			
		TDEX	SET50 Index
SET50 Index Futures	1		
TDEX	0.4673	1	
SET50 Index	0.8289	0.5042	1
Panel B: Average Conditional Information Shares per market			
		Average	Standard error
SET50 Index Futures Conditional Information Shares			
SET50 Index Futures		0.5265	0.1465
TDEX		0.5049	0.1423
SET50 Index		0.5330	0.1482
TDEX Conditional Information Shares			
SET50 Index Futures		0.1235	0.5940
TDEX		0.1671	0.6880
SET50 Index		0.1070	0.5460
SET50 Index Conditional Information Shares			
SET50 Index Futures		0.3500	0.1442
TDEX		0.3281	0.1395
SET50 Index		0.3600	0.1462
Panel C: Bounds of Price discovery			
Conditional Information Shares in SET50 Index Futures			
CIS	SET50 Index Futures	TDEX	SET50 Index
Upper bound	0.9711	0.3376	0.7921
Lower bound	0.1844	0.1180	0.1340
Conditional Information Shares in TDEX			
CIS	SET50 Index Futures	TDEX	SET50 Index
Upper bound	0.9488	0.4148	0.7674
Lower bound	0.1777	0.3610	0.0550
Conditional Information Shares in SET50 Index			
CIS	SET50 Index Futures	TDEX	SET50 Index
Upper bound	0.9763	0.3040	0.8018
Lower bound	0.1848	0.0510	0.1340

Conclusion

This study investigates the price discovery during the overlapping trading hours of SET50 Index (*cash index*), SET50 Index Futures (*futures index*) and ThaiDex SET50 (*exchange traded fund*). We employ three methods to document dynamic price discovery; Vector Error Correction Model (VECM), information share and conditional information share. Our results indicate that there exists the long run relationship among three markets.

While price may deviate from equilibrium in short run, it will eventually move toward the long run equilibrium. More importantly, the empirical evidence supports the notion that SET50 Index Futures contributes the most in price discovery, followed by SET50 Index and least in TDEX. In sum, the results suggest that multi-market trading of derivatives markets and its underlying help to improve price efficiency.

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THE NECESSITY OF MARKETING STRATEGIES IN HIGHER EDUCATION INSTITUTIONS

Cristinel CONSTANTIN
Transilvania University of Brasov, **Romania**
cristinel.constantin@unitbv.ro

Abstract:

This paper is about a research conducted in order to find the students' intentions after the graduation of the 1st cycle of study. The main aim was to find their future priorities in order to support the decision process concerning the best marketing strategies that the university can put in practice. The research started from the general hypothesis that a large part of students do not want to continue the studies with the master studies. The outcomes revealed that the respondents give a high priority to continue the studies without to find a job, but there are students that want to find a job and to leave the school. A low priority is given to finding a job and continuing studies concomitant. In this context, the university should focus its marketing strategies on retaining the students for the master programs, such a situation being in the advantage of both parties.

Keywords: marketing research, educational marketing, marketing strategies, principal component analysis.

JEL Classification: C81, C82, M31

1. Introduction

For every higher education institution it is very important to know the intentions of students from the last year of the 1st study cycle in order to forecast the inputs in the 2nd cycle, especially in this recession period when a lot of students are determined to find a job as soon as possible in order to assure their living wages. In this respect we conducted a survey among the students of Transilvania University of Brasov regarding their intentions after graduation. The hypotheses of our research were the following: a small number of students intend to continue their studies with master programs; the highest priority after graduation is to find a job; there is no difference between students groups formed according to their gender and field of study.

The information collected with the help of this research will be useful for decision makers in order to design the most effective strategies. The reiteration of such surveys for every generation could provide useful information regarding the patterns of students' intentions.

2. Literature review

A review of literature reveals that many universities are involved in developing proper marketing strategies in their efforts to gain a better position on higher education services market. As long as the competition on this market increased significantly the marketing orientation become crucial like in the business field. Using marketing strategies a higher education institution tries to attract a high number of students.

Meeting the students' needs, and a student centred approach should be the institutional mission of a university because it is widely assumed that in the context of increasing competition, higher education institutions need to market themselves more explicitly. The ability to succeed in the marketplace requires more than just sales techniques but rather relationships that can stimulate the students in their choice (Brown, Oplatka 2003). The marketing orientation in higher education institutions becomes more important in the context of demographic changes that characterize the Europe and the entire world. In the context of a decreasing trend of Europe's population and an increasing global competition, the universities need to use marketing tools to promote the institution at the international level (Jansen, Brenn-White 2011).

The marketing tools frequently used by universities are promotion and communication towards potential applicants related to increasing recruitment and admission. But these communication techniques should be accompanied by a high quality of services both educational and support services (Nicolescu 2009). The communication policy is a way of formation and maintaining a position in the competitive conditions of university education market. In order to have a better communication with its customers, a university has to use different communication tools in different situations. These ones

include personal visits to headmasters, educational counsellors and students of secondary schools with the proposals of further education (Jurková, Ferencová 2010). All these efforts are necessary for a higher education institution because it was empirically demonstrated that a good communication could change the attitudes of an individual or group of people regarding a certain entity (Tecau, Chitu 2010).

The implementation of marketing orientation needs an organizational change, which is based on reconfigurations of tasks and activities, transformations of the structures and managerial processes, technological implants and behavioural changes (Bardas *et al*. 2011). In this process, the human resources play an important role. The satisfaction of the universities' staff is a prerequisite in obtaining the commitment of these ones in students' education (Shoeby *et al*. 2012). Inside a university, the professors have a dual mission related both to education and research. The higher education transformations in recent years have increased the importance of the research from the universities (Vacarescu - Hobeanu 2011). In this respect, the world of science must confront and resolve a contradiction of values that tends to transform the research and teaching in a zero-sum game. These two activities have to be put together in the service of students and graduates in order to obtain a better value and quality of higher education (Savkar, Lokere 2010).

In conclusion, the implementation of marketing in higher education institution has to be accompanied by in-depth transformation of the organisation's management and the commitment of all staff in increasing quality. In this context, marketing research play an important role in supplying the information meant to support the decisional process.

3. Objectives and methodologies

Starting from the above considerations regarding the necessity of higher institutions to put in practice marketing strategies, we focused our attention of the main sources from which a university can recruit students. The future students can come from the secondary schools or from the 1st cycle of higher education. According to Bologna system, the graduates of the 1st cycle should continue their studies with master programs in order to increase their level of education and to aim at managerial positions. But a large part of graduates prefer to leave the school and to find a job in order to gain money. This segment of potential students should be permanent in the attention of decision makers in universities. For this reason our research objectives were:

- to measure the ratio of students who want to continue the studies with master programs;
- to identify the opinions of students regarding different alternatives after their graduation;
- to identify the interdependence between the named alternatives;
- to test the differences between different groups of students regarding their future plans.

The researched population was the students of Transilvania University of Brasov, from the last year of the 1st study cycle. A sample of 262 students has been randomly selected, having the structure presented in Table 1. The sample members have been selected only from engineering and economic studies and the sample structure was validated using the t-Student test.

Table 1. Sample structure

Gender	Frequency	Percent
Female	138	52,7
Male	124	47,3
Total	262	100,0
Study field		
Economic	121	46,2
Engineering	141	53,8
Total	262	100,0

Data was gathered using a questionnaire with various questions designed to meet the research objectives. Collected data was analysed using various univariate, bivariate and multivariate methods available in the SPSS software: frequency tables, t-Student test, Principal Component Analysis.

4. Research outcomes

The first objective of our research was to identify the ratio of students who want to continue the studies with master programs. In this respect a binary scale was used and the results are presented in

Figure 1. We can notice that only 65% of respondents intend to continue their studies in master programs. The percent of students who want to leave the school is quite big taking into consideration that the university loose more than one third of its students from the 1st cycle. On another hand, the trend is normal, because a part of graduates try to find a job as soon as possible in order to make money for their current expenses. They can come back to school after several years to continue their studies.
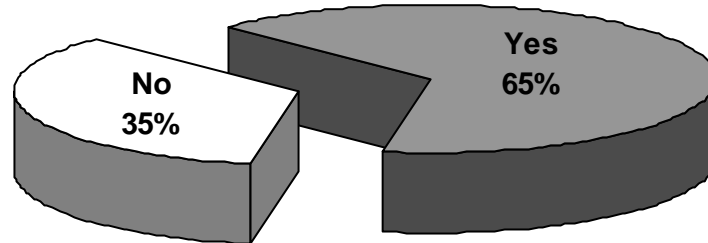
Figure 1. The intentions of students to continue studies with master program

In order to fulfil the second objective of our research, we used 6 items measured with a four equidistance numerical levels. These items measured the priority given by students to several activities after graduation. The mean score for every item is presented in Figure 2.
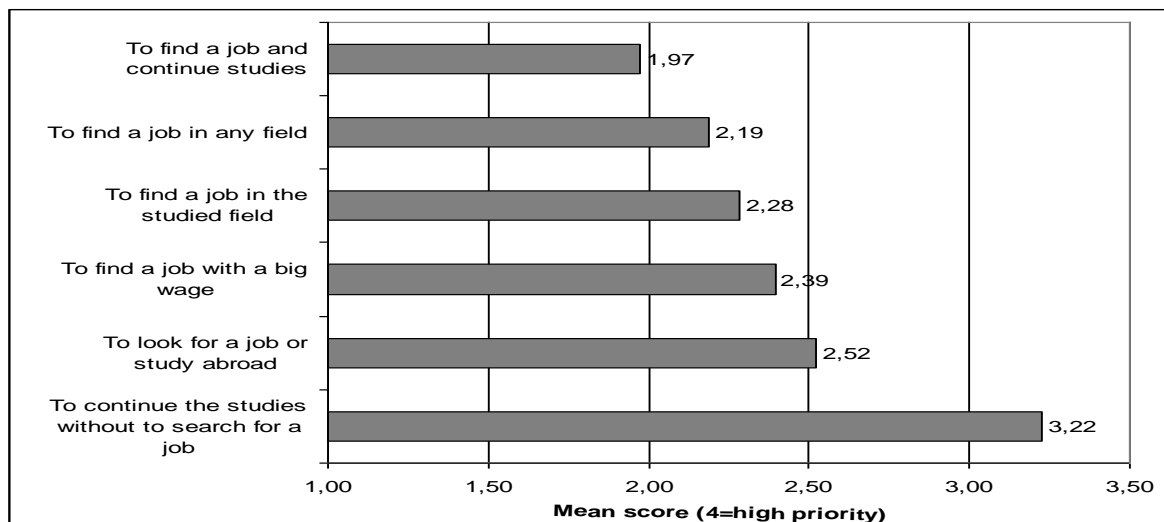
Figure 2. The mean scores regarding the students' priorities after graduation

Looking at the priority given by students to various actions after graduation, we can see that the highest mean score has been obtained by the intention to continue studies of master programs without to search for a job. There are also other activities with quite high priority such as looking for a job or study abroad and to find a job with a big wage. In conclusion, we can appreciate that in spite of a large percent of students which are not decided to continue master programs (35%), the highest priority is given to this activity. For this reason, the university should intensify its promotional activities in order to reveal to the students the benefits of completing their studies.

The above items were grouped into major factors using the Principal Component Analysis (PCA) as a method of multivariate data processing. We have chosen this analysis because it allowed us to identify the simultaneous correlations between more than two variables. In this context, we had the opportunity to analyse globally the interdependence between the variables (Bry 1995). The analysis returned the results presented in table 2. Three components were identified with the Eigenvalue higher than one, which explain 66.39% of the total variance. Grouping the items according to their correlations with the principal components, we can find that the first component is related with

a high priority given to find a job, the second one with priority for job and studies simultaneously and the last one is only related with a high priority to continue studies without searching for a job.

Table 2. Variable correlations with the principal components

Rotated Component Matrix(a)	Component 1	2	3
To find a job in the studied field	**0,82**	0,16	0,00
To find a job with a big wage	**0,71**	0,14	0,26
To find a job in any field	**0,65**	0,38	0,26
To find a job and continue studies	0,09	**0,83**	0,10
To look for a job or study abroad	-0,03	**0,64**	0,36
To continue the studies without to search for a job	0,06	-0,07	**0,89**
Extraction Method: Principal Component Analysis.			
Rotation Method: Varimax with Kaiser Normalization.			
a Rotation converged in 5 iterations .			

New variables were created according to these principal components, by computing the means of all variables that contribute to every principal component. These new variables are labelled as follows: "Job", "Job and studies", "Studies". The means of the named variables are presented in Figure 3, the priority given to studies being very high, while for the rest of activities the priority is a medium one.
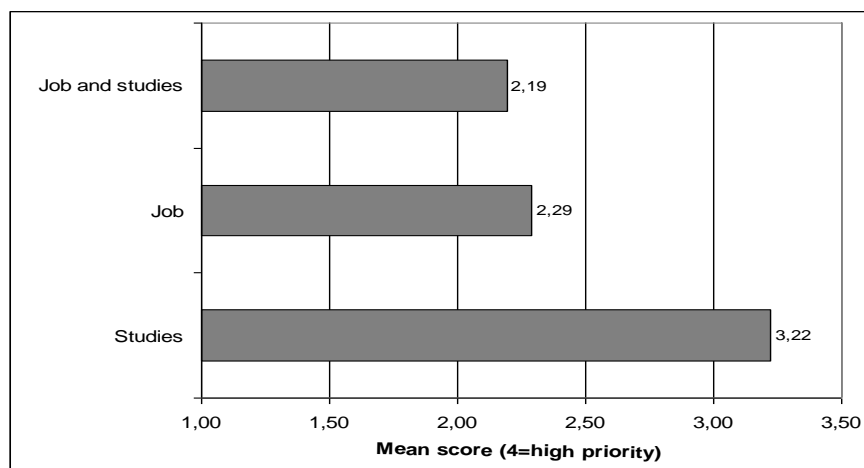
Figure 3. The mean scores recorded for the principal components

In order to find differences between certain specific groups of population, we tested the differences between the means recorded for the three components divided on male and female but also on the economic and engineering field of study. The differences were tested with the t-Student test for independent sample (see table 3).

Table 3. Mean scores on respondent categories and significance test

Priorities	Male	Female	Test result	Significance
Studies	3.07	3.34	t = 2.167	Sig = 0.031
Job	2.28	2.29	t = 0.147	Sig = 0.883
Job and studies	2.30	2.10	t = -2.547	Sig = 0.011
Priorities	**Economic**	**Engineering**	**Test result**	**Significance**
Studies	3.50	2.96	t = 4.576	Sig = 0.000
Job	2.40	2.18	t = 3.077	Sig = 0.002
Job and studies	2.14	2.24	t = -1.190	Sig = 0.310

It can be noticed that females give a higher importance to continue studies, while males pay a higher attention to continue studies and to find a job in parallel. There is no significance between the two means regarding the priority to find a job (Sig.>0.05).

Regarding the other two groups formed depending on the study field, the students from economic studies give a higher priority both to studies without job and job without studies than the students from engineering. The second group gives a higher importance to simultaneous job and studies, but the difference is not statistical significant.

Conclusions

The main conclusion of our research is that the last year students from the 1st cycle of higher education have to be stimulated in order to continue their studies with master programs. These ones should be convinced that their education will be completed only after the graduation of the 2nd cycle. This communication process should be based on proper marketing strategies in order to be effective. An important role in establishing such marketing strategies is played by marketing research, which is meant to provide the necessary information to decision system.

In this respect, we conducted a survey among the students of Transilvania University of Brasov that study in economics and engineering. The main objectives were to find their future intentions and the relationships between these ones and the students characteristics (gender and study field). The hypotheses were partially rejected as far as we stated that only a small part of students intend to continue the studies with master program. The research outcomes revealed that about 65% of students want to continue the studies and the highest priority is given to continue studies without to find a job. There are also students that give a priority higher than average to find jobs or to go abroad for studies or to find a job. We also found that females and students from economics give a higher importance to continue their studies in comparison with males and students from engineering.

Taking into consideration the above mentioned findings, we consider that the university has to stimulate its students to remain at school and to fulfil their education and competences according to the spirit of Bologna process. In this respect some facilities could be offered to the students in the 2nd cycle such as the possibility to work in parallel with the study process. Even if this activity has the lowest priority in the students' opinions, this one is a strong alternative that can persuade the ones that are interested only by jobs to continue their studies. Other marketing strategies could be also designed for specific groups of students taking into account the above results.

Further research directions should deepen the above analysis and evaluate various strategic alternatives of educational marketing. It is also necessary to find the reasons that cause the students' future intentions in order to design persuasion strategies meant to convince them to continue their studies.

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ENGLISH INFLUENCE UPON ROMANIAN
IN THE ERA OF GLOBALIZATION

Camelia FIRICĂ
Spiru Haret University, **Romania**
cameliafirica@yahoo.com

Abstract:

From the economic field to the technical, scientific, financial and cultural ones, not to mention everyday life, the highly disputed phenomenon of globalization impacted on all domains, the linguistic one being the less important by far. Linguistic globalization, more conspicuous nowadays than ever in Romania due to the political, social and cultural circumstances, meant the coming into use of words of English origin that either illustrate untranslatable notions or are mark of pseudo culture.

Besides mentioning the reasons of this state of facts the paper brings on both these categories of English loans.

1. Intoduction

The events that characterised the past two decades of Romania's history, the transitional period to democracy with implications on all levels brought about profound transformations as well, transformations that left their mark on language particularly the vocabulary - the less stable compartment of a language.

As a living body undergoing sustained development Romanian reflects, by its increased dynamism especially in its lexical compartment, the current realities and transformations and, as the last few decades knew the extensive use of English turned into a world lingua franca - status acquired due to globalization - English became for Romanians, too a *contact language* between persons who share neither a common native tongue nor a common (national) culture (Seidlhofer 2005:1).

2. Main body

Initially used with reference to economy the term *globalization* - the process of growing and expanding to exist throughout the entire world (www.yourdictionary.com) - subsequently covered all spheres of Romanian social life and linguistically the phenomenon of globalization illustrated the relationship between the social dynamics and communication necessities. The collocation *linguistic globalization* alludes to the transformations that national languages have met in recent decades due to the more or less wilful acceptance of English as a common means of communication in economic, political, cultural international relationships (Călăraşu 2003, 323).

The opening towards the west, towards other cultural areas and opportunities offered by the unprecedented contact with the Anglo-American world and achievements in all fields of science and technique, economy and finance was the perquisite of accepting English as the working language if not of the twelve major domains (Graddol 2000, 8) at least of part of them, a good command of the language becoming objective necessity as long as "English and American-English seem to embody for men and women throughout the world - and particularly for the young - the *feel* of hope, of material advance, of scientific and empirical procedures." (Steiner 1975, 469 *apud* Graddol 2000, 8)

The possibility to attain better positions, to start or develop business in areas unknown or disallowed before, to get access to the latest information through all channels or to education abroad were enough reasons to comply with the *linguistic imperialism* of English and to forget about and overcome the national and cultural vanities obsolete competitive mentalities involving the idea of linguistic supremacy (Călăraşu 2003, 324).

Education in Romania was promptly adjusted to fit the challenges the new realities, needs and objectives put forward: transition to a market economy and privatization of banking sector, transnationalization of economic and technological environment, occurrence of foreign investors who mainly recruited staff with English communication skills, increase of the emerging nature of markets, access to computer technology. The importance the study of English acquired in elementary and high school education placed it, after 1989, at least in urban area, among the first options of the students, and curricula were changed under the pressure of the language globalization phenomenon. English, perceived as an implement to accelerate the timing and participation in global economy (Călăraşu

2003, 324) began to be studied intensively in Romanian schools as early as elementary school. Incidentally, before 1989, according to the curricula in effect at that time, the study of a foreign language was compulsory as early as the second grade - it is true that French and Russian prevailed - but looking back in time without anger, one can say that the study of foreign languages was hardly the main concern or choice of most ordinary people as it started to be after the fall of the Iron Curtain when, under the pressure of the changes imposed by the new economic and political conditions and of the beneficiaries of the education system, English superseded Russian and French and became the main option of students. Families barely considered the study of English in schools only as sufficient and satisfactory and the private tutoring system, widely practiced, mushroomed.

Romania's opening to the western world caused an unprecedented enrichment of the vocabulary with English and American neologisms belonging all fields from economy, administration, finance and trade to computer science and internet communication and everyday life where English words, used more or less adequately abound. Many of these terms lack Romanian equivalent, being borrowed concurrently with the realities they used to designate. Nevertheless there are cases where the loans are nothing but doublets of the Romanian existing terms or phrases, cases in which, despite the fact that they render ideas correctly, such words or phrases are considered or perceived as irritant barbarisms (Zafiu 2008): *to download (a descărca), to focus (a se concentra), to prioritize (a ierarhiza), link* (*legătură*), *shortcut (comandă rapidă, acces rapid, scurtătură), live* (*direct* - many speakers say *transmisie live* for *live broadcast*) *training (instructaj)* pronounced [trening - the Romanian for *track-suit*!], *topic* (*subiect*), *provider* (*furnizor*), *look* (*imagine, înfăţişare*), *make-up* (*farduri*), *casual* (*lejer, sport*) *to host* (*a găzdui*), *formal* (*solemn, oficial, ceremnios*), *informal* (*neoficial, neprotocolar*), *topping* (*ingredient*), *job* (*slujbă*), *party* (*petrecere, serată* meaning *entertainment*). All these and many others tend to be more widespread through repetition in media as acceptable models.

Another case is that where certain English phrases were translated literally bringing into use some constructions or artificial meanings, inappropriate for the language spirit and character:

to make sense (*a avea sens* - where the Romanian phrase is built with *to have* but many followed the English pattern and use the proper meaning of *to make*); *to cut a good/bad figure* (*a face o figură bună/rea*), an uninspired linguistic calculus with meaning similar to the English phrase, which, although an entry in dictionaries, strikes as non-Romanian. If in English the phrase makes sense as the word *figure* also means *the impression produced by a person* the Romanian equivalent lacks this meaning, hence the oddity of the calculus.

Ordinary people face two more peculiar situations when it comes to the present Romanian language. Firstly they hear or read some *fabricated* words such as: *to perform* is used increasingly in political speeches under the form *a performa* - not recorded in dictionaries - and meaning of *to make one's debut in politics, to be a dynamic politician*; after *determination* Romanian use *determinare* which has a completely different meaning: *causing a certain condition, situation*; *defining*.

Secondly, both in everyday life in the street or on television one can hear sentences hybrid between English and Romanian: "Dă-mi un hint", "Am un nou job", "Mă duc la shoppping" (Give me a hint, I have a new job, I'm going shopping) etc.

Not only native speakers but some of the linguists, too, showed shallow preoccupation to adjust these words to the national language system; the reason was on one hand the worldwide phenomenon of globalization which, at linguistic level, means, among others, the creation of an international vocabulary and the imposition of some unique rules and, on the other hand that, it was more convenient for the native population to take information alongside with language. This is obvious with words belonging to the field of economics, where globalization initially manifested itself visibly and where they started to use English loans for job designations: *auditor, dealer, (senior) manager, market developer, sales manager*, *sales person, salesman, broker, chief copywriter, executive coach, head hunter, program officer*.

Despite the fact that Romanian recorded English loans - entered into circulation indirectly mainly via French, German and Italian - as early as the second half of the XVIIIth century and that the process, with consequences particularly in the field of scientific terminology, intensified during the XIXth century, the tendency towards linguistic globalization generated a wave of protests and lamentation (Avram 1997, 7) regarding the influence of English perceived, sometimes, as an invasive phenomenon that endangered the national character and the very existence of the language. Works published before the fall of communism (Marcu, and Maneca 1978; Dimitrescu 1982; Graur 1987) are

living proof that during the very restrictive totalitarian regime Romanian enhanced considerably its lexicon with neologism (more than 40.000) of different origins used in finance, sports, film and fashion industries, politics, army, administration, science and medicine.

In the last past years an annoying inclination of both ordinary speakers - some of which can hardly speak English correctly (Slama - Cazacu 2005, 502), others men of letters who fell into mainstream and legitimized, more's the pitty, the use of some extremely inappropriate words taken from English to the detriment of words of Romanian origin - and of a significant part of media arouse some linguists' and scholars' backlash against the excessive use of Anglo-American neologisms to indicate notions for which Romanian had its own terms.

The attitude is understandable as in the present - day Romania ... some work in *advertising* or in *fashion* and not in *publicitate* or *modă* (the Romanian equivalent), some have their *own* band not *formaţie* or a *target* not *obiectiv* or *ţintă*, everything is *cool* and not *bun*, *atractiv*, *grozav* or *calm*, everybody is a *hairdresser* or *hairstylist* not a *frizer* or *coafeză,* everybody *focuses* not *concentrează,* and examples could go on forever. "From newspapers, advertising, radio and television there pours upon us a torrent of variegated, ugly, corrupt language where one may find almost anything: …Anglicisms (very popular in circles with no real education) by the use of which *the issuers* want to seem informed and aware of what is fancy in the West… so, they say, full of importance, *middle class*, not as any bumpkin, *clasa de mijloc*. An Anglo-Romanian jargon is in fashion ..." (Paler 1997).

The profusion of foreign terms is legitimate as long as they facilitate contact with other civilizations, complete, highlight or render more accurately the meaning of a word or the new social, political, economic, cultural realities (*duty-free, non-profit, telebanking, electronic banking, voucher, cash & carry, fast-food, marketing*), as long as they simply denote more concisely notions whose Romanian equivalents are long juxtapositions (*mass-media - mijloace de comunicare în masă*; *duty-free - scutit de taxe vamale*) or even whole sentences (*acquis - totalitatea elementelor standardizante, normative, legislative, asupra cărora ţările UE s-au pus completamente de acord*) (Pruteanu 2006), *hot line - linie telefonică prin care publicul poate contacta poliţia sau alte servicii pentru a da informaţii despre anumitesituaţii speciale*.

As a matter of fact, it is not the borrowing of words that should be blamed but the urge to display them just because this is the trend. It is a matter of approach that turns the pervasive Anglicisms into a label of a pseudo status (Creţu 2009, 92).

The use of barbarisms is hardly a sign of culture and modernity, on the contrary it is the best indication of superficiality in thinking and rejection of minimum intellectual effort that involves the use of Romanian words, more appropriate to communicate and to understand any type of message.

As long as there still are numerous people unfamiliar with English, linguists (Pruteanu 2006) called for prudence in using loans that were not tailored to Romanian. In fact, in 2004 the Romanian Parliament passed a Bill (no.500/2004) - concerning the use of Romanian in public places, institutions relationships - that states that English words must be translated if they appear in commercials or promotional texts. This law initiated by Professor George Pruteanu encountered "violent rejection of specialists, half-learned, ignorant people who do not speak foreign languages and they themselves do not understand the foreign words that *bombard* them, of journalists, politicians, or *VIPs* who *commit* and disseminate terrible mistakes... I add to this *snobbery, desire to shock* ("I can speak English" - even if I do not know it), reckless *imitation* of some persons *promoted* by the media" (Slama-Cazacu 2005, 502) They replied with various reasons one of which was that the language itself being a *living organism* will eliminate what is not good, right or useful. Those who advocated this reason overlooked the power of example - which may be questionable - and, unless penalized by experts, language errors become common place.

Others (Avram 1997, 10; Stoichiţoiu-Ichim 2008, 110) consider that „paradoxically, the danger of current English influence comes from the fact that it takes place by cultivated people and that these people act as factors that *prevent* or even *delay* the loans naturalization, under the umbrella of dictionaries that maintain their foreign aspect. Many words show that without *the hindrance that normative works should impose* and without consummate connoisseurs of English, recent Anglicisms would accommodate to the Romanian language as easy as the loans of other foreign etymologies."

Necessary or not, used with more or less justification, Anglicisms and Americanisms invaded the vocabulary of the native speakers who, especially in urban areas, have enthusiastically acquired a series of loans without which communication seems impossible today.

Conclusions:

Linguistic globalization - consequence of economic globalisation - manifested itself by the coming into the use of all national languages of a large number of English loans.

Due to their international character Anglicisms and Americanisms are well preserved in Romanian and the fact that they continue to be used is a clear indication that some of them were needed or became necessary through semantic specialization in comparison with the Romanian synonyms which they duplicated. Although an old phenomenon in the history of the Romanian language, loans of English origin are widely and sometimes inexcusably used by native speakers instead of Romanian words. It can be asserted that the use of Anglicisms and Americanisms - regardless of the causes - was generally an inner urge of Romanians and not necessarily something imposed from outside, the media having an important role in the process of linguistic globalisation.

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UNDER-REACTION OF S&P 500 IMPLIED VOLATILITY TO RELEVANT INFORMATION

Andrey KUDRYAVTSEV
The Economics and Management Department
The Max Stern Yezreel Valley Academic College, **Israel**
andreyk@yvc.ac.il

Abstract:

The main goal of this study is to analyse the ability of the implied volatility index (VIX) to incorporate current stock market information that is relevant for the volatility forecasts. Employing historical market volatility, market trading volume and significant stock market returns as examples of market factors positively correlated with future market volatility, I document that VIX, though being positively correlated with these relevant market factors, does not manage to account for them fully and immediately, or in other words, under-reacts to relevant market information. I suggest that this finding may be explained by investors' tendency to be "anchored" towards (or over-affected by) the recent implied volatility measures, causing VIX to be relatively sticky and relatively less affected by the market factors, than the future realized volatility is.

Keywords: anchoring, historical volatility, implied volatility, under-reaction, volatility forecasts; VIX.

JEL Classifications: D80, D84, G12, G14, G17.

1. Introduction

Volatility is a fundamental characteristic of financial markets. Although a derived number, describing the propensity of prices to fluctuate, it plays an important role in options pricing and in any simple characterization of market dynamics. Therefore, much effort has been invested in forecasting stock market volatility. The two sources of information most widely employed in future volatility forecasts are the historical (realized) volatility measures and implied volatility measures.

The most commonly used measure of implied volatility is the Volatility Index (VIX) introduced by Whaley (1993) and launched by the Chicago Board Options Exchange (CBOE) in 1993. VIX is based on the prices of S&P 500 index options, providing thereby a benchmark for the expected future market volatility over the next month. The index is calculated in real-time and is continuously disseminated throughout each trading day. VIX is widely followed and has been cited in hundreds of news articles in leading financial publications. Since VIX represents an implied measure of expected future volatility, it has been labelled the investors' 'fear gauge' (see Whaley 2000, 2008). According to this interpretation, though there are other factors affecting this index, in most cases, high VIX reflects increased investors' fear and low VIX suggests complacency. Whaley (2008) documents negative correlation between daily S&P 500 index returns and VIX changes, and interprets it as indicating that changes in the VIX are partially driven by investors demanding portfolio insurance in times of high current market volatility.

Previous financial literature tends to conclude that implied volatility measures tend to outperform realized volatility measures in forecasting future volatility. Latane, and Rendleman (1976), Chiras, and Manaster (1978), and Beckers (1981) provide early assessments of implied volatility forecast quality. They find that implied volatilities offer better estimates of future return volatility than ex-post standard deviations calculated from historical returns data. More recently, Jorion (1995) finds that implied volatilities from currency options outperform volatility forecasts from historical price data. Christensen, and Prabhala (1998), Christensen, and Strunk-Hansen (2002), and Fleming (1998) find that implied volatility forecasts dominate historical volatility in terms of ex-ante forecasting power. Blair *et al.* (2001) show that historical prices (even intraday prices) do not provide much incremental information compared to the information given by VIX; moreover, VIX provides the best out-of-sample forecasts of realized volatility. Jiang, and Tian (2005) deem the information content of the VIX volatility forecast superior to alternative implied volatility measures as well as forecasts based on historical volatility.

Another related issue discussed in previous literature is the "absolute" accuracy of implied volatility measures in predicting future stock market volatility. Chernov (2001) notes that implied volatilities are generally higher than realized ones. Christensen, and Prabhala (1998), Christensen, and

Strunk - Hansen (2002), and Fleming (1998) document that implied volatility forecasts are upwardly biased. Carr, and Wu (2009), and Bollerslev *et al.* (2009) conclude that typically the spot VIX computed from option prices embeds volatility risk premium and exceeds realized volatility.

Yet, a question that has not been raised in previous literature is whether implied volatility measures, and VIX, in particular, fully and immediately incorporate current stock market information that is relevant for volatility forecasts. Present study makes an attempt to fill this gap by examining effect of historical market volatility, market trading volume and significant stock market returns on the *ratio* of VIX and the subsequently realized market volatility. In this context, I document that VIX, though correctly reacts to these relevant factors, does not manage to fully forecast their effects on future market volatility. This kind of under-reaction demonstrated by VIX may be possibly attributed to investors' general tendency to be "anchored"[6] towards current variable or index values, which may cause the expectations with respect to a given variable or index to be relatively sticky and not to account completely for all relevant information.

The rest of the paper is structured as follows: In Section 2, I describe the data sample and the volatility estimation procedure. Section 3 comprises the research hypothesis and the results. Section 4 concludes.

2. Data description and volatility estimates

For the purposes of present research, I employ the daily quotes of VIX and S&P 500 (the underlying index) for the period from January 1990 to December 2011 (overall, 5,547 trading days) that I extract from www.finance.yahoo.com. For the sampling period, I calculate daily log close-to-close returns on S&P 500.

For every 22 consecutive trading days, roughly representing one trading month, I calculate the volatility of S&P 500 returns as a standard deviation of daily returns. In order to make the resulting figures commensurable with the VIX quotes, denoting the one-month-ahead implied volatility of S&P 500 expressed in percent and in yearly terms, I multiply them by 100 and then by 20. To summarize, for every 22 consecutive trading days, I calculate the realized monthly market volatility as:

$$V_{1,22} = \frac{\sum_{t=1}^{22}(r_t - \bar{r}_{1,22})^2}{22} * 100 * 20 \tag{1}$$

where: r_t is the S&P 500 log return on day t; and $\bar{r}_{1,22}$ is the average S&P 500 daily return over days 1 to 22.[7]

In this way, for each trading day t, I am able to define the last month's (past or historical) volatility (PV_t) and the next month's (future) volatility (FV_t) as:

$$PV_t = V_{t-22,t-1} \quad \text{and} \quad FV_t = V_{t+1,t+22} \tag{2}$$

Table 1 reports the basic descriptive statistics over the sampling period of VIX quotes, of the subsequently realized actual market volatility, calculated according to formula (2), and of the ratio of the two, calculated for each trading day t as:

$$VR_t = \frac{VIX_t}{FV_t} \tag{3}$$

where: VR_t represents the implied-to-realized Volatility Ratio.

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[6] Anchoring (anchoring bias) (Tversky, and Kahneman, 1974) refers to people's tendency to form their estimates for different categories, starting from a particular available, and often irrelevant, value and insufficiently adjusting their final judgments from this starting value.

[7] Alternatively, in line with a number of previous studies of market volatility (e.g., French *et al.* 1987; Schwert 1989, Schwert, and Seguin 1990), I calculate the monthly volatility of S&P 500 as a sum of squared daily returns over the month. The results with respect to this study's hypothesis (available upon request from the author) are qualitatively similar to those reported in the paper.

Table 1. Descriptive statistics of the implied and the realized market volatility measures and their ratio

Statistics	Implied and realized volatility measures		
	VIX	Realized Volatility (FV)	Volatility Ratio (VR)
Mean	20.57	20.43	1.12
Median	19.11	17.41	1.08
Standard Deviation	8.27	12.30	0.32
Maximum	80.86	110.95	2.76
Minimum	9.31	5.97	0.26

The Table shows that, though the mean VIX and FV measures are quite close to each other (20.57 and 20.43, respectively), VIX, ranging from 9.31 to 80.86 with a standard deviation of 8.27, is less volatile than the subsequently realized market volatility, ranging from 5.97 to 110.95 with a standard deviation of 12.30. The volatility ratio has a relatively low standard deviation of 0.32, indicating that contemporaneous VIX and FV measures tend not to deviate to much from each other, or in other words, that VIX represents a reasonable forecast of one-month-ahead market volatility. In order to verify the latter inference, Table 2 presents the results of a simple regression model predicting the next month's market volatility based on the current value of VIX, namely:

$$FV_t = \delta_0 + \delta_1 VIX_t + \varepsilon_t \qquad (4)$$

where: VIX_t represents the day-*t* closing value of VIX.

Table 2. The predictive ability of VIX with respect to the subsequently realized actual market volatility
(Dependent variable – FV)

Explanatory variables	Regression coefficients (t-statistics)
Intercept	***-3.178 (-11.29)
VIX	***1.147 (90.35)**
Adjusted R-Squared	0.596

Asterisks denote 2-tailed p-values: *$p<0.10$; **$p<0.05$; ***$p<0.01$

The adjusted R-squared of this simple regression model is impressively high (0.596), demonstrating that, consistently with the previous literature, VIX represents a high-quality forecast of future market volatility.

3. Research hypothesis and results

Previous Section's results confirm that VIX represents a good forecast of future stock market volatility. But is VIX able to fully and immediately incorporate current stock market information that is relevant for the volatility forecasts? The major goal of this study is to answer this question. In this respect, I hypothesize that investors, when forming their estimates of the "correct" contemporaneous implied volatility, should be probably over-affected by recent implied volatility measures, causing VIX to be relatively sticky and under-react to relevant information.

In this context, I first of all (in Subsection 3.1) establish three contemporaneous market factors that are highly correlated with the realized future market volatility, and furthermore (in Subsection 3.2) test for their effects on VIX and on the *ratio* of VIX and the subsequently realized market volatility.

3.1. Market factors correlated with future market volatility

Stock market volatility may be affected by a very wide range of market factors. In present study, I concentrate on three of them, with the final goal of testing if VIX is able to fully and immediately reflect them, or in other words, if these factors systematically affect the ratio of VIX and the subsequently realized market volatility. These factors include:

    a. Past (historical) market volatility: Previous literature dealing with stock volatility clearly indicates that market volatility over different periods of time is positively autocorrelated and

that past volatility may serve a good (though slightly worse than implied volatility) forecast of future volatility (e.g., Fleming 1998; Blair *et al.* 2001; Jiang, and Tian 2005). Therefore, I expect the realized future market volatility (FV_t) to be positively correlated with the respective past market volatility (PV_t).

b. Market trading volume: Trading volume activity, in general, is recognized to be a reflection of heterogeneous investors' expectations (e.g., Copeland 1976, Pfleiderer 1984, Varian 1985). Karpoff (1986) demonstrates that trading volume has essentially two causes – dispersion in prior expectations and idiosyncratic interpretations of information events. He also shows that the increase in trading volume is positively correlated with the information "surprise". On the other hand, the new incoming information is also one of the major causes of stock price volatility. Thus, an increased trading volume in a stock market is usually a result of an increased flow of information and may serve a hint for increased subsequent market volatility. For each trading day *t*, I calculate abnormal market trading volume ($AVol_t$), with respect to the previous trading month, as:

$$AVol_t = \frac{Vol_t - Average(Vol_{t-22} : Vol_{t-1})}{StDev(Vol_{t-22} : Vol_{t-1})} \tag{5}$$

where: Vol_t represents the total day-*t* trading volume in S&P 500 stocks.[8]

In the light of the aforesaid, I expect FV_t to be positively correlated with $AVol_t$.

c. Substantial stock market returns: Similarly to increased daily trading volume, substantial daily changes (both rises and falls) in stock market index may be a result of important information arriving at the market, and may serve an indication for increased future market volatility. Similarly to Fabozzi, and Francis (1977), and Kliger, and Kudryavtsev (2010), I define the days of substantial changes in S&P 500 as the days when the absolute value of S&P 500 return was larger than half standard deviation of S&P 500 measured over the total sampling period. I define the "substantial" dummy variable ($SDum_t$) to be equal to 1 for the days with substantial S&P 500 returns (overall, 2,600 trading days), and 0 for the rest of the sampling period days (overall, 2,947 trading days). In the light of the aforesaid, I expect FV_t to be positively correlated with $SDum_t$.

First of all, I verify the effects of the three aforementioned variables' contemporaneous values on the subsequent month's market volatility. For this purpose, I run three linear regressions of the following format:

$$FV_t = \varphi_0 + \varphi_1 Factor_t + \varepsilon_t \tag{6}$$

where: $Factor_t$ refers to PV_t, $AVol_t$ and $SDum_t$, respectively, for each of the three regressions.

Table 3 presents the regressions' results, confirming that the past market volatility, the abnormal market trading volume and the "substantial" dummy are positively correlated with the subsequently realized stock market volatility, at very high significance levels. One more thing to note is that, in line with the previous literature, the predictive power of VIX with respect to the future volatility, as expressed by the adjusted R-squared of regression (4) (0.596 – see Table 2) is higher than that of the past volatility (0.536).

