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## Panel regression of stock market indices dynamics in south-eastern European economies

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We tested the hypothesis of pro-cyclicality of the stock exchanges indices regarding economic activity of south-eastern European countries (SEE) in the Two-Stage Least Squares (TSLS) model in order to demonstrate the degree and pace of integration of 'new' financial markets into larger ones (EU). Rising stock prices in the SEE countries may be the sign of economic growth in the region in the light of the financial integration process. Results of panel estimates support the hypothesis of pro-cyclicality in the period of transition of the SEE region and financial integration, due to the opening of the market economy and re-pricing of systematic risk followed by large capital inflows, GDP growth, trade liberalisation and increased industrial production as well as the implementation of reforms regarding EU integration. Also significant is the negative coefficient of government debt in the SEE group results could be interpreted as a 'contagion effect' of the recent global financial crisis that spread beyond national borders.

**Keywords:** financial integration; stock exchange; panel regression; south-eastern Europe (SEE)

**JEL classification:** E44, F36, F43, G1

### 1. Introduction

After the collapse of communist and socialist regimes in the beginning of the 1990s, a number of central and eastern European (CEE) economies established capital markets as part of their transition process for adopting the mechanisms of a market economy (Égert & Kočenda, 2007).

There is a great deal of empirical literature on the pro-cyclicality of the stock market as a sign of financial integration and it covers the countries of central and SEE as well as Asia and the Americas. Research into the matter intensified with the development of the EU and its enlargement into an ever-widening circle of countries. Existing literature on this topic includes research into the stock markets of transition countries that have already joined, or are joining, the European Union, in order to examine the level of financial integration in the EU. Trade links between CEE and SEE countries and the EU gradually became stronger, leading to further economic integration by the time of formal accession. With the re-intensified process of monetary integration in the European monetary union,

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theories of cyclical movement in financial markets multiplied. The discussion was further fanned by recent financial crises that spread beyond national borders, creating a ‘contagion effect’ (Caporale, Cipollini, & Spagnolo 2005; Muradoglu, 2009).

The aim of this study is to investigate the spillover effect, i.e., the degree and pace of integration of ‘new’ financial markets into larger markets (EU). We presumed the **Hypothesis 1.** *of pro-cyclicality in the period of transition of the SEE region and further financial integration, due to the opening of the market economy and re-pricing of systematic risk followed by large capital inflows, GDP growth, trade liberalisation and industrial production as well.*

Also we tried to improve negative effects of financial integration through the significant impact of government debt.

For the ‘new’ financial market we chose stock markets of Bosnia and Herzegovina, Bulgaria, Croatia, Montenegro, Serbia, Slovenia and Romania, as a representative group of SEE countries. Recent literature includes a significant amount of research on the stock markets of transition countries that have already joined, or are in the process of joining, the EU (Babetskii, Komárek, & Komárková, 2007; Cappiello, Kadareja, & Manganelli, 2006; Christiansen & Rinaldo, 2008; Dvůrák & Podpiera, 2006; Égert & Kočenda, 2007; Erdogan, 2009). Drawing upon the methods used by this authors who have dealt with the correlation of stock market indices, we analysed the correlation of stock markets of SEE countries united in one SEE pool.

The test of stock indices with regard to the main economic indicators in SEE countries in the panel is based on monthly data obtained during 2004–2010. Our contribution is obvious in researching of SEE stock markets as one united region.

The theoretical background of empirical analysis is presented in section 2. An overview of existing empirical literature and different methodologies of assessing financial integration can be found in section 3. The methodology and the data of the empirical analysis are explained in section 4, results and discussion are in section 5, and the implications of the empirical analysis are revisited in the conclusion.

## **2. The theoretical background of empirical analysis**

The authors of stock market integrations proved that the main economic variables, such as capital inflows, real GDP, trade balances, exchange rates, interest rates and consumer price indexes are significant in their relation to the indices of the stock market. The outcome of all these studies suggests that, with minor degrees of variation, fundamental macroeconomic dynamics are indeed influential factors for stock market returns. Our study on financial integration is based on European financial integration theory – that the integration and development of financial markets are likely to contribute to economic growth by removing barriers to exchange, and by allocating capital more efficiently, that the financial integration unquestionably yields economic benefits and that Europe’s financial integration is instrumental to its economic union (more in Adam, Japelli, Menichini, Padula, & Pagano, 2002; Baele, Ferrando, Hördahl, Krylova, & Monnet, 2004; Baltzer, Cappiello, De Santis, & Manganelli, 2008).

### **2.1. The macroeconomic environment in south-eastern Europe**

A financially united Europe is a challenge because it eliminates some of the specific national risks and enables investors to diversify their portfolios across various countries. Countries of the SEE region are all still in the process of transitioning (which mostly

began in the 1990s) from an old autocratic socialist system towards a market economy. Some countries in the region went through less painful changes in their system, while others went to war. All these circumstances influenced the direction, speed and course of economic and financial integration into the EU. Definitely, even the most developed countries of the SEE region are faced with challenges when trying to reach the standards of the most developed market economies. Recent economic research has shown that Bulgaria and Romania, which joined the EU in January 2007; Slovenia, which became an EU member in 2004 and introduced the euro in 2007; and Croatia which is the last EU member from 1st of July 2013, are countries that have gone much further in their development than other countries in the region. Governments and other state bodies of countries of the SEE region have recently started implementing demanding reforms (see more in Christiansen & Ranaldo, 2008; Erdogan, 2009). After 2000, most SEE countries recorded economic growth with low inflation and progress in the field of market reforms. The average economic growth of SEE countries in the last 10 transition years was higher than in the EU. Still, the GDP per capita in countries of the south-eastern region shows a gap when compared to the developed countries of Western Europe, suggesting that there is long way ahead of them. Obviously, clear links are visible between the implemented reforms and economic growth. It is important to mention that no country in the region has expressed the wish to return to the previous economic system.

From 2008 to 2011 in most SEE countries, recession has slowed down real GDP as we can see in Figure 1. There are lower capital inflows (Figure 2) and domestic credit has negatively impacted domestic demand. Most SEE governments, either alone or with IMF and EU support, have tried to reconstruct the public sector and cut expenditures. The effects of the recession are still obvious in rising unemployment – especially in Croatia, Serbia, and Bosnia and Herzegovina. Due to lower domestic and foreign demand, and lower commodity prices, current account deficits have continued to narrow in most SEE countries. It seems that all governments and central banks in the SEE region have been aware of the importance of stabilisation and low inflation for economic growth, but every country has chosen a different approach for monetary policy, exchange rate policy and state intervention (Ho, 2009). Still, all countries in the region are prone to high deficits in their balance of payments (adding the price dynamics of

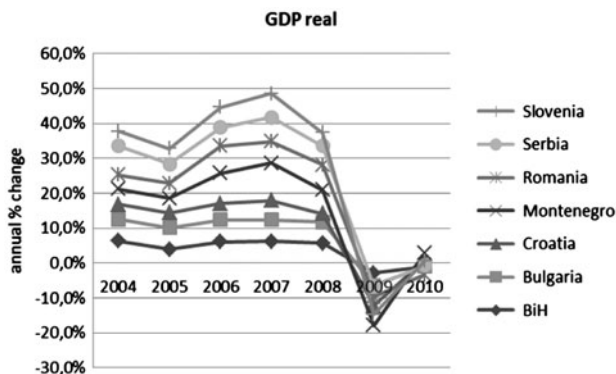


Figure 1. Macroeconomic environment in SEE – GDP. Source: Designed by the authors according to the data from EC (2011) and UniCredit CEE Quarterly (2010).

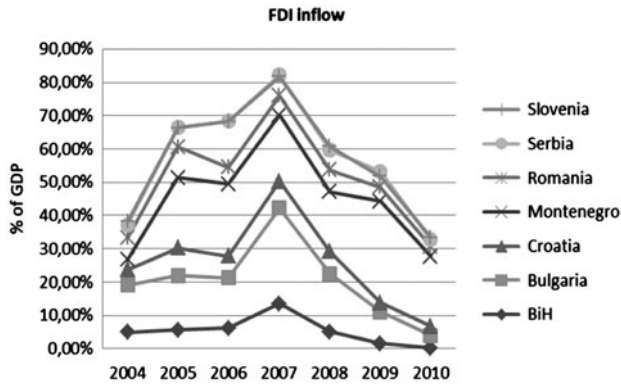


Figure 2. Macroeconomic environment in SEE – FDI inflow. Source: Designed by the authors according to the data from EC (2011) and UniCredit CEE Quarterly (2010).

food and energy sources on the world market in 2011), proving the fact that certain countries have been living beyond their realistic possibilities in the years before (see Figure 4).

## 2.2. Stock Markets in south-eastern Europe

Emerging capital markets in the transition countries of SEE countries are becoming increasingly important for both institutional and individual investors. South-eastern transition countries slowly started opening up to the world market towards the end of 1980s and the beginning of the 1990s, and established a local exchange as part of their transition process towards adopting the mechanisms of a market economy. The stock markets of SEE have tried to adapt their standards to an international one, by improving the disclosure practices of firms, order execution, ownership rights, and by bringing down limitations to international capital flows (Syllignakis & Kouretas, 2006). However, they still remain small, fragmented and underdeveloped in comparison with the capital markets of developed countries. Following the removal of restrictions on capital flows, the opening up to foreign investors, the creation of appropriate corporate governance structures and the establishment of ownership rights, both market capitalisation and daily trading volumes increased rapidly in SEE countries during transition.

Since the equity markets in these countries are still relatively small when compared with developed ones, they tend to exhibit higher volatility (Figure 5), possibly because of their sensitivity to even relatively small portfolio adjustments (Égert & Kočenda, 2007). Stock markets in SEE countries received massive Foreign Direct Investments (FDI) in the course of 2004, which boosted stock indices in almost all countries (see Figure 1). The dramatic increase in stock prices in the EU accession countries following the announcement of EU enlargement was a result of market integration and the subsequent re-pricing of systematic risk (Dvorač & Podpiera, 2006).

## 3. Empirical analysis: empirical literature overview

In the following section we explain the theoretical background for the variables that were used in our model. Our research is particularly interested in stock market index movements in the transition countries of SEE. In that sense, our study follows up on

the papers of those authors who compared the movements of stock market indices in the new European Union member countries in order to determine the degree and pace of financial integration. Our model is based on large amounts of empirical evidence from Adam, Japelli, Menichini, Padula, and Pagano (2002), Baele, Ferrando, Hördahl, Krylova, and Monnet (2004), Baltzer, Cappiello, De Santis, and Manganelli (2008) and others who pointed out that transition from centrally planned to market economies has led to rapid financial developments boosted by a strong, foreign, primarily EU banking presence. A number of studies have analysed how stock market integration affects stock market returns and investigated if stock market returns become more correlated in a more integrated market. Some authors found strong correlations in stock market movements among developed countries (Christiansen & Rinaldo, 2008; Egert & Kočenda, 2007) which could not be said for SEE countries where those correlations are weaker (Cappiello, Kadareja, & Manganelli, 2006; Dvorač & Podpiera, 2006; Onay, 2007; Syllignakis & Kouretas, 2006).

While global trends significantly increased index movements, regional characteristics nevertheless remained the most significant determinants of integration (Cappiello, Kadareja, & Manganelli, 2006). For CEE countries that became EU members earlier, authors such as Egert and Kočenda (2007) and Onay (2007) found more correlated with EU than fresh EU members such as Slovenia, Romania, Bulgaria and Croatia. There is a growing amount of literature showing the strong influence of macroeconomic variables (indicators such as GDP, total employment rates, profits, balance of payments, etc.) and stock markets, mostly for industrialised countries (Ali et al., 2010; Cumhuri, Cem, & Erdem, 2005; Muradoglu et al., 2009; Menike, 2006; Nasseh & Strauss, 2000; Loayza, Ranciere, Serven, & Ventura, 2007). Razin, Sadka, and Yuen (1999) showed that in an environment with asymmetric information, FDI can have positive welfare effects if credit markets are undeveloped, but these effects turn into losses in economies with a well-functioning domestic credit market. Mohammad and Abdelhak (2009) tested the relationship among government expenditures, CPI, M2 and economic growth and found that that these variables have important, dominant and positive effects on prices and variations in real output. We also involved in our research variable such as government debt to check the premise that government debts of transitional countries rise with the financial integration.

## 4. Methodology and data

### 4.1. Data specification

Based on the studies investigating the correlation of stock market indices and macro economic variables in the empirical literature we constructed a data set of explanatory variables that are usually included in models: capital inflows (in bn [billions] of domestic currency, in real terms); the exchange rate express as the price of one unit of foreign currency in units of domestic currency; the real GDP (in bn of domestic currency deflated by GDP deflator); government debt expressed as percentage of GDP; the industrial production index; interest rates (p.a., short run); the consumer price index; trade balance (in bn of domestic currency deflated by GDP deflator), and the unemployment rate expressed as a percentage of the total labour force. We relied on the internal database of the Candidate Countries Economies Quarterly CCEQ (2010), EIPF (Economic Institute Ljubljana, Slovenia) and on the databases of the national statistical bureaus of individual countries. All the nominal variables expressed in national currencies were corrected by an individual

country's appropriate deflator(s) (using December 2010 as the base) and converted into EUR by using the exchange rate of December 2010. A monthly time series was used for the period from January 2004 to December of 2010, in order to explain the stock exchange's pro-cyclicality in selected SEE countries. This particular period was used because it is a relevant period for explanation of the dynamics of transition and due to availability of the data (the data for the earlier period of SEE countries were not available).

The local stock price indices (closing prices) were used for each of the examined stock markets: CROBEX (Croatia), SBI20 (Slovenia), SASX-10 (Bosnia and Herzegovina), BELEX15 (Serbia), MONEX20 (Montenegro), BG40 (Bulgaria) and BET10 (Romania). Stock indices' data (closing) were collected on national stock exchanges and adapted to monthly average indices from January 2004 to December 2010. In order to control for a potential endogeneity problem, several instrumental variables were employed in regressions:

- broad money (in *bn* [billions] of domestic currency, in real terms)
- credit volume (in *bn* of domestic currency, in real terms) as a share of deposits in banking sector (in *bn* of domestic currency, in real terms)
- the export of goods and services expressed as a percent of GDP, the import of goods and services expressed as a percent of GDP
- capital outflows (in *bn* of domestic currency, in real terms)
- wages as the average wage per employee (deflated by consumer price index)

#### **4.2. Methodology**

In different estimations for the empirical evidence of a relationship between stock-exchange indices and main (macro) economic indicators, we used panel regressions, TSLS method for the fixed effect model. According to the similarities between the analysed economies, we decided to use a panel regression and obtain more information about the analysed parameters. This method controls for the omitted variables that are persistent over time and, by including the lags of the regressors, potentially alleviates the measurement errors and endogeneity bias. The advantage of the applied method is that it lowers the co-linearity between the explanatory variables. It also dismisses heterogeneous effects. The fixed effects model is the preferred modelling methodology when the individual effect of each country is negligible (while the random effects model is better capable of estimating the effect of time-invariant independent variables). Given the low *p*-values of the Hausman test (Hausman, 1978), fixed effects are more efficient.

All variables were seasonally adjusted (Eviews 7, Stata 10) on the basis of monthly data from 2004 to 2010 for the SEE panel regression of all observed countries. For panel SEE countries model, the ADF-Fisher Chi-square panel unit root test for panel estimation (Maddala & Wu, 1999; Wooldridge 2002; Hsiao, 2003) was applied to test for stationarity of all the transformed time series using an asymptotic Chi-square distribution. In the panel estimation we applied  $d(x)$  because of the significant oscillation of variables through different countries integrated in the SEE panel. By using the differences of the variables (expressed as percentage changes), the problem of spurious regression was avoided (Dickey & Fuller, 1979). To determine the lag length, the Schwarz information criterion was used (Ashgar & Abid, 2007) and also Akaike and Hannan-Quinn information criterion (Akaike, 1987). A maximum of 12 lags was considered for each variable when determining the lag length. Q-statistics were

estimated to check autocorrelation in the residuals (Iwaisako, 2004) by a test statistic for the null hypothesis that there is no autocorrelation of residuals with high probabilities and low Q-statistics. The results indicate that residuals are not serially correlated and, therefore, suitable for analysis.

We used SEE countries in a group to obtain more information on the analysed parameters and to avoid the eventual problem of certain similarities of individual country economies and the problem of relatively short time series (Hsiao, 2003; Wooldridge, 2002).

For the united SEE group, we applied panel EGLS and panel IV Two-Stage EGLS methods. These methods allow the cross-country differences to be treated as unobserved time invariant characteristics (Babihuga, 2007) and give us control of omitted variables over time and may alleviate measurement errors and endogeneity bias (Baltagi, 2001; Maddala & Wu, 1999). This methodology also lowers co-linearity between explanatory variables and dismisses heterogeneous effects (Western, 1998). The TSLS method was used for SEE panel to avoid an endogeneity problem, which could arise in estimation with to-correlated explanatory variables, which were substituted by employing suitable instrumental variables (see the description in the *Data Specification*). To provide a TSLS estimation, we satisfied the order condition for identification (there must be at least as many instruments as there are coefficients in the equation). Co-integrated markets exhibit common stochastic trends that limit the amount of independent variations between markets (Christiansen & Ranaldo, 2008). There are some requirements for assets that are integrated in an economic sense and that share common stochastic factors (Chen & Knez, 1995). Based on the authors (Engle-Granger, 1987; Johansen, 1988) who did research for co-integration between economic variables and based on our own research, we used the Johansen methodology to find co-integrated variables as a long-term relationship of them. Capital inflows and interest rates are related to a whole range of economic activities, as well as trade balance and exchange rate; and gross domestic product with industrial production index could be potentially endogenous. We employed a set of instrumental variables: capital outflows, broad money, credit volume to deposit ratio, exports, imports and wages, which we expected to be correlated with the endogenous variables. The correlation between capital inflow and capital outflow is based on the theory that capital outflow stimulates capital inflow conditioned by interest rates and exchange rate dynamics. We could also substitute wages for capital inflow due to the fact that average lower wages usually could be one trigger for increasing the capital inflow in some countries. The interest rate could be substituted with instruments such as broad money and credit volume to deposit ratio, because interest rates positively impact the supply of money (lower interest rates due to a broader supply of money), savings (higher interest rates increase deposits) and credit demand (lower interest rates increase a credit demand). Trade balance is substituted with instrumentals such as the export and import of goods and services, because in economic theory the balance of trade (or net exports) is conditioned also by exchange rate dynamics (Aizenman & Noy, 2005).

We conducted a set of instrumental variables that should be correlated with the endogenous variables but not with the error term (Hahn & Hausman, 2002; Murray, 2005). For the weak instrument diagnostic, Cragg and Donald (1993) originally proposed the statistic test for a test of under-identification. When disturbances are heteroskedastic or autocorrelated, these test statistics are no longer valid (Stock & Yogo, 2005). The Hansen-Sargan test for over-identifying restrictions addresses the first assumption, whereas the weak identification tests address the second assumption (Bound, Jaeger, & Baker, 1995). The probability of the J-statistic is the Sargan statistic,



Table 1. Panel regression results for the SEE region.

Dependent variable: d(x), cross-section included: 7 (monthly 2004 – 2010)		
Variable	Fixed EGLS	Fixed IV Two-stage EGLS
d(CAP)(-2)	20.97660 (4.954005) (0.0001)***	17.56979 (3.786017) (0.0010)***
d(GDP)(-12)	12.43523 (2.013816) (0.0559)*	12.91708 (8.614207) (0.0000)***
d(GVD)	-17.73085 (-7.714151) (0.0000)***	-11.62261 (-3.019839) (0.0061)***
d(IND)(-12)	6.211327 (6.124719) (0.0000)***	14.00244 (5.257360) (0.0000)***
d(INT)	-19.48193 (-3.640742) 0.0014***	-17.04761 (-3.532648) 0.0018***
d(TRB)(-10)	14.72069 (2.564458) (0.0173)**	2.340819 (2.346399) (0.0279)**
Weighted statistics		
R-squared	0.662393	0.662997
Adjusted R-squared	0.574321	0.575083
S.E. of regression	1.039794	0.905857
Sargan test	(0.783412)	(0.829761)
Kleinberger-Paap test	(0.000913)	(0.000273)

Symbols: Explanatory variables: CAP: capital inflows; GDP: gross domestic product; GVD: government debt; IND: industrial production index; INT: short run interest rate p.a.; CPI: consumer price index; TRB: trade balance.

Instrumental variables:

BM: broad money; CV: credit volume relative to deposits; EXP: export of goods and services; IMP: import of goods and services; COF: capital outflow; WAG: average wage per employee.

Notes: d(x) denotes the difference in variables as a percentage change (measured in percentage points). The time lag of the variables is given in the subscript; (t-Statistics) are in brackets and (probabilities) are in brackets below (t-Statistics).

Significance levels are denoted as:

\*\*\*significant at 1%

\*\*significant at 5%

\*significant at 10%.

The probability of the Sargan and Kleinberger-Paap tests give us evidence for the validity of instrumental variables.

Source: authors' calculations.

which provides evidence for the instrumental quality of every regression. The coefficients for the probability of the J-statistic (see Table 1) show evidence for the validity of instrumental variables that we used in equations. The Hansen-Sargan test of overidentifying restrictions addresses the first assumption, whereas the weak identification tests address the second assumption. The Stock and Yogo (2005) test for weak instruments is based on the largest acceptable bias of the TSLS estimation relative to the OLS estimation. When disturbances are heteroskedastic or autocorrelated, these test statistics are no longer valid (Stock & Yogo, 2005). Research by Kleibergen and Paap (2006) led to the development of a robust version of the weak instrument test statistic that solves the previously mentioned problems and, additionally, does not require i.i.d. (independent and

identically distributed) errors (Kleibergen & Schaffer, 2007). Instrumental variable methods rely on two assumptions (Staiger & Stock, 1997): (1) the excluded instruments are distributed independently of the error process (i.e. instruments are valid); and (2) the instruments are sufficiently correlated with the included endogenous regressors (i.e. the instruments are not weak).

In our case, the Hansen-Sargan statistic of overidentifying restrictions does not reject the null hypothesis that the instrumental variables are uncorrelated with the error term. The rejection of the null hypothesis of the Kleibergen-Paap test, on the other hand, suggests that the chosen instruments are not weak.

## 5. Results and discussion

The obtained results confirmed the significant influence of the chosen explanatory variables on the stock exchange indices of the SEE countries. We can confirm the positive influence of capital inflows, GDP, industrial production and trade balance on stock exchange indices of SEE countries united in a group. We also confirmed that interest rate and government debt have negative impact to stock exchange indices of SEE countries. The complete results provide evidence of the higher volatility of macroeconomic factors such as capital inflows and interest rate. Those factors are obviously important explanatory variables that increase the volatility of stock exchange indices (more in Muradoglu, 2009; Poghossian, 2008). Rising stock prices in the SEE countries in the scope of our interest, may lead to economic growth in the light of the financial integration process, in general and in light of the EU integration process, in particular which should be studied more briefly in further studies.

As we can see in Figures 2 and 3, the rise of capital markets has been very strong in SEE countries over the last few decades due to large FDI inflows followed by a high coefficient of industrial production index (which naturally goes together with FDI inflows) and a high coefficient of trade balance due to the liberalisation of the market and opening to market economy. Obviously, the liberalisation of the market is connected with EU accession and other regional and international trade integration (Baltzer, Cappiello, De Santis, & Manganeli, 2008). The process of integration should increase cross-border investments among countries, which have joined the EU and are in the process of joining the European and Economic Monetary Union (De Santis & Gérard, 2006).

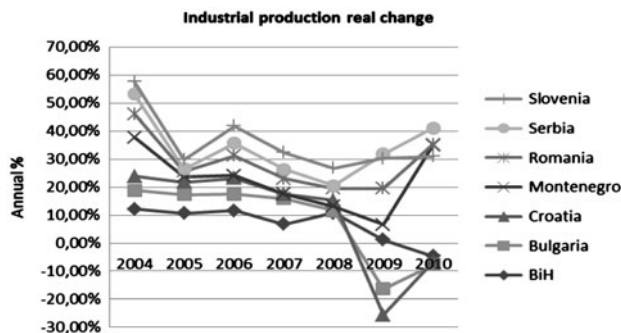


Figure 3. Macroeconomic environment in SEE – Industrial production. Source: Designed by the authors according to the data from EC (2011) and UniCredit CEE Quarterly (2010).

This increase in stock prices in the EU accession countries clearly followed the announcement of EU enlargement (for Bulgaria, Romania and Slovenia and subsequently Croatia and Montenegro) and obviously was a result of market integration and the subsequent re-pricing of systematic risk. However, a development of the financial markets was not homogenous across the SEE region.

The positive influence of GDP, capital inflow and trade balance, which is confirmed in our results for the SEE panel, improves the theory that foreign direct investments in developing economies have grown rapidly following financial and political transformations. The efforts of transition countries with respect to changing to a market economy, has resulted in massive FDI for the stock markets, especially in the course of 2004, which boosted stock indices in almost all countries (see Figure 5). Despite this legal difference, there are common movements on all these markets (Eicher et al., 2009)

GDP growth presumes also a rise of the industrial production index and the rise of trade due to closer trade connections between the EU and candidate countries (Onay, 2007). Additionally, the strongest feedback between FDI and manufacturing trade is based on the argument that larger inflows of FDI will lead to a higher volume of trade as well as other benefits such as increased rates of total factor productivity growth or higher output growth rates (Aizenman & Noy, 2005). