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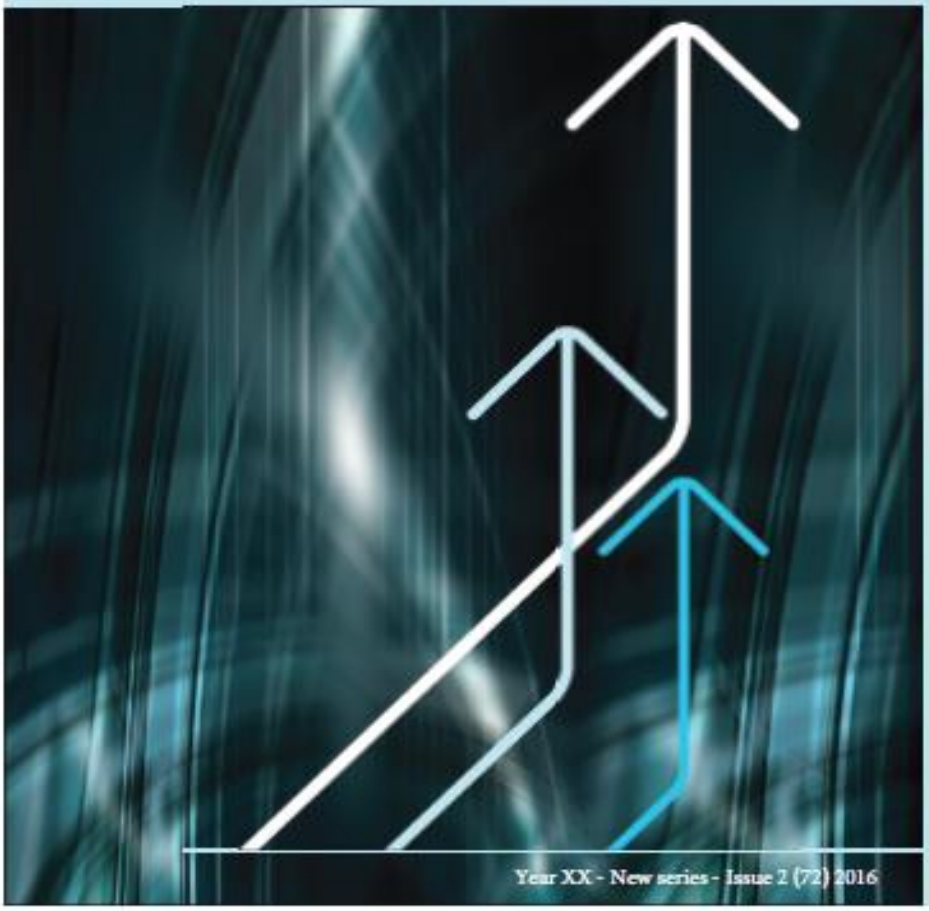

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“VICTOR SLĂVESCU” CENTRE FOR FINANCIAL
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FINANCIAL STUDIES

ROMANIAN ACADEMY
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WHO DRIVES WHOM? INVESTIGATING THE RELATIONSHIP BETWEEN THE MAJOR STOCK MARKETS

Pinar EVRIM MANDACI, PhD[*]
Efe Caglar CAGLI[**]

Abstract

In this paper we examine the relationships between the major stock markets including the U.S., the U.K, Japan, Germany and France covering a long period from July 1987 to December 2015 and employing Carrion-i-Silvestre et al. (2009) unit root tests and Maki (2012) cointegration test, both of which considering structural breaks. Additionally, we estimate the long-run elasticities of the co-integrating relationships by applying dynamic ordinary least squares algorithm of Stock and Watson (1993). And lastly, we investigate short-run linkages among stock markets using the Granger causality test across the subsamples determined according to the breakpoints. Our results indicate that these markets are mostly co-integrated. Among them only the Japanese market is mildly segmented proving a diversification benefit. Additionally, we observe a gradually decrease in the short-run relationship between these markets.

Keywords: Stock Market, Diversification, Cointegration, Structural Breaks, Financial Crisis

JEL Classification: G11, G14, G15

1. Introduction

Although, the long and short-run relationships between the stock markets in the world are one of the most common research topics, it doesn't lose its popularity in finance literature. There are many factors make the researchers still studying on this issue: First and the most important is the development of the econometric

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techniques using to measure the cointegration and causality between the stock markets day by day. The researchers need to apply these new techniques into their analysis in order to overcome the shortcoming of the old ones and achieve more trustable results. Second is that since the most recent studies cover an extended time period for stock market, their results on long-run tests are more reliable than the old studies with a shorter period. Third, since the most of the current studies include the 2007-08 financial crises period, researchers have got the change to examine its impact on the relationships between the stock markets. The impact of these turbulences on the integration of stock markets is always a big question for both the academicians and practitioners.

The liberalization and deregulation of financial markets, globalization of the world economy and the development of technology and computerized systems increased the international capital flows and the integration among the financial markets. Aside the positive effects of international capital flow, the strong integration between the stock markets reduce the benefits of international diversification. On the other hand, there are still opportunities for the arbitrageurs. There might be a high integration between the two stock markets, but it doesn't mean that the markets move in the same direction every day. The spread between the prices are mean-reverting in the long-run. Therefore, it is possible to observe arbitrage opportunities in the short-run for investors. We can also link the concept of cointegration with Efficient Market Theory of finance. If the markets are co-integrated, it will be possible to predict the movements in one market by using the movements in another market which is contradict to the weak form of efficient market hypothesis.

The aim of this paper is to find out whether there are diversification benefits for the international investors and portfolio managers preferring to keep their funds in developed markets which might be considered as more secured. We try to answer whether the international investors can reap profits and reduce risk by investing into the big markets. Our data consist of the major stock markets covering the U.S., the U.K, Japan, Germany and France. Our data period is from July 1987 to December 2015 covering a long period. Since our data period includes all financial turbulences, there is no way out to consider the structural breaks into our analysis. Therefore, we employ Carrion-i-Silvestre et al. (2009) unit root tests and Maki (2012) cointegration test, both of which considering up to five

structural breaks. We further estimate the long-run elasticities of the cointegrating relationships by applying dynamic ordinary least squares algorithm of Stock and Watson (1993). Additionally, we investigate the short-run linkages among stock markets using the Granger (1969) causality test across the subsamples determined by the breakpoints which are detected by the cointegration test.

This paper improves the previous studies in four ways. First, most of the previous studies on cointegration use some latent techniques ignoring the structural breaks such as unit root tests proposed by Dickey and Fuller (1979), and Kwiatkowski et al.(1992) and cointegration tests proposed by Engle and Granger (1987), Johansen and Juselius (1990) and Johansen (1991). However, since these techniques do not take account the structural breaks, they might drive the researchers to unreliable results. To overcome this problem most of the recent studies have begun to use more developed techniques considering the structural breaks in testing integration such as Zivot and Andrews (1992) and Lumsdaine and Papell (1997) and cointegration such as Gregory and Hansen (1996). Although the techniques considering the structural breaks provide more trustable results, they include some shortcomings in such a way that Zivot and Andrews (1992) allows for only one and Lumsdaine and Papell (1997) allows for only two structural breaks. This paper improves the existing literature by employing the most recent and powerful techniques in testing unit root by using Carrion-i-Silvestre et al. (2009) allowing up to five structural breaks and Maki (2012) cointegration test with unknown structural breaks.

Second, we again consider financial breaking points in examining both long-run elasticities and short-run relationships between the stock markets. We obtain long-run elasticities in the presence of structural breaks in order to check whether the link between cointegrating relationships are perfect and/or changing over time. In addition to that we employ novel and powerful Granger causality across subsamples determined by the structural breaks detected by the cointegration method in analyzing short-run interactions.

Third, we extend the previous studies by using the monthly data for a longer period beginning from July 1987 up to December 2015. Since the cointegration tests measures the long-term relationship, extended period data is essential to achieve more realistic results.

Fourth, different from the previous studies before the last recent 2007/08 financial crises, this paper contributes to the literature by covering the crises period into its analysis and examine its impact on stock market integration.

The reminder of this paper is organized as follows: In Section 2 we present the existing literature, in Section 3 we explain the methodology. Then in Section 4, we present the data and empirical results. And last, we conclude the paper in Section 5.

2. Literature Review

As is known, there exists a plenty of studies examining the long- and short-run relationships among the stock markets. Since in this paper, we focus on the major stock markets, we have just unfolded briefly the common points that previous studies on the issue have shared.

Among these studies Taylor and Tonks (1989) examine the cointegration of the U.K. with the major stock markets by using the two-step Engle and Granger (1987) cointegration technique with monthly data covering the period from 1973 to mid-1986 and they show that the abandonment of the U.K. exchange rate controls in 1979 increases long-run integration of the U.K. market with those of the U.S., Japan, the Netherlands and West Germany.

Kasa (1992) examines the long-run relationship between the stock markets of Canada, Germany, Japan, the U.K and the U.S. by using monthly and the quarterly data covering the period from January 1974 to August 1990. He employs the Johansen (1991) cointegration test and identifies one common stochastic trend for these markets and gives the strongest rejection of no cointegration hypothesis. His estimates of the factor loadings indicate that this trend is most important in the Japanese market and least important in the Canadian market.

Similarly, Corhay, Rad and Urban (1993) examine the cointegration between the largest stock markets of Europe including France, Germany, Italy, Netherland and the U.K. for the period from March 1975 to September 1991. They employ the Johansen (1991) cointegration test with weekly data and find the evidence of cointegration between these markets. They argue that while a long-run relationship seems to hold among European stock prices, Italian stock prices do not seem to influence this long-run relationship. On the other hand, Arshanapalli and Dokukas (1993) examine the

integration between the stock markets of the U.S., France, Germany, Japan and the U.K. before and after the 1987 stock market crash. They find that while the Japanese stock market is integrated with the U.S. market before and after the crash, the stock markets of France, Germany and the U.K are only integrated with the U.S. after the crises. Similarly, Meric and Meric (1997) employ the factor analysis to examine long-term co-movements of 12 European and the U.S. equity markets before and after the stock market crash of October 1987 and find that co-movements of the markets became more harmonious after the stock market crash.

In contrast, Richards (1995) analysis the cointegration between sixteen markets covering Australia, Austria, Canada, Denmark, France, Germany, Hong Kong, Italy, Japan, the Netherlands, Norway, Spain, Sweden, Switzerland, the U.K, and the U.S. He employs the Johansen (1991) and Engle and Granger (1987) cointegration tests by using quarterly data from end-December1969 to end-December 1994. He finds a little empirical evidence for the proposition that the stock return indices of different countries are co-integrated. He argues that while national stock return indices are correlated around a common world component, in the long-run they are not co-integrated around a common component since the country-specific factors affect the long-term stock performance. The mean-reverting tendencies of the return and price series of the national stock markets indicate market efficiency. And according to him, the existence of permanent country specific component in return series of national stock markets implies that there will be a long-run risk reduction benefits from international investments. Gallagher (1995) examine the relationship between the Irish stock market with those of the Germany and the U.K by using weekly data from mid-Jan 1983 to mid-Feb 1993. He employs Phillips and Ouliaris (1990) test and Granger causality test. According to him, long-run relationship does not exist but there exists a short run relationship after the 1987 stock market crash. Similarly, Kanas (1998) employs the multivariate trace statistic, the Johansen method, and the Bierens (1997) nonparametric approach to test for pairwise cointegration between the U.S. and each of the six largest European equity markets, namely those of the U.K., Germany, France, Switzerland, Italy, and the Netherlands for the period from the beginning of January 1983 to end of November 1996. His findings indicate that the U.S. market is not pairwise co-integrated with any of the European markets. He argues

that there exist potential long-run benefits in risk reduction from diversifying in U.S. stocks and stocks in any of the major European markets.

However most of these empirical studies have failed to notice that the cointegration relationship may have a structural break during the sample period which implies significant changes on cointegration parameters. After the development of the cointegration techniques allowing for structural breaks, many finance researchers have begun to apply them for stock markets. Among these studies Huang et al. (2000) examine whether there is a long-run relationship between the stock markets of the U.S., Japan and South China triangle by applying the Gregory and Hansen (1996) approach and find that there is only a relationship between the Shanghai and Shenzhen stock markets. Narayan and Smyth (2004) analyzes stock market integration between Australia and G7 Economics by applying the same technique and finds some evidence of a pair-wise long-run relationship between Australian stock markets and the stock markets of Canada, Italy and Japan. Narayan and Smyth (2005) examine whether there is a long-run relationship between New Zealand stock markets and the stock markets of Australia and G7 economics. They find that New Zealand stock market is only not co-integrated with these markets other than the U.S after they employ the Gregory and Hansen (1996).

Yang, Khan and Pointer (2003) investigate the impact of 1987 stock market crash on the long-run integration between the U.S. and 14 developed countries. They employ the Johansen test for the period from 1970 to 2001 and do not find any cointegration between the countries. Additionally, they use a recursive cointegration analysis to examine the time-varying nature of long-run relationships. They find similar results indicating any cointegration. However, they find increasing integration between the U.S. and many smaller markets such as Belgium, Norway, Denmark and Sweden in the late 1990s. In contrast, Fraser and Oyefeso (2005) run a Johansen multivariate cointegration test between the U.S., the U.K., Germany, France, Italy, Germany, Belgium, Spain, Denmark and Sweden for the period from January 1974 to January 2001 and find that there is a single common stochastic trend to which all markets have a long-run relationship. The contrast findings might be the result of using real stock prices which are adjusted to the Consumer Price Index (CPI).

Baele (2005) employes a regime-switching shock spillover model to test the interactions from the U.S. to the European stock markets Austria, Belgium, France, Germany, Ireland, Italy, the Netherlands, and Spain Denmark, Sweden, Norway, and Switzerland. He uses weekly data for the period from January 1980 - August 2001 finds evidence of increased cross-market interactions from the U.S. to a number of European equity markets during periods of high world market volatility. On the other hand, Bekaert et al. (2005) employ a two-factor asset pricing model and define contagion as correlation among the model residuals. They examine the stock markets of 22 countries including both the developed and emerging markets for the period from Jan 1980 to Dec 1998. They find no contagion between the U.S. and countries in Europe, Asia and Latin America during the Mexican Peso crisis. However, they find economically meaningful increases in residual correlation, especially in Asia, during the Asian crisis.

Lafuente and Ordonez (2007) investigate the dynamic nature of financial integration for Germany, France, Spain and Italy and the U.K. They test whether the degree of integration between these countries increased after European monetary union. They employ time varying correlation as a proxy of the degree of dynamic financial integration, a bivariate error correction DCC-MV-GARCH model is used to estimate conditional correlations between stock index returns during the sample period 1993-2004. They find that these markets are co-integrated after they allow for the structural changes.

Yunus (2013) analyze the dynamic relationship among ten major stock markets including the U.S., Australia, Japan, China, India, France, Germany, U.K., Brazil and Mexico covering the period beginning January 1993 and ending in December 2008. He employs the recursive cointegration technique and find that these markets are integrated and that the degree of integration among these markets has increased over time. A scrutiny of the various crisis periods reveals that a major financial crisis had an effect of increasing the level of convergence among these markets. Additionally, he finds that the U.S., Japan, India, China, U.K., and Germany lead the other markets with the U.S. contributing most heavily to the common trend.

As can be observed from the studies, their results are conflict. This paper fills the gap in cointegration analysis by using the most improved and recent techniques covering a long period for the world major markets.

3. Methodology

3.1. Unit Root

The conventional unit root tests, such as Augmented Dickey-Fuller (1979) (ADF), lose their power and lead researchers to unreliable conclusions when there is a structural break in the deterministic trend. In order to reach accurate decisions in the presence of possible structural breaks due to financial crises, Carrion-i-Silvestre et al. (2009) (CKP) extends the methodology of Kim and Perron (2009) by allowing for an arbitrary number of changes up to five structural breaks in both the level and slope of the trend function. Basically, the structural break dates are estimated endogenously using an algorithm based on Bai and Perron (2003). CKP analyze *M*-class unit root tests in the literature and further improve the power and size properties of those tests. By doing so, CKP advocate that their unit root tests overcome many problems of previous methods widely employed in the literature. We estimate three test statistics proposed by CKP, namely $MZ_{\alpha}^{GLS}(\lambda)$ $MZB^{GLS}(\lambda)$ $MZ_{t}^{GLS}(\lambda)$[1].

3.2. Empirical Model

Maki (2012) develops cointegration test (MB*k*) under the assumption that unspecified number of breaks of the cointegrating vector is smaller than or equal to the maximum number of breaks set a priori. Maki (2012) advocates that MB*k* test performs even better than the previously developed cointegration tests of Gregory and Hansen (1996) and Hatemi-J's (2008) when the cointegration relationship has more than three breaks or persistent Markov switching shifts.

Maki (2012) proposes four regression models in order to test cointegration allowing for multiple structural breaks:

$$y_t = \mu + \sum_{i=1}^{k} \mu_i D_{i,t} + \beta' \mathbf{x}_t + \sum_{i=1}^{k} \beta_i' \mathbf{x}_t D_{i,t} + u_t \qquad 1)$$

where $t = 1, 2, ..., T$. y_t (dependent) and $x_t = (x_{1t}, ..., x_{mt})'$ (regressors) indicate observable integrated of order one ($I(1)$) variables, and u_t is the equilibrium error. $D_{i,t}$ takes value of 1 if

[1] *See Carrion-i-Silvestre, Kim, and Perron (2009) for detailed technical explanations for the procedures of the tests.*

$t > T_{Bi} \quad (i = 1,...,k)$ and of 0 otherwise, where k is the maximum number of breaks and T_{Bi} indicates the time period of break. The above model (1) accounts for structural breaks both in the level (μ) and regressors (x), called regime shift model. Following Maki (2012), we estimate the regime shift model in order to estimate the test statistic, MBk, with the null hypothesis of no cointegration against the alternative hypothesis of cointegration with I breaks ($i \leq k$) [2].

3.3. Dynamic Ordinary Least Squares

We employ dynamic ordinary least squares (DOLS) developed by Stock and Watson (1993) in order to estimate the long-run equilibrium relationships among the cointegrated prices of the stock markets. We estimate the long-run relation between two stock markets with the following regression model:

$$y_t = \omega C_t' + \beta X_t' + \sum_{j=-q}^{r} \psi \Delta X_{t+j}' + \sum_{b=1}^{\eta_m} d_m DUM_{m,t} \qquad 2)$$

where X_t' represents the vector of long-run coefficients of x; $\lambda = (\omega', \beta')'$ is the least-square estimates of the above equation (5). q and r are the lags and leads of the differenced regressors, respectively and they are determined according to Akaike Information Criterion (AIC). η_b is the number of breaks in the cointegrating vector suggested by the cointegration test of Maki (2012), and $DUM_{m,t}$ represent the dummy variables taking a value of 1 from each point of structural breaks in cointegrating vector onwards, 0 otherwise.

3.4. Granger Causality

We apply the novel Granger (1969) causality test in order to check whether the stock markets are interrelated in short-term. We estimate the following pairwise regression models across the subsamples determined by the break points in the cointegration vector:

[2] *See also Maki (2012) for detailed explanations of the estimation steps for the test statistic, MBk.*

$$y_t = \omega_0 + \alpha_1 y_{t-1} + \ldots + \alpha_k y_{t-k} + \beta_1 x_{t-1} + \ldots + \beta_k x_{t-k} + \varepsilon_t$$
$$x_t = \omega_0 + \alpha_1 x_{t-1} + \ldots + \alpha_k x_{t-k} + \beta_1 y_{t-1} + \ldots + \beta_k y_{t-k} + \upsilon_t \quad (3)$$

where *y* and *x* represent the stock market price pairs; ε_t and υ_t are error terms and *k* is the length of lag selected according to the AIC. The null hypothesis of *x* (*y*) does not Granger cause *y* (*x*) for the first (second) regression can be written as follows:

$$H_0 : \beta_1 = \beta_2 = \ldots = \beta_k = 0 \quad (4)$$

If the *F*-statistic (Wald Statistic) for the null hypothesis is found to be statistically significant, then we can reject joint null hypothesis.

4. Data and Empirical Results

All stock market data are monthly from July 1987 to December 2015 for a total of 342 observations. We obtain the data for the S&P500 (SPX), the FTSE100 (UKX), Nikkei225 (NKY), DAX30 (DAX), and CAC40 (FRA) indices from the Bloomberg. We analyze the natural logarithm of the stock price indices.

Table 1

Unit Root Test Results

Index	$MZ_\alpha^{GLS}(\lambda)$	$MZB^{GLS}(\lambda)$	$MZ_t^{GLS}(\lambda)$	BP 1	BP 2	BP 3	BP 4	BP 5
SPX	-22.450	0.149	-3.350	Oct-90	Dec-94	Mar-98	Jan-01	May-08
UKX	-17.756	0.167	-2.970	Dec-99	Mar-03	Apr-06	Feb-09	Feb-12
NKY	-19.002	0.162	-3.073	Sep-90	Apr-95	Sep-98	Apr-03	Oct-07
DAX	-22.301	0.149	-3.327	Jul-90	Jul-98	Mar-03	Dec-07	May-12
CAC	-24.474	0.143	-3.498	Jul-90	Jan-95	Mar-98	Jan-01	May-08

Note: BP stands for break point. $MZ_\alpha^{GLS}(\lambda)$ $MZB^{GLS}(\lambda)$ $MZ_t^{GLS}(\lambda)$ *are the test statistics.*

Source: Carrion-i-Silvestre et al. (2009)

Table 1 presents Carrion-i-Silvestre et al. (2009) unit root tests results. The estimation results suggest that the null hypothesis of unit root cannot be rejected for all the price indices, indicating that they are integrated of order one (1). The unit root test procedure detects

several structural breaks which are concentrated around significant economic and political events.

The break points in 1990 for all country indices except U.K. might be the result of the Iraq's invasion of Kuwait on August 2, 1990. Then the Gulf War began and the International Coalition intervened in the conflict. The second half of the 1990s was a period of crises. The break points at the end of 1994 and the beginning of 1995 in SPX and CAC indices respectively might result from the ramifications of the crisis in Mexico. It is highly probable that the Asian and Russian crisis in 1998 inflicted all but UKX. The break points on January 2001 for SPX and CAC poses parallels with the presidential election in the U.S. at the end of which George W. Bush was elected. The break points in March and April 2003 seem correlated with the outbreak of the Second Gulf War against Iraq under now defunct Saddam regime, that started with the U.S. aerial attacks on the Iraqi capital on March 20. Lastly, it is very likely that the global financial turbulence that took its start in the middle of 2007 culminated in the break points observed in the years of 2007 and 2008 which was derived from the developments in the subprime mortgage markets in the U.S. The breakpoints cumulated in the beginning of 2010s might quite likely be related to the debt crisis in some European economies, especially in Greece and to ongoing economic fluctuations in the whole Euro-zone.

Table 2

Cointegration Test Results

Dependent	MB*k*	# of Break	BP 1	BP 2	BP 3	BP 4	BP 5
	Panel A. Independent: SPX						
UKX	**-6.640**	5	Apr-99	Apr-01	Aug-03	Sep-08	Feb-13
NKY	-5.530	5	Aug-90	Dec-96	Mar-00	Dec-12	Jul-14
DAX	**-6.341**	5	Nov-89	Jan-00	Jun-02	May-07	Dec-11
CAC	**-6.933**	5	Oct-89	Mar-02	Feb-06	Oct-10	Apr-12
	Panel B. Independent: UKX						
SPX	-5.222	2	Dec-99	Oct-05	-	-	-
NKY	-5.593	3	Feb-98	Nov-08	Mar-13	-	-
DAX	**-6.158**	5	Feb-94	Apr-98	Dec-02	Mar-07	Dec-08
CAC	**-7.191**	5	Jul-96	Apr-98	Jan-00	Jun-07	Jun-11
	Panel C. Independent: NKY						
UKX	-5.307	5	Mar-92	Apr-96	Nov-97	Apr-06	Oct-08
SPX	**-6.435**	4	Mar-92	Mar-95	Nov-97	Sep-11	-

DAX	-5.454	5	Nov-91	Dec-95	Apr-98	Jun-03	Sep-10
CAC	-5.788	5	Nov-89	Aug-96	Apr-98	Apr-02	Oct-10
	Panel D. Independent: DAX						
NKY	-5.622	5	Aug-90	Mar-00	May-08	Oct-09	Mar-13
UKX	**-6.365**	5	Feb-93	Mar-97	Jan-02	May-04	Apr-12
SPX	-5.979	5	Aug-98	May-02	Nov-03	May-10	May-12
CAC	**-6.549**	5	Dec-88	Jun-01	Nov-02	May-08	Apr-10
	Panel E. Independent: CAC						
DAX	-4.579	4	Aug-95	Apr-97	Mar-99	Feb-02	-
NKY	**-6.467**	5	Aug-90	Jun-96	Aug-00	Nov-07	Apr-14
UKX	-4.875	5	Jun-91	Aug-95	Apr-97	Jan-00	Jun-11
SPX	-5.281	4	Dec-94	Mar-97	Dec-06	Apr-12	-

Note: BP stands for break point. MBk is the test statistic.
Source: Maki (2012)

Table 2 presents the results Maki (2012) cointegration test considering the structural breaks. Additionally, before that we implement Engle and Granger (1987) cointegration test which doesn't consider the structural breaks in order to compare their results. We observe that while the results of the Engle and Granger test indicate any long-run relationship between indices except UKX-CAC pair only when CAC is used independent variable, Maki test suggests no cointegration between UKX-CAC pair[3].

After we consider structural breaks, we find significant long-run relationship between most of the stock markets other than two pairs namely UKX – NKY and DAX – NKY regardless of which is used as dependent or independent variable. This offers a diversification opportunity in the long-run for the investors and portfolio managers trading in both European and Japanese markets even after taking the structural breaks into account.

Table 3 presents the results of the DOLS estimations with dummy variables representing the subsamples. Our results indicate that the long-run relationships between the co-integrated stock markets are statistically significant albeit the relationships between them are not perfect[4]). In addition to that degrees of relationships are

[3] *We do not document the Engle and Granger (1987) test results in order to conserve space.*
[4] *We tested* H_0*:* $\beta=1$ *for all, however do not report the results to conserve space.*

changing over time. This might indicate that the market movements especially in the short run are separating from time to time, but eventually they converge to equilibrium in the long-run.

Table 3

Dynamic OLS Results

Dependent	*β*	*ω*	d1	*d* 2	*d* 3	*d* 4	*d* 5	*r*	*q*
Panel A. Independent: SPX Index									
UKX Index	**0.7629**	**0.8186**	**0.1687**	**0.2552**	**0.0524**	**0.1499**	**0.2292**	16	0
	0.000	*0.000*	*0.000*	*0.000*	*0.006*	*0.000*	*0.000*		
DAX Index	**0.8834**	**2.1759**	**0.1377**	**0.1292**	**0.1590**	**0.6498**	**0.5013**	0	16
	0.000	*0.000*	*0.000*	*0.006*	*0.000*	*0.000*	*0.000*		
CAC Index	**0.6028**	**4.0151**	**0.0922**	**0.1730**	**0.4082**	**0.1894**	**0.1010**	16	16
	0.000	*0.000*	*.006*	*0.000*	*0.000*	*0.000*	*0.017*		
Panel B. Independent: UKX Index									
DAX Index	**1.2626**	**-2.9694**	**0.1034**	**0.0730**	**0.1188**	**0.3200**	**0.6225**	6	2
	0.000	*0.000*	*0.000*	*0.005*	*0.000*	*0.000*	*0.000*		
CAC Index	**1.1025**	**1.5701**	**0.2363**	**0.1271**	**0.0657**	**0.1556**	**0.0400**	0	0
	0.000	*0.000*	*0.000*	*0.000*	*0.001*	*0.000*	*0.083*		
Panel C. Independent: NKY Index									
SPX Index	**0.2568**	**4.3840**	**0.4348**	**0.7530**	**1.4676**	**1.7696**		13	0
	0.000	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*			
Panel D. Independent: DAX Index									
UKX Index	**0.4618**	**4.8076**	**0.0577**	**0.3027**	**0.2548**	**0.1784**	**0.0852**	0	16
	0.000	*0.000*	*0.007*	*0.000*	*0.000*	*0.000*	*0.093*		
CAC Index	**0.6834**	**2.3439**	**0.1479**	**0.1779**	**0.3135**	**0.1022**	**-0.0995**	16	0
	0.000	*0.000*	*0.000*	*0.000*	*0.000*	*0.003*	*0.008*		
Panel E. Independent: CAC Index									
NKY Index	**0.4549**	**2.0086**	**-0.3631**	**-0.7855**	**-1.2024**	**-1.1240**	**-0.8913**	0	0
	0.000	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*		

Note: β is the slope coefficient, ω is the constant. d(.) are the dummy variables representing the subsamples. q and r are the lengths of lags and leads, respectively.

Table 4

Granger Causality Results across Subsamples

Dependent	$\beta_{1\text{-}BP1}$	$\beta_{BP1\text{-}BP2}$	$\beta_{BP2\text{-}BP3}$	$\beta_{BP3\text{-}BP4}$	$\beta_{BP4\text{-}BP5}$	$\beta_{BP5\text{-}T}$
Panel A. Independent: SPX						
UKX	**0.2143**	**-0.2553**	**0.5376**	0.2972	**0.2184**	0.0889
	0.000	*0.089*	*0.033*	*0.163*	*0.065*	*0.205*
NKY	-0.0600	0.0587	0.0797	-0.0086	0.1338	0.1680
	0.505	*0.237*	*0.115*	*0.894*	*0.289*	*0.674*
DAX	**0.5157**	**0.1625**	-0.0122	0.8103	0.2581	0.0082
	0.002	*0.007*	*0.963*	*0.216*	*0.284*	*0.932*
CAC	0.0042	**0.1047**	0.3269	0.0199	-0.0660	-0.0244
	0.990	*0.001*	*0.233*	*0.934*	*0.841*	*0.729*
Panel B. Independent: UKX						
SPX	-0.0289	**0.1259**	-0.0348	-	**-**	-
	0.660	*0.072*	*0.253*			
NKY	**-0.0951**	0.0492	**0.2432**	-0.0939	-	-
	0.001	*0.356*	*0.083*	*0.371*		
DAX	-0.0256	**0.3181**	**0.4205**	0.0158	**0.7465**	0.0214
	0.817	*0.094*	*0.002*	*0.964*	*0.000*	*0.932*
CAC	-0.0141	**0.6683**	0.3056	0.3336	**0.4244**	0.2051
	0.858	*0.000*	*0.470*	*0.205*	*0.071*	*0.471*
Panel C. Independent: NKY						
UKX	-0.0453	0.0080	-0.0811	0.0288	**0.4751**	0.0636
	0.454	*0.853*	*0.298*	*0.383*	*0.035*	*0.455*
SPX	0.0048	0.0142	-0.0790	**0.0734**	0.0109	-
	0.922	*0.684*	*0.268*	*0.003*	*0.932*	
DAX	0.0811	0.0497	-0.1589	**0.1638**	0.0872	0.0903
	0.271	*0.327*	*0.256*	*0.011*	*0.278*	*0.418*
CAC	**0.3224**	-0.0229	-0.1411	**0.1892**	**0.1661**	0.0565
	0.097	*0.538*	*0.209*	*0.000*	*0.079*	*0.470*
Panel D. Independent: DAX						
NKY	-0.0750	-0.0236	**0.0724**	-0.1288	**0.1634**	-0.0228
	0.240	*0.253*	*0.058*	*0.780*	*0.031*	*0.802*
UKX	0.1184	0.1071	**-0.1482**	-0.0136	**-0.0478**	0.0807
	0.143	*0.208*	*0.017*	*0.951*	*0.028*	*0.535*
SPX	-0.0186	0.0213	**-0.4659**	-0.0257	-0.1133	0.0320
	0.636	*0.873*	*0.033*	*0.212*	*0.200*	*0.628*
CAC	-0.4054	**0.0615**	-0.9165	-0.0003	0.5438	0.1008
	0.206	*0.068*	*0.185*	*0.998*	*0.357*	*0.276*
Panel E. Independent: CAC						
DAX	0.0779	-0.1154	0.1078	0.2695	-0.0186	-
	0.379	*0.599*	*0.796*	*0.294*	*0.542*	
NKY	-0.0338	0.0025	0.0019	**0.1871**	**-0.0688**	-0.1382
	0.593	*0.985*	*0.966*	*0.001*	*0.089*	*0.326*
UKX	**0.1964**	-0.0652	-0.1104	-0.0241	-0.0334	-0.0386
	0.013	*0.624*	*0.307*	*0.802*	*0.722*	*0.788*
SPX	0.0381	-0.0491	0.0438	-0.0573	0.0411	-
	0.568	*0.623*	*0.186*	*0.134*	*0.476*	

Note: BP stands for break point. Lag length for each equation is set to 1 based on AIC criterion. First and second rows are 1-lagged explanatory coefficients and p-

values associated with that lagged coefficients, respectively. Bold values indicate statistical significance at conventional levels. First dashes (–) in the rows indicate that there are less than five structural breaks and that the previous column is for the last subsample, from last breakpoint to end of sample.

Table 4 depicts the results of Granger Causality test across subsamples which are determined by the break points in the co-integrating vector of the Maki test. Our results indicate limited short-run diversification opportunities for the investors.

In the late 90s and early of 2000s, we observe short-run linkages between stock markets, however they are disappearing over time. Such that, we barely observe any short run interactions among them during the subsamples spanning from the last breakpoint to end of the sample.

It is important to assess that the U.S., as the predominant stock market in our sample, has no impact on the Japanese market in the short run as in long run. On the other hand, Japanese market has a significant effect on the U.S. market in the long run and there are limited short run linkages between these two markets in the subsamples. Moreover, French market do no cause the U.S. and the German markets in any subsamples.

5. Conclusions

In this paper, we try to examine the relationship between the major stock markets including the U.S., U.K., Japan, Germany and France for a long span of time from July 1987 to December 2015 including many important economic and political events. Our study differs from most of the previous ones in terms of its methodology. We implement Carrion-i-Silvestre et al. (2009) unit root and Maki (2012) cointegration tests considering the structural breaks. Additionally, we use the Granger causality test for subsamples determined according to the period between break points to point out the changes in the short-run relationship between these markets over time.

The bottom line is that structural breaks suggested by the cointegration methodology are empirically relevant. Most of these breaks are observed around significant economic and political events including the wars and financial crises. Our results indicate that most of these markets are co-integrated with the others but Japan stock market is not co-integrated with those of the U.K. and Germany indicating a limited diversification benefit.

While, in the long-run, most of the stock markets are significantly interconnected in the presence of structural breaks, we observe a gradually decrease in the short-run linkages between these stock markets. Even we observe any linkage between these markets in the last subsamples for all pairs indicating a short run diversification opportunity as of late.

As a result, after we consider structural breaks, we observe that the Japanese market is mildly segmented from the other countries providing limited diversification benefits for international investors and portfolio managers in both short and long run. This can be the result of divergence of its economic and financial policies from those of the other countries. For instance, while the FED and following the European Central Bank reduced the interest rates in order to invigorate the economy after the global financial crises in 1997-98, the Bank of Japan just reduced the interest rates during we are writing up this paper.

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CONSIDERATIONS ON THE DISTRIBUTION OF INFORMAL ECONOMY IN THE EUROPEAN UNION

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Abstract

Informal economy is a ubiquitous element in both developed and emerging states. Given the complex nature of the concept and the multitude of forms in which it can be found, modeling informal economy became an important focus in the specific scientific literature. This paper aims to advance a graphical representation of the correlation between income per capita and informal economic in Europe. Building on this analysis, the paper brings forth a model that simulates the variation of informal economy as a function of the dynamics of GDP per capita.

Keywords: Informal Economy, Economic Growth, Spatial Distribution

JEL Classification: E26

1. Introduction

Last decades, there are many studies trying to estimate both the size and dynamics of informal economy. Generally, the informal economy refers to activities and income being partially or fully outside government regulation, taxation, and observation.

For instance, from the on line Business Dictionary, the informal economy is viewed as “System of trade or economic exchange used outside state controlled or money based transactions. Practiced by most of the world's population, it includes barter of goods and services, mutual self-help, odd jobs, street trading, and other such direct sale activities. Income generated by the informal economy is usually not recorded for taxation purposes, and is often unavailable for inclusion in gross domestic product (GDP) computations” (see for details http://www.businessdictionary.com/). A typical worker operating in informal economy: “has no formal contract with his employer; has no systematic work conditions; gets irregularly

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and unevenly paid; has no forum to express his grievances; has no fixed hours of work and mostly earns hand to mouth; is not covered by any kind of social security system; and has poor knowledge about the need to protect himself socially and economically."

Moreover, some of them are studying the impact of such type of activity on the general process of economic growth. Depending on its definition and on the method of estimation, to denote informal economy there is a huge number of names: underground economy, shadow economy, hidden economy, gray economy, parallel economy, etc. (Feige, 1989; Fortin and Lacroix, 1994; Gibson and Kelley, 1994; Gutmann, 1977; Schneider, 2013; ILO, 2012; Kuehn, 2007; Porta and Shleifer, 2014; OECD, 2002 and 2009; Tanzi, 1982; Thomas, 1992).

In this study, we present graphically (by using stylized maps of Europe) the inverse correlation between income per capita and informal economy in Europe. Then, based on the analyse of the dynamics of informal economy during a decade in EU we estimated a model that can be useful to simulate how the size of informal economy will change in correlation with the dynamics of GDP per capita.

2. Spatial distribution of informal economy in Europe and correlations

In order to analyse the trend in dynamics of the correlation between the size of informal economy and growth in Europe, it is useful to see how their geographical distribution (presented here as a stylised map of Europe) changed during a medium or long term. For instance, from Figures 1 and 2 (where LO and LA are longitude and respectively latitude) we can see that both in 2003 and in 2012 the distribution of informal economy in Europe (30 countries: 28 EU countries plus Norway and Switzerland) looks like in a mirror comparing to the distribution of GDP per capita. Data used to build the stylised maps are from Schneider (2013) on shadow economy, and from IMF (International Monetary Fund, World Economic Outlook Database, April 2015) on GDP. On the stylised maps of Europe, y means GDP per capita, expressed in thousand dollars per person at Purchasing Power Parity (PPP), and z is the size of the shadow economy (as percent of official GDP).

In 2003 and in 2012 the estimated values of correlation coefficient (between GDP per capita and the size of informal economy) were -0.757 and respectively -0.764.

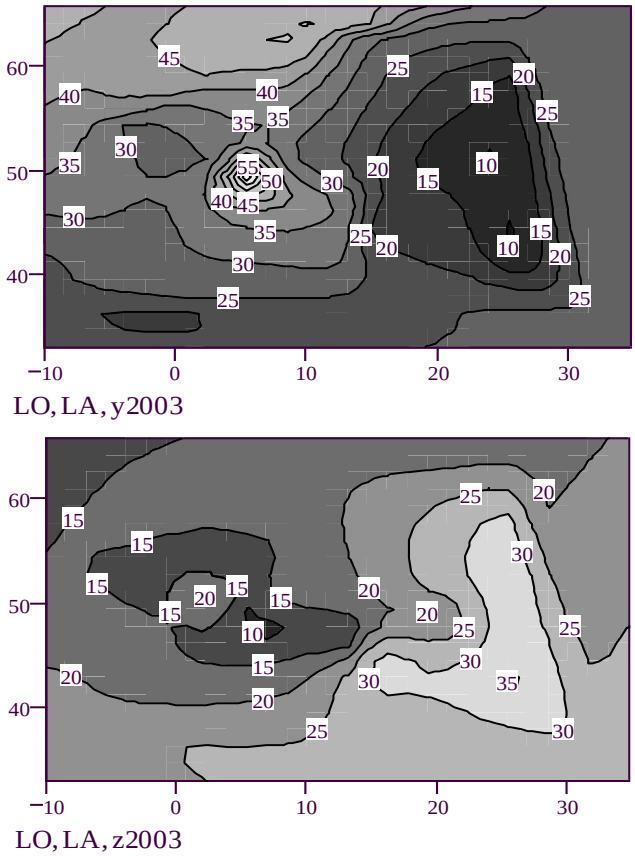

Figure 1

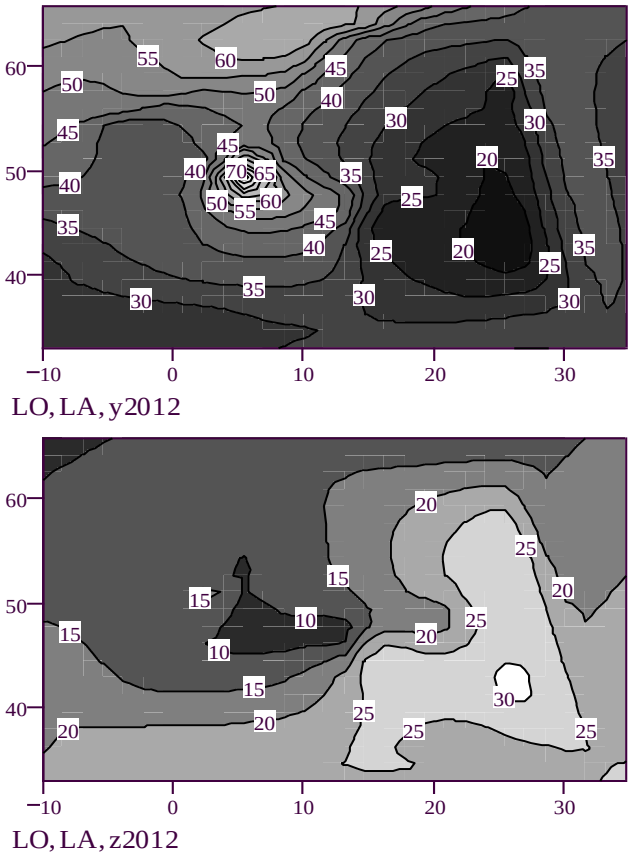

Figure 2

Moreover, already there is in specialised literature a general rule asserting that an inverse correlation between the level of economic development and the size of informal economy exists. This rule could be illustrated in case of the selected 30 European countries, as it is shown in Figure 3, where the EU countries plus Norway and Switzerland were considered for the period 2003-2012. The graphical representation is based also on the estimated data for informal (shadow) economy from Schneider (2013).

In Figure 3, y is GDP per capita (expressed in thousand dollars per person at Purchasing Power Parity, PPP), z - the size of the shadow economy (as percent of GDP), i - countries, and t - years. On the graphical representation in this Figure, Romania is

represented in 2003 and respectively in 2012 by the two points noted as (yR2003, zR2003) and respectively (yR2012, zR2012).

The corresponding correlation between GDP per capita and the size of informal economy for the selected European countries in the period 2003-2012 was strongly negative (the value of correlation coefficient was -0.755). For the considered period, the correlation coefficient (between y and z) was lower than -0.9 for all countries, excepting Greece (-0.540), Luxemburg (-0.758), Malta (-0.854), Ireland (-0.862), and Cyprus (-0.877).

Moreover, by adding informal economy to the official GDP, we can estimate the total GDP per capita, yT, and the share of informal economy in total GDP, zT, as follows:

$$yT = y + (z / 100) * y$$

and respectively

$$zT = z * y / yT$$

In this case, the corresponding correlation between the total GDP per capita and the size of informal economy, as share in total GDP, for the selected European countries in the period 2003-2012 was again strongly negative (the estimated value of the correlation coefficient was -0.710). This time, for the considered period, the correlation coefficient (between yT and zT) was lower than -0.9 for all countries, excepting Greece (-0.426), Luxemburg (-0.720), Ireland (-0.813), Cyprus (-0.841), Malta (-0.842), Hungary (-0.887), Croatia (-0.896), Estonia (-0.896), and Latvia (-0.897).

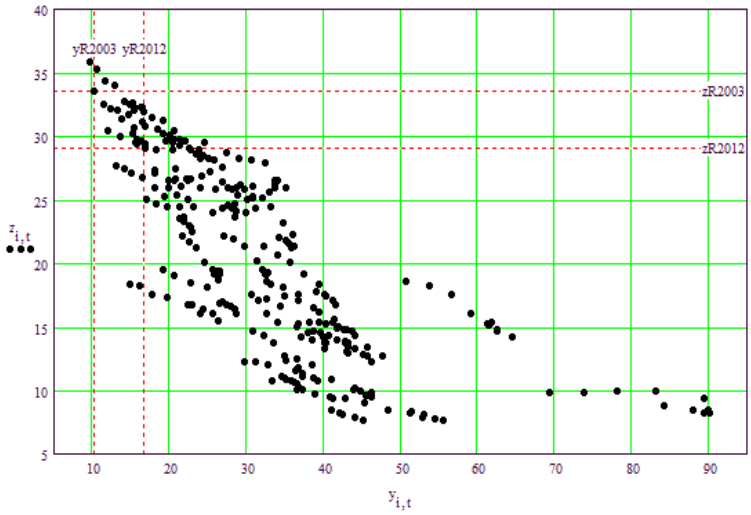

Figure 3

3. Dynamics of informal economy in EU

Referring to the European Union (28 countries), the estimated average size of informal economy decreased from 20.0% of official GDP (expressed in PPP) in 2003 to 17.0% in 2012, as it is shown in Figure 4 (where zM is the EU average level, and z23 is Romania; t being time, from 1 to 10, corresponding to years of the period 2003-2012).

Higher values in 2003 and in 2012 registered Bulgaria (35.9% and 31.9%), Romania (33.6% and 29.1%), Croatia (32.3% and 29.0%), Lithuania (32.0% and 28.5%), Estonia (30.7% and 28.2%), Latvia (30.4% and 26.1%), Cyprus (28.7% and 25.6%), Greece (28.2% and 24.0%), Poland (27.7% and 24.4%), Malta (26.7% and 25.3%), Slovenia (26.7% and 23.6%), Italy (26.1% and 21.6%), Hungary (25.0% and 22.5%), Portugal (22.2% and 19.4%), Spain (22.2% and 19.2%), and Belgium (21.4% in 2003).

Lower values in the same years registered Luxemburg (9.8% and 8.2%), Austria (10.8% and 7.6%), UK (12.2% and 10.1%), Netherlands (12.7% and 9.5%), France (14.7% and 10.8%), Ireland (15.4% and 12.7%), Germany (17.1% and 13.3%), Denmark (17.4% and 13.4%), Finland (17.6% and 13.3%), Slovakia (18.4 and 15.5%),

and Sweden (18.6% and 14.3%), Czech Rep. (19.5% and 16.0%) and Belgium (16.8% in 2012).

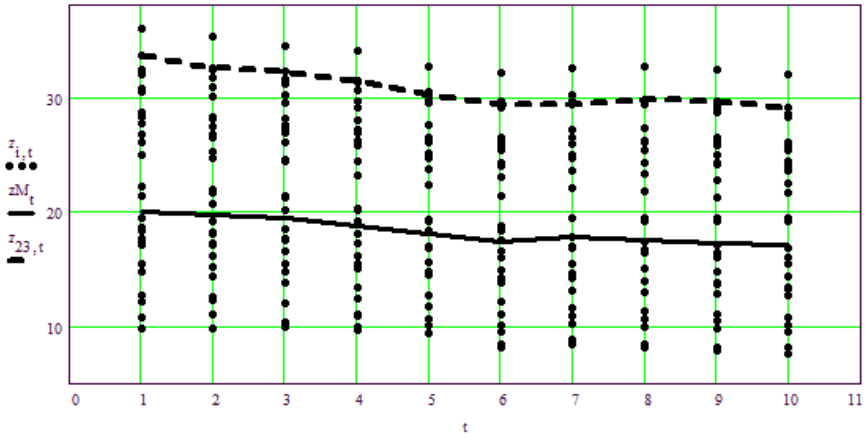

Figure 4

In order to estimate a model to describe the dynamics of the informal economy (this time denoted as y) as a function of income per capita (denoted as x) we selected the following simple hyperbolic function:

$$y(x) = a + b/x + u$$

where y is the share of informal economy, x is the income per capita, and u is residuum.

Applying this model on the data in case of EU28 for the period 2003-2012, the estimation results are presented graphically in Figures 5-7. Moreover, other estimation outputs are as follows:

Variable	Value	Standard Error	t-ratio	Prob(t)
a	5.477509046	1.310129905	4.180890023	0.00004
b	453.6922814	21.41594412	21.18479012	0.0

Coefficient of Multiple Determination (R^2) = 0.6174989195
Proportion of Variance Explained = 61.74989195%
Adjusted coefficient of multiple determination (Ra^2) = 0.6161230163
Durbin-Watson statistic = 1.7575193170675