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[8] In this study's sample, abnormal market trading volume ranges from -8.836 to 8.281, with the mean of 0.041 and the standard deviation of 1.249.

Table 3. The effects of three market factors on subsequent market volatility (Dependent variable – FV)

Explanatory variables	Regression coefficients (t-statistics)	Explanatory variables	Regression coefficients (t-statistics)	Explanatory variables	Regression coefficients (t-statistics)
Intercept **PV**	***5.459 (25.03) *****0.733 (80.09)**	Intercept **AVol**	***20.400 (123.65) *****0.623 (4.71)**	Intercept **SDum**	***17.465 (79.72) *****6.316 (19.74)**
Adjusted R-Squared	0.536	Adjusted R-Squared	0.004	Adjusted R-Squared	0.065

Asterisks denote 2-tailed p-values: *p<0.10; **p<0.05; ***p<0.01

3.2. Reaction of VIX to market factors and its ability to reflect them

Having established positive and significant correlation of the three aforementioned market factors with the future market volatility, I now verify if VIX, that, according to the previous literature and the results in Section 2, represents a high-quality forecast of the future volatility, properly reacts to these factors. I run three linear regressions, similar to regressions (6), but with VIX instead of FV as a dependent variable, that is:

$$VIX_t = \phi_0 + \phi_1 Factor_t + \varepsilon_t \qquad (7)$$

Table 4 reports the regressions' results. VIX appears to be positively and significantly correlated with the market factors, suggesting that investors correctly take the latter into account. Another, in itself, interesting finding is the extremely high goodness-of-fit (0.790) of the regression of VIX on PV, indicating that the realized historical volatility is by far the most important factor affecting implied volatility.

Table 4. The effects of three market factors on VIX (Dependent variable – VIX)

Explanatory variables	Regression coefficients (t-statistics)	Explanatory variables	Regression coefficients (t-statistics)	Explanatory variables	Regression coefficients (t-statistics)
Intercept **PV**	***8.356 (84.60) *****0.598 (144.34)**	Intercept **AVol**	***20.563 (185.02) ***0.173 (1.95)**	Intercept **SDum**	***18.066 (125.20) *****5.343 (25.35)**
Adjusted R-Squared	0.790	Adjusted R-Squared	0.001	Adjusted R-Squared	0.104

Asterisks denote 2-tailed p-values: *p<0.10; **p<0.05; ***p<0.01

So, by now, the (quite not surprising) results confirm that VIX represents a strong predictor of the one-month-ahead market volatility and correctly reacts to relevant market factors. At this stage, however, I arrive at the main question of this study, namely: "Is VIX able to *fully and immediately* incorporate current stock market information that is relevant for the volatility forecasts?"

In this respect, my expectation is that VIX, though positively correlated with the relevant market factors, should not be able to account for them fully and immediately, or in other words, should under-react to relevant information. This expectation is based on the well-documented people's tendency to form their estimates for different categories, starting from a particular available, and often irrelevant, value and insufficiently adjusting their final judgments from this starting value. This tendency represents a simplifying decision-making rule, known as *anchoring* (or *anchoring bias*), and may cause the expectations with respect to a given variable or index to be relatively sticky and not to account completely for all relevant information. In other words, it may cause people to be "anchored" towards the current value of the variable or index.

The term "anchoring" was introduced in one of the most cited ever studies by Tversky, and Kahneman (1974). They argue that in many situations people make estimates by considering an initial value that they adjust upwards or downwards to yield a final estimate. Such adjustments are often

insufficient, leaving judgments biased in the direction of the initial "anchor" value. In what is probably the best-known demonstration of this effect, Tversky, and Kahneman (1974) first ask their research participants whether the percentage of African nations in the United Nations (*target* number) is higher or lower than an *arbitrary* number (the anchor) which is randomly determined by spinning a wheel of fortune (e.g., 65% or 10%). Participants are then asked to give their best estimate of this percentage. Absolute judgments are assimilated to the provided anchor value so that the mean estimate of participants who have received the high anchor is 45%, compared to 25% for participants who have received the low anchor.

Anchoring effects have proved to be a truly ubiquitous phenomenon that has been observed in general knowledge questions (e.g., Jacowitz, and Kahneman 1995, Strack, and Mussweiler 1997, English 2008), probability assessments (e.g., Plous 1989, Chapman, and Johnson 1994), legal judgment (e.g., Markovsky 1988, Chapman, and Bornstein 1996), and a number of other fields. There is also a continuously growing body of literature documenting the effects of anchoring on different aspects of economics and finance, including, for example, real-estate pricing (Northcraft, and Neale 1987), buyers' and sellers' behavior (Galinsky, and Mussweiler 2001), auctions (Beggs, and Graddy 2009), advertising (Biswas, and Burton 1993), technical analysis (Zielonka 2004), and general stock market analysis (Fischer, and Statman 2000, Kudryavtsev, and Cohen 2010a, 2010b). Gruen, and Gizycki (1993) use anchoring to explain the widely-observed anomaly that forward discounts do not properly explain subsequent exchange rate movements. They argue that anchoring phenomenon may be relevant to the "sticky prices" that are so talked about by macroeconomists. So long as past prices are taken as suggestions of new prices, the new prices will tend to be close to the past prices. The more ambiguous the value of a commodity, the more important a suggestion is likely to be, and the more important anchoring is likely to be for price determination.

Adopting the idea by Gruen, and Gizycki (1993), I suggest that investors, when forming their estimates of the "correct" contemporaneous implied volatility, may be "anchored" towards the recent implied volatility measures, causing VIX to be relatively sticky and under-react to relevant information, or in other words, causing VIX to be relatively less affected by the market factors, than the future realized volatility is (or than the VIX itself should be). Therefore, I expect the *ratio* of VIX and the subsequently realized market volatility (VR) to be negatively correlated with the market factors.

That is, I hypothesize the following:

H0: VR_t is uncorrelated with market factors having positive effects on FV_t.

H1: VR_t is negatively correlated with market factors having positive effects on FV_t.

In order to test this hypothesis, for each of the market factors, I run a regression similar to regressions (6) and (7), but with VR_t as dependent variable, that is:

$$VR_t = \phi_0 + \phi_1 Factor_t + \varepsilon_t \qquad (8)$$

Table 5 concentrates the regressions' results that clearly support my research hypothesis.

Table 5. The effects of three market factors on the ratio of VIX and FV (Dependent variable – VR)

Explanatory variables	Regression coefficients (t-statistics)	Explanatory variables	Regression coefficients (t-statistics)	Explanatory variables	Regression coefficients (t-statistics)
Intercept **PV**	***1.198 (145.37) ***-0.004 (-11.18)	Intercept **AVol**	***1.119 (260.71) ***-0.014 (-3.97)	Intercept **SDum**	***1.137 (193.34) ***-0.040 (-4.65)
Adjusted R-Squared	0.022	Adjusted R-Squared	0.003	Adjusted R-Squared	0.004

Asterisks denote 2-tailed p-values: *p<0.10; **p<0.05; ***p<0.01

Past market volatility, abnormal trading volume and substantial daily market returns are all negatively and highly significantly correlated with VR. That is, on the one hand, as demonstrated earlier in this Subsection, the three market factors cause the levels of VIX to increase, but on the other hand, they lead to relative *decreases* in the levels of VIX with respect to the subsequently realized (and predicted by VIX) levels of market volatility, suggesting that VIX generally tends to under-react to relevant information.

Concluding remarks

Present paper explored the ability of the implied volatility index (VIX) to incorporate current stock market information that is relevant for the volatility forecasts. Employing daily stock market data, I documented that VIX, though being positively correlated with the relevant market factors, did not manage to account for them fully and immediately, or in other words, under-reacted to relevant market information. I suggested that this finding may be explained by investors' tendency to be "anchored" towards (or over-affected by) the recent implied volatility measures, causing VIX to be relatively sticky and relatively less affected by the market factors, than the future realized volatility is.

This study's results may prove to have important practical implications. Since implied volatility plays a crucial role in option pricing, the fact that it systematically under - reacts to relevant contemporaneous information suggests that the options may be systematically mispriced. Awareness of this fact may, therefore, open new profit opportunities for stock market investors, and in the end, help to eliminate this mispricing and make stock markets more efficient.

Potential directions for further research may include analysing other factors that may affect both the implied and the subsequently realized volatility, and also performing similar studies with intraday data.

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ON PRE-SELECTION OF ALTERNATIVES IN THE ANALYTIC HIERARCHY PROCESS

Jiří MAZUREK
Silesian University in Opava
School of Business Administration in Karvina, **Czech Republic**
mazurek@opf.slu.cz

Abstract:

The aim of the article is to propose and demonstrate a new approach to multi-criteria decision making with high number of alternatives in the analytic hierarchy process framework. The basis of the proposed method is division of alternatives into predefined sets based on expert's knowledge, which precedes pair-wise comparisons of alternatives with regard to given criteria. The method significantly reduces the number of pair-wise comparisons necessary to find the best alternative, it is computationally simple and intuitive, so it can enhance managerial decision making in many real-world situations. The use of the method is illustrated by an example, a comparison with standard AHP procedure is provided as well.

Keywords: AHP, MCDM, pair-wise comparisons, pre-selection of alternatives

JEL Classification: C02, C44.

1 Introduction

Multi-criteria decision making (MCDM) is an important part of management decision making in many areas of business and entrepreneurship, commerce and business. One powerful tool of MCDM is the analytic network process (AHP) proposed by (Saaty 1980). The fundamental part of AHP procedure form pair-wise comparisons of elements of one hierarchical level with regard to elements of immediately higher hierarchical level on Saaty's fundamental scale from 1 to 9. However, when the number of alternatives is high, the number of pair-wise comparisons is too large even for experts. To overcome this AHP shortcoming several approaches were proposed; see e.g. (Harker 1987), (Shen *et al.* 1992), (Zopounidis, Doumpos 2002), (Hotman 2005), (Islam, Abdullah 2006), (Ishizaka *et al.* 2012) or (Ishizaka 2012). But these methods are ad-hoc in nature, computationally complex and also time demanding; therefore they do not provide efficient way for managerial decision-making in real-world situations with high number of alternatives.

The aim of the article is to propose a pre-selection of alternatives in AHP, which can significantly reduce the number of pair-wise comparisons necessary for the selection of the best alternative. The proposed approach is intuitive, efficient and easy to apply. Its use is demonstrated on an example, and it is compared with the standard AHP as well.

2. Pre-selective analytic network process (AHP)

Let's assume that goal, criteria and alternatives are already chosen. Before pair-wise comparisons of criteria and alternatives begin, an expert provides a division of all alternatives into three disjunctive sets:

- set *Y* ('Yes'): The set of alternatives that certainly can aspire for the best alternative according to an expert. This set contains alternatives that satisfy some high (aspiration, above average) level by all criteria
- set *M* ('Maybe'): The set of alternatives that might aspire for the best alternative. Alternatives in *M* might be excellent with regard to some criteria, but somewhat weaker in other(s). Such alternatives still can be considered for the best alternative, as their assets might outweigh their weak points at last.
- set *N* ('No'): the set of alternatives that certainly cannot aspire for the best alternative. This set consists of alternatives clearly inferior to other alternatives from sets *Y* and *M*. Alternatives from *N* might be dominated by other alternatives from *Y* or *M* in all criteria, they do not satisfy some basic requirements or they are just evaluated average or under

average by majority of criteria. Such alternatives can be safely ruled out from further considerations.

The best alternative recruits from the set *Y* or the set *M*. It is assumed that at least two of these sets are non-empty, otherwise the situation is standard AHP, which will be referred 'non-selective AHP' occasionally in the text. The pre-selective AHP proceeds in the following steps:

Step 1. Alternatives are pre-selected into sets *Y*, *M*, *N*.

Step 2. Pair-wise comparisons of all criteria are made and criteria's'weights are established by Saaty's eigenvalue method.

Step 3. If the set *Y* contains at least two elements, then pair-wise comparisons of all alternatives from the set *Y* with regard to all criteria are performed, and weights of alternatives with regard to criteria and a goal are established, so the best alternative in *Y* is found. Cases with none or one alternative in *Y* are trivial.

Step 4. If the set *M* contains at least two elements, then pair-wise comparisons of all alternatives from the set *M* with regard to all criteria are performed, and weights of alternatives are established with regard to criteria and a goal are established, so the best alternative in *M* is found. Cases with none or one alternative in *M* are trivial.

Step 5. If both sets Y and *M* are non-empty, the best alternative from *Y* is pair-wise compared with regard to all criteria, weights of both alternatives are established with regard to criteria and a goal, and the best alternative (overall) is found. If only one of sets *Y* and *M* is non-empty, than the best alternative comes from a non-empty set.

The weights of alternatives with regard to a goal in Step 5 are computed in the same manner as in AHP: Let f_j be criteria, let $v_i(f_j)$ be a weight of an alternative *i* with regard to a criterion *j*, and let w_i be weights of criteria with regard to the goal, then the weight of an alternative *i* with regard to the goal (u_i) is given as (Saaty 1980):

$$u_i = \sum_j v_i\left(f_j\right) \cdot w_j$$

Pre-selection described above can significantly reduce the number of pair-wise comparisons necessary for the selection of the best alternative, as it is shown in next Sections.

3 On the number of pair-wise comparisons in AHP and pre-selective AHP

Let's consider the three level hierarchy AHP: goal, criteria and alternatives. Let *n* (where $n \geq 2$) be the number of alternatives and *k* (where $k \geq 2$) the number of criteria. Then the number of pair-wise comparisons of criteria is $\binom{k}{2} = \dfrac{k(k-1)}{2}$, and the number of pair-wise comparisons of alternatives with regard to all criteria is $k\binom{n}{2} = \dfrac{kn(n-1)}{2}$. The total number of comparisons *C* is:

$$C = \binom{k}{2} + k\binom{n}{2} \tag{1}$$

Now assume that pre-selection step in AHP is applied and *n* alternatives are divided into at least two sets from sets *Y*, *M*, and *N* with cardinalities n_1, n_2 and n_3 respectively such that: $n = \sum_{i=1}^{3} n_i$, and $n_i > 0$ for at least two distinct $i \in \{1, 2, 3\}$. It is assumed further that if both sets *Y* and *M* are non-empty, then they contain at least two alternatives ($n_1 \geq 2, n_2 \geq 2$) as cases with only one alternative in

Y and/or *M* can be considered 'degenerate' or 'trivial', because pair-wise comparisons within a set have no sense and numbers $\binom{n_i}{2}$ are not defined.

When alternatives are divided in two or three sets, there are 4 possible cases, which are going to be described in more detail:

▪ *Case 1*. All sets are non-empty: alternatives from the set *N* are ruled out. The best alternative in *Y* and *M* (separately) is found, and then the best *Y*'s and *M*'s alternative are compared with regard to all criteria (another *k* comparisons) for the best alternative overall. Under the assumptions above the total amount of pair-wise comparisons C' is given as:

$$C' = \binom{k}{2} + k\left[\binom{n_1}{2} + \binom{n_2}{2} + 1\right] \tag{2}$$

▪ *Case 2*. *Y* and *M* are non-empty, *N* is empty: the procedure is the same as in Case 1. Under the same assumptions as in Case 1 ($n_1 \geq 2, n_2 \geq 2$), the total amount of pair-wise comparisons is given by relation (2).

▪ *Case 3*. *Y* and *N* are non-empty (and $n_1 \geq 2$), *M* is empty: the best alternative of *Y* is the best alternative overall. The total amount of pair-wise comparisons is given by (3):

$$C^* = \binom{k}{2} + k\binom{n_1}{2} \tag{3}$$

▪ *Case 4*. *M* and *N* are non-empty (and $n_2 \geq 2$), *Y* is empty: the best alternative of *M* is the best alternative overall. The total amount of pair-wise comparisons is given by (3′):

$$C^* = \binom{k}{2} + k\binom{n_2}{2} \tag{3'}$$

In the next Proposition 1 it will be shown that the number of total pair-wise comparisons in Cases 1-4 of pre-selective AHP given by (2) and (3, 3′) is smaller than the number of total pair-wise comparisons in non-selective AHP given by (1).

Proposition 1. Let $k \geq 2$, $n_1 \geq 2$, $n_2 \geq 2$ and $n = n_1 + n_2 + n_3$. Let *C* be defined by relation (1), let *C′* be defined by relation (2) and let C^* be defined by relation (3). Then:

$$i)\, C' < C \qquad\qquad ii)\, C^* < C.$$

Proof: see Appendix A.

To demonstrate the difference in the number of comparisons given by formula (1) versus the number of comparisons given by formulas (2) or (3) for selected values of *k*, *n*, n_1, n_2, and n_3, see Table 1. As can be seen, even in cases when no alternative is placed in the set *N*, a reduction in pair-wise comparisons of alternatives is significant.

Table 1. The number of pair-wise comparisons in AHP and pre-selective AHP.

k	*n*	n_1	n_2	n_3	pre-sel. AHP	AHP
4	7	5	2	0	54	90
4	7	3	4	0	46	90
4	7	3	3	1	34	90
5	8	6	2	0	95	150
5	8	4	4	0	75	150
5	8	4	3	1	60	150
5	8	3	3	2	45	150
6	10	3	5	2	99	285

4. An illustrative example
4.1. Formulation of the problem

Consider 8 applicants (from A to H) who apply for a CEO position. The best candidate have to be chosen on the grounds of four criteria: level of education (ED), experience in an upper management (EX), foreign language skills (FLS) and interview (IN) with a committee. Applicants are considered 'alternatives' thereinafter. The background (and simplified) information on applicants for pair-wise comparisons is provided in the Appendix B, and decimal numbers showed in the following figures and tables are presented rounded due to the lack of space. Pair-wise comparisons of identical pairs with regard to all criteria were made identical in AHP and pre-selective AHP, so the results of both methods could be compared.

4.2. Solution of the problem by AHP

In the first step all criteria were compared pair-wise and their weights (w) were established by Saaty's eigenvalue method, see Fig. 1. Then all alternatives were pair-wise compared with regard to all criteria, see Fig. 2 and 3 (comparisons correspond to the evaluation of alternatives provided in Appendix B, inconsistency index I.C. was smaller than 0.10 in all cases). Finally, weights of all alternatives with regard to the goal were established and the best alternative was found, see Table 2. The best alternative was E ($v = 0.181$) followed by C ($v = 0.180$) by a minimal margin of one thousandth.

	ED	EX	FLS	IN	w
ED	1	0.5	3	2	0.272
EX	2	1	5	3	0.483
FLS	0.33	0.2	1	0.5	0.088
IN	0.5	0.33	2	1	0.157

Figure 1. Pair-wise comparisons of all four criteria with corresponding weights (I.C. = 0.005).

	A	B	C	D	E	F	G	H	w		A	B	C	D	E	F	G	H	w
A	1	1	0.5	3	1	3	1	1	0.130	A	1	3	0.5	2	0.5	0.5	5	0.5	0.105
B	1	1	0.5	3	1	3	1	1	0.130	B	0.33	1	0.25	1	0.14	0.2	2	0.25	0.042
C	2	2	1	6	2	6	2	2	0.261	C	2	4	1	2	0.5	1	7	1	0.159
D	0.33	0.33	0.17	1	0.33	1	0.33	0.33	0.043	D	0.5	1	0.5	1	0.25	0.33	3	0.33	0.060
E	1	1	0.5	3	1	3	1	1	0.130	E	2	7	2	4	1	2	9	2	0.273
F	0.33	0.33	0.17	1	0.33	1	0.33	0.33	0.043	F	2	5	1	3	0.5	1	7	1	0.172
G	1	1	0.5	3	1	3	1	1	0.130	G	0.2	0.5	0.14	0.33	0.11	0.14	1	0.14	0.023
H	1	1	0.5	3	1	3	1	1	0.130	H	2	4	1	3	0.5	1	7	1	0.167
				a)										b)					

Figure 2. AHP: pair-wise comparisons of alternatives with regard to the criterion: a) ED, b) EX.

	A	B	C	D	E	F	G	H	w		A	B	C	D	E	F	G	H	w
A	1	3	1	1	3	5	1	3	0.192	A	1	5	3	3	5	5	1	3	0.275
B	0.33	1	0.33	0.33	1	2	0.33	1	0.065	B	0.2	1	0.5	0.5	1	1	0.2	0.5	0.051
C	1	3	1	1	3	5	1	3	0.192	C	0.33	2	1	1	2	2	0.33	1	0.098
D	1	3	1	1	3	5	1	3	0.192	D	0.33	2	1	1	2	2	0.33	1	0.098
E	0.33	1	0.33	0.33	1	2	0.33	1	0.065	E	0.2	1	0.5	0.5	1	1	0.2	0.5	0.051
F	0.2	0.5	0.2	0.2	0.5	1	0.2	0.5	0.036	F	0.2	1	0.5	0.5	1	1	0.2	0.5	0.051
G	1	3	1	1	3	5	1	3	0.192	G	1	5	3	3	5	5	1	3	0.275
H	0.33	1	0.33	0.33	1	2	0.33	1	0.065	H	0.33	2	1	1	2	2	0.33	1	0.098
				a)										b)					

Figure 3. AHP: pair-wise comparisons of alternatives with regard to the criterion: a) FLS, b) IN.

Table 2. Final weights of all criteria with regard to a goal

Alternative	*A*	*B*	*C*	*D*	*E*	*F*	*G*	*H*
Weights	0.14625	0.06940	0.18019	0.07297	0.18131	0.10600	0.10673	0.13713

4.3. Solution of the problem by pre-selective AHP

The procedure of pre-selective AHP proceeds in steps described in Section 2:

Step 1: Applicants are divided as follows:

$$Y = \{A, C, H\}, \ M = \{E, F, G\}, \ N = \{B, D\}.$$

Applicants in the set *N* are clearly worse than applicant *C* in all criteria, or in other words, they are regarded 'dominated alternatives'. Applicants in the set *M* form the set of non-dominated alternatives, but they are not evaluated above average by all criteria as applicants in the set *Y* by an expert (see brief information about applicants in Appendix B, which provides better understanding of this division). From formula (2) it follows that only 34 pair-wise comparisons have to be performed (118 pair-wise comparisons in non-selective AHP is necessary).

Step 2: Criteria are pair-wise compared as in non-selective AHP, see Figure 1.

Step 3: Alternatives in *Y* are pair-wise compared with regard to all criteria, see Figure 4, and their weights with regard to the goal are computed: $v(A) = 0.297$, $v(C) = 0.398$ and $v(H) = 0.305$. The best alternative is *C*.

Step 4: Alternatives in *M* are pair-wise compared with regard to all criteria, see Figure 5, and their weights with regard to the goal are computed: $v(E) = 0.461$, $v(F) = 0.239$ and $v(G) = 0.300$. The best alternative is *E*.

Step 5: The best alternatives from *Y* and from *M* are pair-wise compared with regard to all criteria, see Figure 6, and their weights with regard to the goal are computed: $v(C) = 0.513$, $v(E) = 0.487$

The best alternative found by pre-selective AHP (by a narrow margin) is *C*.

	A	C	H	*w*			A	C	H	*w*
A	1	0.5	1	0.25		A	1	0.5	0.5	0.20
C	2	1	2	0.5		C	2	1	1	0.40
H	1	0.5	1	0.25		H	2	1	1	0.40
		a)						b)		

	A	C	H	*w*			A	C	H	*w*
A	1	1	3	0.429		A	1	3	3	0.60
C	1	1	3	0.429		C	0.33	1	1	0.20
H	0.33	0.33	1	0.142		H	0.33	1	1	0.20
		c)						d)		

Figure 4. Pair-wise comparisons of alternatives in *Y* with regard to the criterion: a) ED, b) EX, c) FLS, d) IN.

	E	F	G	*w*			E	F	G	*w*
E	1	4	1	0,444		E	1	2	9	0.597
F	0.25	1	0.25	0,111		F	0.5	1	7	0.346
G	1	4	1	0,444		G	0.11	0.14	1	0.057
		a)						b)		

	E	F	G	*w*			E	F	G	*w*
E	1	2	0.33	0.229		E	1	1	0.33	0.20
F	0.5	1	0.20	0.122		F	1	1	0.33	0.20
G	3	5	1	0.649		G	3	3	1	0.60
		c)						d)		

Figure 5. Pair-wise comparisons of alternatives in *M* with regard to the criterion: a) ED, b) EX, c) FLS, d) IN.

	C	E	*w*		C	E	*w*		C	E	*w*		C	E	*w*
C	1	2	0.667	C	1	0.5	0.333	C	1	3	0.75	C	1	2	0.667
E	0.5	1	0.333	E	2	1	0.667	E	0.33	1	0.25	E	0.5	1	0.333
		a)				b)				c)				d)	

Figure 6. A comparison of the best alternative in *Y* and *M* with regard to criteria: a) ED, b) EX, c) FLS, d) IN.

4.4. Discussion of results

In AHP the alternative *E* was selected as the best, closely in front of the alternative *C*. In pre-selective AHP the alternative *C* was found the best, followed by a little margin by the alternative *E*. Though the order of two best alternatives was found to be reversed, both approaches have selected the same pair of the best alternatives. In this case pre-selective AHP had some extra virtue, as alternatives *C* and *E* were compared 'face to face' in the last step for the winner, and *C* slightly dominated *E* for the best alternative overall. Nevertheless, similarity of results provided by both methods in general remains an open question.

Conclusions

The proposed pre-selective AHP method is intuitive, natural and most importantly, it is computationally simple and not so time demanding as non-selective AHP, because it significantly reduces the number of pair-wise comparisons necessary for a selection of the best alternative. The method can be used in a large variety of multi-criteria decision making problems involving higher numbers (up to 20-25) of alternatives, so it can facilitate decision making in many real-world situations. However, for problems with number of alternatives exceeding 25, some other methods have to be developed.

Acknowledgement

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APPENDIX A

The proof of Proposition 1:

i): From formulas (1) and (2) we obtain:

$$\binom{k}{2} + k\binom{n}{2} > \binom{k}{2} + k\left[\binom{n_1}{2} + \binom{n_2}{2} + 1\right]$$

$$\binom{n}{2} > \left[\binom{n_1}{2} + \binom{n_2}{2} + 1\right]$$

$$n(n-1) > n_1(n_1-1) + n_2(n_2-1) + 1$$

$$(n_1 + n_2 + n_3)(n_1 + n_2 + n_3 - 1) > n_1(n_1-1) + n_2(n_2-1) + 1$$

$$2(n_1 n_2 + n_1 n_3 + n_2 n_3) + n_3^2 > n_3 + 1$$

Because $n_3^2 \geq n_3$ and $2(n_1 n_2 + n_1 n_3 + n_2 n_3) \geq 2n_1 n_2 \geq 8 > 1$, the inequality is proved.

ii): From (1) and (3) we obtain:

$$\binom{k}{2} + k\binom{n}{2} > \binom{k}{2} + k\binom{n_1}{2}$$

$$\binom{n}{2} > \binom{n_1}{2}$$ which is true because $n_1 < n$ (it is assumed the set N is non-empty, so $n_3 \geq 1$).

The proof for the relation (3´) is analogous.

APPENDIX B

In this Appendix information on applicants from the illustrative example in Section 4 is provided. Applicants were evaluated on the ordinal scale *excellent ≻ good ≻ average ≻ poor* with regard to FLS and IN criteria, see below. This information provides better understanding of the division of applicants into sets *Y*, *M* and *N* in Section 4.2 and also their evaluation in pair-wise comparisons.

Applicant	ED (degree)	EX (years)	FLS	IN
A	M.Sc.	5	excellent	excellent
B	M.Sc.	2	good	average
C	Ph.D.	7	excellent	good
D	Bc.	3	excellent	good
E	M.Sc.	12	good	average
F	Bc.	9	average	average
G	M.Sc.	0	excellent	excellent
H	M.Sc.	8	good	good

INTEREST RATES DETERMINATION AND CRISIS PUZZLE (EMPIRICAL EVIDENCE FROM THE EUROPEAN TRANSITION ECONOMIES)

Rajmund MIRDALA
Faculty of Economics
Technical University of Kosice, **Slovakia**
rajmund.mirdala@tuke.sk

Abstract:

Economic theory provides clear suggestions in fixed versus flexible exchange rates dilemma in fighting high inflation pressures. However, relative diversity in exchange rate regimes in the European transition economies revealed uncertain and spurious conclusions about the exchange rate regime choice during last two decades. Moreover, Eurozone membership perspective (de jure pegging to euro) realizes uncertain consequences of exchange rate regime switching especially in the group of large floaters. Successful anti-inflationary policy associated with stabilization of inflation expectations in the European transition economies at the end of 1990s significantly increased the role of short-term interest rates in the monetary policy strategies. At the same time, so called qualitative approach to the monetary policy decision-making performed in the low inflation environment, gradually enhanced the role of real interest rates expectations in the process of nominal interest rates determination. However, economic crisis increased uncertainty on the markets and thus worsen expectations of agents.

In the paper we analyse sources of nominal interest rates volatility in ten European transition by estimating the structural vector autoregression (SVAR) model. Variance decomposition and impulse-response functions are computed to estimate the relative contribution of inflation expectations and expected real exchange rates to the conditional variability of short-term money market interest rates as well as responses of nominal interest rates to one standard deviation inflation expectations and expected real interest rates shocks. Effects of economic crisis are considered by estimation of two models for every single economy from the group of the European transition economies using data for time periods 2000-2007 and 2000-2011.

Keywords: interest rates, inflation expectations, expected real interest rates, SVAR, variance decomposition, impulse-response function.

JEL Classification: C32, E31, E43

1. Introduction

Macroeconomic stability, fast recovery from deep and sudden transition shock and real output growth stimulation represents one of the most challenging objectives for the European transition economies in the early 1990s. Consistent choice as well as flexible adjustments of monetary policy framework and exchange rate regime accompanied key crucial economic policy decisions in this process. Associated changes in monetary-policy strategy reflected wide range of macroeconomic aspects underlying sustainability of appropriate exchange rate regime choice.

Among key determinants of the exchange rate regime choice in the European transition economies at the beginning of the 1990s we may consider an effort to regain macroeconomic stability, foreign exchange reserves requirements and availability, overall external economic (trade and financial) openness, etc. At the later stages of transition process we emphasize the role of massive foreign capital inflows, sustainability of real economic growth, institutional adjustments according to perspectives of ERM2 entry.

Initial transition shock followed by the sharp real output decline associated with intensive inflation pressures (caused by rapid exchange rate devaluations, price liberalization and deregulation, tax reforms, fiscal imbalances, etc.) emphasized a crucial importance of strong nominal anchor for monetary authorities in restoring a macroeconomic stability and confidence as well as positive expectations of economic agents. However immediate exchange rate based stabilization became an appropriate strategy only for countries with adequate foreign exchange reserves while being able to significantly reduce inflation pressures in adequate (short) time period to prevent undesired rapid overvaluation. As a result it seems to be convenient to divide the European transition economies in two groups (so called "peggers" and "floaters") considering initial exchange rate regime framework.

Economic theory provides clear suggestions in fixed versus flexible exchange rates dilemma in fighting high inflation pressures. However, relative diversity in exchange rate regimes in the European transition economies revealed uncertain and spurious conclusions about the exchange rate regime choice during last two decades. Moreover, Eurozone membership perspective (de jure pegging to euro) realizes uncertain consequences of exchange rate regime switching especially in the group of large floaters.

Successful anti - inflationary policy associated with stabilization of inflation expectations in the European transition economies at the end of 1990s significantly increased the role of short-term interest rates in the monetary policy strategies. At the same time, so called qualitative approach to the monetary policy decision-making performed in the low inflation environment, gradually enhanced the role of real interest rates expectations in the process of nominal interest rates determination. However, economic crisis increased uncertainty on the markets and thus worsen expectations (inflation expectations including) of agents.

Eurozone member countries as well as global economy are currently exposed to the negative effects of the financial and economy crisis. To alleviate recession and support economic recovery, monetary authorities dramatically reduced key interest rates. Low interest rates together with quantitative easing, however, should not necessarily increase supply of loans due to prudential credit policy of commercial banks reflecting increased uncertainty on the markets. As a result, policy of low interest rates seems to be inefficient.

In the paper we analyse sources of nominal interest rates volatility in ten European transition economies to identify the impact of inflation expectations and expected real interest rates on the nominal interest rates volatility by estimating the structural vector autoregression (SVAR) model. From constructed model we estimate the relative contribution of both determinants to the conditional variability (variance decomposition) of short - term money market interest rates. At the same time we estimate responses (impulse-response functions) of short - term nominal money market interest rates to one standard deviation inflation expectations and expected real interest rates shocks. Effects of economic crisis on our results are considered by estimating two models for every single economy from the group of the European transition economies employing monthly data for two different time periods 2000-2007 and 2000-2011. Comparison of results for both models is crucial for analysis the economic crisis contribution to the nominal interest rates volatility in ten European transition economies.

2. Overview of exchange rate regime evolution in the European transition economies

Exchange rate policy evolution represents one of the key parts of crucial economic policy decisions at the beginning of the transition process in countries from the region of Central and Eastern Europe in the early 1990s. Despite its complexity and particularity there seems to be some similar features at the starting point of transition process in all European transition economies such as recession followed by initial transition shock and common vision of European union and Economic and Monetary union membership.

Macroeconomic stability as one of the primary objectives in the initial phase of the transition process affected exchange rate regime choice in the European transition economies. However, low credibility of monetary institutions, lack of foreign exchange reserves and high inflation differentials represented real constraints and difficulties related to the sustainability of pegged exchange rate regimes. Brief overview of the exchange rate regimes evolution in the European transition economies provides table 1.

It seems to be clear that the European transition economies did not follow common practice in the process of the exchange rate regime choice at the beginning of the 1990s. Small Baltic countries adopted currency board regime (Estonia and Lithuania) eventually conventional fixed peg regime (Latvia). Hungary adopted crawling peg regime (after few years of adjustable peg in place) together with Poland. Czech Republic and Slovak Republic adopted pegged regime with horizontal bands. Despite high inflation rates Bulgaria, Romania and Slovenia adopted floating exchange rate regime due to low level of reserves and lack of credibility though Bulgaria switched to currency board after 1996-97 financial crisis. It seems to be clear that most of the European transition economies enjoyed disinflationary and credibility benefits of so called hard or soft exchange rate regimes. Fixed exchange rates as the nominal anchor significantly contributed to the successful disinflationary process at the end of the 1990s.

Table 1 Exchange rate regimes in the European transition economies

Country	Exchange rate regime																						
Bulgaria		managed floating						currency board															
Czech Republic	peg with horizontal bands							managed floating															
Estonia			currency board													ERM2						Eurozone	
Hungary	adjustable peg					crawling peg					peg with horizontal bands								managed floating				
Latvia		floating			conventional fixed peg											ERM2							
Lithuania		floating			currency board										ERM2								
Poland		crawling peg									free floating												
Romania	free floating								managed floating														
Slovak Republic	peg with horizontal bands								managed floating							ERM2				Eurozone			
Slovenia	managed floating												crawling band		ERM2			Eurozone					
Period	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012

Note: Exchange rate regime evolution in the European transition economies: *Bulgaria* - since 1991 floating (pegged exchange rate regime undesirable due to possible low credibility), currency board since 1997 (after 1996-1997financial crisis (public debt, bad commercial banks loans)).

Czech Republic - exchange rate pegged to currency basket with narrow but continuously widen horizontal bands, since May 1997 after currency attacks switch to managed floating with no predetermined path for the exchange rate with DEM (EUR) as reference currency.

Estonia - currency board since 1992 till 2011 (euro adoption), plan to adopt in 2008 but delayed due high inflation, since 2011 Eurozone membership.

Hungary - managed floating till February 1995, since March 1995 till the end of 1999 crawling peg with continuously decreased rate of periodical devaluation and widen horizontal bands, since January 2000 exchange rate pegged to euro combined with wide horizontal bands (since May 2001), since May 2008 managed floating with EUR as reference currency.

Latvia - since February 1994 exchange rate pegged to SDR (fixing the exchange rate to a basket of currencies (SDR) instead of a single currency serves to promote long-term stability) (since January 2005 pegged to EUR).

Lithuania - since April 1994 currency board (exchange rate pegged to USD, in February 2002 pegging switched to EUR).

Poland - since the end of 1991 crawling peg with continuously decreased rate of periodical devaluation and widen horizontal bands, since April 2000 free floating.

Romania - free floating, since 1998 exchange rate arrangement reclassified as managed floating.

Slovak Republic - exchange rate pegged to currency basket with narrow but continuously widen horizontal bands, since October 1998 after currency attacks switch to managed floating with no predetermined path for the exchange rate with DEM (EUR) as reference currency, since 2009 Eurozone membership.

Slovenia - managed floating with no predetermined path for the exchange rate (since February 2002 crawling band - the monetary authority manages the float of the domestic currency within certain fluctuating margins around a depreciating path - a heavily-managed crawling band with pragmatic monetary, real, external and financial indicators).

ERM2 - June 2004 - Estonia (left in January 2011 after euro adoption), Lithuania, Slovenia (left in January 2007 after euro adoption) - May 2005 – Latvia - November 2005 - Slovak Republic (left in January 2009 after euro adoption)

Source: IMF AREAER 1990-2011, author's processing.

Till the end of the decade many countries from the group switched to more flexible exchange rate regimes (Czech Republic in 1997, Slovak Republic in 1998 and Poland in 2000). Similarly Hungary switched to intermediate regime by widening horizontal bands. Although Hungary stacked to exchange rate pegged to euro, by employing wide horizontal bands de facto followed the same trend as previous group of countries.

Exchange rate regime choice also affected corresponding monetary policy strategy framework. Countries with exchange rate as nominal anchor (hard pegs or soft pegs with narrow horizontal bands) successfully implemented exchange rage targeting. Countries with soft pegs (pegs with wide horizontal bands or crawling pegs) and floating regimes employed monetary targets as intermediate criteria of monetary policy (monetary targeting).

Overall success of disinflationary process represents one of the key milestones on the road to stable macroeconomic environment with crucial role of low and stable inflation expectations. Low inflation combined with stable inflation expectations is considered to be a substantial condition for switching from quantitative (money supply) to qualitative (interest rates) approach in monetary policy decision-making. This adjustment in monetary policy strategies seems to be obvious in the European transition economies since the end of 1990s as a part of prevailing trend in weakening of relationship between money and inflation. Increased role of inflation expectations together with raising credibility of monetary authorities resulted in adoption of direct (explicit) inflation targeting strategy in many European transition economies - Czech Republic (1998), Poland (1999), Hungary (2001), Slovenia (2002), Romania (2005) and Slovak Republic (2005).

European transition economies challenged a decision of a euro adoption and eurozone membership several years before the economic crisis arises. Disputable policy implications of sacrificing monetary sovereignty rose as a crucial assumption affecting main features as well as durability of preparation phase timetable in countries with flexible exchange rate regimes (Czech Republic, Poland, Romania, Slovak Republic and Slovenia). Among a variety of determinants and aspects we emphasize the role of decisions inevitably associated with "right" scheduling of the Eurozone entry. Some countries from the group of the European transition economies already joined the Eurozone (Estonia (2011), Slovak Republic (2009), Slovenia (2007)) followed by participation of their currencies in ERM2 (Estonia (June 2004), Slovak Republic (November 2005), Slovenia (June 2004)). On the other hand currencies of Lithuania and Latvia are still participating on ERM2.

The loss from sacrificing exchange rates flexibility in the Eurozone candidate countries became directly confronted with benefits related to exchange rate stability associated with sacrificing monetary autonomy. Despite plausible advantages of pegging exchange rates of candidate countries to euro followed by the euro adoption it seems to be clear that risks associated with potential effects of breakdown in mutual interconnections between macroeconomic development and flexible exchange rates leading path seem to be of a minor interest in current empirical literature.

3. Overview of the literature

Obvious trend in the exchange rate regimes development and low inflation environment, together with increased sensitivity of commercial banks to the interest rates development in the European transition countries in the pre - crisis period during the last decade, enabled monetary authorities to successfully harmonize national monetary policy frameworks with Eurozone legal and operative pillars. Exchange rates stability during the preparation phase on the road to euro adoption was clearly associated with capabilities of national monetary authorities to maintain a monetary stability via interest rates transmission channel.

