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Romanian Capital Market in a Globalized World

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Abstract: Globalization is a central topic in the financial literature, as its impact observed or estimated on local economies is sometimes invalidated by the macroeconomic variables. The positive effects induced by globalization are usually closely followed by several preconditions of future crisis, leading to an exposure of less developed economies to shocks induced by globalized markets.

In this article, we use the daily returns of 12 capital markets - developed, emergent and frontier markets (mainly from the Central and Eastern Europe), between January 1st, 2007-March, 17th, 2017, in order to reveal the impact that turbulences on these markets have on the Romanian capital market. We use VAR models to capture the impact the developed capital markets have on the less developed Romanian capital market. The obtained results show the major influence that the developed capital markets, especially the US capital market, have on the volatility of the daily returns from the Romanian capital market.

This result emphasizes the need for a reform of the Romanian capital market, in order to better fulfill its role as a financing venue for the Romanian companies.

Keywords: capital market, contagion risk, volatility
JEL Classification: C13, C22, C58, D53, G01, G15

1. Introduction

The globalization phenomenon has changed the global economic and financial landscape, contributing to fostering the economic growth and intensifying international commerce. Moreover, the globalized economy and markets lead to the re-establishment of financial institutions, such as those characteristic to the capital markets, in countries less developed, among them being some of the former Soviet satellites from Eastern Europe. As such, after 1990, an extensive plan of economic reforms was implemented, including the start of operations on the local capital markets that were re-established with the support of western developed countries. Although the positive effects incurred by the globalized economies have helped reducing the development gaps between a large number of countries, there were also present some negative developments, that became evident especially in times of turbulences, associated with increased volatility. The negative effects triggered by the attachment to a globalized economy were seen in the aftermath of the global financial crisis that started in US in 2007, that impacted almost every stock market in the world. The crisis showed the direct connection between the integration degree of local financial markets into the global financial sector and the impact generated by a global crisis' occurrence. As markets become more integrated, the effects induced by a shock are almost identical within particular clusters of capital markets (*developed, emerging or frontier markets*), as the structure of active institutional investors on these markets (*as for example, pension funds, closed-end funds, open-end funds etc.*) is a homogenous one. The negative effects are induced by the presence in a globalized world, but there are also important risks deriving from the local capital market's openness toward the global financial system, the active institutional investors' structure and the independence of the monetary and financial authorities.

Due to globalization, turbulences in the capital markets evolved into large outflows from the less developed markets (that offered more attractive returns), such as the emerging and frontier markets, toward the developed ones, with an associated large increase in the volatility of the markets. Such increased volatility was mainly due to massive inflows (*that lead to soaring prices*) in the years preceding the financial crisis and outflows (*that lead to plunging prices*) when the financial turbulences became large scale events.

This was also the case for the Romanian capital market, which grew rapidly in the years before Romania joined the European Union, later on experiencing a severe crisis during 2009-2011, followed by a smooth recovery until 2017.

In this article, using the VAR models, we assess the connections between the Romanian capital market's performance during January 1st, 2007 and March 17th, 2017 and those corresponding to developed countries and capital markets (*such as the US, UK, France and Germany*) as well as those from the Central and Eastern Europe. We use the daily returns of the main indices from the 12 selected markets, in order to emphasize the impact the developed markets' returns have on the less developed markets.

2. Globalization in Financial Literature

The globalization phenomenon is central in financial literature, as it brought along new opportunities and unprecedented risks. The globalization phenomenon leads to an increased interconnectedness between markets, as well as an increased exposure to shocks occurring in a specific market. The volatility that spreads from a country to another emphasized the need to study and understand the causes of the turbulences present in financial markets, in order to better assess the effects induced on less developed markets.

Mishkin (2005) analyzed the effects financial globalization has on the developing countries and found that the financial development is a key element in promoting economic growth. But also, the negative effects of the financial globalization are emphasized, as globalization leads to severe financial crisis. Moreover, it is found that the current wave of globalization is actually the second wave of globalization of international commerce and financial flows, considering the fact that the first one occurred during 1870-1914. The current great wave of globalization is facilitated by the establishment of new international financial institutions, such as the International Monetary Fund and the World Bank, as well as the

General Agreement on Tariffs and Trade. In this respect, the beneficial effects of globalization can be withdrawn after the economies go through an institutional consolidation of the actors that are present in a local economy.