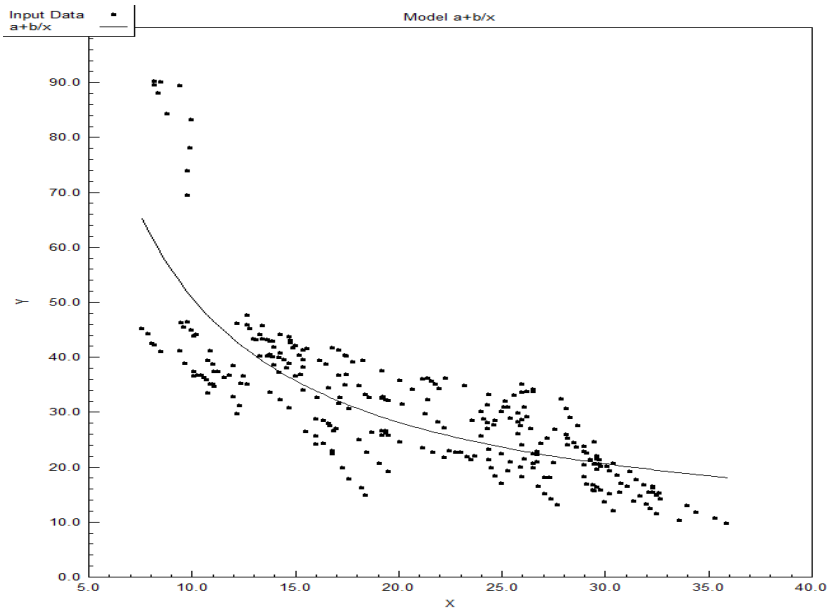

Figure 5

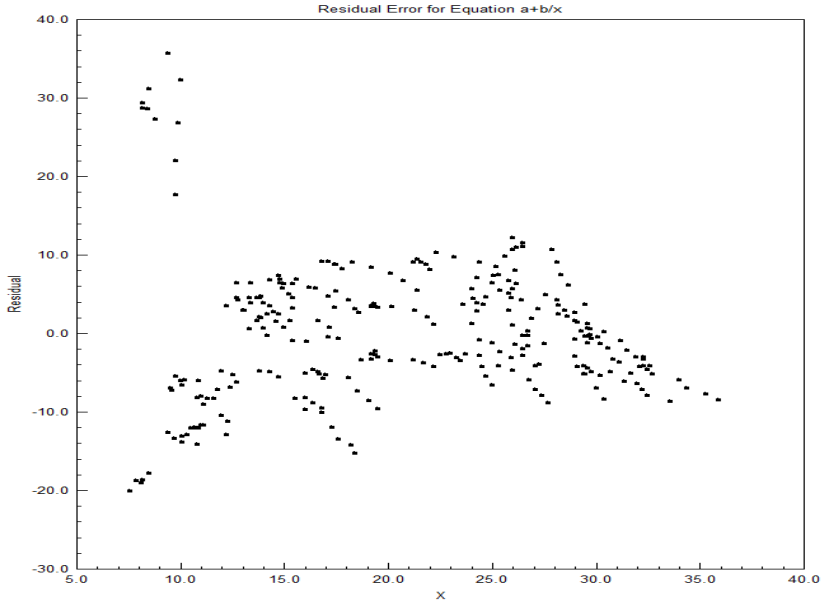

Figure 6

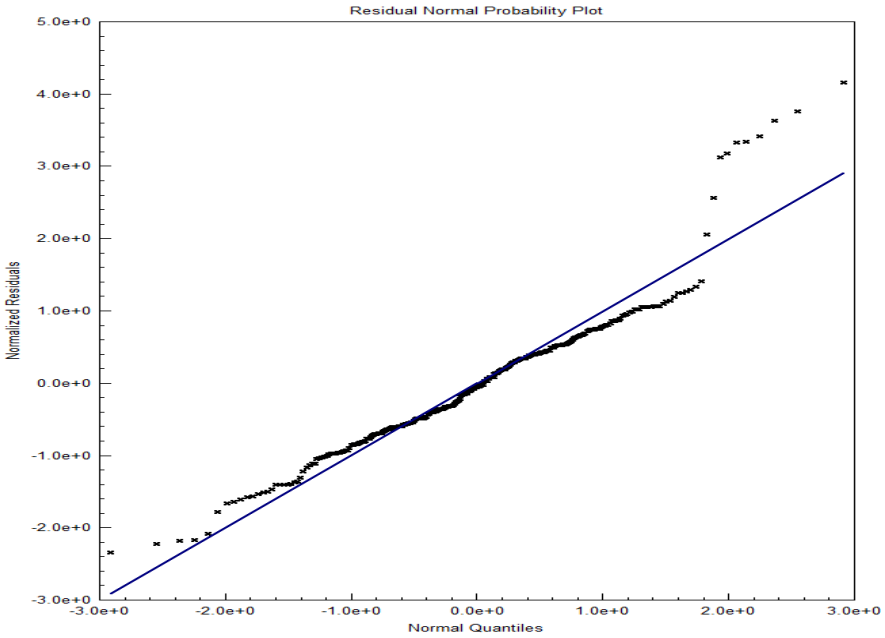

Figure 7

4. Conclusions

The focus of this paper was to formulate a characterization of the informal economy in Europe. For this purpose, the first part of the analysis presents a series of stylized maps of Europe that document on the correlation between the size of informal economy and growth offering a spatial distribution. This approach proves the general idea of a negative correlation between economic development and the size of informal economy. From this point it is possible to estimate the share of informal economy in the total GDP per capita (official GDP plus informal economy). Again the results point to a strongly negative correlation which was lower than 0.9 for the majority of countries excepting: Greece, Luxemburg, Ireland, Cyprus, Malta, Hungary, Croatia, Estonia and Latvia. When discussing the average size of informal economy in the 2003 – 2012 interval we notice a 3% percent drop from 20% to 17%. Building on these results, the last phase of the analysis is centred on a model that fits the above mentioned

dynamics and rends a graphical output of the informal economy trends.

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THE EFFECTS OF PROFITABILITY RATIOS ON DEBT RATIO: THE SAMPLE OF THE BIST MANUFACTURING INDUSTRY

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Abstract

The factors affecting debt levels of firms are related to the course of economy as well as the profitability of companies. But it is quite difficult to make a prediction about the course of economy. In this study, it is aimed to reveal how profitability indicators of companies affect debt levels.

The purpose of this study is to examine the relation between the debt and profitability ratios of the companies that operate on the BIST (Istanbul Stock Exchange Market) manufacturing industry by using Panel Regression Analysis. The data of the 86 companies within manufacturing industry on the BIST between the years 1994 and 2015 were used. Furthermore, the variables such as asset growth ratio, return on asset, current ratio, leverage ratio, cash rate, new borrowing rates, total financial liability/total liability ratio, return on equity, investment and earnings have been studied. It has been observed in the study that the active growth and the return on equity ratios affect the new borrowing variables positively while investment, current earnings per share ratios affect the new borrowing variables-negatively. In addition, it has been determined in the study that the return on investment, the return on assets and the current ratios affect the leverage ratio negatively while the active growth, the return on equity, the earnings and the cash ratios per share affect the leverage ratios positively. It has also seen that the active return on assets and the earnings per share ratios affect the total financial liabilities/total liability ratios negatively while the asset growth ratios affect the total financial liabilities/total liabilities ratios positively.

Keywords: Manufacturing Industry, Capital Structure, Turkish Stock Market, Panel Regression

JEL Classification: G3, L6, C23

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1. Introduction

The studies in the literature are based on two major points: those investigating the factors which affect the profitability of companies and those investigating debt ratios. In other words, it is possible to state that the majority of the studies in the literature focus on the factors affecting profitability or investigate the factors affecting the debt ratios based on capital structures. Moreover, the fact that there are no studies in the literature examining the effects of profitability on debt ratios draws attention. Therefore, it is considered that this study is going to fill this gap in the field and to contribute to the literature in this respect.

The profitability and debt ratios of companies affect each other. To illustrate, it is known that some companies make investments by borrowing, while some use their equities for investments. It is possible to say that in the case that companies receive profits from their investments, they will continue to grow or at least to maintain their continuity. Therefore, it is a fact that the factor determining the debt levels of companies which prefer borrowing is economic conditions. In other words, it is an undeniable fact that the profitability ratios of companies affect their debt levels. In this context, this study aims to research the relation between the borrowing and the profitability ratios of the 86 companies within the Istanbul Stock Exchange Market (BIST) for the period between 1994 and 2010. The variable elimination method has been employed in order to determine the variables indicating the financial structure and profitability of the companies. When determining the variables showing the financial and profitability structure of the companies, the Forward Stepwise-Wald method, which is a variable elimination method, has been used. Accordingly, active growth rate, return on asset, current rate, leverage ratio, cash rate, new borrowing and total financial liability/total liability ratios, return on equity, investment and earnings per share and leverage ratio variables as well as Panel Regression Analysis have been used in the study.

2. Literature review

Profitability and debt ratios, which give information about the financial statuses of companies, are important indicators. It has been observed that there are a great number of studies in the literature researching the profitability and debt ratios of companies.

Nissim and Penman (2003) conducted a study in which they researched the difference between the leverage effect that appeared in the transactions performed between the years 1963 and 2001. Also, they examined the effects of these leverages on profitability and equity capital values. The return on equity rates of all the companies within COMPUSTAT, net transaction return on assets, financial leverage rates, financial spread rates, net debt ratios, risk-free short-term interest rates after tax and the market borrowing rate variables were used in this study. Also regression analyses were employed. As a result of the study, it was found that the financial leverage and the transaction liability leverage affected the profitability positively. It was also seen that the price book value rates depended on the expected profitability. In addition, this study pointed out that these two leverage ratios affected the price book value rates, as well.

In another study carried out by Chen and Zhao (2005) for the period between 1972 and 2002, it was examined the inclination of the companies which had more profits for lower leverage ratios and the leverage ratios average rates of returns. Equity returns, changes in current debts, long-term debt emissions, equity share sales and purchase variables were used in this study. Moreover, they made use of OLS Method. In order to measure the leverage ratio, four variables were employed: total debts on the market value of the assets, long-term debts on the market value of the assets, total debts on the book value of the assets and long-term debts on the book value of assets. As a result of the study, it was found out that there was a negative relation between profitability and leverage ratios, and that the capital structure theory was valid.

Mansor, Mahmood and Zaprofitia (2007) conducted another study on the period between 1996 and 2003 in Malaysia. They examined the factors that affected the profitability and capital structure of the 25real estate companies and the 20 construction companies. The capital gearing, the rate of debts to equities, profit margin before tax, the value of the fixed assets, net profit margins, equity share profit rate variables were used in this study. Also, OLS Method was applied. As a result of the study, it was determined that the capital gearing had a negative effect on net profit margin and on price earnings ratios.

In another study conducted by Nobonee (2009), a comprehensive and integrative optimal cash conversion cycle model for business capital management were suggested. Accordingly, the

data belonging to the 5802 companies which were non-financial and which were listed on the NYSE, American Stock Exchange and on Nasdaq for the period between 1990 and 2004 were employed. The transaction returns to sales ratio, the receivables to sales ratio, the lists of goods to the cost of the sold commodities ratio, the receivables to the cost of sold commodities, the cash conversion cycle, the debts to equity capital ratio and the liquidity rates variables were used. In addition, GMM Dynamic Panel Data Analysis was carried out. As a result, it was seen that the recomended optimal cash cycle model increased the market values and the profitability of companies and maximized their sales.

Albayrak and Akbulut (2008) conducted a study and tried to reveal the factors that affected the profitability levels of the 55 companies that were active in the BIST industry and service sectors by evaluating the annual data belonging to the years between 2004 and 2006. In the study, return on assets, return on equity, profit margins, earnings per share were regarded as the dependent variables, while the liquidity rates, the efficiency of asset usage, the capital structure leverage rates, the market values and the company sizes were considered as the independent variables. Besides, variable elimination and Panel Regression Analysis methods were used. According to the results of Panel Regression Analysis Method, it was determined that the equity turnover and liquidity rate affected the profitability of the active assets negatively. It was also concluded that the financial structure variable, which was among the factors that affected the return on equity, caused a significantly positive effect, which was contrary to the expectations. In the model, the factors affecting the net profit margin were examined. It was determined that the liquidity rate, the stock turnover rate as well as the equity turnover rate affected the net profit margin negatively, which was contrary to the expectations. It was also observed that a similar situation was valid for the relation between the gross profit margin and short-term liability turnover rate, as in the relation between the activity profit margin and current rate.

As to Demirhan's study (2009), she examined the factors the capital structure of the companies that were active in the Istanbul Stock Exchange service sector. The data belonging to the 20 companies for the period between 2003 and 2006 were analyzed. Total debt/total active assets, short-term debt/total active assets, long-term debt/total active assets, total debt/equity, short-term

debt/equity and long-term debt/equity capital rates were used as the dependent variables, while profitability, company size, R&D expenses/sales, material fixed assets/total active assets, company risk rate, paid tax/profit before tax, finance expenses/total liabilities, current active assets/current passive assets and depreciation/total active assets rates were used as the independent variables. Moreover, the regression analysis was carried out. As a result of the study, it was determined that the most significant variables affecting debt levels of companies were the profitability, the company size, the structure of assets and the liquidity level.

Ata and Ağ (2010) conducted a study about the effects of company characteristics on capital structures of the companies that are active in the main metal industry and metal goods sector, machinery and tool manufacturing sector within Istanbul Stock Exchange. For this purpose, the annual data of the 42 companies listed on the Istanbul Stock Exchange between the years 2003 and 2007. In this study, Panel Data Analysis was applied. Furthermore, the debt level was used as the dependent variable, while the company size, the liquidity rate, the interest coverage ratio and the growth rate were used as the independent variables. As a result of the study, it was determined that only the company size affected the capital structure positively, and all the other variables affected it negatively. It was also concluded that the results of the study showed parallelism with the trade-off theory.

Akbulut (2011) conducted a research on the relation between company capital management and profitability. It was carried out among the 127 companies which were active in manufacturing sector within the Istanbul Stock Exchange. The return on assets was considered as the dependent variable, while the average collection duration of the receivables, the stock keeping process, the cash cycle, the active size, the growth rate and the leverage ratio were regarded as the independent variables. One-Way variance and regression analyses were employed in the study. As a result, a one-way relation was determined between profitability and company capital management.

In another study, Gülhan and Uzunlar (2011) analyzed the sample of Turkey in the period from 1990 and 2008 in order to determine the factors affecting active return on assets of local and foreign banks. In the study, in which Panel Data Analysis was applied, capital, activity expenses, liquidity, securities, non-performing

loans and growth variables were regarded as the specific variables for banks. Also, inflation and GNP growth rates were regarded as the macroeconomic variables, and sector share and intensifying rate were regarded as the sector variables. 18 local banks and 11 foreign banks were examined for the period between 1990 and 2000, and 11 local and foreign banks were examined for the period 2002 and 2008. It was concluded in the study that capital, personnel expenses, size, securities, inflation and sector share affected the active return on assets in the period between 1990 and 2000. On the other hand, in the regression models that were handled for the period between 2002 and 2008, the variables that affected active return on assets significantly were capital, personnel expenses, non-performing loans, GNP growth rate and sector share. It was also seen that all these results were valid for each of these three models: the local banks, foreign banks, and all the banks together.

Najjar and Petrov (2011) reseached the relation between the capital structure and the factors particular to the companies in insurance sector in Bahrain taking the period between 2005 and 2009. It was determined in the study that there was a positive relation among the leverage ratio of the insurance companies, their material fixed assets and total active assets. Also, there was a negative relation between the liquid assets and the leverage ratios.

Almajali and Alamro (2012) examined the performance of the 25 insurance companies listed on the Jordan Stock Exchange. The effects of liquidity, leverage and size variables on the performance of companies in the period between 2002 and 2007 were investigated in the study. As a result, it was found that there was a positive relation between the company performance and the relevant variables.

Saldanlı (2012) conducted a study and researched the effects of working capital management of manufacturing companies within 'Istanbul Stock Exchange 100' on profitability for the period between 2001 and 2011. In the study, return on assets was taken as the dependent variable, while receivables turnover rate, debt turnover rate, stock turnover rate, current rate, acid test rate, cash rate and net trade duration were taken as the independent variables. Besides, the linear regression analysis was applied. It was concluded that current rate, acid test rate and cash rate affected active return on assets negatively. Moreover, it was determined that the other variables did not have any significant effects on active profitability.

Sarıoğlu et al. (2013) conducted a study which the data of the companies publicly-traded on the BIST within cement, automotive and automotive subordinate industry and informatics sectors were taken as samples. The factors affecting the decisions of companies on capital structures were examined in the study. In addition, panel regression analysis was applied. Debt ratio was regarded as the dependent variable, while active profitability, return on equity, active growth, acid-test rate, period depreciation expenses/total active assets, material fixed assets/total active assets and annual renewal growth rates of sales were regarded as the independent variables. As a result, it was concluded that the active size and profitability rates were effective on debt ratios in the cement sector. The growth rate of the sales was effective on the debt ratios in automotive sector, while the size, the asset structure and the sales had effects on debt ratios in the informatics sector.

In another study, Elitaş and Doğan (2013) aimed to investigate the factors determining the capital structures of the insurance companies functioning within the Istanbul Stock Exchange in the scope of trade-off theory. In this context, they made use of the data of insurance companies pertaining to the period between 2005 and 2011. Also, they used leverage ratio as the dependent variable, while fixed asset rates, return on assets, total assets rates, premium rates and current rates were used as the independent variables. As a result of the regression analysis, it was determined that the fixed assets ratio in the assets of the insurance companies, the current ratio, active return on assets rates and premium increase percentage and active size rates were effective on the capital structure.

Korkmaz and Karaca (2014) conducted a study which aimed to determine the elements affecting profitability for manufacturing companies. They made use of the data belonging to the 78 companies that were active within Manufacturing Industry Index on the Istanbul Stock Exchange between the years 2000 and 2011. They also made use of panel regression analysis. Earnings per share, net profit/equity capital, net profit/total active assets, total active assets growth, net sales/total active assets, sold product cost/stocks, net sales/commercial receivables, current rate, fixed asset/total active assets, material fixed assets/long-term foreign resources, net sales/fixed assets and total liabilities/total active assets variables were used in the study. As a result, it was found that the fixed assets were financed through the long term foreign resources and that the

companies preferred financing their fixed assets with equity capitals rather than the long term foreign resources. It was also concluded that in the case that the share of the fixed assets increased in the active assets, the active return on asset rates decreased.

Erdoğan (2015) carried out a research to determine the relation among growth possibility, leverage ratio, matured liability, and total investments by using the data of the 290 companies that were active on the BIST between the years 1996 and 2012. Besides, the regression analysis was applied. Leverage rate, debt maturity rate and total investment rates were taken as the dependent variables; market value/book value (PP/DD) rate, material fixed assets rate, non-debt tax shield rate, return on equity, company size, asset maturity structure rate and cash flow rate were taken as the independent variables. As a result of the regression analysis, it was found that there were no relations between the debt maturity and leverage ratio; however, there was a negative relation between the PP/DD rate and debt maturity rate. In addition, it was also determined that the long-run loans had a decreasing effect on investments.

When the literature is examined, it is possible to state that the studies that have been conducted so far have focused on the factors affecting the profitability and the debt ratios based on the capital structures. In addition, it points out that there are no studies examining the effects of profitability ratios on debt ratios. Therefore, this study can be considered to be original from this aspect.

3. Dataset and Methodology

The data belonging to the companies in manufacturing industry within the Istanbul Stock Exchange (BIST) between the years 1994 and 2010 have been examined in this study. The variables that indicate the financial structures and the profitability of the companies have been used in the study. These variables are given in Table 1.

Table 1

Variables

Abbreviation	Variables	Formula
AGR	Active Growth Rate	((Total Assets$_t$ / Total Assets$_{t-1}$)-1)*100
ROA	Return on Assets	(Net Profit / Average Total Assets)*100
CR	Current Rate	Current Asset/ Short Term Loans

EPS	Earnings per share	Net Profit / Total Number of Shares
ROI	Return on Investment	(Gain from Investment-Cost of Investment)/Cost of Investment
LR	Leverage Ratio	Total liabilities/ Total Assets
CAR	Cash Ratio	(Ready Liquid Assets + Stocks and Bonds) / Short Term Liabilities
ROE	Return on equity	Net Profit / Equities
TFTD	Financial Liabilities	Total Financial Debt/Total Debts
NB	New Borrowing	(Current Period Long Term Liabilities -Previous Period Long Term Liabilities)

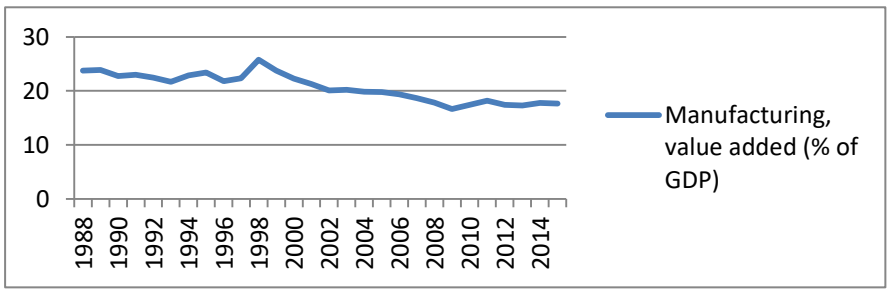
Source: Akgüç, 2011: 450-459; Karaca, 2014:193-208.; Botchkarev and Andru, 2011: 246.

The years from 1994 to 2015 constitute the time dimension of the dataset and the cross-sectional part consists of the 86 companies in the BIST Manufacturing Industry. The annual data have been used in this study.

What comes first when evaluating the development process of a country is the share of manufacturing industry in economics. "Manufacturing industry exhibits – the engine of development- features with rapid productivity growth, returns according to dynamically increasing scales, rapid technological change and with many dynamic externalities." (Doğruel and Doğruel, 2008:7). In other words, manufacturing industry is considered to be the locomotive of economics. Thus, the sample of this study has been chosen as the manufacturing industry sector.

Figure 1

Manufacturing Industry %of GDP



Resource : The World Data Base.

Panel data includes the units and the time dimension. Panel data analysis consists of the combination of the cross-sectional area and the time series analyses. Sometimes, the data about some units related to some periods may be missing or lost in analyses and in such a situation, unbalanced panel data are used. Therefore, due to the missing data belonging to some years, the unbalanced panel data method has been employed in the study. The models examined are as follow:

Model 1: $\boldsymbol{LR_{it} = \alpha_0 + \alpha_1 AGR_{it} + \alpha_2 ROA_{it} + \alpha_3 EPS_{it} + \alpha_4 CR_{it} + \alpha_5 CAR_{it} + \alpha_6 ROE_{it} + \alpha_7 ROI_{it}}$

Model 2: $\boldsymbol{TFTD_{it} = \beta_0 + \beta_1 AGR_{it} + \beta_2 ROA_{it} + \beta_3 EPS_{it} + \beta_4 CR_{it} + \beta_5 CAR_{it} + \beta_6 ROE_{it} + \beta_7 ROI_{it}}$

Model 3: $\boldsymbol{NB_{it} = \delta_0 + \delta_1 AGR_{it} + \delta_2 ROA_{it} + \delta_3 EPS_{it} + \delta_4 CR_{it} + \delta_5 CAR_{it} + \delta_6 ROE_{it} + \delta_7 ROI_{it}}$

When determining the variables used in the models, Forward Stepwise-Wald method, which is a variable elimination method. has been used.

As in time series, the variables' being stable in panel data analysis is quite important to avoid spurious regression problems. The levels or differences at which each series is stable must be determined so that the models mentioned above can give accurate and reliable results. This is possible with unit root analysis. In order to determine the Unit Root test to be used in a study, first of all, it must be researched that whether there is a correlation between the units or not. Since panel regression models depend on cross-sectional independence hypotheses between units.

Cross-sectional independence tests are used in order to determine whether the models dealt include unit and time effects. The Pesaran CD test is used to research the existence of cross-sectional independence between units, and it is used only when N>T. In this context, the Pesaran CD test is as follows (Hoyos and Sarafidis, 2006: 487):

$$CD = \sqrt{\frac{2T}{N(N-1)}}\left(\sum_{i=1}^{N-1}\sum_{j=i+1}^{N}\hat{p}_{ij}\right) \quad (1)$$

Here, T stands for the time period, N stands for the number of the cross-sections and $\hat{p}_{ij}$indicates the correlation between the i.[st]

and j.st error terms. Also, it has zero average for the fixed values of T and N. In this equation,

$$\hat{p}_{ij} = \sum_{t=1}^{T} \frac{e_{it} e_{jt}}{\left(\sum_{t=1}^{T} e_{it}^2\right)^{\frac{1}{2}} \left(\sum_{t=1}^{T} e_{jt}^2\right)^{\frac{1}{2}}} \quad (2)$$

e_{it} shows the OLS error terms based on T observation for each i=1,…,N (Baltagi, 2005: 247).

In the case that there is a cross-sectional independence between the models, the First Generation unit root tests are *not* used for the stability analyses of the series. The Pesaran unit root test, which is one of the Second Generation unit root tests, resolves this problem. In other words, the Pesaran (2007) unit root test focuses on the cross-sectional independence. Pesaran dealt with the ADF regression, which included the delayed levels of individual series and the cross-section averages of the first differences in the unit root test he suggested. In this test, the standard panel unit root tests are based on the averages of the ADF statistics (CADF) with the individual cross-section (Pesaran, 2007:266). The Pesaran CIPS statistics is as shown in the equation below (3):

$$CIPS = \frac{1}{N} \sum_{i=1}^{N} CADF_i \quad (3)$$

In the wake of determining the stability, the specifications of the models that will be estimated in panel data analysis must be determined. The Breusch-Pagan Lagrange Multipliers (LM) Test is used to decide whether the models to be estimated include unit and time effects. Breusch-Pagan LM test Statistics is as follows (Breusch-Pagan, 1980):

$$LM = \frac{NT}{2(T-1)} \left[\frac{\sum_{i=1}^{n} (\sum_{t=1}^{T} u_{it})^2}{\sum_{i=1}^{n} \sum_{t=1}^{T} u_{it}^2} - 1 \right]^2 \quad (4)$$

Another test used to research the specifications of the models to be estimated is the F test. It is used in order to determine whether there is a unit effect.

4. Results

When applying Panel Data Analysis, the first thing to do is to determine whether there is a cross-sectional dependence among the

series. The existence of cross-sectional dependence for the models dealt with in this context has been examined through the Pesaran CD cross-sectional independence test. The relevant findings are shown in Table 2.

Table 2

Pesaran Cross-sectional Dependence Test

MODEL 1		MODEL 2		MODEL 3	
CD	Probability	CD	Probability	CD	Probability
29.096	0.0000***	8.207	0.0000***	16.414	0.0000***

*, **and ***show statistical significance at 0.10, 0.05 and 0.01 levels, respectively.

According to the results of the Pesaran CD test, it is possible to state that there is a cross-sectional independence in the variables. Accordingly, in this study, the stability of the variables has been examined through the Pesaran unit root test, which takes cross-sectional dependence into consideration. The results are shown in Table 3.

Table 3

The Results of Pesaran Unit Root Tests Regarding Variables

	I(0) Constant and Trend		I(1) Constant and Trend	
Variables	**Statistics**	**Probability**	**Statistics**	**Probability**
AGR	-1.613(3)	0.053*	-9.704(2)	0.000***
CAR	-3.400(3)	0.000***	-14.385(1)	0.000***
CR	-5.588(2)	0.000***	-9.119 (2)	0.000***
EPS	1.455 (3)	0.926	-8.062(2)	0.000***
LR	0.163(1)	0.565	-2.672(2)	0.004***
NB	-0.182(1)	0.428	-2.724 (2)	0.003***
ROA	2.287(3)	0.989	-8.028(2)	0.000***
ROE	1.824(2)	0.966	-4.564 (2)	0.000***
ROI	-6.106(1)	0.000***	-13.105(1)	0.000***
TFTD	2.829(3)	0.998	-6.301(2)	0.000***

*The lag lengths are determined according to Akaike (AIC) and Schwarz (SC) data criterion. The lag length numbers are shown in brackets ( ),and the Maximum lags number of Schwert (1989)[5] has been taken as 8. *, ** and *** show statistical significance at 0.10, 0.05 and 0.01 levels, respectively.*

[5] $Maximum\ lags = \left(12 * \left(\frac{T}{100}\right)^{0.25}\right)$

Another issue in panel regression analyses, which is as important as stability, is the determination of the unit effects in the model to be estimated.

The models in the study have been established by considering the levels or differences at which the variables are stable. For these models, whether the individual effects are random, has been examined by using the Breusch Pagan Lagrange Multiplier (LM) test, as well. The findings are given in Table 4.

Table 4

LM Test Results

MODEL 1				
Test	**χ^2 Statistics**	**Probability**	**Ho Hypothesis**	**Decision**
LM_1	-1.680	0.953	Unit Effects are not Random.	Rejected
MODEL 2				
Test	**χ^2 Statistics**	**Probability**	**Ho Hypothesis**	**Decision**
LM_1	-3.100	0.999	Unit Effects are not Random.	Rejected
MODEL 3				
Test	**χ^2 Statistics**	**Probability**	**Ho Hypothesis**	**Decision**
LM_1	-2.560	0.994	Unit Effects are not Random.	Rejected

*, ** and *** show statistical significance at 0.10, 0.05 and 0.01 levels, respectively.

According to the LM test results, it has been concluded that the unit effects are not random in Model 1, Model 2 and Model 3. At this stage of the study, whether there are unit effects has been examined with the F Test. The results are given in Table 5.

Table 5

F Test Results

MODEL 1				
Test	**F Statistics**	**Probability**	**Ho Hypothesis**	**Decision**
F	0.280	0.991	There are not unit effects.	Accepted
MODEL 2				
Test	**F Statistics**	**Probability**	**Ho Hypothesis**	**Decision**
F	0.170	0.998	There are not unit effects.	Accepted

MODEL 3				
Test	**F Statistics**	**Probability**	**Ho Hypothesis**	**Decision**
F	0.110	0.993	There are not unit effects.	Accepted
, ** and * show statistical significance at 0.10, 0.05 and 0.01 levels, respectively.*				

As Table 5 is examined, it is seen that "There are not unit effects." statement is not rejected for all the models. It has been observed in the study that the results of the F and the LM tests support each other. Based on these results, it is possible to state that all the models must be estimated as Pooled Models.

After it had been decided that the three models were to be estimated as Pooled Models, whether there were autocorrelation and heteroscedasticity problems in the relevant models was dealt with in this section of the study.

First of all, the existence of autocorrelation for Pooled Models were examined with the Wooldridge Autocorrelation Test. And then, the analysis continued with heteroscedasticity test. The heteroscedasticity problem for all the models was examined by using the White Heteroscedasticity Test. All results are given in Table 6.

Table 6

Diagnostic Test Results

	White Heteroscedasticity Test		**Wooldridge Autocorrelation Test**	
Models	**χ^2 Statistics**	**Probability**	**χ^2 Statistics**	**Probability**
MODEL 1	284.663	0.000***	4.946	0.028**
MODEL 2	104.249	0.000***	10.257	0.001**
MODEL 3	50.545	0.043**	5.220	0.002**
, ** and * indicate statistical significance at 0.10, 0.05 and 0.01 levels, respectively.*				

Based on the findings in Table 6, it is possible to state that all models have heteroscedasticity and autocorrelation problems. Since there are both autocorrelation and heteroscedasticity problems in all the models, standard errors were corrected without altering the parameter estimations in order to solve these problems. To ensure

the robust standard errors in the study, the Huber, Eicker and White estimators were used. The model results estimated for Model 1, Model 2 and Model 3 are given in Table 7, Table 8 and Table 9, respectively.

Table 7

Pooled Model for Model 1

Dependent Variable: ΔLR			
Independent Variables	**Coefficient**	**Robust Std. Error**	**Probability**
AGR	0.022	0.009	0.019**
CAR	1.131	0.394	0.004***
CR	1.046	0.298	0.000***
ΔEPS	0.002	0.001	0.000***
ΔROA	-0.452	0.035	0.000***
ΔROE	-0.001	0.001	0.240
ROI	-1.725	1.091	0.114
Constant	1.187	0.634	0.061*
R^2= 0.2317		Wald $_{statistics}$=51.99 (0.000)***	
, **and*show statistical significance at 0.10, 0.05 and 0.01 levels, respectively. Δ represents first difference.*			

The explanatory power of Model 1 is 23.17%, and the coefficients are statistically significant both one by one and as a whole. It can be seen in Model 1 that the return on assets affect the leverage ratio variable negatively, while the active growth, earnings per share and cash ratios affect them positively. In other words, the increase in active growth rate points out that companies use debts more than the finance of their assets. It also indicates that the increase in the earnings per share increase the debt ratios of the companies. The relation between the leverage ratio and the return on assets shows that the increase in return on assets decreases borrowing to finance the assets of a company.

Table 8

Pooled Model for Model 2

Dependent Variable: ΔTFTD			
Independent Variables	**Coefficient**	**Robust Std. Error**	**Probability**
AGR	0.047	0.012	0.000***
CAR	0.177	0.727	0.807
CR	0.848	0.483	0.861

ΔEPS	-0.004	0.002	0.000***
ΔROA	-0.404	0.043	0.000***
ΔROE	0.008	0.006	0.205
ROI	-3.593	1.710	0.036**
Constant	-0.709	0.943	0.452
R^2= 0.0841		Wald $_{statistics}$= 87.32(0.000)***	
*, **and*** *show statistical significance at 0.10, 0.05 and 0.01 levels, respectively. Δ represents first difference.*			

It is seen in Model 2 that the coefficients are statistically significant both one by one and as a whole (except for CO, CAR, ROE and I). In addition, it can be said that the explanatory power of the model is 8.41%. It has been determined in the study that the return on investment, the return on assets and the earnings per share ratios affect the total financial liabilities/total liabilities rate negatively; but, the active growth rate affect the total financial liabilities/total liabilities ratio positively.

Table 9

Pooled Model for Model 3

Dependent Variable: ΔNB			
Independent Variables	**Coefficient**	**Robust Std. Error**	**Probability**
AGR	104097.9	64442.67	0.099*
CAR	-8340686	8187696	0.308
CR	10000000	5905439	0.090*
ΔEPS	-918.956	1736.414	0.597
ΔROA	-64048.06	284406.1	0.822
ΔROE	7701.374	1822.479	0.000***
ROI	3652395	193000000	0.850
Constant	-208000000	20000000	0.297
R^2= 0. 0229		Wald $_{statistics}$=6.72 (0.000)***	
*, **and*** *show statistical significance at 0.10, 0.05 and 0.01 levels, respectively. Δ represents first difference.*			

It has been determined in the study that the active growth and return on equity, current rate and the return on equity ratio affect the new borrowing variable positively. As is observed in Table 9, the coefficients (except for CAR, EPS, ROA and ROI) are statistically significant one by one. Likewise, the coefficients are significant as a whole. The explanatory power of Model 3 is 2.29%. With reference to

these models' results, it is thought that the effect of the return on investment on borrowing does not emerge concurrently, since the cash flows of the investment emerge in the following years.

5. Conclusion

The relation between the debt and profitability ratios of the 86 companies quoted in manufacturing sector in the Istanbul Stock Exchange Market (BIST) for the period between 1994 and 2015 has been examined in this study. In order to determine the variables that would show the financial and profitability structures of companies, the variable elimination method has been used. When determining the variables used in the models, Forward Stepwise-Wald method, which is a variable elimination method. has been used. The variables such as active growth rate, return on asset, current rate, leverage rate, cash rate, new borrowing, total financial debt/total liabilities rate, return on equity, return on investment and earnings per share rates, leverage rates and total financial liabilities/total liabilities have been used in the study. The three models in which leverage ratio, total financial liability/total liability ratio and new borrowing rate were used as the dependent variables have been used in the study. Furthermore, Panel Regression Analysis has been used for estimation of the models.

When the models, in which the total financial liabilities/total liabilities ratio and the leverage ratio are taken as the dependent variables are examined together, it is seen that the return on assets decreases both the dependent variables. Similarly, when the models in which the total financial liabilities/total liabilities rate is regarded as the dependent variable, the earnings per share affect it negatively.

The negative relation between the leverage ratios determined in the study and the return on assets show parallelism with the findings reached in the study of Demirhan (2009) and Najjar and Petrov (2011). In the relevant studies, it was found that the relation between the leverage ratio and the profitability variables was negative. Then, it is possible to suggest that these results support the Financial Hierarchy Approach. Because, according to this approach, profitable companies need less external resources. Therefore, the existence of the relation between the leverage ratio and the return on assets rate is an expected situation.

In the study, the current rate and the cash ratio have been found to be the variables which affect the leverage ratio positively

most. Moreover, it has been determined that the variable affecting the leverage ratio negatively most is the return on assets. Likewise, the variable affecting the total financial liability/total liability ratio negatively most has been found as the return on investment. It has been also seen that the total financial liability/total liability ratio is not affected positively and significantly by any variables. Another finding reached in the study is that the current and the growth rates are the variables affecting the new borrowing variable positively most. In addition, it has been concluded that the new borrowing variable is not affected negatively by any variables, either.

Another conclusion drawn from the study is that only active growth rate affects the debt ratios positively in all these three models. It has also been observed that the return on equity and the current ratios affect the new borrowing ratio positively; however, the return on investment affect the total financial liabilities/total liabilities ratio negatively. In addition, it has been concluded that the earnings per share, the cash rates and the current ratios affect the leverage ratio positively. With reference to these findings, it can be suggested that the companies functioning within the manufacturing industry will take the results of this study into consideration when they take decisions about determining their debt policies.

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POLITICAL IDEOLOGY AND FISCAL POLICY. THE CASE OF ROMANIA

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Abstract

The main question asked in this paper regards the possible influence of political ideology on the fiscal policy measures proposed and implemented by the Romanian government. We observe the political affiliation of the ministers of finance and the positioning of their parties on the left-right axis. We find there is a certain equilibrium in terms of the duration the Ministry of Finance portfolio was occupied by a representative of the centre-left versus centre-right parties. The analysis of the influence of ideology on policy is complicated by external facts such as political, social and economic context.

Keywords: government, finance, political party

JEL Classification: D72, E62, G18

The easiest way of segmenting the political spectrum is to use the left-right axis. A preferred field of displaying the ideological orientation of the politicians is the economic one, largely the fiscal area. Normally, we can expect a "left-wing" government to be more interventionist, to promote a fiscal policy relying on larger deficits, while the "right-wing" government is expected to promote a policy of state withdrawal from the economy and to reduce the budget deficits. Theoretically, the left-wing governments might be expected to direct their fiscal policy in a counter-cyclical manner, more restrictive during the periods with low unemployment rates, and in a stimulative manner during the periods with high unemployment rates. Similarly, the right-wing governments might be inclined towards a pro-cyclical approach, in which the fiscal policy stimulates during the periods of boom and restricts during the periods of crisis. As Alesina (1989) acknowledges, the ideological motivations influence the options of politicians in the matter of macroeconomic policies. The importance of the ideological options of the governments on the matter of fiscal policy was the

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object of many previous studies, with different angles of approach. For instance, Baskaran (2012) analysed the relation between political ideology and fiscal policy in the German states at regional level, his observations confirming previous findings that left-wing local administrations spend more than right-wing administrations and have larger deficits.

These theoretical considerations led to the idea that it would be interesting and useful to study the relation between political ideology and fiscal policies in Romania. This study took into consideration relevant elements from the past 25 years and more, covering the entire period of transition of Romania from a centralised economy to the present form semi-integration with the European economy and, why not, with the global economy.

1. Outline of defining elements for Romania's fiscal policy

Considering the current legislation, the Government of Romania has to define and run the fiscal and budgetary policy on the basis of a set of principles: 1) The principle of transparency in setting the fiscal and budgetary objectives and in carrying out the fiscal and budgetary policies; 2) The principle of stability; 3) The principle of fiscal responsibility; 4) The principle of equity; 5) The principle of efficiency, and 6) The principle of efficient administration of the staff expenditure. The fiscal policy must achieve specific objectives (such as maintenance of the public debt at a sustainable level, or ensure the predictability of the taxation rates), and this must be done according to a fiscal and budgetary strategy. This strategy is the public policy document that sets the objectives and priorities in the fiscal-budgetary field, the targets for the revenues and expenditures of the consolidated general budget and of the composing budgets, as well as the evolution of the consolidated general budget balance over a period of 3 years (Fiscal responsibility law, no. 69/2010).

The Fiscal Council was established in 2010 with the purpose to assist the Government in the process of drawing up and running the fiscal policies. This is an independent authority whose objectives are the analysis of macroeconomic and budgetary prognoses, analysis of the fiscal-budgetary strategy, monitoring the observation of the fiscal rules, etc. The activity of the Fiscal Council materialises mainly in the issue of opinions on the main fiscal events.

Frequently, during the period analysed in this paper, the changes in the field of public finance in Romania have been

presented as “reforms”. These reforms were intended to support the process of economic transition or to allow the process of correcting economic and social imbalances. Văcărel (2001) clarified the way in which the reforming measures in the field of public finance aim to modify the system of revenues and the structure of the public expenditure, thus trying to optimise them.

From the beginning of the transition towards a market economy in Romania, several personalities influenced the path of transition. To exemplify, former president Iliescu is one of these personalities and it may be useful to present his point of view on the fiscal matters: “the state and the government are expected to have available means of constructive intervention in the economy; the policy of pure liberalism, of state’s non-intervention, which invokes as argument the self-regulating power of the market mechanisms (which we don’t yet have) is not compatible with the processes of transition, like it is not compatible with the requirements of the modern economy in general” (Iliescu, 1994, p. 179-180). He continues (p. 181-182) saying that the “state must not use an oppressive taxation that inhibits the economic initiative; on the contrary, it must think of means of stimulating the initiative”. These points of view, stated during the early transition, are illustrative for the dominant approaches of the country’s governance.

The lack of long-term consistency is a defining trait for the Romanian fiscal policy in the past 27 years. This fact has been noticed many years ago by Văcărel (2001), who noticed that a *retrospective analysis of the Romanian fiscal policy during the years of transition shows that there was no clear and coherent strategy. The regulations regarding taxes, dues and contributions have been adopted on the basis of the immediate necessities, only seldom considering medium or long-term objectives. Some of the adopted solutions have been suggested by foreign advisors or by the representatives of international bodies, starting from the experience of the countries or of the interests of the institutions for which they were working, which were not in agreement with the specific conditions of Romania and with our own interests*.

Although it might be tempting to remain with the analysis just on theoretical bases, we considered, however, essential to use landmarks from the recent political and economic history of Romania. Therefore, in order to investigate the relation between the political ideology and the fiscal policy, we rely largely on the historic approach,

making a comparative analysis of the governments of the recent decades, completed with the hypothesis of the left-right structure of the political spectrum. This approach, although useful in our case, has its limitations resulting from the interpretation (or lack of interpretation) of the distinctions between the ideologies of the different political parties situated in the same area of the dichotomous axis.

During the past 27 years, the Romanian Ministry of Finance was headed by 24 ministers. Four of them held this position twice, which means that this ministry has been headed by 20 different people during this period. Within the same ministry, there also have been several mandates of minister delegate for budget (1991-1992 and 2012-2014).

Of interest for this analysis is the Ministry of Economy too (with its various denominations and forms of organisation). Two times, this ministry had a common governance with the finance (1991-1992 and 2007-2008), both times, the portfolio of the minister of economy being expanded to include the ministry of finance. Overall, there were 19 ministers heading this ministry during the surveyed period. A more detailed presentation of this data is included in Table 1, at the end of the paper.

Besides the ministries of finance and economy, of interest for our analysis we also considered to be the ministries of reform, privatization industry and resources, as well as some hybrid ministerial forms of coordination of the economic activity.

This analysis aimed first to clarify the correct succession of the leadership of the relevant ministries. Although such approach might seem easy to do, the reality is that some information is hard to get to, if not obscured. Such an example is the first finance minister of Romania after the 1989 revolution. Most sources, including the webpage of the Ministry of Finance, indicate that the first minister of finance was Theodor Stolojan, as of June 1990. Actually, up to that moment, the ministry has been headed by Ion Păţan, former communist dignitary and one of the few maintained in high profile leading positions in 1990. The second objective of the analysis consisted in the identification, as closely as possible, of the specific segment of the political spectrum to which these people could be assigned to. This objective was quite ambitious and the results are surely perfectible. Figure 1 shows the results of the analysis. For a better view of the successive ministers of finance during the past

decades, the chart has been drawn in colours showing the political affiliation of portfolio holders. Red indicates the ministers from Social Democrat Party (PSD or its precursors PDSR and FSN), which positions itself as a centre-left party; blue shows the National Liberal Party (PNL) ministers, officially with centre-right political positions; green shows the Christian-Democratic National Peasants' Party (PNŢCD) minister, officially with centre-right political positions; brown shows the Democratic Liberal Party (PDL) ministers, officially with centre-right political positions and mauve shows the politically independent ministers (even if they were affiliated to governments generally controlled by PSD).

The analysis comprises about 320 months of governance of the Ministry of Finance. The breakdown of this period is as follows:

- about 129 months (40% of the total), the ministry has been headed by PSD ministers (or predecessors of this party), representing a centre-left wing ideology;
- about 105 months (33% of the total), the ministry has been headed by PNL ministers, representing a centre-right wing ideology;
- about 12 months (4% of the total), the ministry has been headed by a PNŢCD minister, representing a centre-right wing ideology;
- about 47 months (15% of the total) the ministry has been headed by PDL ministers, representing a centre-right wing ideology;
- about 27 months (8% of the total) the ministry has been headed by independent ministries, generally in governments with centre-left wing orientation.

We could also make an adjustment and assign the independent ministers which were clearly supporters of PSD policies to this party and the results would change as follows: PSD – 146 months (46% of total), independent – 10 months (3% of total).

In total, the ratio is of 146 months (46% of the total) leadership with centre-left wing orientation, to 164 months (51% of the total) leadership with centre-right wing orientation (and 10 months, representing 3% of the total with ideologically independent leadership). It is interesting to note that this leadership, which was preponderantly left-wing in the early 90s, shifted towards the right wing, the last decade being clearly dominated by the representatives of centre-right wing doctrines. Generally there was an ideological

consistency between the holders of the finance ministry portfolio of the other relevant portfolios (budget, economy etc.)

It is clear that the differences between fiscal policies cannot be analysed strictly in terms of the political affiliation of finance ministers; the economic and political circumstances, as well as the duration of their mandates, must also be taken into consideration. Furthermore, as noticed by Alesina (1989), sometimes it is difficult to position the governing coalitions on the left-right axis, because the relative influence of the coalition members can change in time, thus influencing its general position. Also, for much of the period observed, Romania was governed by political coalitions. In this respect, we must also mention the conclusions of Alesina and Perotti (1995), according to which the coalition governments have a lower capacity to implement successful fiscal adjustments than the single-party governments because of the actions of various pressure groups. Another issue to be considered is the general economic and financial context. For example, the financial crisis that started in Romania in 2008 had a very significant influence on the fiscal policy of all European countries (Lupu, 2010), Romania included.

2. Observations regarding the relationship between political ideology and fiscal policy in the case of Romania

The problem of the relation between the doctrinarian aspects and the public policies is rather difficult to approach. Chirovici (1999) noticed that *there has not been, and there still isn't a severe doctrinarian clarification at the level of the dominant political parties, including in terms of their economic models underlying the administrative action*. This was true when Chirovici wrote it and is still true. Manolescu (1997) also noticed the inter-correlation between the fiscal policy and the political domain.

Obreja Braşoveanu et al. (2011) make a relevant analysis, conducting an ideological partition of the post-revolutionary governments from Romania on the left-right axis, and presenting the evolution of some macroeconomic indicators during the mandates of these governments. Although interesting, this analysis doesn't take into consideration elements such as the general economic context or even different ideological shades, and since there is no temporal symmetry, the results have limited usefulness.

In conducting our analysis we took into consideration two possibilities: on the one hand, the analysis of the relations between

the political doctrine and the intentions of fiscal policy and, on the other hand, the actual fiscal measures. The reason behind this two-factor approach resides in the considerable difference exiting between declarations and facts. Particularly at the political level, such differences can be more acute.

The preferences for different economic policies of the main political parties from Romania are generally known. When a party comes to govern, these orientations must acquire a much more concrete form, which must take into account both the doctrine elements, and the elements pertaining to the economic and political context. Therefore, a first stage of our research was to analyse the governance programs which the appointed Prime-ministers presented in front of the Parliament to ask for a vote of confidence. From these governance programs we observed relevant elements for our study. The information seems to confirm the working hypotheses relying on the position on the left-right axis of the parties behind the proposed governments and on the position resulting from the statute of the different parties. It may be a surprise, however, that a common element of all governments, irrespective of their political orientation, was the aim to decrease the "level of taxation". Most governments aimed to undertake major fiscal reforms. Occasionally, the adopted measures or packages of measures actually had a reforming character. These reforms have been usually announced after major changes in the political doctrine of the governments, based on their party composition (from the left-wing/centre-left-wing governance of FSN, to the centre-right-wing governance of CDR, than again to the left and then again to the centre-right).

It should be noted, however, that sometimes the fiscal policies proposed and implemented by the governments were not easily identifiably as being in balance with the political orientation of the parties that proposed the ministers of finance in office. Particularly in the past couple of years, when the finance ministers were affiliated to the party proposing a left-centre ideology, the fiscal changes appeared to be of a more liberal orientation.

The intention to investigate the correlation between the political ideology and the fiscal policy is generous, but entails significant difficulties. It is obvious that the ideological positions of the parties have a dynamic character, the doctrine and political positions of the individual people also display a dynamic character (the most relevant one being that of the ministers of finance who had changed

their political orientation). Furthermore, most governments are supported by coalitions of political parties, which produce a doctrine mix that is difficult to analyse.

3. Evaluation of the political ideology as predictor of the fiscal policy in Romania

How much can we anticipate the orientation of the fiscal policy based on the information given by the political affiliation of the government? Intuitively, we may expect some general changes, but without being sure of it. Many times, reality has proven that the implemented policies don't fit with the initial promises of the governance, and that the dynamics of some of the coalition governments is very hard to understand because of the different doctrines of the governing parties. In Romania we recently had the opportunity to experiment, with uncertain results, a centre-right-wing governance (PNL) of the Ministry of Finance, in parallel with the existence of a minister empowered for the budget, whose political orientation was centre-left-wing (PSD).

Reverting to the matter of the political doctrine and of the manner in which it determines the fiscal policy promoted by different governments, one may say that this influence has rather strict limits. We must acknowledge the rather politically confusing character of the Romanian governances, where the doctrine problems are only broadly clarified within the parties. It may be thus relevant to read a brief excerpt from a recent governing program (2012): *just as the budgetary discipline is not left-winged or right-winged, likewise the concern for the social cohesion must not have ideological colour*. In order to make the political doctrine display its predictive character mentioned earlier, several conditions should be accomplished as much as possible. On the one hand, the political parties should be supported by social segments with clearly defined preferences for economic policies. Then, these social segments should have enough influence within the specific parties, so that these preferences are assumed by the said parties. The governments proposed by these parties should have the capacity to implement the specific policies.

An area of further discussion regards fiscal rules and the way of restricting governments' behavior and improving the consistency of public financial policies (Lupu, 2015). This could also be linked with the process of European integration and the challenges of European governance, as outlined by Criste and Lupu (2012).

As final conclusion, we might mention, like Hibbs (1992), that a left-wing vision versus a right-wing vision is too simplistic to explain the changes in the fiscal policy, considering that factors related to the conditions of the economic environment, as well as other political and social elements, most times have a very important influence.

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ANNEX

Table 1

Succession of the ministers relevant to this analysis, in the governments after 1989

Government	Political party	Minister of finance	Minister of economy	Other relevant ministers
Roman 1 26.12.1989- 28.06.1990	FSN	*Ion Păţan* (26.12.1989-28.06.1990) (**FSN**)	*Victor Atanasie Stănculescu* (28.12.1989-16.02.1990) (**FSN**)	
Roman 2 28.06.1990- 30.04.1991	FSN	*Theodor Stolojan* (28.06.1990- 30.04.1991) (**FSN**)	*Eugen Dijmărescu* (28.06.1990-30.04.1991) (**FSN**)	*Florian Bercea* (30.04.1991-16.10.1991) (**FSN**)Minister appointed with the budget
Roman 3 30.04.1991- 16.10.1991	FSN	*Eugen Dijmărescu* (30.04.1991-16.10.1991) (**FSN**)		
Stolojan 16.10.1991- 19.11.1992	Nat. Union	*George Danielescu* (16.10.1991-19.11.1992) (**PNL**)		*Florian Bercea* (16.10.1991-19.11.1992) (**FSN**) Minister of the Budget, State Revenues and Financial Control
Văcăroiu 19.11.1992- 11.12.1996	PDSR	*Florin Georgescu* (19.11.1992- 11.12.1996) (**PDSR**)	*Mişu Negriţoiu* (19.11.1992-27.08.1993) (**IND**) *Mircea Coşea* (28.08.1993-11.12.1996) (**IND**)	

Ciorbea 12.12.1996-17.04.1998	CDR, USD UDMR	Mircea Ciumara (12.12.1996-05.12.1997 (**PNŢCD**); Daniel Dăianu (05.12.1997-17.04.1998 (**PNL**)		
Vasile 17.04.1998-13.12.1999	CDR, USD UDMR	Daniel Dăianu (17.04.1998-23.09.1998) (**PNL**); Decebal Traian Remeş (23.09.1998-22.12.1999) (**PNL**)		
Isărescu 22.12.1999-28.12.2000	CDR, PD, PNL, PSDR, UDMR	Decebal Traian Remeş (22.12.1999-28.12.2000) (**PNL**, **PNŢCD**- November 2000)		Mircea Ciumara (22.12.1999-28.12.2000): State minister, president of the Council of Economic and Financial Coordination (**PNŢCD**)
Năstase 28.12.2000-28.12.2004	PSD	Mihai-Nicolae Tănăsescu (28.12.2000-28.12.2004) (**PSD**)	Dan-Ioan Popescu (28.12.2000-28.12.2004): Minister of industry and resources (as of 19 June 2003);Minister of economy and trade, as of 11 March 2004;State minister on economic matters, Minister of economy and trade) (**PSD**)	
Tăriceanu 1 29.12.2004-5.04.2007	D.A., PNL-PD, UDMR, PUR Alliance	Ionel Popescu (29.12.2004-22.08.2005) (**PNL**); Sebastian Vlădescu (22.08.2005-05.04.2007) (**PNL**)	Ioan-Codruţ Şereş (29.12.2004-04.12.2006) (**PUR**) Varujan Vosganian (12.12.2006-05.04.2007) (**PNL**)	Adriean Videanu (29.12.2004-20.03.2005) (**PD**) Gheorghe Seculici (20.03.2005-22.08.2005) (**PD**) Gheorghe Pogea (22.08.2005-12.06.2006) (**PD**)

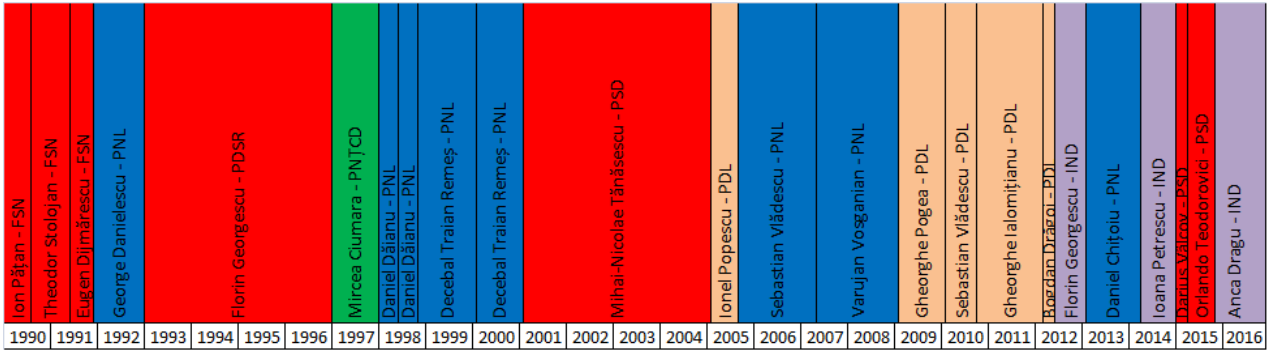
				State minister coordinating the economic activities
Tăriceanu 2 5.04.2007- 22.12.2008	PNL, UDMR	Varujan Vosganian (5.04.2007-22.12.2008) (**PNL**)		
Boc 1 22.12.2008- 23.12.2009	PDL, PSD	Gheorghe Pogea (22.12.2008-23.12.2009) (**PDL**)	Adriean Videanu (22.12.2008-23.12.2009) (**PDL**)	
Boc 2 23.12.2009- 09.02.2012	PDL, UDMR, UNPR	Sebastian Vlădescu (23.12.2009-03.09.2010) (**PDL**) Gheorghe Ialomiţianu (03.09.2010-09.02.2012) (**PDL**)	Adriean Videanu (23.12.2009-03.09.2010) (**PDL**) Ion Ariton (03.09.2010- 09.02.2012) (**PDL**)	
Ungureanu 09.02.2012- 07.05.2012	PDL, UDMR, UNPR	Bogdan Drăgoi (09.02.2012-07.05.2012) (**PDL**)	Lucian Bode (09.02.2012- 07.05.2012) (**PDL**)	
Ponta 1 07.05.2012- 21.12.2012	USL (PSD, PNL, PC)	Florin Georgescu (07.05.2012-21.12.2012) (**IND**)	Daniel Chiţoiu (07.05.2012- 21.12.2012) (**PNL**)	
Ponta 2 21.12.2012- 5.03.2014	USL (PSD, PNL, PC, UNPR)	Daniel Chiţoiu (21.12.2012-06.02.2014) (**PNL**)	Varujan Vosganian (21.12.2012-07.10.2013) (**PNL**) Daniel Chiţoiu, interim, (07.10.2013-17.10.2013) (PNL) Andrei Gerea (17.10.2013-5.03.2014) (**PNL**)	Liviu Voinea (21.12.2012-27.08.2014) (**PSD**) Darius Vâlcov (28.08.2014-13.12.2014) (**PSD**) Minister delegated for the budget

Ponta 3 5.03.2014- 17.12.2014	USL (PSD, UDMR, PC, UNPR)	Ioana Petrescu (5.03.2014-14.12.2014) (**IND**)	Constantin Niţă (5.03.2014-13.12.2014) (**PSD**)	
Ponta 4 17.12.2014- 4.11.2015	PSD, UNPR, ALDE	Darius Bogdan Vâlcov (14.12.2014-15.03.2015) (**PSD**) Victor Ponta, interim (15.03.2015-30.03.2015) (**PSD**) Eugen Orlando Teodorovici (30.03.2015-17.11.2015) (**PSD**)	Mihai Tudose (17.12.2014-17.11.2015) (**PSD**)	
Cioloş 17.11.2015- present	IND.	Anca Dana Dragu (17.11.2015-present) (**IND**)	Costin Grigore Borc (17.11.2015-present) (**IND**)	

Data source: centralization done by the author using the available public information

Figure 1

Political succession of the governance of the Ministry of Finance



Data source: centralisation done by the author using the available public data

THE MONETARY AUTHORITHY AND ELECTORAL CYCLE IN ROMANIA, AT A GLANCE[1]

Adina CRISTE, PhD*

Abstract

One of the characteristics that define the monetary authority governance is the independence from the political sphere, and it is established worldwide since the 1980s, after the Bundesbank success in containing inflation, success that was assigned to its quality of an independent central bank. In this article we try to illustrate the development of the central bank independence against the political field, considering also the inflation development, since the beginning of the transition period, in Romania. The objective formulated in this article is part of a broader one, dealing with the relationship between the electoral cycle and the financial policies. The analysis showed that in Romania the relationship between electoral cycles and the conduct of the National Bank of Romania (NBR) is shown through the intervention of the monetary authority for the purposes of correcting the tendencies of a presumptive procyclical fiscal policy, given not only the limits imposed by the NBR Statute, but the desire to avoid the risk of impairing the credibility of this institution by engaging in politics.

Keywords: central bank independence, inflation, National Bank of Romania, elections

JEL Classification: D72, E52, E58

[1] *This paper is a capitalization of the research project entitled „Ciclul electoral şi politicile financiare" (engl. Electoral Cycle and Financial Policies), performed at "Victor Slăvescu" Centre for Financial and Monetary Research, Romanian Academy.*

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1. Introduction

The activity of central banks is continuously subjected to changes, and the management of these institutions, defined by the assumed responsibility, by the power to decide, and also by the democratic accountability, have suffered nuances over time.

The central bank independence is becoming a popular feature of central banking institution, particularly after 1980, given the success that marked the independence of the Bundesbank in containing inflation, in the 1970s. Gradually, it is recognized that the political pressure always gives priority to the short-term objectives, neglecting the costs they can produce in the longer term. At the same time, increases the tendency to link the greater independence of central bank to the lower inflation developments.

More recently, after 2007, many central banks from worldwide have been the main agents in managing the global financial crisis and its effects. By the same token, the measures adopted by these institutions implicitly meant broadening its responsibility beyond the statutory provisions, thus increasing the probability of impairing the central bank's credibility and independence.

Ciumara and Lupu (2015) emphasize that an important source of volatility of macroeconomic policy is related to the electoral cycle. Starting from this observation, and also from the debate regarding the independence of the central bank policy, in this article we try to illustrate the evolution of central bank independence against the political sphere, taking into account, also, the inflation rate, since the beginning of the transition period, in Romania.

2. Expounding the central bank independence

The central bank independence, i.e. the free use of specific tools to achieve its goals, is considered one of the conditions for an effective implementation of the monetary policy.

Starting with MacLaury's observations regarding the definition of central bank independence (MacLaury, 1977), we can identify elements that depict an isolated image rather than an independent one from the political or the government pressure, or from other interest groups pressure. Thus, independence means the accountability in making decisions for conducting the monetary policy, both in front of the Parliament, and in front of the public and banks. Also, this quality of a modern central bank does not exclude the

involvement of this institution in public debates and criticism of the Parliamentarians, the government experts, or others agents (financial analysts, businessmen, community leaders). In this context, the central bank independence does not eliminate any need for collaboration with the government, as a public institution that operates within a framework of responsibilities to the public interest.

There are numerous studies dealing with the topic of central bank independence. Some of them focus on theoretical issues related to the need for this feature in terms of temporal inconsistency between the economic policy objectives, connecting the economic cycles with the political and electoral ones (Barro and Gordon, 1983; Alesina, 1989; Cukierman, 1992).

An argument that supports the importance of the independence of the central bank against the election cycle is that, usually, politicians do not have the quality to be proficient in the monetary policy field (Cerna, 2014). Moreover, the risk of incompetence at the level of the central bank's management is rather low given the existence of a large number of governing bodies within central bank (Bank Board, the monetary policy committee, the specialty divisions/departments, etc.) that provide specialization and qualification by the division of labour. On the other hand, Cerna (2014) states that, even if the staff of the central bank is highly qualified, it cannot be guaranteed "a priori that the officials always act exclusively in achieving the stated objectives of the institution" (Cerna, 2014 pp. 227). Instead, they can pursue their own interests and not the social welfare, and the personal interest could mean applying an expansionary monetary policy during the election period, in order to increase the chances for the government to be re-elected. Avoiding such a situation is achieved by imposing strict rules for the monetary policy implementation, although the experience shows the need for a more flexible framework in this domain.

In the literature, the debate regarding rules versus discretion reflects the automatic link between the application of the monetary rules and the existence of monetary incentives for those responsible for enforcing these rules. This dilemma leads to the need for such a law on the organization and functioning of central bank to persuade the monetary policy decision-makers to follow a rule for ensuring price stability in the longer term, on the one hand, and to take into account the supply and demand developments in the short and medium term, on the other hand (Cerna, 2014).

Another argument for the importance of the central bank independence relates to the possible conflict of interests in the short-term (those pursued by political candidates in elections and which means their preference for implementing an expansionary monetary policy), on the one hand, and the medium-term objective of central bank (i.e. price stability), on the other hand. It is assumed that an independent central bank seeks the stability, on the medium or long-term, and not the short-term monetary performance.

Empirically, the central bank independence is viewed in conjunction with the developments of some macroeconomic indicators, such as inflation, GDP growth, consolidated general government balance (Alesina and Summers, 1993; Cukierman, 1992; De Long and Summers, 1993). Typically, these studies emphasize that central bank independence is a beneficial attribute for low inflation rate and economic growth (Berger, De Haan and Eijffinger, 2000).

There are also studies that address the topic of the institutional independence of central bank. They start from reality, identifying characteristics of some central banks, considered independent, based on the relationship between the central bank and the government in formulating the monetary policy. Such studies have dated since the 1980s (Barro and Gordon, 1983, Alesina, 1989) and continued in the 1990s (Swinburne and Castello-Branco, 1991, Cukierman, 1992). After 1990, the concernment regarding the central bank independence is focused on evaluating this attribute by identifying elements on which specific indices are constructed. De Lis (1996) and Cukierman (1992) address such a topic. Dincer and Eichengreen (2014) update the earlier research on the assessment of the central bank independence. For this purpose, they use two indices (one weighted and the other unweighted, with values between 0 and 1), which are defined on the basis of some criteria chosen in order to highlight four dimensions of this independence: independence from political pressure, independence in formulating the monetary policy decisions, independence in establishing the price stability objective, and independence against the government from limiting its ability to appeal to monetary financing.

As we have already mentioned (Criste, 2015), the literature offers a wide range of definitions of the central bank independence, but summarizing them, it shows three meanings of this concept:

- independence in setting their objectives, in the sense that the government does not influence directly the central bank's authority to set these monetary policy objective(s) (Debelle and Fisher, 1994);

- independence in choosing their instruments, meaning the freedom to set their intermediate target(s) (interest rate, exchange rate or monetary aggregates), and which Grilli, Masciandaro and Tabelini (1991) called „economic independence";

- institutional independence, in the sense that the central bank management is „endowed" to resist to the political pressures made formally or informally by the government (Issing, 1993). Grilli, Masciandaro and Tabelini (1991) emphasize that such a feature depends on: the tenure for the members of the governing body (the Board of Directors); the number of members of the governing body; the degree of the political diversity regarding the nomination process for the central bank's leadership. These three elements are considered directly proportional with the degree of the institutional independence of the central bank.

3. An overview on the developments of the independence of the National Bank of Romania, in relation with inflation and electoral cycle

The organization and functioning of the National Bank of Romania has undergone major changes since 1990, changes directed towards increasing both institutional independence (political) and operational independence as preconditions for economic development.

The turmoil years of the transition towards the market economy are reflected by the very amendments to the Statute of National Bank of Romania. The three changes made between January 1991 and June 2004, actually reflect a continuous concern of the public authorities towards improving the conduct of monetary policy, one direction being to increase the degree of central bank independence. Although by passing the Law No.34/1991 the central bank became more dependent of political field, in 1998, the Law No. 101/1998 gave a higher level of the institutional independence for the National Bank of Romania. Preparing for the Romania's accession to the European Union, as well as the changing of the monetary policy strategy from the monetary targeting to the inflation targeting

(adopted in 2005), implied an increasing level of the monetary authority independence, given both the conditions imposed by the quality of the NBR's future member of the Eurosystem, and the new monetary strategy to be adopted. These changes are reflected in the new statute of the NBR adopted by the Law No. 312/2004. The questions regarding the conducting of the monetary policy during this period, and how the Romanian monetary authority was adapted to the new challenges faced are explained in more detail in Pop et al. (2007). This work is an important referential to the subject matter hereof.

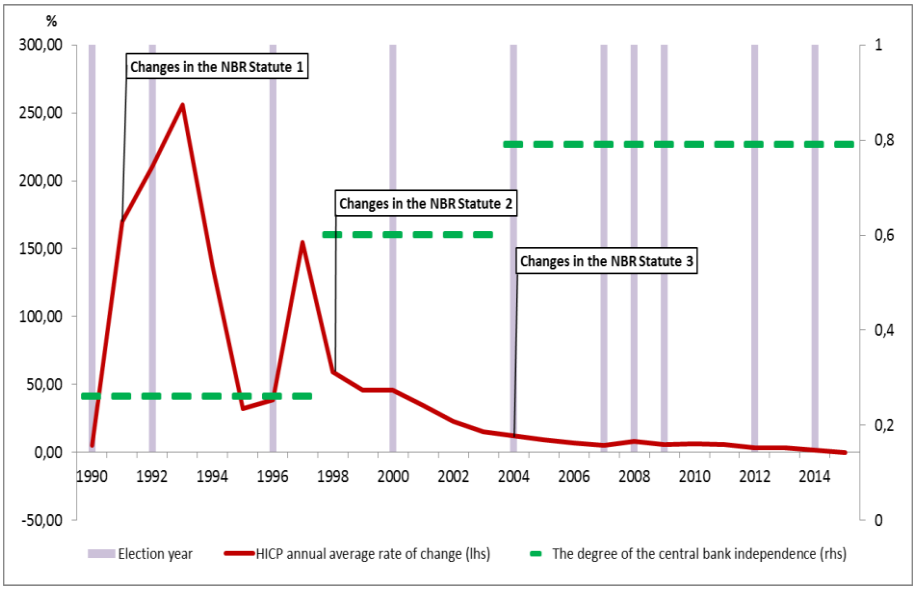
In order to illustrate how the NBR independence and the inflation in Romania have evolved during 1990-2015, pointing also the election years, we use quantifiable data. Thus, the developments of the central bank independence is expressed through the central bank independence index (CBIW)[2] calculated by Dincer and Eichengreen (2014). According to authors' calculations, in 2010, the CBIW was 0.79, a higher level than 1998 (0.60).

The transition from the level of 0.60 to almost 0.80 was realized in 2004 when it was the last improvement of the NBR Statute. Before 2004, there are calculations made by Neyapti (2001), showing a 0.26 level of the index. Although the methodology used is not the same, it is similar Dincer and Eichengreen's (2014) and so the values of these indices can join for temporal comparison. Also, data on inflation are taken from the Eurostat (for the period 1996-2015) and from Annual Reports of NBR (for 1990-1995).

[2] *The authors (Dincer and Eichengreen) calculate two indicators for measuring the central bank independence: a weighted (CBIW) and a non-weighted one (CBIU). In this article, we use the CBIW.*

Chart 1

Electoral Cycle, the level of NBR independence and inflation development, 1990 – 2015



Source: National Bank of Romania Annual Reports (1990-1995), Eurostat Data; Dincer and Eichengreen, 2014; Neyapti, 2001

As it is shown in Chart 1, in times when the NBR had a lower level of independence, the inflation records high values, and vice versa. Theoretically, this observation would confirm the hypothesis that a central bank, which is independent from the political sphere, would achieve better results on inflation target. However, a lower inflation rate can be explained not only by the increasing of the central bank independence, but also by other factors, such as: changing the monetary policy strategy, improving the operational tools, and, generally, the grinding its operational framework, over time.

The lack of influence concerning the election cycle over the management of the monetary policy for NBR is more visible after 2004, when the frequency of the election periods have increased, but, at the same time, the inflation was kept at lower levels (see Chart 1). However, in 2008, there is some influence of the electoral cycle on monetary policy through the higher inflationary pressure exerted by

the relaxed fiscal policy measures adopted by the government. But this influence is an indirect one, because the central bank had to intervene *to correct* this trend, and *not to support* the relaxed fiscal policy.

5. Some final remarks

The short analysis conducted in this study confirms that the relationship between the electoral cycles and the NBR's conduit is limited to interventions of monetary authority, in order to correct any trends of the procyclical fiscal policy, and is not influenced by any "election" pressure exerted by the government. This latter aspect is highlighted not only by the limits imposed by the NBR's Statute, but also by the aim of avoiding the risk of impairing the credibility of monetary authority, one of the main qualities of modern central banking, which once destroyed is hard to be rebuilt.

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OPTIMIZATION OF MONETARY CREATION BY LINKING MONETARY POLICIES WITH COMMERCIAL BANKS' STRATEGIES

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Olga TIMOFEI, PhD Candidate[**]

Abstract

The failure of the economic system by the end of the first decade of the XXI century has extended the fields of research of economists; the most discussed being the problems of the monetary economy, especially the key role of commercial banks versus the central banks' policies in starting and spreading the international financial crisis. The monetary authorities together with academicals researchers have to review the monetary policies and tools, through the impact on financial stability and sustainable economic growth.

Keywords: monetary creation, monetary policies, commercial banks' strategies

JEL Classification: E51, E52, E58

1. Introduction

The role of banks in the process of money creation is undeniable and is proven by economic theory. The involvement of banks in money creation process, especially of the effects of levers adopted by the state to increase the capacity of money creation by banks, may lead to a more efficient implementation of this important role.

The present article focuses on the study of the context in which the banking sector can capitalize the monetary policy of the state through monetary creation and the efficiency of this creation.

The efficiency or inefficiency of banks in the process of money creation was demonstrated by analysis of the applied fields during the global financial crisis. It was proven that the global financial crisis of

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2007 was actually generated by the ability of commercial banks from developed countries to create more money than necessary for the economy. In the search of quick and additional profits the banks took advantage of the abundance of money and invested in risky assets, which eventually failed, undermining not only their own financial situation, but also world economy in general.

As long as the banks had provided a sufficient amount of money – cheap money supply, that was not properly used, they made risky transactions, which led to the financial crisis. The topic interest of this paper consists in the importance of targeting commercial banks (positioned, verified, empowered) within certain limits in order to make them independent on the market growth policy implementation.

The aim of this article is to examine the existing relations of the bi-leveled banking system: the relations between the central bank and commercial banks both in terms of interaction between these two levels, as well as in terms of their possible cooperation in order to achieve a particular purpose. Being aware that the first level is authoritative and the second level is on the market economy level that cannot be forced to perform anything, but maybe only convinced or directed through some instruments and mechanisms.

2. Literature review and proposed guidelines

The mechanism of creation of money supply in circulation is a complex process, due to its dependence on a number of factors that are not always controlled by monetary authorities, and the monetary policy does not generate the expected results. It often happens despite the fact that one of the most important tasks of any central bank is to assure and regulate the optimum quantity of money in circulation according to the demand and needs of the real and banking sector. However, monetary creation is a complex process, in which the leading role has no central bank as a monetary authority but commercial banks, which have the important function of assessing the demand for money in the economy and training their supply, benefiting in the process through various monetary policy tools.

Economists have different views and opinions concerning **the importance of commercial banks in money creation process**. On one hand, there are economists like Robert Lucas (1988), who thinks that the role of financial institutions is exaggerated, judging by the

function of financial intermediation of commercial banks and its importance for economic growth, or Dornbusch and Reynoso (1989, p. 204), who believe that financial factors have almost no influence on the level of GDP per capita. And on the other hand, many economists are convinced that the creation of money is important for economic growth, and due to its financial effect through commercial banks leads to a considerable increase.

The economists, who acknowledge the role of commercial banks in the creation of money, consider this ability as a function of their primary bank emerging from its financial intermediation activity. "Banks act as intermediaries between depositors and people who are able and willing to borrow money. This relationship is often described as between depositors and investors, but the debtor is not required to invest in the sense of obtaining new capital goods" (Cameron, 1968).

It can be noticed that economists put particular emphasis on the multiplicity of their functions in order to highlight the place and role of banks in an economy. There are two distinguishable groups of economists (Olteanu, 2003, p. 6):

- Economists who believe that commercial banks are essential simple intermediary bodies between agencies who have capital and those who need additional capital (ex. Herman Schulty, Deletzsch, Albert Shaffle, Karl Knies, etc.)

- Others who consider that the main role of banks is unlimited creative currency (John Law, Mac Loode, Josef Alois Schumpeter).

Commercial banks fulfil their creative function of money creation together with the central bank through lending and investment operations. The ability of commercial banks to create money is of particular importance for the economy (Andolfatto and Nosal, 2003). If there is no increase in the volume of bank loans, the growth of economic activity of economic agents becomes impossible or is delayed in time, until the accumulation of the necessary financial means, from profits or other sources.

The normal progress of economic life becomes possible when there is a certain well-defined ratio and balance between the mass and the volume of money in circulation of goods and services brought to the market. The existence and maintenance of such a report depends on one hand, on the achievement of monetary equilibrium, in this case the money emissions of the Central Bank must correspond to real needs, and on the other hand, on the functionality of economy, a process when commercial banks become involved.

Commercial banks represent the channel through which the Central Bank executes its objectives and goals in order to maintain the money market. However, "The most important role is played in the creation of money supply by the banking sector ... when banks grant loans, they create additional deposits for those who need money" is written in one of the reports issued by the Bank of England (Bank of England, 2007a).

Theoretical considerations of the role of commercial banks in the redistribution of financial flows in the economy occurred in several stages, from complete ignorance to the total involvement, each economist expressing his opinion depending on the pursued historical circumstances. However, in our opinion**, not the multitude of functions performed by commercial banks underlies the importance of their role in the economy**. Their exceptional value is mainly driven by the specific operations they can do:

- Establishing means of payment;
- Investing means of payment into circulation;
- Withdrawal from circulation of payment means.

These transactions highlight banks among other financial institutions, and have the capacity to change the volume of money in circulation. Proceeding from the above context, we can say that the concept of bank should be viewed not only in terms of its functions to attract temporarily available resources and to place them in the name and on their own terms of reimbursement conditions, interest rate and maturity, but according to their participation in the formation of the money supply in circulation.

A number a modern economists who studied the causes and consequences of the global financial crisis triggered in 2007-2008, asserted the same idea, considering that it happened due to the commercial banks' basic capacity to create money:

"When banks grant loans to customers, they create money by crediting their accounts", says Sir Mervyn King, the governor of the Bank of England (King, 2012);

- The head of Economic Analysis Department of the magazine Financial Times, Martin Wolf, thinks that the essence of the contemporary monetary system is creating money out of nothing, by private banks (Wolf, 2010);

- The financial crisis in 2007/08 took place because we could not limit the private financial system in its function of creating private

credit and money, says the President of Financial Services Authority, Adair Turner (Turner, 2012).

- The banking sector has the most important role in the creation of money supply. When banks provide loans, they create additional deposits for those who need money, writes in one of the reports issued by the Bank of England (Bank of England, 2007b);

- The primary function of banks is monetary creation and not the intermediary one, Michael Kumhof, IMF economist (see Conference *Fixing the Banking System for Good, 2013*), highlighting the unfairness of banks in terms of their approach intermediation approach due to the exclusion of monetary financing determinance.

3. Correlation of commercial banks' strategies with monetary policy objectives

The amount of money that can be created by banks in the economy depends both on the need to respond to the demand for money that comes from the nongovernmental sector, as well as on the amount of the offer, which the bank can take from the central bank and multiply it being influenced by monetary policy instruments. But banks' monetary policies are not the only one that are responsible for money supply creation, banks' decisions that are focusing on profitability and caution in their activity are important too. Reality shows that monetary policy mechanisms do not always work efficiently, in some cases the effects claiming the reverse, that is why commercial banks try to avoid restrictions placed by the authorities in a bid to increase their profitability. However, the main function of central bank is that of correcting the level of central bank money supply in the economy through monetary policy instruments, which are used to optimize the monetary mass in the direction of its increase or decrease. Each of the objectives of macroeconomic monetary policy is reflected in the strategic decisions of commercial banks, being transformed into microeconomic objectives, which are designed to increase bank profitability.

In order to optimize the effects of monetary policy, it is necessary to study the behaviour of the banks' reaction to its impulses, because they represent a complex system of relationships, tools and channels through which the Central Bank and government influence over the banking system and the real economy. In this case, commercial banks represent a node for transmitting monetary authority decisions and rulings.

Table 1

Monetary policy objectives and response policies of commercial banks

Monetary policy objectives	Components of monetary policy	The purposes of monetary policy	Commercial bank's response policies	The purposes at commercial bank
Price stability	Monetary emission	Enough quantity of money supply	Credit policy and politics storage	Maximizing profits from the accumulation and efficient resource placement
External stability	The stability of exchange rates and balance of payments	National currency stability	Foreign and external exchange policy	Business subjects' demand for foreign currency
Sustainable growth	Crediting	Credit availability for business subjects	Credit policy	Business subjects' demand for credits
	Storage	Creating the conditions for economic growth as a primary source of increasing potential investments	Storage policy	Creating conditions for growth generating sources of funds - sources of loans and investments increase
The stability of interest rates	Interest rate	Meeting the demand for money within the means of subjects of economic activity to pay the right to use financial resources temporarily available	Policy interest rate and fees	Meeting the demand for money within the means of subjects of economic activity to pay the right to use financial resources temporarily available
Financial system stability	Financial system stability	The regulation of the banking system liquidity	Risk management, liquidity management	Application of central bank regulations, ensuring the stability of the bank

Source: elaborated by authors.

So, it can be said that in the process of monetary policy drafting it is essential to establish correctly the goal and selection of tools for its realization, and the goal must be as simple as possible and accessible to perception. In this case, a single monetary policy will determine the final objectives of banking system development, banking policy and the position of each bank separately, which while adopted and implemented by the management or owners of commercial banks, will condition their behaviour and their relationships with customers, influencing dynamic economic development of the country in general.

To clear up the existing interdependences from the banking system, it is necessary to make the analysis of monetary policy objectives in terms of the aims and policies of the banking system (Table 1).

Each objective pursued by the central bank that is highlighted in the table, has its own implementation methods and tools, which in one or another way influence the banking system activity (Semionov, 2005).

Since the monetary policy implementation takes place through a range of techniques and monetary instruments, which target mostly are commercial banks, the study and research of commercial banks' reactions on monetary policy, are of major importance for the functioning of an effective mechanism for transmission.

4. The influence of monetary policy instruments on the ability of commercial banks to create money

The effects of the instruments of monetary policy on money creation ability of commercial banks are different. Currently, the set of monetary policy tools that the central bank has at its disposal and through which it implements monetary policy in order to achieve its primary objective, can be divided into two groups, depending on the desired effects, namely:

1) Tools that have an impact on monetary mass in circulation:

• minimum reserves

• open market operations (open market)

2) Tools impacting the cost of money

• monetary policy rate (the refinancing rate), that is a quantitative tool of monetary policy, reserve requirements have a direct impact on money creation by commercial banks which have the following effects:

→ restrictive, the rise of the required reserves makes commercial banks' excess liquid reserves to fall, because it is required higher reserves in accounts at the central bank, reducing the potential creation of money;

→ incentive, rate reduction of required reserves makes reservations excess liquidity of commercial banks to increase, because a considerable amount of the money previously held as required reserves is released, becoming available for lending, in other words, increase the potential for creation banks.

The impact of mandatory reserve rate needs two clarifications. The action of the first factor may be different, depending on the structure of bank resources. Second, there are countries where the system of required reserves is such that those reserves can be used partially as a source of liquidity, which makes sometimes decrease below the required level, providing on their reconstruction in due time. In these countries, the rise of increased volume enhances the possibility to draw from them necessary liquidity in the short term, thus reducing optional liquid reserves. As a result, the effects of changing coefficient required reserves are partially canceled in this case by the reverse effects of changing coefficient of optional liquid reserves.

There are also other tools that influence the volume of money supply - **open market operations (open market)** performed by the Central Bank which initiates the sale or purchase of certain trade effects, thus creating a demand or a supply of currency at a certain price. However, open-market policy has a reversible influence: the effects purchase by the Central Bank leads in increased liquidity and vice versa. The effects of central bank securities trade are the following:

- constraining, through the sale of securities by the central bank to commercial banks, occurs liquidity absorption in the economy and a reduction in the amount of money available to commercial banks for multiplication;

- incentive, by buying bonds from commercial banks, the central bank provides liquidity and enhances the creation of money by commercial banks.

In conclusion, the effect of the policy of open market of Central Bank influences the ability of commercial banks to create money based on its willingness to engage in the process of lending to non-banks, which in the end, has repercussions on monetary mass in

circulation. At the same time, the decision of banks to create money depends on the rentability it offers to those central bank securities, because this instrument can have dual effects: trying to limit liquidity, central bank can completely neutralize the creation of money. Namely, in case the central bank attempts to reduce the money supply, it provides securities state with an attractive interest rate, creates favorable conditions for banks to remain active buyers in the money market, which also leads not only to decrease design capabilities of money by banks but even counter it (remaining banks remain on the money market as active speculators and will not provide credit to the economy).

An instrument that influences the value of money is **refinancing rate**, which is the interest rate used for the main open market operations of the central bank. The refinancing rate performs a valuable effect on existing interest rate structure in the economy and an indirect impact on the size of money supply in circulation. The alteration of refinancing rate towards its reduction is perceived by the public as relaxation of the monetary policy pursued by the authorities, leading to the decrease of interest rates in the economy, increased demand for money to carry out investment and therefore enhancing the capacity of banks to create money and increase money supply in the economy.

And on the contrary, the increase of the refinancing rate leads to higher interest rates in the economy, higher price of credit and ensuring savings to the detriment of investment, which will also lead to the decrease of the demand for money, and will reduce banks' ability to impel the money into the economy or to create money.

Thus, when the central bank changes refinancing rate, it encourages financial institutions to change the interest rate on deposits and short-term loans, leading to changes in interest rates on assets and liabilities in nominal and real terms, and request of money supply.

However, if the Central Bank promotes a restrictive monetary policy, trying to limit the ability of commercial banks to create money by lending, the latter shall endeavor to avoid the restrictions by appealing to various financial innovations. The main types of financial innovations in developed economies in the last third of the twentieth century were:

a) Deliberate increase of liabilities by borrowing on the interbank market (although normally, bank liabilities are created

independently of the bank's shares, based on the behavior depositors of banks);

b) Securing credits, financing method by converting bank loans into securities and selling them to new loans;

c) Credit lines between various financial institutions, whereby they are obliged to grant loans to another financial institution on first demand.

All these innovations allow commercial banks to avoid financial restrictions and the Central Bank and to grant new loans, even in the absence of mandatory reserve surplus (restrictive monetary policy imposed by the Central Bank).

5. Conclusions

The efficiency of monetary policy, which consists of a series of measures and methods by which the monetary authorities tend to influence macroeconomic conditions changing the money supply in the economy is determined by how this offer is compensated by money demand coming from the real economy to maintain an optimal balance for expected inflation target. In this respect, monetary authorities have three essential levers: increasing the money supply by printing banknotes used only in exceptional cases; direct control of the quantity of money in the monetary sector and open-market operations. The second option aims at the ability of banks, at a lower hierarchical level of the power to issue currency by specific financial intermediation. The response effect of these three levers banks, in turn, is unquantifiable and unpredictable.

Commercial banks, in terms of their ability to create money, play an indispensable role in the modern economy sustainable growth, by providing the economy with the necessary financial resources. These are essentially the only institutions that perform the interconnection between the monetary authorities and the real economy through the transmission of monetary policy impulses, interconnection which depends on the ability of banks to meet the demand for currency influences that come from the real sector and stimulating or restrictive monetary authorities. Thus, when the monetary policy pursued by the monetary authorities does not lead to the expected effects, the cause of failure can be sought not only to the provisions of the policy itself, but also in the activity of the banking system, especially in its degree of correlation policy with monetary banking supervision.

Since commercial banks can be positioned on the same position as the central banks in promoting macroeconomic policies, due to their increased ability to create money, even compared with the bank of issue, and the purposes of the central bank and private banks are different (banks are private individuals who have one goal - to create profits) and the way they perform these functions is identical - both create money. The classification of commercial banks within certain restrictive limits is very complicated, because in this case, there is a risk that banks simply will not meet their proper function. In these circumstances, it should be found such a mechanism of influence on commercial banks that on one hand will be interested in creating money in the economy, on the other hand not be restricted by various levers risk mitigation, and not at least, is not hazardous to involve a major risk - one of the causes that led to the financial crisis. Only in this case the application of instruments of monetary policy by central banks will have the desired effects, banks acting simultaneously at both levels will contribute to economic development.

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