Gradual transition toward implementation of the qualitative approach mechanisms to the monetary policy decision-making in the European transition economies significantly increased the role of short-term interest rates adjustments. Operative fine-tuning of money market interest rates provides crucial information for commercial banks about intentions of monetary authority and thus enhancing signal function of key interest rates. However, desired effects of interest rate changes may be weaken especially in non-stable inflation environment. Sudden inflation shifts may cause misleading interpretation of interest rates adjustments and thus provide spurious signals to agents.

Linkage between inflation and nominal interest rates seems to be well observed. There is a strong interconnection in development of both categories. Traditional channel of impulses transmission provides clear suggestion about causal relationship between inflation and nominal interest rates - changes in the rate of inflation forces changes in the nominal interest rates due to changes in inflation premium. Following this assumption, central banks raises interest rates as the response to the inflation increase (this practice is known as monetary policy rule), trying to stabilize (maintain) purchasing power of the money. On the other hand, inflation increase doesn't necessarily reflect unreasonably fast economic growth signalizing overheating. In such a case, increased interest rates should not contribute to the inflation drop. Therefore, raising inflation is not necessarily associated with fast economic growth, but may be a result of market failures or exogenous shocks and thus affect economies even in the recession or stagnation.

Nominal interest rates are not necessarily determined just by the rate of inflation. It is due fact that nominal interest rates consists of two components - real value of money and inflation premium.

As a result, changes in nominal interest rates may be caused not only by forces determining the rate of inflation, but also by a number of variables affecting real interest rates (expectations of agents included). Nominal price of money is determined by a wide variety of determinants, that is why it may not seem to be clear, whether nominal interest rates volatility is caused by changes in inflation expectations or expected real interest rates. Correct identification of (especially short-term) nominal interest rates volatility seems to be a crucial aspect for successful monetary policy decision-making. For example, an increase in the nominal interest rates caused by higher inflation expectations of agents represents a right signal for monetary policy tightening. Corresponding increase in the rate of interest seems to be well suited decision for reduction of excessive inflation pressures. On the other hand, an increase in the nominal interest rates caused by higher expected real interest rates is usually associated with different monetary policy consequences.

Inflation versus interest rates nexus seems to be widely discussed area in the empirical literature. St-Amant (St-Amant 1996) employed bivariate SVAR model to analyse the impact of expected inflation and ex-ante real interest rates on the nominal interest rates volatility of government bonds with maturity one year and ten years in the U.S.A. Following author's results we may conclude that inflation expectations seems to prevailing determinant of nominal interest rate volatility since the beginning of 1970s till the middle of 1980s, whereas shifts in expected real interest rates substantially contributed to the nominal interest rates volatility during the first half of the 1990s. Deacon, and Derry (Deacon, and Derry 1994) provided a variety of methods for identification of market interest rate and inflation premium from the interest rates associated with government bonds. Engsted (Engsted 1995) implemented cointegration analysis and VAR methodology to examine properties of interest rates and inflation time series. Neely, and Rapach (Neely, and Rapach 2008) analyzed time series for real interest rates employing growth equilibrium model. Authors dedicated extra effort to investigate a presence of persistence patterns especially in medium and long time period. Ragan (Ragan 1995) analyzed time structure of nominal interest rates to estimate inflation expectations of agents. Results of his empirical investigation provided interpretation of the real interest rate volatility over time. Crowder, and Hoffman (Crowder, and Hoffman 1996) analyzed mutual interconnections between inflation and interest rates. Implemented SVAR methodology helped authors to isolate permanent and temporary sources of volatility for nominal interest rates and inflation time series. Lai (Lai 2004) examined properties of time series for real interest rates. Author investigated conditions to maintain a time series stacionarity under changing length of base period. Garcia, and Perron (Garcia, and Perron 1996) analyzed long-run features of time series for real interest rates in the U.S.A. Lanne (Lanne 2002) verified a validity of Fisher effect following the results of lung-run interconnections testing between inflation and nominal interest rates in the U.S.A.

4. Econometric model

Employed methodology to analyse sources of nominal interest rates volatility is based on technique pioneered by Blanchard, and Quah (Blanchard, and Quah 1988) who estimated bivariate model with two types of exogenous shocks. To identify structural shocks authors implemented identification scheme based on decomposing effects of the shocks into permanent and transitory components. Long-run identifying restrictions were applied on the variance-covariance matrix of reduced form VAR residuals.

Following our objective we estimate a model consisting of the vector of endogenous variables X_t and the same number of primitive (structural) shocks. Unrestricted form of the model is represented by the following infinite moving average representation:

$$X_t = A_0 \varepsilon_t + A_1 \varepsilon_{t-1} + A_2 \varepsilon_{t-2} + \ldots = \sum_{i=0}^{\infty} A_i \varepsilon_{t-i} = \sum_{i=0}^{\infty} A_i L^i \varepsilon_t \tag{1}$$

or

$$\begin{bmatrix} ir_{n,t} \\ p_t \end{bmatrix} = \begin{bmatrix} a_{11} & a_{12} \\ a_{21} & a_{22} \end{bmatrix} \begin{bmatrix} \varepsilon_{p^e,t} \\ \varepsilon_{ir_r^e,t} \end{bmatrix} \tag{2}$$

where X_t is a vector of the endogenous macroeconomic variables, A_i is a polynomial variance-covariance matrix of lag-length l, L is lag operator and ε is a vector of identically normally distributed, serially uncorrelated and mutually orthogonal white noise disturbances (vector of reduced form shocks in elements of X). Vector X_t of the endogenous variables of the model $\left(X_t = \left[ir_{n,t}, p_t \right] \right)$ consists of the following two elements: nominal interest rates $\left(ir_{n,t} \right)$ and rate of inflation $\left(p_t \right)$. Vector ε_t of the past primitive shocks is represented by the following two shocks: inflation expectations shock $\left(\varepsilon_{p^e,t} \right)$ and expected real interest rates shock $\left(\varepsilon_{ir_r,t} \right)$.

The structural exogenous shocks from equation (1) are not directly observable (cannot be correctly identified) due to the complexity of information included in true form VAR residuals. As a result structural shocks cannot by correctly identified. It is necessary to transform true model into following reduced form

$$X_t = e_t + C_1 e_{t-1} + C_2 e_{t-2} + \ldots = \sum_{i=0}^{\infty} C_i e_{t-i} = \sum_{i=0}^{\infty} C_i L^i e_t \qquad (3)$$

or

$$\begin{bmatrix} ir_{n,t} \\ p_t \end{bmatrix} = \begin{bmatrix} c_{11i} & c_{12i} \\ c_{21i} & c_{22i} \end{bmatrix} \begin{bmatrix} u_{i^e,t} \\ u_{ir_r^e,t} \end{bmatrix} \qquad (4)$$

From equations (1) and (3) we clearly observe relationship between primitive shocks ε_t and reduced form VAR residuals e_t:

$$e_t = A_0 \varepsilon_t \qquad (5)$$

Matrices C_i we obtain from estimated equation (1). Considering $A_i = C_i A_0$, we can now identify matrix A_0. To estimate coefficient of matrix A_0, it is necessary to impose four restrictions. Two restrictions are simple normalizations, which define the variance of the shocks $\varepsilon_{p^e,t}$ and $\varepsilon_{ir_r,t}$ (it follows the assumption that each of the disturbances has a unit variance, $\mathrm{var}(\varepsilon) = 1$). Third restriction comes from an assumption that identified shocks are orthogonal. Normalization together with an assumption of the orthogonally implies $A_0' A_0 = \Sigma$, where Σ is the variance covariance matrix of $e_{p^e,t}$ and $e_{ir_r,t}$. The final restriction, which allows the matrix C to be uniquely defined, represents the long-run identifying restriction providing that a cumulative effect of expected real interest rate shock to the nominal interest rates variability is zero:

$$\sum_{i=0}^{\infty} a_{12i} = 0 \qquad (6)$$

Long-run identifying restrictions enable us to isolate temporary and permanent sources of nominal interest rates volatility and thus to distinguish effects of both structural shocks on endogenous variables of the model.

In terms of our vector autoregression model it implies

$$\begin{bmatrix} ir_{n,t} \\ p_t \end{bmatrix} = \begin{bmatrix} 1 & 0 \\ . & 1 \end{bmatrix} \begin{bmatrix} \varepsilon_{i^e,t} \\ \varepsilon_{ir_r^e,t} \end{bmatrix} \qquad (7)$$

Correctly identified model can be finally estimated employing SVAR methodology. Variance decomposition and impulse-response functions are computed to observe a relative contribution of inflation expectations and expected real interest rates shocks to the nominal interest rates conditional variance as well as response of nominal interest rates to one standard deviation inflation expectations and expected real interest rates shocks. Effects of economic crisis on our results are considered by estimation of two models (with data sets for two different time periods 2000 - 2007 (model A) and 2000 - 2011 (model B)) for every country from the group of the European transition economies. Comparison of results for both models is crucial for evaluation of the economic crisis contribution to the nominal interest rates volatility in ten European transition economies.

5. Data and results

To estimate a sources of the nominal interest rates volatility in ten European transition economies (Bulgaria, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovak Republic, Slovenia) we employ monthly data with period 2000M1 - 2007M12 (model A) consisting of 96 observations and with period 2000M1 - 2011M12 (model B) consisting of 144 observations for following endogenous variables - nominal interest rates (interbank offered rates with 3 months maturity[9]) and inflation (core inflation). Estimation of two models corresponds with the primary objective of the paper that is to evaluate effects of inflation expectations and estimated real interest rates on nominal interest rates development considering possible implications of economic crisis on presented results. Time series for all endogenous variables were drawn from IMF database (International Financial Statistics November 2012). Time series for the rate of inflation were seasonally adjusted.

We also emphasize a relative importance of exchange rate regime choice on the results providing suggestion about potential effects of breakdown in mutual interconnections between macroeconomic development and flexible exchange rates leading path (as one of the key implications after euro adoption). The beginning of the period for time series included in both models is related the continuous strengthening of qualitative features in the monetary policy decision - making since the beginning of the past decade.

Correct estimation of both models and precise identification of exogenous shocks hitting the model it is necessary VAR model to be stationary. To test the stationarity of both models it is necessary to test the time series for unit roots and cointegration. To test the stability of the VAR model we have also applied a number of diagnostic tests of the VAR residuals (normality, serial correlation, heteroskedasticity).

Overview of interest rates and inflation development in the European transition economies provides Figure 1. As we have expected, most countries experienced obvious trend in inflation decrease during the first half of the past decade. Adverse impacts of external (oil and gas markets) and internal (seasonal food, indirect taxes) price development together with spurious price effects of euro adoption (in respective countries) and economic crisis contributed to ceasing or slowing down of positive inflation trend in most of countries from the group. On the other hand interest rate development seems to be affected by exchange rate regime choice. Countries with currency board arrangements (Bulgaria, Estonia and Lithuania) and conventional fixed peg (Latvia) experienced relatively stable trend in the interest rates development during the pre - crisis period. In countries with flexible exchange rate arrangements[10] interest rates seem to be much more determined by main trends in the development of inflation.

In both groups of countries interest rates did not precisely follow a leading path of inflation. At the same time, adjustments in interest rates seem to be lagged following changes in inflation with up 6 month delay. Countries with hard pegs also experiences repetitive periods with negative real interest rates in the recent years due to excessive inflation pressures.

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[9] Interbank offered rates in Estonia, the Slovak Republic and Slovenia were replaced by EURIBOR since the Eurozone membership.

[10] Although Hungary employed fixed exchange rate pegged to euro till May 2008, due to wide horizontal bands (±15%) exchange rate floated in de facto flexible exchange rate arrangement.
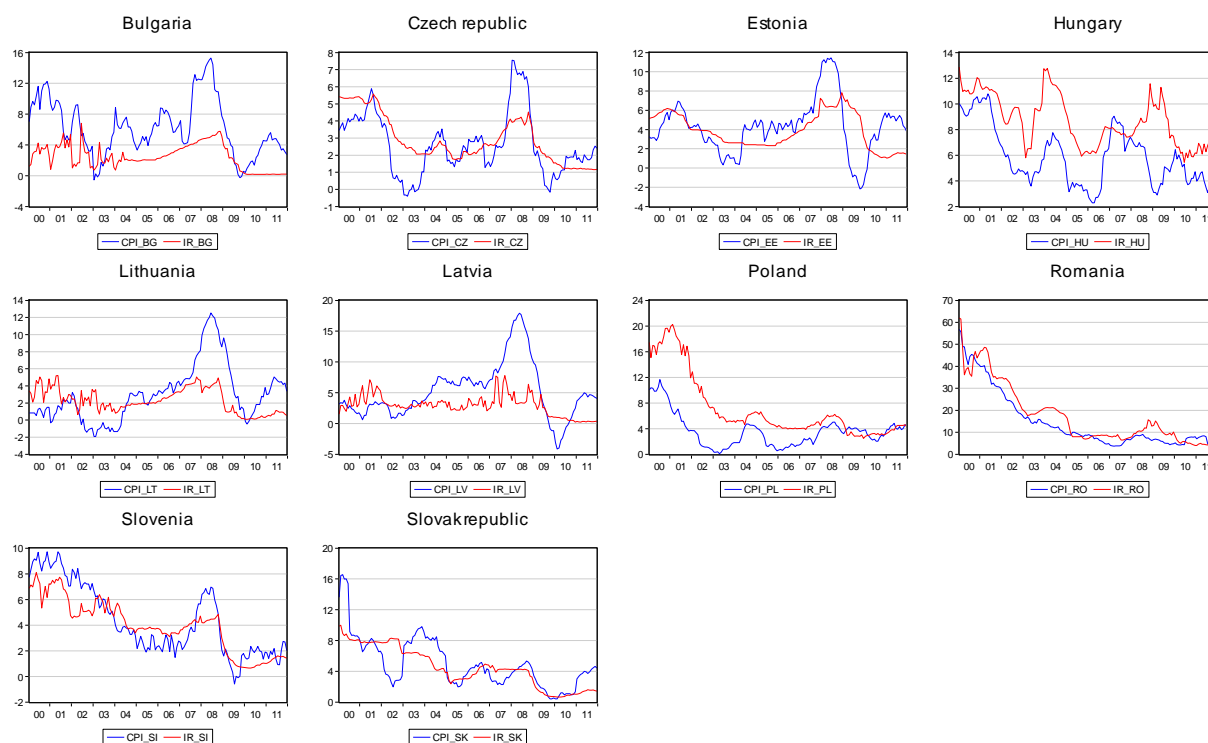
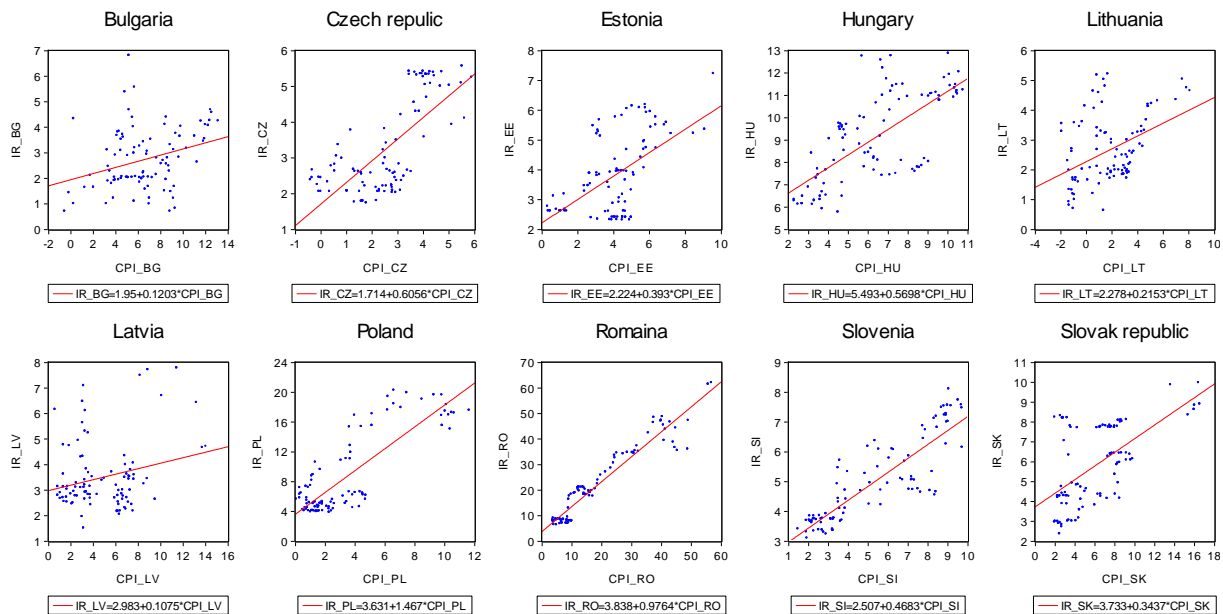**Figure 1**. Interest Rates and Inflation (2000M1-2011M12)

Note: Endogenous variables - inflation (CPI), short-term interest rates (IR) are expressed in percentage.
   Source: Compiled by author based on data taken from IMF - International Financial Statistics (November 2012).

Crises period affected interest rates and inflation in all countries. Inflation rates in all ten European transition economies reached its local maximum (for the period of last few years) shortly before negative effects of ongoing economic crisis revealed. Although the rate of inflation seems to differ at the end of pre-crisis period in each individual country, all economies subsequently experienced rapid disinflation as a result of recession. In all countries interest rates adapted to changes in inflation with just moderate intensity causing high volatility and instability of real exchange rates. Moreover, Hungary experienced the period of asymmetric development of inflation and interest rates leading path. Strong divergence effect in Hungary was associated with sharp increase in real interest rates emphasizing crisis related internal and external macroeconomic imbalance in the country.

A. Correlation Analysis

Mutual relationship between inflation and interest rates in the European transition economies during the pre-crisis period depicts figure 2. Coefficients of correlation between core inflation and short-term interest rates revealed plausible implications of exchange rate regime choice. In the group of countries so called "peggers" (countries with currency board arrangement or conventional fixed peg with narrow horizontal bands) the coefficients of correlation between inflation and interest rates seem to be lower (in some cases even much lower) than in the group of countries so called "floaters" (countries with free or managed floating or intermediate pegs).

Figure 2. Inflation and Interest rates Correlation Coefficients (2000M1-2007M12)

Note: Endogenous variables - inflation (CPI), short-term interest rates (IR) are expressed in percentage. Correlation coefficients between inflation and interest rates: BG (0.310), CZ (0.715), EE (0.556), HU (0.700), LT (0.428), LV (0.235), PL (0.825), RO (0.957), SI (0.864), SK (0.595).
   **Source:** Author's calculations.

Following the results of correlation analysis we may conclude that in countries with exchange rate as the nominal anchor, non-autonomous monetary policy is obviously associated with low interest rates (irrespective of inflation) while exchange rate target contributes to successful disinflation process. On the other hand interest rates leading path doesn't seem to be directly affected by domestic rate of inflation proving a substantial source of real exchange rate volatility. Even though, stabilized expectations of agents due to exchange rate targeting significantly contributes to the overall macroeconomic stability.

Countries with inflation targeting and no predetermined path for the exchange rate achieved higher correlations between interest rates and inflation especially due to increased flexibility of short-term interest rates. In such countries, autonomous monetary policy obviously contributes to higher mutual interconnections between the rate of interest and the rate of inflation. Signal function of interest rates adjustments seems to be more significant and thus providing more precise information to agents about the price stability associated with the overall macroeconomic performance of the country.

Mutual relationship between inflation and interest rates in the European transition economies during the extended period depicts Figure 3. Coefficients of correlation between core inflation and short-term interest rates revealed curious effects of the crisis period.

Economic crisis significantly affected results of correlation analysis between inflation and interest rates. It seems that the strength of mutual interconnections between both categories weakened in most of countries from the group irrespective of the exchange rate arrangement. Increased uncertainty on the markets resulted in drop of information value resulted from associated changes in prices especially due to exogenous character of prices related initial determinants causing decreased efficiency of allocative efficiency of the markets. Lower predictability of inflation trend during the recession together with higher discretion in the monetary policy decision-making following the principle of low interest rate policy and quantitative easing that monetary authorities implemented to fight a crisis, contributed to higher volatility in the real exchange rates development in most of the countries from our group. The only exception in the group of "peggers" we found in two countries with currency board arrangements - Bulgaria and Lithuania and in the group of "floaters" - Slovak republic (country joined Eurozone in 2009).
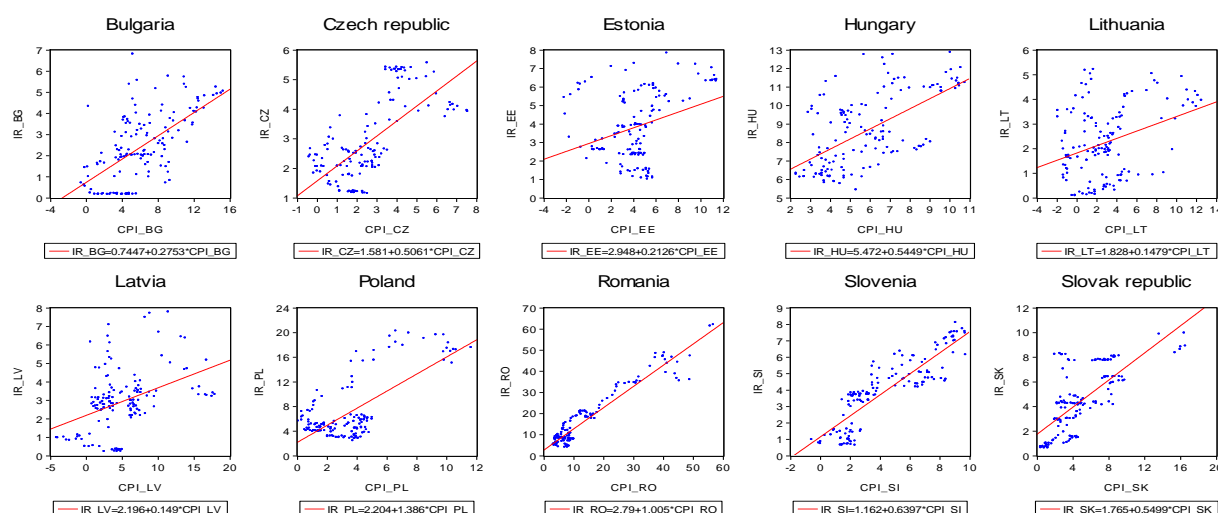
Figure 3. Inflation and Interest rates Correlation Coefficients (2000M1-2011M12)

Note: Endogenous variables - inflation (CPI), short-term interest rates (IR) are expressed in percentage.
Correlation coefficients between inflation and interest rates: BG (0.621), CZ (0.677), EE (0.334), HU (0.616), LT (0.351), LV (0.404), PL (0.704), RO (0.955), SI (0.871), SK (0.714).
Source*:* Author's calculations.

Despite decreased interconnection between interest rates and inflation development during the extended period, coefficients of correlations between both categories remained, in general, higher in the group of "floaters". Moreover, overall decrease in correlation coefficients doesn't seem to be significant in this group of countries. Spurious effects of the crisis period seem to be more evident in the group of "peggers" considering much more significant changes in the coefficients of correlation between the rate of inflation and short-term interest rates.

Summarizing overview for correlation analysis of mutual relationship between inflation and interest rates in the European transition economies in pre-crisis and extended period provides table 2.

Table 2. Summary of Correlation Analysis for Pre-crisis and Extended Period

Country	2000-2007	2000-2011	Δ
Bulgaria	0.310	0.621	↑
Czech Republic	0.715	0.677	↓
Estonia	0.556	0.334	↓
Hungary	0.700	0.616	↓
Latvia	0.428	0.351	↓
Lithuania	0.235	0.404	↑
Poland	0.825	0.704	↓
Romania	0.957	0.955	=
Slovak Republic	0.595	0.714	↑
Slovenia	0.864	0.871	=

Source*:* Author's calculations.

B. Unit Root Test

Augmented Dickey-Fuller (ADF) and Phillips - Perron (PP) tests were computed to test endogenous variables for the presence of a unit root. Results of unit root tests are summarized in the table 3 (detailed results of unit root are not reported here to save space. Like any other results, they are available upon request from the author).

Table 3. Unit Root Tests

Country	Model	Order of integration of endogenous variables			
		CPI		IR	
		ADF	PP	ADF	PP
Bulgaria	A	I(1)	I(1)	I(1)	I(1)
	B	I(1)	I(1)	I(1)	I(1)
Czech Republic	A	I(1)	I(1)	I(1)	I(1)
	B	I(1)	I(1)	I(1)	I(1)
Estonia	A	I(1)	I(1)	I(1)	I(1)
	B	I(1)	I(1)	I(1)	I(1)
Latvia	A	I(1)	I(1)	I(1)	I(1)
	B	I(1)	I(1)	I(1)	I(1)
Lithuania	A	I(1)	I(1)	I(1)	I(1)
	B	I(1)	I(1)	I(1)	I(1)
Hungary	A	I(1)	I(1)	I(1)	I(1)
	B	I(1)	I(1)	**I(0)**	I(1)
Poland	A	I(1)	I(1)	I(1)	I(1)
	B	I(1)	**I(0)**	I(1)	I(1)
Romania	A	I(1)	I(1)	I(1)	I(1)
	B	I(1)	I(1)	I(1)	I(1)
Slovak Republic	A	I(1)	I(1)	I(1)	I(1)
	B	I(1)	I(1)	I(1)	I(1)
Slovenia	A	I(1)	I(1)	I(1)	I(1)
	B	I(1)	I(1)	I(1)	I(1)

Source: Author's calculations.

Both ADF and PP tests indicate that all variables are not stationary on the values so that the null hypothesis of a unit root cannot be rejected for any of the series (with exception of interest rates (ADF, model B) in Hungary and inflation in Poland (PP, model B). Testing variables on the first differences indicates that the time series are stationary. We may conclude that all variables are I(1).

C. Cointegration Test

Because endogenous variables have a unit root on the values it is necessary to the test the time series for cointegration using the Johansen and Juselius cointegration test. The test for cointegration was calculated using three lags as recommended by AIC (Akaike Information Criterion) and SIC (Schwarz Information Criterion). Results of cointegration tests are summarized in the Table 4 (detailed results of cointegration tests are not reported here to save space. Like any other results, they are available upon request from the author). The results of the Johansen cointegration tests confirmed the results of the unit root tests for both models (models A and B) in all ten countries providing that any linear combination of two variables is nonstationary process. Trace statistics and maximum eigenvalue statistics (both at 0.05 level) in each individual country indicated that there is no cointegration among endogenous variables of both models.

**Table 4.** Johansen, and Juselius Cointegration Tests

| Country | Number of cointegrating equations | | | |
| | Model A | | Model B | |
	trace stat.	max eigvalue stat.	trace stat.	max eigvalue stat.
Bulgaria	0	0	0	0
Czech republic	0	0	0	0
Estonia	0	0	0	0
Latvia	0	0	0	0
Lithuania	0	0	0	0
Hungary	0	0	0	0
Poland	0	0	0	0
Romania	0	0	0	0
Slovak republic	0	0	0	0
Slovenia	0	0	0	0

Source: Author's calculations.

D. VAR Stability

To test the stability of VAR model we also applied a number of diagnostic tests. We found no evidence of serial correlation, heteroskedasticity and autoregressive conditional heteroskedasticity effect in the disturbances. Model also passed the Jarque-Bera normality test, so that errors seem to be normally distributed. VAR models seem to be also stable because inverted roots of the model for each country lie inside the unit circle (figure 4).

Model A
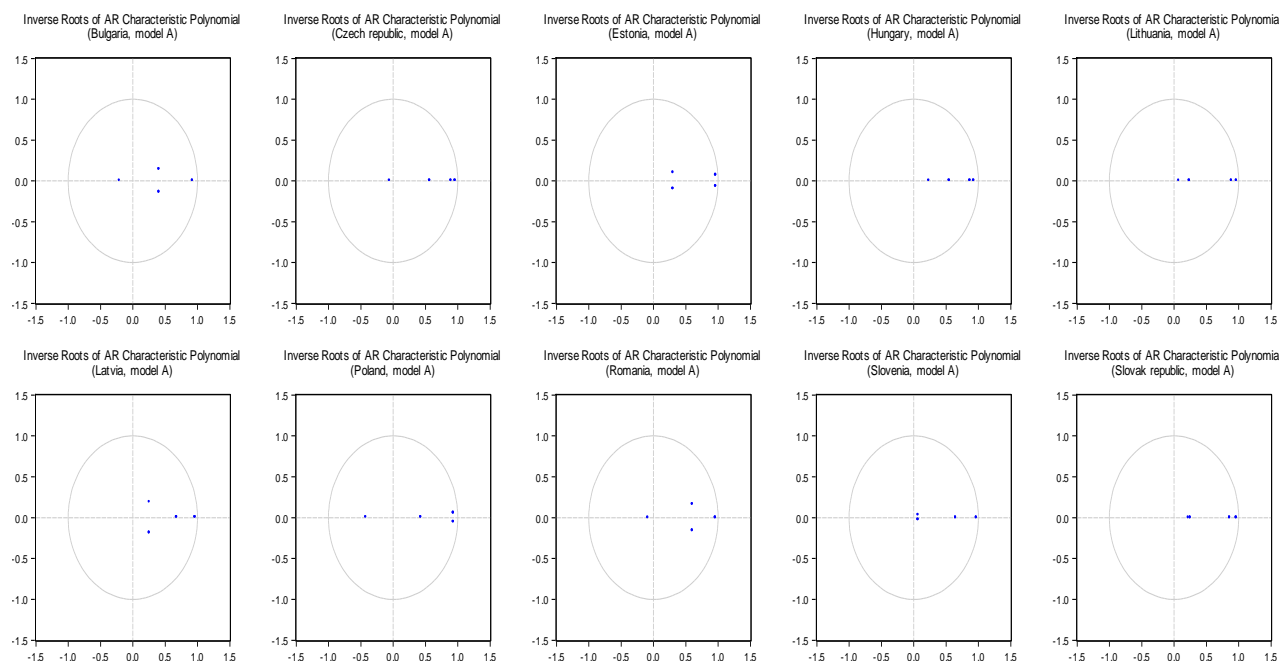
Model B
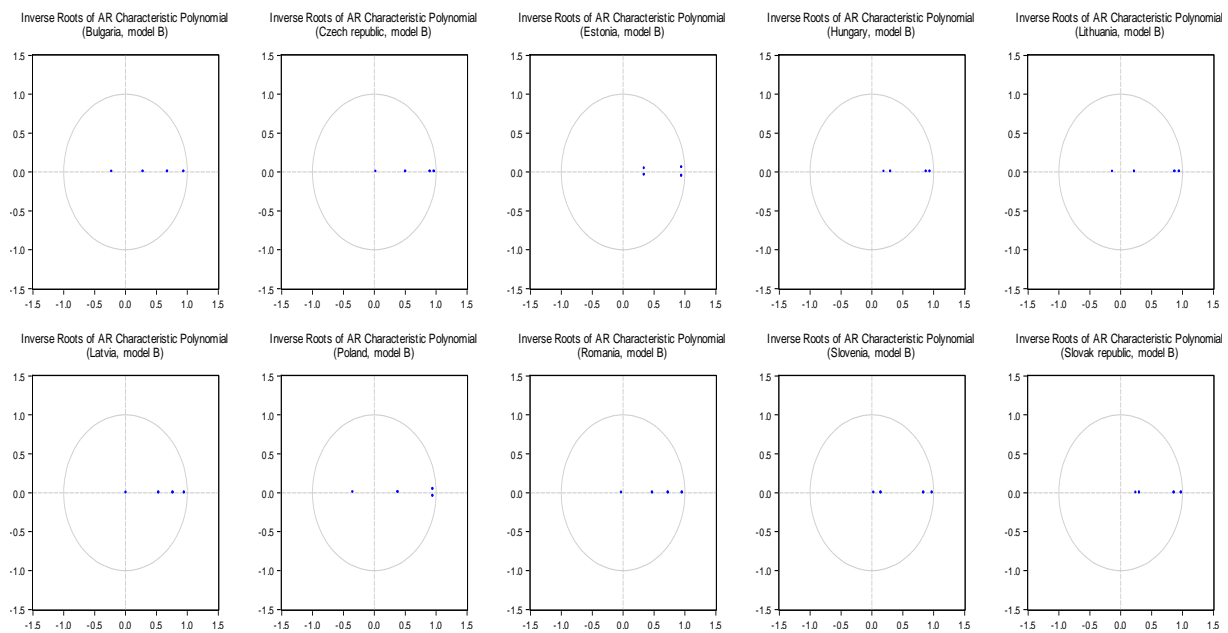
Figure 4. VAR Stability Condition Check

Source: Author's calculation.

Following results of the unit root and cointegration tests we estimated both models using variables in the first differences so that we can calculate variance decompositions and impulse-response functions for all ten countries from the group of the European transition economies. Following the main objective of the paper we summarize the relative importance of inflation expectations and expected real interest rates shocks in the nominal interest rates conditional variance. We also analyze individual responses of nominal interest rates to the positive one standard deviation inflation expectations and expected real interest rates shocks. Effects of the crisis period on sources of the nominal interest rates volatility in the European transition economies is observed by comparing the results for estimated models employing time series for two different periods - model A (2000M1-2007M12) and model B (2000M1-2011M12).

E. Variance Decomposition

Figure 5 shows the estimated contribution of inflation expectations and expected real interest rates shocks to nominal interest rates conditional variance in the European transition economies during the pre-crisis period (2000M1-2007M12) in model A.

Overview of structural shocks contributions to the nominal interest rates unpredicted shifts revealed remarkable implications of the exchange rate regime choice. Immediate contribution of the expected real interest rates shock is significantly higher in countries with currency board arrangement (Bulgaria, Estonia, and Lithuania) and conventional fixed peg (Latvia) though the size of initial contribution differs in all four economies. It seems like exchange rate as the nominal anchor contributes to the stability of inflation expectations (especially in the short-run). Exchange rate targeting thus provides a suitable vehicle for reducing short-run effects of inflation expectations on the price mechanism on the money market. Higher contribution of expected real interest rates to the nominal interest rates variance also reduces distorting effects of money markets imperfections resulting from false price signals related to sudden inflation shifts. It also seems to be obvious that the relative contribution of the expected real interest rates shock decreases over time followed by increasing role of the inflation expectations shock.
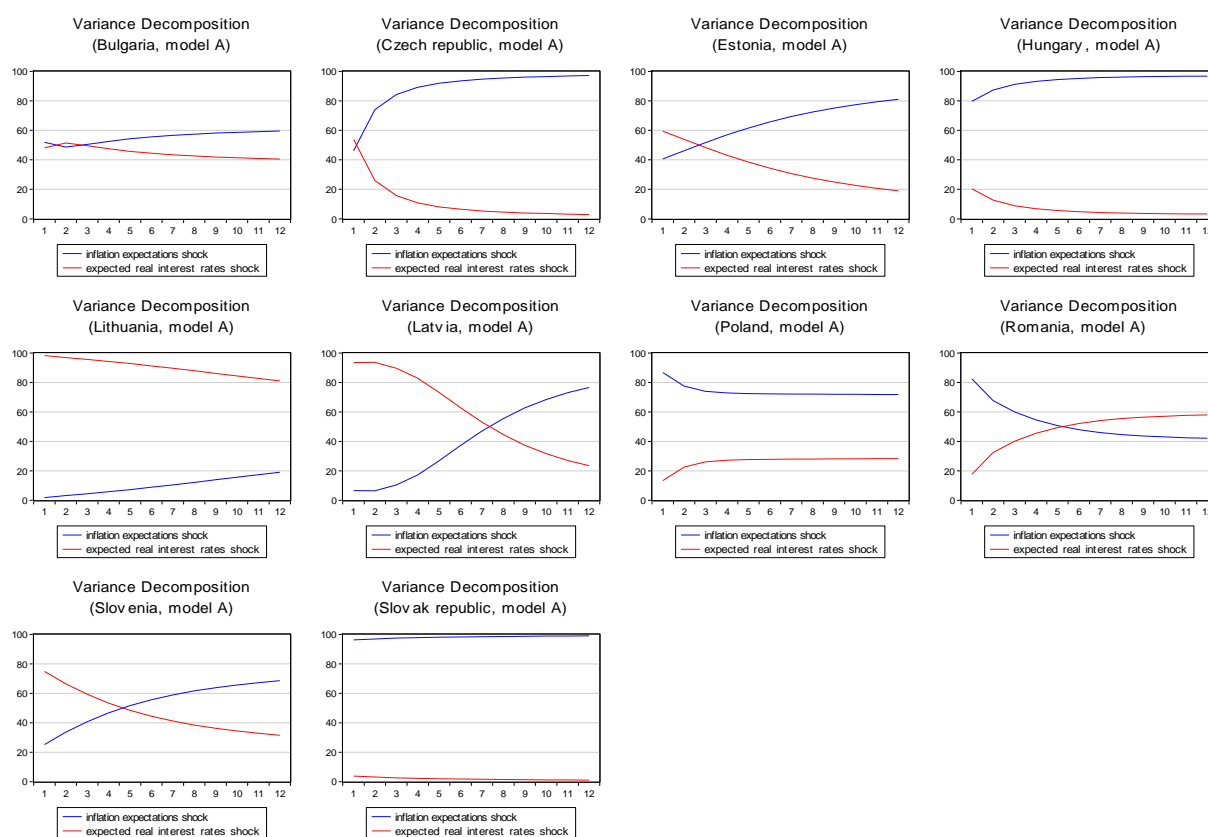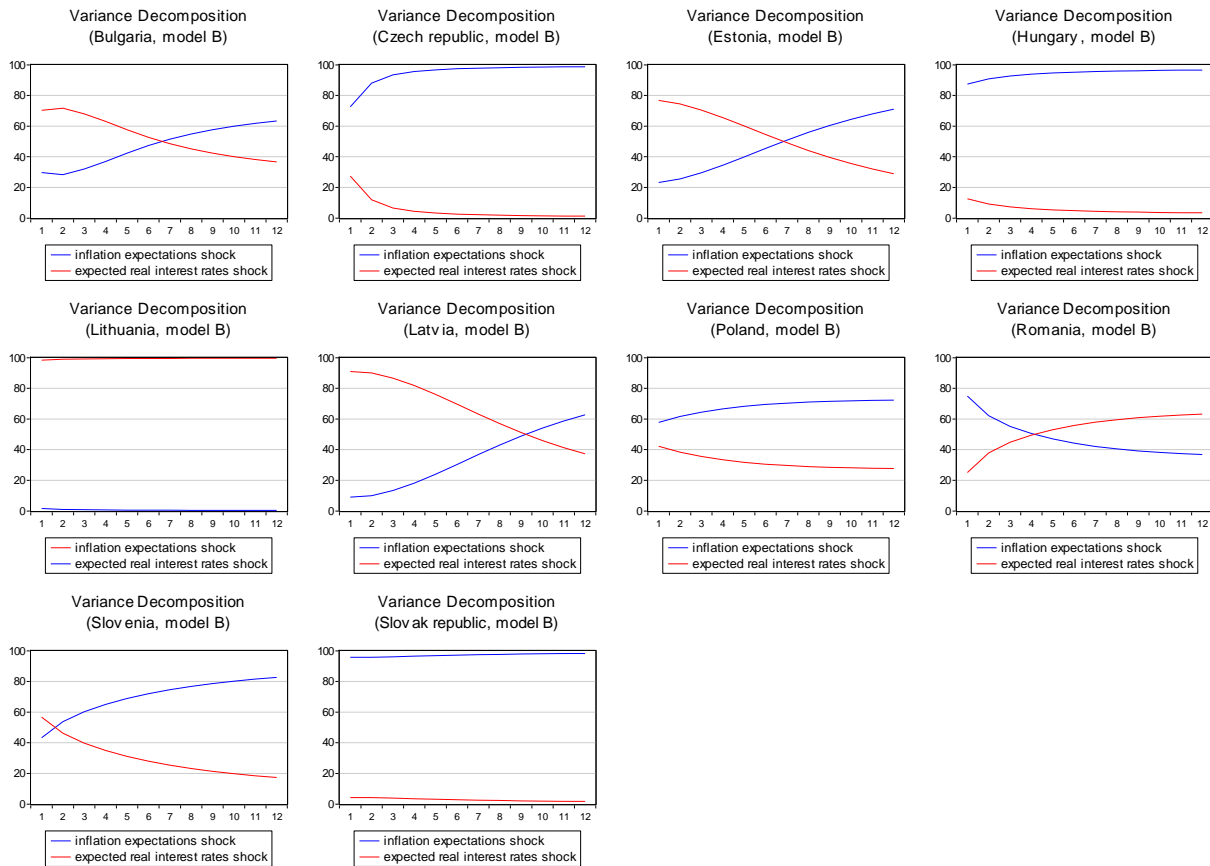
Figure 5. Variance Decomposition of Nominal Interest Rates (2000M1-2007M12)

Source*:* Author's calculations.

The relative immediate importance of the expected real interest rates shock in the group of countries, so called floaters, seems to be significantly smaller reflecting crucial role of inflation expectations in determining the nominal interest rates leading path (with exception of Slovenia). Despite the absence of apparent nominal anchor (explicit exchange rate target with no predetermined path for the exchange rate), explicit inflation targeting (monetary policy strategy implemented by all six countries with floating exchange rate regimes during the first half of the 2000s) delivered similarly successful results in disinflation process. Thus, a substantially higher role of the inflation expectations in this group of countries seems to be reasonable. The overall impact of inflation expectations on interest rates even rises in the long-run (with exception of Poland and Romania).

Figure 6 shows the estimated contribution of inflation expectations and expected real interest rates shocks to the nominal interest rates conditional variance in the European transition economies during the extended period (2000M1-2011M12) in model B.

In general, economic crisis predominately confirmed main character of identified potential sources determining the short-term nominal interest rates volatility in the European transition economies. In the group of countries, so called "peggers" we experienced an increased immediate contribution of expected real interest rates shock to the conditional variability of nominal interest rates. Even the price effects of economic crisis seem to be spurious and hardly predictable, immediate role of inflation expectations in determining nominal interest rates generally decreased in this group of countries. It seems that a credible nominal target operating as a key pillar of the monetary policy strategy provides a crucial anchor for stable inflation expectations of agents, especially in the short-run.

Figure 6. Variance Decomposition of Nominal Interest Rates (2000M1-2011M12)

Source: Author's calculations.

In the group of countries, so called "floaters", immediate contribution of inflation expectations shock to the nominal interest rates variance predominately increased (with exception of Poland and Romania in the short-run). Despite overall success of inflation targeting we suggest that inflation expectations tend to suffer from low level of self-persistence and become quite vulnerable to sudden changes caused by unexpected exogenous shocks. Related nominal interest rates volatility and associated real interest rates instability reflects relatively low success of monetary authority to regain price stability providing the absence of a credible nominal anchor.
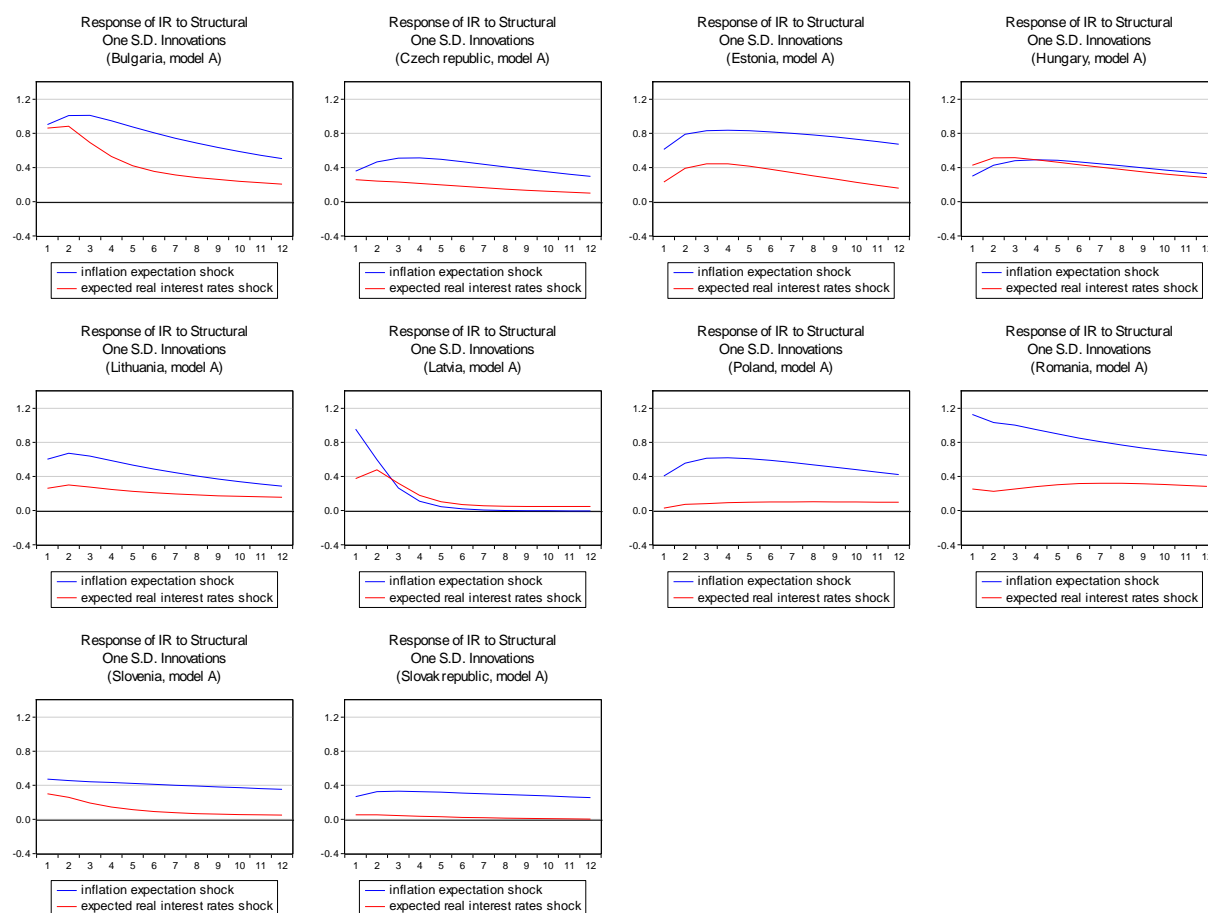
F. Impulse-Response Function

In the Figure 7 we summarize responses of nominal interest rates to one standard deviation positive inflation expectations and expected real interest rates shocks in the European transition economies during the pre-crisis period (2000M1-2007M12) in model A.

Nominal interest rates responded to both inflation expectations and expected real interest rates shocks during pre-crisis period in line with empirical expectations. One standard deviation positive shock of inflation expectations caused immediate increase in nominal interest rates in all ten European transition economies. On the other hand we observed some differences in intensity as well as durability of the effect.

Immediate response of nominal interest rates to unpredicted sudden positive one standard deviation real interest rate shock in the group of countries, so called "peggers" as well as in Hungary, seems to be noticeably higher. Provided that Hungarian forint operated during the pre-crisis period in the intermediate exchange rate regime[11], similarity of results seems to be convenient.

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[11]Hungarian forint operated during pre-crisis period in de facto fixed peg regime, but due to substantial range for fluctuations provided by wide horizontal bands it was included in the group of countries, so called "floaters".

Figure 7. Impulse-Response Functions of Nominal Interest Rates (2000M1-2007M12)
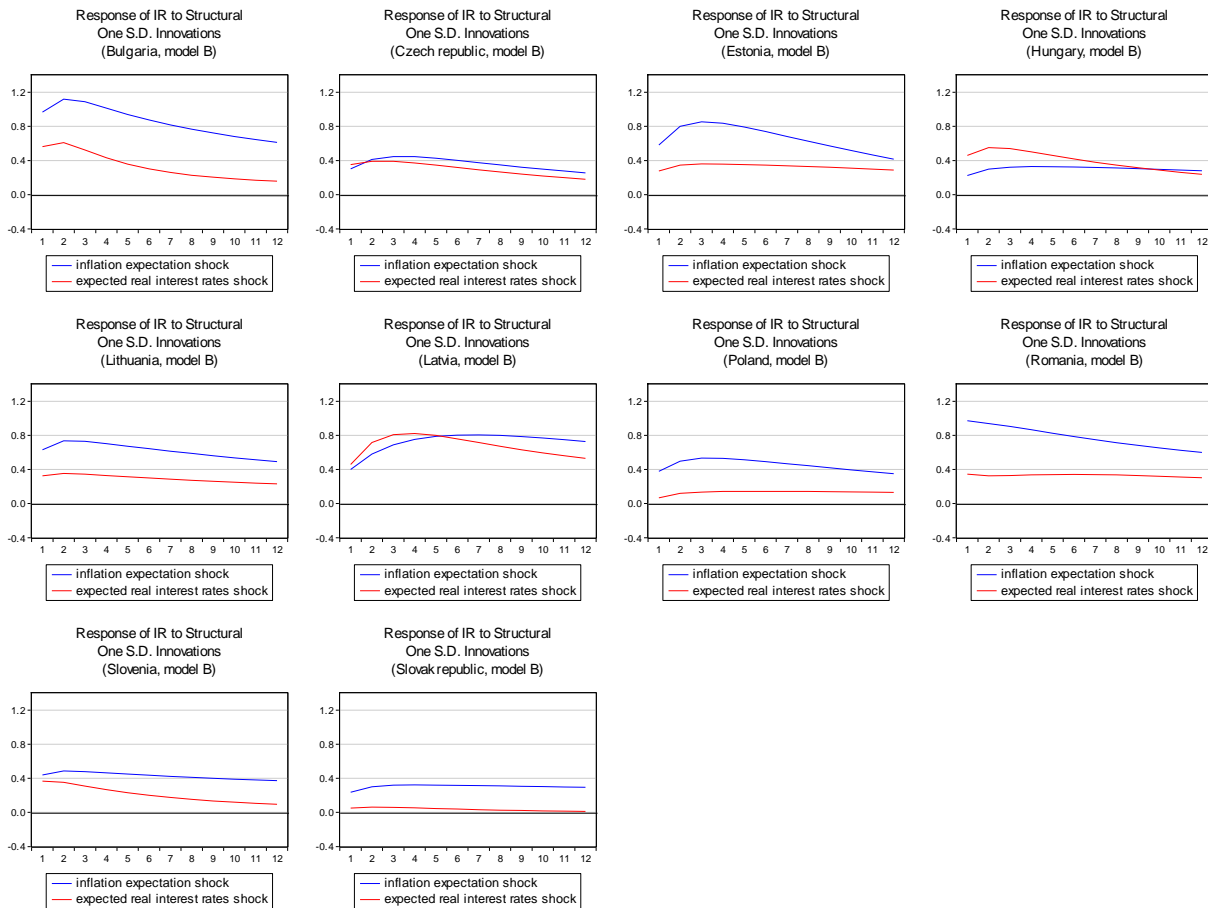
Source: Author's calculations.

Effects of both shocks seem to be just temporary in determining short-time variability of nominal interest rates. Negative impact of inflations expectations and expected real interest rates shocks steadily died out confirming long-run neutrality of nominal interest rates to their effects.

In the Figure 8 we summarize responses of nominal interest rates to one standard deviation positive inflation expectations and expected real interest rates shocks in the European transition economies during the extended period (2000M1-2011M12) in model B.

Crisis period affected responses of nominal interest rates to positive inflation expectations and expected real interest rates shocks with spurious results. In three countries from the group of so called "peggers" (Bulgaria, Latvia and Lithuania) we experienced slight increase in the durability of the negative effect imposed by the inflation expectations shock. An exception in this group of countries is Estonia (anticipated Eurozone membership might cause changes in effects of inflation expectations). At the same the negative effect of expected real interest rates shock seems to be durable in all countries of so called "peggers" with expectation of Bulgaria. At the same we experienced an increased durability of the expected real interest rates shock in Estonia and Latvia.

Changes in effects of inflation expectations shock on the nominal interest rates during the extended period in the group of so called "floaters" seems to be just negligible. At the same time we experienced a slight increase in durability of expected real interest rates positive shock (especially in Czech Republic and Poland).

Figure 8. Impulse-Response Functions of Nominal Interest Rates (2000M1-2011M12)

Source: Author's calculations.

Conclusion

Exchange rate regime choice in the European transition economies affected corresponding monetary policy strategy framework. Countries (peggers) with exchange rate as nominal anchor (hard pegs or soft pegs with narrow horizontal bands) successfully implemented exchange rage targeting. Countries (floaters) with soft pegs (pegs with wide horizontal bands or crawling pegs) and floating regimes employed monetary targets as intermediate criteria of monetary policy (monetary targeting) later (continuously since the end of the 1990 in respective countries) followed by adoption of direct (explicit) inflation targeting.

Regular monetary policy anchors operates well as stabilizing pillars under turbulent conditions in domestic (open) economy considering relative stability on the markets of main trading partners as well as of the country providing nominal anchor (i.e. exchange rate). Following our results in the model with time series for pre-crisis period it seems that exchange rate as the nominal anchor contributed to the stability of inflation expectations in the group of countries, so called "peggers" (especially in the short-run). Exchange rate targeting thus provided a suitable vehicle for reduction of short-term effects of inflation expectations on the price mechanism on the money market. Higher contribution of expected real interest rates to the nominal interest rates conditional variance also reduced distorting effects of money markets imperfections resulting from false price signals related to sudden inflation shifts.

Despite the absence of an apparent nominal anchor, explicit inflation targeting delivered similarly successful results in disinflation process in the group of countries, so called "floaters". Substantially higher role of the inflation expectations in this group of countries seemed to be reasonable. The overall impact of inflation expectations on nominal interest rates in the long-run mostly rose.

Overall effects of the crisis period related to the respective responses of nominal interest rates to the inflation expectations and expected real interest rates shocks seem to be puzzled. Redistributive impacts followed by increased asynchronous effects of local crisis are obviously associated with selective and irregular changes in expectations of agents though still well anchored by credible indicator. Economic crisis, as a typical exogenous shock and global phenomenon, affected economies especially through the external trade or/and financial flows channel, quickly spreading across a region of neighboring and interconnected economies. It seems to be convenient to expect that a relative importance of external nominal anchors during the crisis period became less successful in stabilizing inflation expectations, providing distorting effects of the crisis on the economy of anchoring country. However, our results indicates that a relative importance of inflation expectations in determining nominal interest rates generally decreased in the group of countries, so called "peggers". Even the price effects of economic crisis seem to be spurious and hardly predictable, a credible nominal anchor provided a crucial vehicle for stabilization of inflation expectations of agents, causing a relative drop in the role of inflation expectations in determining nominal interest rates during the crisis period.

Despite overall success of inflation targeting during the most of the 2000s we suggest that inflation expectations tend to suffer from low level of self-persistence and become quite vulnerable to sudden changes caused by unexpected exogenous shocks in the group of countries, so called "floaters". Related nominal interest rates volatility and associated real interest rates instability reflected relatively low success of monetary authority to regain price stability proving the absence of a credible nominal anchor.

Acknowledgement

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ITALIAN MEDIUM-SIZED ENTERPRISES AND THE FOURTH CAPITALISM

Daniele SCHILIRÒ
Dept. SEAM, University of Messina, **Italy**
schi.unime@katamail.com

Abstract:

The work addresses the issue of Italian medium-sized enterprises of the fourth capitalism. The question is whether this business model is going to last and actually represent a new model for global competition. This contribution examines the features of the model of the medium industrial enterprise. It also investigates the performance of the Italian medium-sized enterprises, comparing with large companies. The analysis of the data, albeit at a descriptive level using data published by Mediobanca-Unioncamere, allows taking some significant features of these enterprises.

The analysis of the business model of medium Italian enterprises highlights the low use of capital, the local roots, the importance of product innovation, the differentiation of products, the customer service, flexibility, specialization of production and internationalization. An important aspect stressed in the work is that the processes of innovation and internationalization that underlie the strategies of medium-sized companies require a strong collaboration with the institutions. Therefore, medium-sized enterprises need institutions, especially institutions that work. Lastly, medium Italian enterprises suffer from high taxation compared to their competitors.

Keywords: medium-sized enterprises, fourth capitalism, knowledge, innovation, internationalization.

JEL Classification: D8, L10, L11, L16, O3

1. Introduction

The present contribution addresses the issue of Italian medium-sized enterprises of the fourth capitalism. The question is whether this business model is going to last and actually represent a new model for global competition.

This work examines the features of the medium industrial enterprises. It also investigates the performance of the Italian medium-sized enterprises, comparing with large companies; in particular, it shows the sectors in which the medium-sized enterprises distributed their total sales and their exports and the weight of the *Made in Italy*, but also the different technological intensity of the sectors (high - tech, medium - high tech, low tech, etc.) in which the medium - sized enterprises are involved to a greater o lesser extent. Moreover, indicators of exports, value added and employees are provided. Lastly, indices of profitability are shown to get the ability of Italian medium - sized enterprises to compete and grow and at the same time the resilience these companies during the crisis years (2008-2009). The analysis of the data, albeit at a descriptive level using data published by Mediobanca - Unioncamere, allows taking some significant features of these enterprises.

The analysis of the business model of medium Italian enterprises highlights the low use of capital, the local roots, the importance of product innovation, the differentiation of products, the customer service, flexibility, specialization of production and internationalization. A major aspect stressed in the present work is that the processes of innovation and internationalization that underlie the strategies of medium - sized companies require a strong collaboration with the institutions. Thus, medium - sized enterprises need institutions, especially institutions that work. Unfortunately institutionalization is very difficult in Italy, because the aversion to institutions that do not work is such that, at the end, companies think that they not need them.

So the institutional setting is essential for the working of the enterprises of the fourth capitalism and for the development, especially in the current global economy driven by knowledge and learning (Schilirò 2005, 2009, 2012). However, a serious problem that the medium Italian enterprises have to face regards their future ability to withstand the global economic crisis, if it continues to make the horizon darker. As a result some necessary policies must be implemented to make the economic environment more favourable for these companies, in particular with regard to the relationship with the public authorities and other institutions, but especially, regarding the regulatory environment and,

in particular, with regard to taxation, which disadvantages Italian companies compared to European competitors.

2. The fourth capitalism and its enterprises.

Since over ten years, medium - sized enterprises along with medium - large companies are an important innovative element that characterizes Italy from the economic point of view: the "fourth capitalism". The fourth capitalism comes from the crisis of Fordism, which has been determined from the affirmation of a model of leaner production and from globalization. But this new model of capitalism is successful also because determined by changes in demand for products as a result of a profound change in consumer behaviour and consumption patterns, as maintained by Schilirò (2010, 2011).

The 'Fordist' model, on which the large industrial enterprises had built all over the world - including Italy - their organizational model of production, was based on the factory as a solitary and self - sufficient entity. This model was aimed primarily at internal economies of scale through standardization of the product, a strict division of labour, where labour was poorly trained and the work was divided into simple and repetitive tasks, the concentration of a multitude of workers and capital investment.

The crisis of the 'Fordism', in the mid-seventies, occurred as a result of the emergence in Japan of a more efficient system: the *lean production* or *Toyotism*, that is a flexible and smaller system, where not all value chain for the product is made in the main company (as was the Fordist factory which adopted vertical integration of processes), but it will be divided among several firms. The realization of the new system passes through the de - verticalization and the creation of a network of firms[12]. The lean production system reduces, in fact, the leading company to a chain system in which manufactured parts are assembled outside of the major enterprise by other firms (integrated subcontractors), often resulting in situations of collaboration as well as competition between them, ie of *coopetition*[13]. The de - verticalization of production processes and the globalization of business value chain was discussed, in the literature, in terms of international "fragmentation" of production (Arndt, and Kierzkowski 2001), to describe the separation of different parts of a production process in an international dimension (Levy 1997, Escaith 2010).

The crisis of Fordism certainly explains the downsizing of big companies and the rise, especially in Italy, of the medium-sized enterprises and, more generally, companies of the fourth capitalism. But the crisis of Fordism is also due to the changes that have occurred in the demand, determined, in turn, by a profound change in consumer behaviour and consumption patterns that express a more differentiated and personalized demand, more linked to the levels of income and the expression of social distinction (Coltorti 2008, Marini 2008, Schilirò 2010, 2011). This last element has definitely fostered the enterprises of the fourth capitalism.

The birth of the medium - sized enterprises of the fourth capitalism was certainly favored in Italy also by the evolution of districts of small firms in medium industrial enterprises, which, in turn, have been transformed into joint - stock companies. These new medium - sized enterprises become leaders in their districts through strengthening the hierarchical structure. The origin and evolution of the firms of the fourth capitalism is, thus, connected to the metamorphosis of the industrial districts (Schilirò 2008, 2010).

Finally, globalization also stimulated the transformation of industrial structure, production and trade (Gereffi, Humphrey, and Sturgeon 2005). Thus companies, from large multinational corporations to smaller ones, have faced a continuous redefinition of their basic skills (*core competencies*) to focus on innovation, product strategies, marketing, and on the segments with high value added of manufacturing and services, while reducing the direct properties on non-core functions, such as generic services and the volume of output. This led to a different organization of global value chains and to different models of governance of the enterprises (Escaith 2010, Schilirò 2011).

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[12] The de - verticalization of production processes and the globalization of business value chain was discussed in terms of international "fragmentation" of production (Arndt, and Kierzkowski 2001), to describe the separation of different parts of a production process in an international dimension.

[13] About *coopetition* see Schilirò (2009).

The definition of fourth capitalism, given by the Research Unit of Mediobanca, includes both medium-sized enterprises, which are made by firms with a workforce between 50 and 499 employees and a sales volume between 15 and 330 million euro, and the medium-large enterprises, which are societies with more than 499 employees and a turnover between 330 and 3000 million euro. This definition of firms of the "middle class", which are the backbone of the "fourth capitalism", cannot be exhaustive and rely only on quantitative variables, although statistically rigorously defined, as the number of employees or the turnover. But the definition of medium-sized enterprises of the fourth capitalism depends, however, on a particular business vision, a vision that regards economic variables, strategies, objectives, and which also includes the social dimension of the enterprise. It also involves the question of the transformation of the Italian economy in the last ten years, which occurred after the affirmation of these firms of the "middle class" and their corporate culture based on internationalization and innovation (Coltorti 2008, Schilirò 2010).

Italian enterprises of the fourth capitalism are, therefore, an important reality. They do not have a transitory nature, but, in turn, have a strong relationship with the territory and the culture that comes from these local roots. They show their strength establishing itself in foreign markets, thanks to their strategy based on internationalization and innovation, flexibility and capacity to adapt to market changes. Although there are still some open questions with regard to these enterprises, such as high taxes, the constraints of bureaucracy, the unfriendly nature the institutional environment in which these companies must operate.

3. The Italian medium industrial enterprises

The medium industrial enterprises have become increasingly important in the Italian production system in recent years and, above all, they assumed the role of protagonists in foreign markets. Most of these Italian companies are very dynamic, have good profitability and show a positive trend in production, investment, but more importantly, show a growing trend in export (Coltorti 2008; Garofoli; Coltorti 2011; Schilirò 2011; Ciambotti, Demartini, and Palazzi 2012).

The regular study of the intermediate - sized enterprises started in 1999 by Mediobanca and Unioncamere . Through their investigations, which cover only the manufacturing sector, Mediobanca and Unioncamere carry out an annual survey of industrial medium enterprises. These are enterprises that belong to the class 50-499 employees, have a turnover (sales volume) not less than 15 million and not more than 330 million euro, but also an attitude of self-ownership[14] and legal form of capital companies. Mediobanca and Unioncamere exclude from the definition of medium Italian enterprises those subsidiaries to large companies or under foreign control.

Italian medium - sized enterprises are mostly found in the North-East and North - West, but also in the central regions and Adriatic coast, while their presence in the southern regions is far less. In fact, in southern Italy and the islands there is a number of medium - sized equal to one tenth of the total number of medium - sized enterprises. The Italian region with a larger number of medium - sized enterprises is Lombardia which hosts 30.8 per cent of those companies. The second region, in which the numerousness of medium - sized enterprises is higher, is Veneto with 18.3 per cent.

The origin of medium - sized enterprises dates back prevalently in the mid - seventies; it is determined both by the crisis of the "Fordist" model of the large companies and the development of industrial districts in the Centre - North of Italy, but also by the evolution of consumption and markets (Colli 2005; Coltorti 2006; Marini 2008; Schilirò 2008, 2010).

Mediobanca - Unioncamere (2012) has identified in the period 2000-2009 the following number of companies corresponding to medium industrial enterprises in Italy, as can be seen from Table 1.

Table 1. Number of medium enterprises, 2000-2009

Years	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
No Medium Enterprises	3889	4013	4016	3982	4054	4084	4326	4500	3946	3220

Source: Mediobanca - Unioncamere, 2012

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[14] The ownership of these Italian enterprises is mainly family-owned. The company, in the words Becattini, is a "life project" of the founder and / or owner. Medium - sized enterprises controlled by a single entrepreneur or his family are, in fact, more than 70% of cases (Coltorti 2006; Gagliardi in Marini 2008, 31-57).

Table 1 helps to understand the internal dynamics of the set of medium-sized enterprises in Italy. The number of medium-sized enterprises has been an increasing trend from 2000 to 2007 (except 2003), which rose from 3889 to 4500 medium - sized enterprises; in 2008 and 2009, when the economic crisis has manifested itself in all its strength, the number medium - sized companies have decreased respectively to 3946 and 3220. Thus, between 2000 and 2009, the number of medium - sized enterprises decreased by 669 units. This numerical change of 669 units in the period 2000-2009 is the balance of 3473 entrances and 4142 outflows, which confirms a certain dynamism (and degree of turbulence) in the structure of the Italian industrial system[15].

The years of economic crisis, in particular, have been years of great change in the organization of the Italian productive system. During the global economic crisis, net sales of medium - sized enterprises decreased by 22 percent and the total number of employees by 13 percent, so the degree of turbulence (i.e. the ratio of the number of overall businesses which enter and exit from the class of medium-sized enterprises and the stock of such enterprises at the end of 2000) increased in 2008 and 2009, and led to an overall decrease in the number of medium-sized enterprises. The degree of turbulence in 2008 reached 24 per cent and the same value was reached in 2009 that is the maximum value over the period 2000-2009. In such period of time many small enterprises have become medium-size enterprises, whereas a lower number of medium-sized enterprises have become big companies.

Medium - sized enterprises are autonomous entities under the aspect of the production function, but are linked with different degrees of intensity to other firms which constitute a "system" of production. These companies, at least the most important, are often located in their proximity. Medium-sized enterprises are often part of the industrial districts and they have often become the protagonists and business leaders of the districts. In 2009, for instance, 824 medium-sized enterprises were established in the districts and others 453 in local production systems (SPL).

Thus, an important feature of these enterprises is their solid grounding in specific territorial contexts conjugated to an active presence at the international level, which is realized in various forms of delocalization such as, for example, the organization of the production process that takes place abroad, or occurs also in control of markets through the development of appropriate distribution channels. Medium-sized enterprises even in the diversity of the territories that express them have, however, similar characteristics and share common strategies of which innovation and internationalization are the two guidelines (Corò 2008; Schilirò 2008, 2010). Moreover, they develop in contexts where the stock of knowledge and the transmission of knowledge is the fundamental weapon to the innovative activity (Schilirò 2005, 2009, 2011).

The 3320 Italian medium-sized enterprises, recognized in 2009, covered about 15 per cent of the value added of industry. Moreover, in 2009, the proportion of medium-sized enterprises on domestic exports was 16 per cent. The main activities of medium-sized enterprises concern the sectors typical of *Made in Italy*, which represent 62.1 per cent of sales and 66.9 per cent of exports; so they differ with respect to larger groups[16] where the same activities accounted for 23.8 per cent of sales and 26.1 per cent of exports (Mediobanca - Unioncamere 2012).

In Table 2 there is a representation of the sectors in which the medium-sized enterprises and the large groups distributed their total sales and their exports in 2009 and the weight of the *Made in Italy*.

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[15] Mediobanca - Unioncamere (2012, XIII). For a theoretical analysis of firm size distribution, Kitov (2011).

[16] Mediobanca and Unioncamere intend for "large groups" who have achieved, in 2009, a turnover of more than 3 billion euro.

Table 2. Total sales and exports by sectors in medium enterprises and large groups (2009)

	Total sales in 2009		Exports in 2009	
	Medium Enterprises	**Large Groups**	**Medium Enterprises**	**Large Groups**
Sectors	*in % of the total*			
Food	21.4	6.8	11.9	3,1
Home furnishing and personal goods…	21.3	6.1	22.3	5.6
Mechanical	31.4	68.2	42.4	76.5
Others Sectors.	25.9	18.9	23.4	14.8
Paper and Printing	5.1	2.4	3.0	0.1
Chemical and Pharmaceutical	12.3	5.9	12.0	4.6
Metallurgical.	6.4	8.2	6.7	7.0
Others	2.1	2.4	1.7	3.1
Total	100.0	100.0	100.0	100.0
Of which: *Made in Italy*	62.1	23.8	66.9	26.1

Source: Mediobanca - Unioncamere 2012

The analysis of Mediobanca - Unioncamere conducted on medium sized Italian enterprises for about ten years have shown some interesting results, highlighting three important characteristics: i) the dynamics of the economy in terms of output and employment in medium-sized enterprises has been systematically better in such enterprises than large firms; ii) medium-sized enterprises are more export-oriented than larger firms[17]; ii) the organization of production of medium-sized enterprises, as seen by the continued reduction in the ratio of value added and sales, is always oriented towards the *lean production*[18]. The Italian medium - size enterprises are able to succeed in international markets, since they focus on the quality of the product, on the training of human resources, on the maximization of the value produced per employee, on their ability to generate innovations. These enterprises usually express a virtuous finance, characterized by a contained debt structure; but also they are able to control the organization focusing primarily on the competitive advantages, including intangibles (brand, communication, customer relations) which are the ones that have gained importance (Schilirò 2010, 2011). In fact, successful medium-sized enterprises focus their attention on the product, on the success of the brand, on the control of the distribution. The physical production of goods, instead, is very often almost entirely decentralized to small firms that represent a specialized chain giving flexibility at low cost.

An important aspect to be underlined is the relationship between medium - sized enterprises and innovation (Schilirò 2011). It has been said that the medium-sized enterprises are operating in the majority of cases within the areas of traditional *Made in Italy*, where production is dominated by medium - low technology, and the presence in the conventionally defined "high tech" is marginal. Are few, in fact, the medium - sized enterprises operating in the high - tech, with the exception of the pharmaceutical industry, medical and surgery devices, equipment of telecommunications, electronic devises, manufacturing of instruments and appliances for industrial process control. Innovations in medium - sized manufacturing enterprises of *Made in Italy* are generally incremental, mainly related to the improvement of the product or the testing of new materials. Innovations are, therefore, often linked to mechanisms of diffusion of tacit knowledge rather that of codified knowledge[19].

Table 3 shows the distribution of the medium - sized enterprises and of large groups among the high - tech sectors, medium - high tech, medium - low tech, and low tech sectors in 2009.

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[17] Schilirò, Musca 2010, Schilirò 2011.
[18] Coltorti, Garofoli 2011.
[19] Gagliardi in Marini (2008, 36-37), Schilirò, 2011.

Table 3. Turnover and exports by sectors in medium enterprises and large groups

Sectors	Medium Enterprises		Large Groups	
	Turnover %	Exports %	Turnover %	Exports %
High Tech	4.2	4.0	12.0	1.0
Medium-High Tech	24.5	34.1	57.6	58.2
Medium-Low Tech	26.8	27.0	16.7	17.0
Low Tech	44,5	34,9	13.7	8.8
Total	100.0	100.0	100.0	100.0

Source: Elaborations by Mediobanca-Unioncamere (2012) on OECD data

The relative efficiency of enterprises "no high tech" (measured by the value added per employee) seems to be a specificity of the Italian economy (Coltorti, Garofoli 2011; Schilirò 2011). Therefore, the specialization of Italian exports in these sectors should not necessarily be interpreted as an element of weakness in international competition.

4. Performance of the medium - sized enterprises.

The representation given in the preceding section of the medium industrial enterprises leads to agree with the statement by Coltorti, and Garofoli (2011) that an industrial structure strongly oriented to small and medium enterprises cannot be considered *sic et simpliciter* element of weakness in the global competitive context[20]. In this section, to demonstrate the validity of such statement, I consider the performance of the Italian medium - sized enterprises in 2009 and over the period 2000-2009. Thus I shall examine some economic and financial data of the medium industrial enterprises comparing them with those of large companies and showing their different performances.

Table 4 shows some main variables (tangible invested capital, turnover, value added, exports) of the 3220 Italian medium - sized enterprises in 2009 and the distribution of these enterprises and such variables by sectors (absolute values and percentages).

Table 4. Tangible invested capital, turnover, value added, exports

Total of 3320	Tangible Invested medium enterprises	Turnover	Value Added	Exports Capital[21]
Year:2009 *(million euro)*	**98,372**	**135,320**	**32,390**	**48,468**
Sectors	*(million euro and percentage)*			
Food	17,455 (*17.7*)	28,958 (*21.4*)	4,849 (*15.5*)	5,763 (*11.9*)
Home furnishing and personal goods	23,462 (*23.9*)	28,833 (*21.3*)	6,366 (*20.3*)	10,821 (*22.3*)
Mechanical	30,966 (*31.5*)	42,510 (*31.4*)	11,909 (*37.9*)	20,562 (*42.4*)
Other Sectors	26,489 (*26.9*)	35,019 (*25.9*)	8,266 (*26.3*)	11,322 (*23.4*)

Source: Mediobanca-Unioncamere (2012).

The distribution, in percentage terms, of the variables taken into account (tangible invested capital, turnover, value added, exports) shows the mechanical sector, as the sector with greater weight, followed by other sectors, the home furnishing and personal goods sector, and, finally, from the food sector. Table 5 presents some indicators related to exports, value added, and employees of the medium-sized enterprises in the period 2000-2009 in terms of percentage changes.

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[20] See also Coltorti 2006; Corò 2008, Marini 2008; Schilirò 2010, 2011; Varaldo *et al.* 2009.
[21] The invested tangible capital is equal to net fixed assets plus net working capital less intangible fixed assets.

Table 5. Exports, value added, employees in medium enterprises and large companies

	percentage changes: 2000-2009		
	Exports	Value Added	Employees
Medium-sized enterprises	*+42.9*	*+20.0*	*+11.8*
Large Companies	*+21.6*	*-1.8*	*-9.6*

Source: Mediobanca-Unioncamere (2012).

It is quite evident from the data of Table 5 that the medium-sized enterprises have done better than large companies in terms of exports, value added and employment over the period 2000-2009. Medium-sized enterprises prove they had success by their ability to create important market "niches" in foreign markets, which, in turn, led to a significant increase of exports and value added, allowing also improving the level of employment. Table 6 shows, in turn, the invested capital and its funding in 2009, and compares the medium Italian enterprises with the major Italian multinationals.

Table 6. Tangible invested capital for medium Italian enterprises and major Italian multinationals

	Medium Italian Enterprises	Major Italian Multinationals
% on the tangible invested capital - Year: 2009		
Short-term Debt	29.9	24.0
Medium-Long Financial Debt	21.9	52.8
Tangible Net Capital	48.2	23.2
Total	100.0	100.0
Represented by:		
Fixed Assets	45.4	53.6
Current Assets	41.8	11.8
Liquidity	12.8	34.6
Net Capital + M-L Financial Debt in % of Tangible Invested Capital	70.1	76.0
M-L Financial Debt in % of the Total Financial Debt	42.3	68.8
Current Assets + Liquidity – Short-term Financial Debt in % of Tangible Invested Capital	24.7	22.4

Source: Mediobanca-Unioncamere (2012)

Table 6 shows that in 2009 the tangible invested capital is financed, in the case of medium enterprises, 48.2 per cent from the net assets (tangible net capital) and the rest from financial debts, mainly to banks. The medium and long term liabilities account for 42 per cent of overall debt. In the case of Italian multinationals the tangible invested capital is financed only 23.2 per cent from the net assets and the rest from financial debts. The capitalization of medium-sized enterprises is therefore greater than that of Italian multinationals, but also with respect to large European multinational (Mediobanca - Unioncamere 2012, p.XXII). The main uses of capital of medium-sized enterprises are the current assets (working capital and liquidity) that absorb around 55 per cent. The share of fixed assets in medium-sized enterprises is 45.4 per cent, which is lower than that detectable by the budgets of major Italian multinationals, which is equal to 53.6 per cent. Another characteristic of the medium-sized enterprise is that the net capital covers the entire value of the fixed assets. The supposed undercapitalization of medium Italian enterprises is not reflected in these data, however, medium - sized enterprises show a higher proportion of short - term financing, demonstrating some weakness of the financial structure that is associated with higher costs and greater managerial uncertainty.

Tables 7 and 8 show some indicators of profitability of medium Italian enterprises comparing them with those of large Italian companies.

Table 7. EBIT and current operative result in medium enterprises and large companies (2000-2009)

	percentage changes: 2000-2009	
EBIT	**Current Operative**	**Result**
Medium-sized enterprises	*-18.2*	*-27.8*
Large Companies	*-40.7*	*-16.9*

Source: Mediobanca-Unioncamere (2012)[22].

Table 7 highlights that, over the last decade, the performance in terms of profitability (EBIT and Operating Result) have proved for the medium Italian enterprises no worse than larger companies.

Table 8. EBIT, current operative result (2008-2009)

	percentage changes: 2008-2009	
EBIT	**Current Operative**	**Result**
Medium-sized enterprises	*-25.5*	*-21.6*
Large Companies	*-48.5*	*-28.2*

Source: Mediobanca - Unioncamere (2012).

Table 8 shows that during the period of crisis (2008-2009) the performance in terms of profitability (EBIT and Operating Result) of medium-sized enterprises was better than that of larger companies.

Table 9 presents the percentage changes of EBIT/VA ratio and of ROI over the period 2000-2009 and the values of these variables in 2009.

Table 9. EBIT/VA ratio and ROI

	percentage changes: 2000-2009		Year 2009	
	EBIT/VA	**ROI**	**EBIT/VA**	**ROI**
Medium-sized enterprises	*-9.3*	*-6.0*	*19.7*	*6.7*

Source: Mediobanca - Unioncamere (2012).

Faced with the crisis, the medium-sized enterprises react by means of productivity growth, the continuous innovation, the upgrading of the quality human capital, the competitive repositioning, a renewed relationship with the territory, and through the financial strength of a family capitalism that favors the production and the culture of the product (Schilirò 2010, 2011)[23].

The medium Italian enterprises of the fourth capitalism, therefore, appear as a "middle class" of companies that is able to deal with and stand the challenges of global competition with a peculiar business model. This model is aimed at quality products and great flexibility in which these medium enterprises combine economies of scale internal to the firm with networking economies of scale between companies, and where their ability to establish business networks increasingly large, suitable to capture a global demand, is the strategic element to achieve a successful model in the global competition (Marini 2008; Varaldo *et al.* 2009; Schilirò 2011).

It is worth noting that a relevant aspect of the data proposed in Mediobanca - Unioncamere survey is that they highlight the heterogeneity of the sample of medium Italian enterprises. In fact it is made distinguishable a strong dispersion of performance indicators. The heterogeneity is explained by correlating the performance with variables that capture the characteristics of the enterprises, such as, for example, their propensity to export, or the degree of family control.

In conclusion, the medium Italian enterprise, that is an expression of the fourth capitalism, highlights the following basic elements: family control, specialization resulting from high technical and innovative expertise, fragmentation of the production structure along a supply chain (which is

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[22] Mediobanca –Unioncamere (2012, XXV).

[23] Many of the medium-sized Italian manufacturing firms embedded in the districts have been successful in the years of the crisis to reorganize and transform themselves to overcome many difficulties, often shifting and reallocating production on higher value segments, but at the same time trying to protect their own specificities.

often based on proximity), business strategy that aims to build and develop markets of niche, high capitalization and consequent low financialization. These basic elements (and also the tables shown in this section) explain the ability of these enterprises to cope a market crisis of great intensity, as the current one, limiting the negative effects.

Conclusions

The Italian medium - sized enterprises play an important role in the context of the economic system, even if they are, in fact, a still limited core compared to the total firms of the Italian system of production.

This work has examined the business model of the medium Italian enterprises, in which flexibility, specialization of production, product innovation, differentiation of products, internationalization, low use of capital, a strong relationship with the territory are among the major features. The analysis of their performance shows that it is a model of enterprise destined to last and, actually, to represent a model of some effectiveness to deal with global competition.

However, a crucial issue that derive from the analysis developed in the preceding sections concerns the problem that the medium Italian enterprises, despite their ability to withstand the global economic crisis, as was the case in recent years, may be in great difficulty with a lasting crisis that is getting worse. It is, therefore, necessary to work on the fiscal front, on the R & D activity, but especially in the relationship with the institutions, so that the difficult conditions of the Italian enterprises of the fourth capitalism are made less problematic and their future will be brighter.

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