Globalization was also analyzed considering the effects in employment and in the within-country income inequality. A large stream of literature was dedicated to the impact globalization has on employment, the Heckscher-Ohlin prediction being that both trade and foreign direct investments should take advantage of the labor from the developing countries, leading therefore to an expansion in local employment. This prediction was invalidated by the models proposed by Grossman and Helpman (1991), Faberberg (1988, 1994) or Montobbio and Rampa (2005).

The relation between globalization and within-country income inequality was studied since the Stopler-Samuelson (1941) theorem, which argues that both trade and foreign direct investments should take advantage of the abundance of low-skilled labor in developing countries, leading therefore to an increasing demand for domestic low skilled labor and a decreasing within-country wage dispersion and income inequality. This theorem was also invalidated by the more recent studies, arguing that the results are valid only under some restrictive conditions, as proposed by Davies (1996), Stiglitz (2002) or Lee and Vivarelli (2006).

In the Romanian capital market case, Armeanu, Pascal and Cioacă (2014) used the VAR model to analyze the contagion effects considering the daily returns of 6 European countries (*Romania, France, Germany, Portugal, Italy, Ireland, Greece and Spain*). It was found that Italy and Spain were the most sensitive to financial shocks. Also, the behaviour of the selected markets was assessed, considering various shocks, such as the Lehman Brothers collapse and the sovereign debt crisis, that were found to have induced the most severe shocks.

The impact that the returns of the developed capital markets have on the Romanian capital market's returns were also studied in Armeanu et al. (2012; 2013). Using the daily returns of the Istanbul Stock Exchange and the Bucharest Stock Exchange, during a one year period (October 1st, 2011- October 1st, 2012), Armeanu et al. (2013) found the existence of a cointegration relation, which revealed a positive relationship between the returns. In Armeanu et al.(2012), the increased volatility of the daily returns for the US, German and Romanian capital markets were analyzed, providing evidences of the importance for the later market of the evolution of the first two markets.

3. Methodology and Data

In order to analyze the relationships between different markets, we use the autoregressive vector concept (VAR), defined by Sims (1980), who eliminated the identification problem that an economist is facing when trying to find the appropriate model that describes the evolution of the selected variables. The autoregressive vectors follow an asymptotic distribution and for almost tested hypothesis, the number of degrees of freedom associated with this Chi-square distribution is not largely different from the number of degrees of freedom of the calibrated distribution (*therefore, it is difficult to rely on the results of F-statistic tests*).

For every proposed VAR model, that considers the variables' current and past values, we assess its validity by using some statistical tests, in order to find the ones that produce better results for the users.

For a univariate autoregressive vector, Sims and Watson (2001) proposed a model consisting in a single linear equation, where the current values of a variable are explained by its past values. By generalizing this approach and considering that the model is linear, for an autoregressive vector with *p* components, the model is a linear relation of the past values of the variable and the past and current values of the other (*p-1*) variables. Therefore, a VAR model with *p* variables is a system of *p* equations, each variable being a linear relation of its own past values and a linear combination of the current and past (*p-1*) other variables.

Stock and Watson define 3 alternative forms of the VAR model, respectively the reduced form VAR, the recursive VAR and the structural VAR. In the reduced VAR model, Stock and Watson proposed that each variable is given by a linear combination of its own past values and those of the other variables, as well as an error term that is uncorrelated with them. In the recursive VAR model, the order of the considered variables is important, each equation's error terms are uncorrelated with other equation's error terms and the estimation of each regression's components is done using the least square method (*the obtained results have not correlated error terms*). In the structural VAR model, the order of the selected variables is the result of an economic reasoning, by considering the causality relations between the variables (*such that the number of structural VAR models depends on the goals followed by the researcher*).

Moreover, the supposedly relations expected to exists between the selected variables can be further analyzed with the Granger causality test, with the Impulse-Response Analysis and to make the variance decomposition of the forecasted errors. The Granger causality tests show whether the past values of a variable are useful to predict the values of a different variable. So, if the p-value associated to the F-statistic is less than the significance level, then the independent variable's past values explain the future values of the dependent variable.

The Impulse-Response Analysis can be used to assess the impact generated on the current and future values of each variable by the increase of the current error of the VAR model with one unit (*it is assumed that the error term goes back to zero in future, and all the other values of the term error are equal to zero*). This analysis is used with recursive and structural VAR models (*as in the reduced form, the error terms are correlated*).

The variance decomposition of the forecasted errors is an indicator that shows the percentage from the forecasted error's variance that is given by the occurrence of a shock within a time interval (*therefore, showing the relative importance of each event that influences the variables studied in the VAR model*).

Pfaff (2008) defines the general form of a VAR (p) process as being given by:

$$y_t = A_1 y_{t-1} + A_2 y_{t-2} + \ldots + A_p y_{t-p} + u_t,$$

where $y_t = (y_{1t}, y_{2t}, \ldots, y_{pt})$, A_i are (n x n) matrices, with i = 1,..., p, and u_t is a n-dimensional process with null estimated mean (or $E(u_t) = 0$), and the covariance matrix $E(u_t u_t^T) = \Sigma_u = \begin{bmatrix} \sigma_{u1}^2 & 0 & \cdots & 0 & 0 \\ 0 & \sigma_{u2}^2 & & 0 & 0 \\ \vdots & & \ddots & & \vdots \\ 0 & 0 & \cdots & 0 & \sigma_{un}^2 \end{bmatrix}$,

being constant and positive defined.

For the validity of this model, the necessary condition is that $\det(I_n - A_1 z - \ldots - A_p z^p)$ is not null for $|z| \leq 1$, meaning that the stationary condition is being fulfilled. If the VAR(p) model is stationary, the stationary time series that are generated have constant means, variances and covariances. In the case of a solution that is equal to one, at least one of the considered variables is integrated of level one or there are cointegration relations between the analyzed variables.

Moreover, the general VAR(p) can also be written as an VAR(1) process:

$$= \xi t = A\xi_{t-1} + v_t, \text{ where } \xi_t = \begin{bmatrix} y_t \\ \vdots \\ y_{t-p+1} \end{bmatrix}, A = \begin{bmatrix} A_1 & A_2 & \cdots & A_{p-1} & A_p \\ I & 0 & & 0 & 0 \\ & \vdots & \ddots & \vdots & \\ 0 & 0 & \cdots & I & 0 \end{bmatrix},$$

$v_t = \begin{bmatrix} u_t \\ 0 \\ \vdots \\ 0 \end{bmatrix}$, and the first and the third are (np x 1) vectors, and the matrix A is of (np x np) type. Considering the previous properties, the model is stable if the absolute values of the matrix A's eigenvalues are less than one.

These concepts will be used for data for the January 1st, 2007 - March 17th, 2017 time frame, representing the main indices of Romania and other 11 countries, with developed capital markets (*France, Germany, United Kingdom, Austria, Italy and US*), emerging capital markets (*Czech Republic, Greece, Poland, Hungary and Turkey*) and frontier markets (*Romania and Bulgaria*), using the MSCI classification (*available mid-March 2017*). The data consists in the closing values of the main indices from 12 capital markets: DJIA (US), FTSE 225 (United Kingdom), CAC40 (France), DAX30 (Germany), ATX (Austria), Italy (FMIB), PX (Czech Republic), ATHEX (Greece), WIG20 (Poland), BUX (Hungary), SOFIX (Bulgaria), XU100 (Turkey) and BET (Romania). These data are available on Thomson Reuters and www.stooq.com, as well as the official web-sites of the market operators and were used to calculate the daily returns of the analyzed markets and, afterwards to use VAR models.

4. The Results

Considering the daily returns for each of the 12 selected indices during the January 1st, 2007 - March 17th, 2017 time frame, the descriptive statistics are considered in Table 1:

Table 1 Descriptive statistics for selected indexes (01.01.2007-17.03.2017)

	BET	DJIA	FTSE	DAX	CAC40	FMIB	WIG20	XU100	ATX	BUX	PX	SOFIX
Mean	-1.64E-06	8.89E-05	8.71E-05	0.000106	-1.58E-05	-0.000118	-6.02E-05	0.000139	-7.36E-05	4.83E-05	-7.42E-05	-0.00010
Median	0.00000	0.000134	0.000180	0.000260	4.26E-05	0.000000	0.000000	7.22E-05	0.000000	0.000000	0.00000	0.00000
Maximum	0.05579	0.045637	0.032408	0.046893	0.046012	0.047226	0.035416	0.052668	0.052207	0.057227	0.05369	0.03167
Minimum	-0.05135	-0.035614	-0.032383	-0.032283	-0.041134	-0.057898	-0.036666	-0.048049	-0.044527	-0.054934	-0.07029	-0.04933
Std. Dev.	0.00669	0.005123	0.005157	0.006274	0.006513	0.007460	0.006373	0.007219	0.007241	0.006848	0.00638	0.00532
Skewness	-0.54996	-0.093822	-0.425783	-0.003111	-0.012073	-0.203013	-0.278591	-0.251739	-0.248954	-0.076719	-0.54078	-0.97130
Kurtosis	13.6072	13.49803	7.282826	8.804006	8.884971	7.572277	6.736226	7.336831	8.673066	11.24940	19.1257	14.3643
Jarque-Bera	12628.0	12241.67	2117.316	3740.608	3845.757	2339.712	1584.547	2116.631	3601.258	7559.294	29005.0	14759.7
Sum	-0.00437	0.236886	0.232088	0.283401	-0.042007	-0.313804	-0.160477	0.369901	-0.196117	0.128750	-0.197746	-0.28506
Sum Sq. Dev.	0.11923	0.069916	0.070837	0.104863	0.113012	0.148247	0.108198	0.138843	0.139665	0.124917	0.10870	0.07561
Observations	2665	2665	2665	2665	2665	2665	2665	2665	2665	2665	2665	2665

Source: www.bvb.ro, own calculation

We continue to study these variables, and use the Granger causality tests (*for each pair of the daily returns series*) in order to capture the causality relations. In Table 2 are presented a part of these results, being emphasized the relation of the BET index with the other 11 indices.

Table 2 Pairwise Granger Causality Tests for selected indexes (01.01.2007-17.03.2017)

Pairwise Granger Causality Tests
Date: 03/19/17 Time: 13:15
Sample: 1/01/2007 3/17/2017
Lags: 2

Null Hypothesis:	Obs	F-Statistic	Prob.
DJIA does not Granger Cause BET	2663	218.915	1.E-88
BET does not Granger Cause DJIA		1.41368	0.2434
FTSE does not Granger Cause BET	2663	41.1786	2.E-18
BET does not Granger Cause FTSE		3.04108	0.0479
DAX does not Granger Cause BET	2663	55.0548	4.E-24
BET does not Granger Cause DAX		2.17018	0.1144

CAC40 does not Granger Cause BET	2663	41.9016	1.E-18
BET does not Granger Cause CAC40		0.85945	0.4235
FMIB does not Granger Cause BET	2663	35.9824	4.E-16
BET does not Granger Cause FMIB		0.20001	0.8187
WIG20 does not Granger Cause BET	2663	32.8641	8.E-15
BET does not Granger Cause WIG20		0.95707	0.3841
XU100 does not Granger Cause BET	2663	20.1695	2.E-09
BET does not Granger Cause XU100		0.59520	0.5515
ATX does not Granger Cause BET	2663	51.3310	1.E-22
BET does not Granger Cause ATX		0.93908	0.3911
BUX does not Granger Cause BET	2663	20.9168	1.E-09
BET does not Granger Cause BUX		0.40194	0.6691
PX does not Granger Cause BET	2663	23.6809	6.E-11
BET does not Granger Cause PX		3.40817	0.0332
SOFIX does not Granger Cause BET	2663	3.21744	0.0402
BET does not Granger Cause SOFIX		4.49288	0.0113

Source: www.bvb.ro, own calculation

From this table, the probability values indicate that, except for the Bulgarian and the Czech Republic capital markets, the Romanian capital market is not in a causality relation with any other capital market (*as the test shows that BET does not Granger cause any of the other 9 capital markets*). Also, from the Table 2 we can find that is rejected the null hypothesis that the 11 analyzed capital markets do not Granger cause the BET index (*with the only exception being Bulgaria, but the probability level being less than 5%*). Therefore, the Romanian capital market is influenced by the other 11 capital markets.

