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ALTERATIONS IN THE FINANCIAL MARKETS OF THE BALTIC COUNTRIES AND RUSSIA IN THE PERIOD OF ECONOMIC DOWNTURN

Petras Dubinskas[1], Stanislava Stungurienė[2]

International Business School at Vilnius University,
Saulėtekio al. 22, LT-10225 Vilnius, Lithuania
E-mail: [1]petrasd@tiscali.it; [2]ststunguriene@centras.lt

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Abstract. The present article analyses the alternations in the causality in the financial markets during the 2008-2009 financial crisis with a clear focus on the changes and developments in the financial markets of the Baltic States and Russia in the period starting from 2008. The authors have advanced a hypothesis that the research methods of trends of an abrupt plunge and subsequent stabilistation of equity prices that were clearly discernable during the 1987 crisis are also pointfull for the current financial crisis. The present research was conducted on the basis of the following assumptions: both crises affected financial markets of several nations; a characteristic feature for the inception of the crises is an abrupt fall in equity prices; indications of stabilisation in financial markets become observable before financial experts conclude the end of the financial crisis. To confirm the hypothesis on the similarities of the general trends during the two major international financial crisis, the authors employed empiric tests developed on the basis of Granger causality tests. Based on the precedent survey of the financial crisis of 1987 (Malliaris and Urrutia 1992), the authors of the present article chose to use the Granger causality testing methodology. To be able to apply the Granger causality test first it was necessary to verify the degree of cointegration of the indices of the main equity markets in each of the country (OMX Vilnius, OMX Riga, OMX Tallinn, RTS). For that purpose the authors used the Dickey-Fuller and Johansen testing methodology. Both methodologies demonstrated a strong cointegration between the changes in the indices of all equity markets irrespective of the period analysed (i.e., pre-crisis, during the crisis, post-crisis). In all cases the T-statistics exceeded the critical value. The strongest cointegration was observable in the crisis period, and the weakest – after the crisis. The results showed that in view of the financial crisis the Latvian market showed the greatest degree of slow-down despite it being most active in the pre-crisis times, likewise, Estonian market also showed a somewhat higher degree of passiveness. Thus, it was the Latvian and Estonian markets that the financial downturn had the most painful impacts upon. While the Lithuanian and the Russian markets were, on the contrary, much more active and therefore outlived the equity crash period with least painful after-effects, thus producing confirmation that in the face of a crisis the interests and expectations of most investors are largely related to major markets normally viewed as more reliable and showing a higher degree of resilience.

Keywords: financial markets, financial crisis, Granger causality test, empiric test, general trends.

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1. Foreword

The explosive changes in the global equity markets are assessed by financial analysis and researchers from different viewpoints with some focusing on the consequences, and others – on the reasons. Such significant changes often permit of a chance to test and validate different capital market theories on investor behaviour, asset valuation methods and mechanisms, market valuation, fluctuations, etc. Having regard to different factors of the changes in the business environment from a strategic standpoint (Daugėlienė and Marcinkevičienė 2009; Vida and Obadia 2008; Thomsen 2008; Serbanica *et al.* 2009; Sabonienė 2009; Ruževičius 2009) and peculiarities of the recent integration process (Melnikas 2008a, 2008b; Karagiannis and Feridun 2009; Misztal 2009), the research of the status of the capital markets of different regions must employ the methods meeting the specific objectives of the researchers.

Most market research exercises have been undertaken and research papers concerned normal market functioning conditions with observable usual capital market developments with sustainable growth of globalization impact (Gudonavičius *et al.* 2009; Chlivickas *et al.* 2009; Čiegis *et al*. 2008; Ginevičius and Čirba 2009). These theories, presumptions and findings have been found, however, hardly applicable under extreme, or even catastrophic market conditions (Arbel *et al.* 1988, Dubinskas 2009). It might be partly justifiable to conclude that such research works have lost their true value.

Most authors designate financial turmoil as the main reason moving financial markets worldwide. The reasons for the appearance of such turmoil are most often divided into two categories: macroeconomic and microeconomic. The reasons of macroeconomic character are ordinarily related to the changes in the State budget, interest and inflation rates (Pilinkus and Boguslauskas 2009; Paškevičius and Dubinskas 2009; Wang, Yang and Li 2007). Insurance of investment portfolios, speculative operations on derivative financial instrument markets, risky acquisitions and "bubbles" caused by long-lasting speculations are attributed to microeconomic reasons (Malliaris and Urrutia 1992; Chuang *et al.* 2009; Girdzijauskas *et al.* 2009). And nevertheless, this point of view has received some criticism referring to the impossibility to verify the reliability of the conclusions (Dong and Liu 2007; Roll 1988). Since the reasons for the financial turmoil have not yet been ultimately clarified, it has become a really challenging task to identify the impact of such shocks in the financial markets upon the efficiency of capital markets which is often perceived as the response of financial instrument prices to publicly accessible information. It if often concluded that the price of a company's share reflects the entire information about the company. Still, there might be cases where capital markets become volatile even without receiving any material information. This raises doubts as the existence of any link between the financial turmoil and the market efficiency (Friedman 1990).

The present article focuses on the changes and developments of the equity markets in the three Baltic States – Lithuania, Latvia and Estonia and Russia starting from 2008. The authors

of the present article have advanced a hypothesis that the trends of an abrupt plunge and subsequent stabilisation of equity prices that were clearly discernable during the 1987 crisis are also characteristic for the current financial crisis. The survey underlying the present paper was conducted on the basis of the following assumptions: 1) both crises affected financial markets of several states; 2) a characteristic feature for the inception of the crises is an abrupt fall in equity prices; 3) indications of stabilisation in financial markets become observable before financial experts conclude the end of the financial crisis.

2. Research methodology

To confirm the hypothesis on the similarities of the general trends during the two major international financial crisis, the authors employed empiric tests developed on the basis of Granger causality tests: 1) Granger causality tests, and 2) cointegration tests.

Granger causality tests are the principal tests used in forecasting methods by applying time series. One time series $\{Y_t\}$ has an impact upon another time series $\{X_t\}$. Granger has proved that the value of the variable *X* is best forecasted using the lagged values of the *Y* time series. This definitely requires the appropriate information and the lagged values of the $\{X_t\}$ time series be known.

The link between the corresponding values of *Y* and *X* time series is recorded as follows:

$$Y_t = \delta_0 + \sum_{i=1}^{m} \alpha_i X_{t-i} + \sum_{j=1}^{m} \beta_j Y_{t-j} + \mu_t . \quad (1)$$

An assumption is then made that the X value affects the corresponding Y value only if $a_i \neq 0$:

$$Y_t = c_0 + \sum_{i=1}^{m} a_i X_{t-i} + \sum_{j=1}^{m} b_j Y_{t-j} + e_t . \quad (2)$$

The appearance of both events is followed by concluding the presence of a feedback loop (Schmidt 1976; Pierce and Haugh 1977; Geweke *et al*. 1983; Guilkey and Salemi 1982; Gao and Tian 2009). The F-statistics value computed for the purpose of the causality test assesses the equation presented above (2):

$$F_1 = \frac{(SSE_r - SSE_f)/m}{SSE_f/(T-2m-1)}, \quad (3)$$

where: SSE_r – (*sum of the sguarded error*) squared error in simplified model; SSE_f – (*sum of the sguarded error*) squared error in the full model; T – number of observed samples; m – number of lags;

In the most general case the squared error SSE shall be computed as follows:

$$SSE = \sum e^2 = \sum (Y - \hat{Y})^2, \quad (4)$$

where: Y – actual value; $\hat{Y}$ – computed value.

An assumption is made that F_1 corresponds to χ^2/m and Wald test (Boguslauskas 2007; Studenmund 2006).

Since errors may be both positive and negative there is a possibility that the average error is equal to zero, despite significant observable deviations in both directions. Squared deviations are computed with a view to avoiding this situation. The best regression line is obtained when the total of squared deviations is the least. For this reason the regression analysis is sometimes also referred to as *least-squares regression*.

Based on this calculation methodology American researchers have been examining potential dependences between different international equity markets under financial crisis conditions (Malliaris and Urrutia 1992; Aktan *et al.* 2009, Blume *et al.* 1989; Horobet and Lupu 2009; De Gooijer and Sivarajasingham 2008; Ruxanda and Stoenescu 2009).

Cointegration tests are used in the cases requiring identification of the relation between changes in prices in individual markets. For instance, Engle and Granger (1987) have proved that in the case two non-stationar variables are coinegrated, the autoregression vector in the first differences is not fixed. Suppose, natural logarithms at one stock exchange and another stock exchange, respectively, LnP_{1t} and LnP_{2t} non-stationar, and the firs differences of the natural logarithms of each price are stationar, it might be concluded that the prices are integrated from the first line that is recorded as $I(1)$. The first differences of the logarithms are recorded:

$$LnP_{1t} - LnP_{1,t-1} \quad \text{or} \quad Ln\frac{P_{1t}}{P_{1,t-1}} \quad \text{and} \quad LnP_{2t} - LnP_{2,t-1} \quad \text{or} \quad Ln\frac{P_{2t}}{P_{2,t-1}}.$$

Where each price is from the first line $I(1)$, and the linear stationary combination between the prices of the two stock exchanges is established, it shall be recognised that both price sets are cointegrated. The cointegrations have a direct influence upon the equations (1) and (2) of the Granger causality tests. Where conintegration is fixed the calculations according to the equations (1) and (2) become meaningless. Therefore, prior to starting using causality tests in the theory of econometrics it is highly recommended to verify the cointegration between the primary data sequences (Kedaitis 2009; Lapin 1987; Adams *et al.* 1993).

Having established the data cointegration it is necessary to seek to identify other research methods or accordingly adjust the models already created. For instance, a number of cointegration testing methods were proposed by Engle and Granger (1987). They developed statistical tests, compiled tables of critical values and compared the applicability of the different tests.

The simplest cointegration test is the Durbin-Watson regression cointegration CRDW suitable to be used in first series systems. But the critical values of the test are extremely sensitive to parameters the values whereof are below zero. In practice, CRDW is not a recommended method for the examination of economic data, however, the test is still applied in certain cases, the results obtained are analysed, summarised and presented in research papers (Malliaris and Urrutia 1992).

Rather worthy of notice is the Dickey-Fuller cointegration test that was applied for the purpose of examination of the price changes in the markets during the 1987 financial crisis. The test was based on the regression cointegration idea: initially performed calculations according to the formula (5) were followed by an examination of the residual errors of the Dickey-Fuller regression (6).

$$LnP_{1t} = c_0 + c_1 LnP_{2t} + \varepsilon_t, \tag{5}$$

$$\varepsilon_t - \varepsilon_{t-1} = -b_1 \varepsilon_{t-1} + \mu_1. \tag{6}$$

This method is based on the hypothesis, that $b_1 = 0$, and LnP_{1t} and LnP_{2t} are not cointegrated. This method is recommended for the investigation of price developments in the pre-crisis period, since the examination of financial markets during the crisis or in the post-crisis period requires the identification of models specifically tailored for the situation, or requires creation of new models (Christopoulus and Leon-Ledesma 2008; Gelper and Croux 2007; Rublikova 2003; Dufour and Jouini 2006). In the event of no cointegration between the variables, clearly Granger causality tests should be prioritised and regression equations must be adjusted simultaneously according to the peculiarities of the problem addressed (equations 1 and 2). Therefore, where, in Dickey-Fuller statistics zero is rejected, the conclusion is drawn up that the variables cointegrate and the Granger regression theory is not applicable. Therefore it is necessary to adjust the regression equations (1.2) by supplementing them by residual errors of the adjusting regression. The residual regression error in the Granger regression equation is recorded as an additional independent variable (7, 8):

$$Y_t = \delta_0 + \sum_{i=1}^{m} \alpha_i X_{t-i} + \sum_{j=1}^{m} \beta_j Y_{t-j} + \gamma \hat{\varepsilon}_{t-1} + \mu_t, \tag{7}$$

$$X_t = c_0 + \sum_{i=1}^{m} a_i Y_{t-i} + \sum_{j=1}^{m} b_j X_{t-j} + d \hat{\varepsilon}_{t-1} + e_t, \tag{8}$$

where $\hat{\varepsilon}_{t-1}$ is the residual error of regression equation (5).

Many other researchers for the purpose of examining the phenomena of the same crisis used the regressive analysis methods (Roll 1988; Gennotte and Leland 1990; Arbel *et al.* 1988). For instance, R. Roll established that the major plunging on the Asian markets (except Japanese) started on 19 October 1987. The latter fall was caused primarily by minor slumps in the markets of some European states, later on in the Northern America and finally, in Japan (Roll 1988).

Practical experience has shown that the application of different mathematical methods for investigation of the same economic phenomena yields different results which, in addition, may be differently interpreted.

3. Research of the developments in the Baltic financial markets

In relation to any survey of the developments in financial markets, and specifically under extraordinary conditions it is of vital importance to provide a description of the initial data collected and the appropriate interpretation of the same. For example, Malliaris and Urrutia (1992) presented the data about six equity markets (New York S&P 500, Tokyo Nikkei, London FT-30, Hon Kong Hang Seng, Singapore Straits Times and Australia All Ordinaries), with specific focus on the developments in the period from 1 May 1987 to 31 March 1988. All data was divided into three periods: a) prior to the crisis; b) during the crisis;

c) the period after the crisis. Having established the cointegration degree, and considering the results obtained, the authors selected an appropriate causality test. Similar surveys were performed by other authors too (An and Zhao 2008; Pan and Dai 2008; Beine *et al.* 2008).

The beginning of the financial downturn in the Baltic States (Lithuania, Latvia and Estonia) and Russia should be marked as the end of Q3, 2008 that was characterised by most prominent negative changes in the capital market; while the beginning of Q3, 2009 should be considered the start of the way to recovery. The data used for the survey of the situation in financial markets are divided into three periods: 1) the pre-crisis period (01-02-2008 – 31-08-2008), 2) the crisis period (01-09-2008 – 30-05-2009); 3) and the post-crisis period (01-06-2009 – 31-12-2009).

Based on the precedent survey of the financial crisis of 1987 (Malliaris and Urrutia 1992), the authors of the present article chose to use the Granger causality testing methodology. To be able to apply the Granger causality test first it was necessary to verify the degree of cointegration of the indices of the main equity markets in each of the country (OMX Vilnius, OMX Riga, OMX Tallinn, RTS). For that purpose the authors used the Dickey-Fuller and Johansen testing methodology. Both methodologies demonstrated a strong cointegration between the changes in the indices of all equity markets irrespective of the period analysed (i.e., pre-crisis, during the crisis, post-crisis). In all cases the T-statistics exceeded the critical value. The strongest cointegration was observable in the crisis period, and the weakest – after the crisis.

Since the data cointegrate the Granger causality test may be used only having accordingly adjusted the regression equations (1, 2). The equations were supplemented by residual errors of the cointegrating regression (7, 8): the vector error adjusting type was chosen by developing the vector autoregression model by means of the EViews application. The exercise was based on the assumption that the zero hypothesis on the absence of causality is confirmed, where χ^2 does not exceed the critical value. In the opposite case the existence of causality between the financial markets concerned is concluded.

4. Results of the research

The fluctuation of the stock market indexes during pre-crisis, crisis and post-crisis periods in the Lithuania, Latvia, Estonia and Russia was selected as a research object. Data cointegration level was determined using Dickey-Fuller and Johansen methods.

In the determination of cointegration level according to the Dickey-Fuller method the significance level is 5%. Critical values were calculated from statistical data using EViews program: pre-crisis (–2.882), during crisis (–2.877), post-crisis (–2.881). Data cointegration results are interpreted according T-Statistic values (see Tables 1, 2 and 3).

In the determination of cointegration level according to the Johansen method the significance level is 5% (see Tables 4, 5 and 6).

Data cointegration was approved using both Dickey-Fuller and Johansen methods, but the valuation of capital markets causality is related with causality direction (see Table 7).

Table 1. Cointegration of index returns in pre-crisis period

Period before the crisis (01/02/2008 – 31/08/2008)			
Dependant variable	**Independent variable**	**T–statistics**	**Results**
OMX Vilnius	OMX Riga	–10.837	cointegrate
OMX Vilnius	OMX Tallinn	–11.261	cointegrate
OMX Vilnius	RTS	–10.707	cointegrate
OMX Riga	OMX Vilnius	–16.127	cointegrate
OMX Tallinn	OMX Vilnius	–9.703	cointegrate
RTS	OMX Vilnius	–11.167	cointegrate
OMX Riga	OMX Tallinn	–16.161	cointegrate
OMX Riga	RTS	–16.181	cointegrate
OMX Tallinn	OMX Riga	–9.324	cointegrate
RTS	OMX Riga	–11.336	cointegrate
OMX Tallinn	RTS	–9.225	cointegrate
RTS	OMX Tallinn	–11.027	cointegrate

Table 2. Cointegration of index returns during the crisis period

During the crisis (01/09/2008 – 30/05/2009)			
Dependant variable	**Independent variable**	**T–statistics**	**Results**
OMX Vilnius	OMX Riga	–12.920	cointegrate
OMX Vilnius	OMX Tallinn	–13.015	cointegrate
OMX Vilnius	RTS	–12.959	cointegrate
OMX Riga	OMX Vilnius	–14.929	cointegrate
OMX Tallinn	OMX Vilnius	–12.998	cointegrate
RTS	OMX Vilnius	–12.439	cointegrate
OMX Riga	OMX Tallinn	–14.317	cointegrate
OMX Riga	RTS	–14.857	cointegrate
OMX Tallinn	OMX Riga	–12.380	cointegrate
RTS	OMX Riga	–12.342	cointegrate
OMX Tallinn	RTS	–12.772	cointegrate
RTS	OMX Tallinn	–12.272	cointegrate

Table 3. Cointegration of index returns in post-crisis period

The period after the crisis (01/06/2009 – 31/12/2009)

Dependant variable	Independent variable	T–statistics	Results
OMX Vilnius	OMX Riga	–10.190	cointegrate
OMX Vilnius	OMX Tallinn	–13.139	cointegrate
OMX Vilnius	RTS	–10.106	cointegrate
OMX Riga	OMX Vilnius	–11.500	cointegrate
OMX Tallinn	OMX Vilnius	–14.038	cointegrate
RTS	OMX Vilnius	–10.824	cointegrate
OMX Riga	OMX Tallinn	–11.540	cointegrate
OMX Riga	RTS	–11.434	cointegrate
OMX Tallinn	OMX Riga	–10.935	cointegrate
RTS	OMX Riga	–10.846	cointegrate
OMX Tallinn	RTS	–11.370	cointegrate
RTS	OMX Tallinn	–11.383	cointegrate

Table 4. Data Cointegration in pre-crisis period

Period before the crisis (01/02/2008 – 31/08/2008)

Number of cointegration equations	Trace statistics	Critical value	Result
0	116.11	47.85	cointegrate
1	75.34	29.79	cointegrate
2	39.98	15.49	cointegrate
3	14.48	3.84	cointegrate

Table 5. Data Cointegration during the crisis period

During the crisis (01/09/2008 – 30/05/2009)

Number of cointegration equations	Trace statistics	Critical value	Result
0	133.40	47.85	cointegrate
1	86.94	29.79	cointegrate
2	51.02	15.49	cointegrate
3	19.49	3.84	cointegrate

Table 6. Data Cointegration in post-crisis period

The period after the crisis (01/06/2009 – 31/12/2009)			
Number of cointegration equations	**Trace statistics**	**Critical value**	**Result**
0	150.80	47.85	cointegrate
1	90.66	29.79	cointegrate
2	44.19	15.49	cointegrate
3	17.69	3.84	cointegrate

Table 7. Assessment of causality of the Lithuanian, Latvian, Estonian and Russian financial markets

Causality direction	**Period before the crisis**	**During the crisis**	**The period after the crisis**
	(01/02/208 – 31/08/2008)	**(01/09/2008 – 30/05/2009)**	**(01/06/2009 – 31/12/2009)**
	***X*statistics (critical value 5.99)**		
Latvia → Lithuania	13.92	0.15	6.44
Estonia → Lithuania	6.54	4.75	1.97
Lithuania → Latvia	5.04	8.62	8.65
Estonia → Latvia	5.98	13.96	13.76
Lithuania → Estonia	5.47	16.37	2.60
Latvia → Estonia	3.19	1.03	21.49
Lithuania → Russia	4.55	3.40	1.17
Latvia → Russia	6.48	5.94	3.56
Estonia → Russia	7.03	2.21	8.01
Russia → Lithuania	12.52	16.26	2.34
Russia → Latvia	3.19	17.90	9.95
Russia → Estonia	0.29	4.56	5.06

The results of the survey demonstrated, in the period preceding the financial downturn, the OMX Vilnius index was specifically affected, and in particular by OMX Riga and RTS (see Table 7). No causality was established between the Latvian and Estonian markets. The high attention must be paid to the Russian capital market's low influence to the Latvian and Estonian capital markets. The assessment of all four markets has led to a conclusion that the Lithuanian equity market was the most passive, while Latvian market was most active. This might justify a conclusion that the financial downturn of the Baltic States that started in September 2008 was primarily initiated by the Latvian financial market. Moreover, the decline of Lithuanian capital market was initiated by the Russian capital market too. The Russian capital market was affected by Latvian capital market. Therefore, it can be stated

that financial downturn started in Latvia. After that the crisis reached the Russia and finally Estonia and Lithuania.

In view of a financial crisis cases of existence of causality between markets become more frequent. In this respect, specifically noticeable is the Latvian market – the most active in the period preceding the market and the most passive of the three during the crisis, though the Estonian market lost some of its activity either. Therefore, it might be presumed that it was there markets that were mostly affected by the outburst of the financial downturn. Furthermore, in view of a financial crisis most investors relate their interests and expectations with larger markets, that under crisis conditions are considered more reliable and tend to recover quicker. This is clearly evidenced by the case of the Lithuanian financial market that were the most passive in the period preceding the downturn, became the most active in the mid of the crisis and survived the equity plunge period comparatively painlessly. The similar situation is with the Russian market. Taken all these factors and considerations into account it is highly probable that the end of the financial downturn started in Lithuania and Russia initiating the recovery trends in the smaller Baltic States (Latvia and Estonia).

The end of the financial downturn restored the initial situation. The Latvian market is gaining its activity (even exceeding the Estonian). The Lithuanian and the Russian markets are less active than in the crisis period, however, more active than at the time preceding the crisis.

5. Conclusions

1. The research results evaluated causality changes in Lithuanian, Latvian, Estonian and Russian financial markets during pre-crisis (01/02/2008 – 31/08/2008), crisis (01/09/2008 – 30/05/2009) and post crisis (01/06/2009 – 31/12/2009) periods.
2. The survey concluded that in all cases the developments in the period prior to the financial downturn affected the OMX Vilnius index that was mostly influenced by OMX Riga index and RTS index (see Table No. 7). No causality was established between the Latvian and Estonian capital markets. The assessment of all four capital markets yields a conclusion that the Lithuanian financial market was most passive, while the Latvian market was most active. In the opinion of the authors, the financial downturn trends of the Baltic markets that started in September 2008 originated in the Latvian financial markets.
3. In the mid of the financial crisis the Latvian market was most passive, though noted for its activity in the pre-crisis times. The results of the survey also showed that the Estonian market had lost some of its activity. Thus, the financial downturn to the largest extent affected the Latvian and Estonian markets. This is clearly evidenced by the case of the Lithuanian and Russian markets that became the most active in the mid of the crisis and survived the equity plunge period comparatively painlessly, thus confirming that in view of a financial crisis the interests and expectations of most investors are related to larger markets that are normally considered more reliable and resilient.
4. The end of the financial downturn restored the initial situation: the Latvian market is gaining its activity (in some respects even exceeding the Estonian), and the Lithuanian

(together with Russian market) market is less active than in the crisis period, however, more active than at the time preceding the crisis.

5. The results of the causality of the financial markets of three financial markets confirmed the hypothesis that the analysis of the 2008-2009 financial crisis may employ the econometric methods applied for the analysis of the 1987 crisis by identifying the change in the trends of the pre-crisis, crisis and post-crisis causality.

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FINANSŲ RINKŲ POKYČIAI BALTIJOS ŠALYSE IR RUSIJOJE EKONOMINIO NUOSMUKIO LAIKOTARPIU

P. Dubinskas, S. Stungurienė

Santrauka. Straipsnyje analizuojami finansų rinkų priežastingumo pokyčiai 2008–2009 m. finansinės krizės laikotarpiu. Pagrindinis dėmesys sutelkiamas į Baltijos šalių – Lietuvos, Latvijos ir Estijos – bei Rusijos akcijų rinkų pokyčius nuo 2008 m. Autoriai iškelia hipotezę, kad finansų rinkose staigaus akcijų kainų kritimo ir jų stabilizavimosi tendencijos, kurios išryškėjo nuo 1987 m. prasidėjusios krizės, būdingos dabartinei finansinei krizei. Tyrimo metu daromos prielaidos: abi krizės apima daugelio valstybių finansų rinkas; krizių pradžiai būdingas staigus akcijų kainų kritimas; finansų rinkų stabilizavimosi požymiai pastebimi anksčiau, nei ekspertai konstatuoja krizės pabaigą. Dviejų tarptautinių finansų rinkų krizių bendrųjų tendencijų panašumo hipotezei patvirtinti naudoti empiriniai testai, parengti remiantis Granger priežastiniais testais: Granger priežastiniai testai ir kointegracijos testai. Nustatyta, kad finansinės krizės metu Latvijos rinka tapo pasyviausia, nors iki prasidedant krizei buvo pati aktyviausia, pasyvesnė tapo ir Estijos rinka. Taigi finansinis nuosmukis skaudžiausiai paveikė Latvijos ir Estijos finansų rinkas. Lietuvos ir Rusijos rinkos krizės metu tapo pačios aktyviausios ir lengviausiai išgyveno akcijų kainų kritimo periodą, tuo patvirtindamos, kad krizės metu daugelio investuotojų interesai ir lūkesčiai paprastai siejami su didesnėmis rinkomis, kurios laikomos patikimesnėmis ir turinčiomis galimybę greičiau atsigauti.

Reikšminiai žodžiai: finansų rinkos, ekonominis nuosmukis, Granger priežastingumo testai, empiriniai testai, bendrosios tendencijos.

Petras DUBINSKAS. Master, Lecturer and Assistant. Department of Finance. International Business School at Vilnius University. First degree in international relations and politics sciences, The Institute of International Relations and Politics Sciences at Vilnius University (2002). Master of Science in International Business School at Vilnius University (2005). Research visits to Cordoba University (Spain, 2008), Savonia University of Applied Sciences (Finland, 2009), The Polytechnical Institute of Beja (Portugal, 2009), La Rochelle Business School (France, 2010). Author of 4 scientific articles. Research interests: financial and investment management, financial econometrics, financial engineering, optimization of financial deicions.

Stanislava STUNGURIENĖ. Doctor, Associate Professor. Financial Department of International Business School at Vilnius University. First degree and master in economic engineering, Vilnius University (1972). Doctor (1982). Author of about 30 scientific articles. Research interests: information technologies, operations management, quantitative analysis in economics and management, optimal financial decisions.