Using the conclusions derived from the Granger causality tests, we can say that the US market has a significant influence over the other markets, as it is rejected every null hypothesis of DJIA not being in Granger causality relation.

Considering the importance of each analyzed capital market within the global financial system and with the aim of assessing the impact the other capital markets have on the Romanian capital market, we construct a VAR model for the 12 time series, the selection order being BET, DJIA, FTSE, DAX, CAC40, FMIB, WIG20, XU100, ATX, BUX, PX and SOFIX for 1 lag, using daily data. We choose the model with one lag, as the results of test for lag length provides the results presented in Table 3 (*we consider the choice provided by the Schwarz information criterion and Hannan-Quinn information criterion*):

Table 3 Lag selection test for selected indexes (01.01.2007-17.03.2017)

VAR Lag Order Selection Criteria
Endogenous variables: BET DJIA FTSE DAX CAC40 FMIB WIG20 XU100 ATX BUX PX SOFIX
Exogenous variables: C
Date: 03/19/17 Time: 11:29
Sample: 1/01/2007 3/17/2017
Included observations: 2657

Lag	LogL	LR	FPE	AIC	SC	HQ
0	128949.2	NA	1.15e-57	-97.05475	-97.02817	-97.04513
1	129811.1	1715.220	6.69e-58	-97.59508	-97.24956*	-97.47003*
2	130049.6	472.5288	6.23e-58	-97.66622	-97.00175	-97.42573
3	130207.6	311.5981	6.16e-58	-97.67676	-96.69335	-97.32084
4	130371.8	322.4516	6.07e-58	-97.69200	-96.38965	-97.22065
5	130542.5	333.5552	5.95e-58	-97.71210	-96.09080	-97.12531
6	130697.9	302.1244	5.90e-58*	-97.72063*	-95.78039	-97.01840
7	130840.7	276.5228	5.91e-58	-97.71975	-95.46056	-96.90209
8	130955.9	222.0981*	6.04e-58	-97.69811	-95.11998	-96.76502

* indicates lag order selected by the criterion
LR: sequential modified LR test statistic (each test at 5%level)
FPE: Final prediction error
AIC: Akaike information criterion
SC: Schwarz information criterion
HQ: Hannan-Quinn information criterion

Source: www.bvb.ro, own calculation

Therefore, for the proposed VAR model, we can see that the model is stable, as can be seen from the fact that all eigenvalues are less than one in absolute value (*graphically represented in Figure 1*).

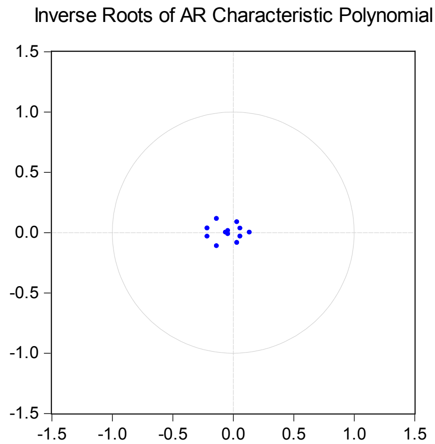

Figure 1 Inverse Roots of AR Characteristic Polynomial

Source: own calculation

Applying the VAR Granger Causality test on the daily returns time series, for the selected period, we find that the returns of the US, French and Austrian capital markets influence the daily returns' volatility of the BET index from the Bucharest Stock Exchange (*the results being presented in Table 4*).

Table 4 VAR Granger Causality/Block Exogeneity Wald Test (01.01.2007-17.03.2017)

VAR Granger Causality/Block Exogeneity Wald Tests
Date: 03/19/17 Time: 11:29
Sample: 1/01/2007 3/17/2017
Included observations: 2664

Dependent variable: BET

Excluded	Chi-sq	df	Prob.
DJIA	313.7595	1	0.0000
FTSE	0.283912	1	0.5941
DAX	0.384891	1	0.5350
CAC40	11.63787	1	0.0006

FMIB	0.062263	1	0.8030
WIG20	2.444602	1	0.1179
XU100	0.091517	1	0.7623
ATX	12.56230	1	0.0004
BUX	0.198408	1	0.6560
PX	0.047214	1	0.8280
SOFIX	0.458682	1	0.4982
All	473.2171	11	0.0000

Source: own calculation

Furthermore, the model we find is given by the following relation that reflects the positive impact the returns from the US, German and French capital markets have on the returns of the Romanian capital market:

BET = - 0.00466*BET(-1) + 0.53530*DJIA(-1) + 0.024813*FTSE(-1) + 0.03282*DAX(-1) - 0.222047*CAC40(-1) + 0.0092534*FMIB(-1) + 0.043309*WIG20(-1) + 0.006360*XU100(-1) + 0.11111*ATX(-1) - 0.010634*BUX(-1) - 0.00669*PX(-1) - 0.016504*SOFIX(-1) - 4.93915336111e-05

In order to derive a conclusion, we also test the existence of some cointegration relations between the variables used in the model, the results being presented in Table 5, that shows that there are 12 cointegrated relations.

Table 5 The cointegration test for the daily index returns (01.01.2007-17.03.2017)

Date: 03/19/17 Time: 11:30
Sample (adjusted): 1/03/2007 3/17/2017
Included observations: 2663 after adjustments
Trend assumption: Linear deterministic trend
Series: BET DJIA FTSE DAX CAC40 FMIB WIG20 XU100 ATX BUX PX SOFIX
Lags interval (in first differences): 1 to 1

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.496818	14852.32	334.9837	1.0000
At most 1 *	0.436113	13023.36	285.1425	0.0000
At most 2 *	0.430433	11497.72	239.2354	1.0000

At most 3 *	0.397658	9998.774	197.3709	1.0000
At most 4 *	0.387619	8648.818	159.5297	1.0000
At most 5 *	0.364743	7342.881	125.6154	1.0000
At most 6 *	0.358618	6134.610	95.75366	1.0000
At most 7 *	0.337470	4951.891	69.81889	1.0000
At most 8 *	0.329210	3855.562	47.85613	1.0000
At most 9 *	0.317708	2792.230	29.79707	1.0000
At most 10 *	0.313074	1774.170	15.49471	1.0000
At most 11 *	0.252260	774.1352	3.841466	0.0000

Trace test indicates 12 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.496818	1828.960	76.57843	1.0000
At most 1 *	0.436113	1525.635	70.53513	1.0000
At most 2 *	0.430433	1498.949	64.50472	1.0000
At most 3 *	0.397658	1349.956	58.43354	1.0000
At most 4 *	0.387619	1305.938	52.36261	1.0000
At most 5 *	0.364743	1208.271	46.23142	0.0000
At most 6 *	0.358618	1182.719	40.07757	1.0000
At most 7 *	0.337470	1096.329	33.87687	1.0000
At most 8 *	0.329210	1063.333	27.58434	0.0000
At most 9 *	0.317708	1018.060	21.13162	0.0001
At most 10 *	0.313074	1000.035	14.26460	0.0001
At most 11 *	0.252260	774.1352	3.841466	0.0000

Max-eigenvalue test indicates 12 cointegrating eqn(s) at the 0.05 level

* denotes rejection of the hypothesis at the 0.05 level

**MacKinnon-Haug-Michelis (1999) p-values

Source: own calculation

From this test, we can find the cointegrated relation, that expresses the Romanian capital market's returns as the returns of the other returns, as a long-run equilibrium equation presented in Table 6 :

Table 6 The cointegration equation for the Romanian daily index returns (01.01.2007-17.03.2017)

Normalized cointegrating coefficients (standard error in parentheses)											
BET	DJIA	FTSE	DAX	CAC40	FMIB	WIG20	XU100	ATX	BUX	PX	SOFIX
1.00000	74.34309	-6.156459	-4.204587	-27.10106	10.96140	-9.615423	-2.461896	-14.98300	-0.246702	1.268634	-4.113769
	(1.55662)	(1.76652)	(2.11071)	(2.70719)	(1.51304)	(1.09764)	(0.82655)	(1.34544)	(0.94716)	(1.26406)	(0.88909)

Source: own calculation

We can also consider the variance decomposition of the forecasted errors of the VAR model for the daily data of the 12 time series that are presented in Table 6. Considering the lag 1, we can find that the largest impact in the volatility of the forecasted errors for the Romanian capital market is due to the volatility of the US capital market, but also to those of the Austrian, French and Polish capital markets.

Table 6 The cointegration equation for the Romanian daily index returns (01.01.2007-17.03.2017)

Variance Decomposition of BET:													
Period	S.E.	BET	DJIA	FTSE	DAX	CAC40	FMIB	WIG20	XU100	ATX	BUX	PX	SOFIX
1	0.00615	100.000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
2	0.00668	85.9743	13.0828	0.00483	0.07994	0.28808	0.01588	0.13638	0.00564	0.38827	0.00730	0.00248	0.01396
3	0.00670	85.5606	13.2222	0.07349	0.13818	0.32753	0.01787	0.13576	0.00604	0.38704	0.02482	0.09247	0.01391
4	0.00670	85.5366	13.2307	0.07425	0.14587	0.32768	0.01791	0.13597	0.00625	0.38849	0.02487	0.09718	0.01403
5	0.00670	85.5353	13.2309	0.07437	0.14620	0.32769	0.01792	0.13598	0.00629	0.38864	0.02490	0.09762	0.01405
6	0.00670	85.5352	13.2309	0.07437	0.14622	0.32769	0.01792	0.13598	0.00629	0.38865	0.02490	0.09765	0.01405
7	0.00670	85.5352	13.2309	0.07437	0.14622	0.32769	0.01792	0.13598	0.00629	0.38866	0.02490	0.09765	0.01405
8	0.00670	85.5352	13.2309	0.07437	0.14622	0.32769	0.01792	0.13598	0.00629	0.38866	0.02490	0.09765	0.01405
9	0.00670	85.5352	13.2309	0.07437	0.14622	0.32769	0.01792	0.13598	0.00629	0.38866	0.02490	0.09765	0.01405
10	0.00670	85.5352	13.2309	0.07437	0.14622	0.32769	0.01792	0.13598	0.00629	0.38866	0.02490	0.09765	0.01405

Source: own calculation

This result is mainly due to the importance of the US capital market in the global financial system, as the volatility is spreading from this developed capital market towards the less developed capital markets.

Also, the volatility of the Romanian capital market's returns is dependent also in volatility of the Austrian capital market, considering the relevance of the Austrian financial system to the Romanian financial system (*as the Austrian intermediaries and financial companies are present on the Romanian financial market, also as issuers or intermediaries*). Moreover, the importance of the Polish capital market, as well as the Austrian one, is derived from the fact that these two capital markets are the most relevant for the Central and Eastern Europe.

5. Conclusions

Using data from the January 1st, 2007-March, 17th, 2017 time interval, for 12 capital markets from developed countries (USA, United Kingdom, France, Italy and Germany) and from the Central and Eastern Europe (Austria, Poland, Greece, Romania, Hungary, Czech Republic, Turkey and Bulgaria), we analyzed the possible relations that can exist between the returns of the selected countries. To this purpose, we used a VAR model for daily data that explains the Romanian capital market's returns in relation with the other markets.

We obtained that the volatility of the daily returns of the Romanian capital market is influenced by the volatility of the US capital markets, as well as by changes in the most important capital markets from the Central and Eastern Europe, namely the Austrian and the Polish ones.

This result is of interest for a large area of users, as it reveals the need of a reform of the Romanian capital market, to strengthen its place as a financing venue for the Romanian companies and as an alternative attractive destination for foreign institutional investors.

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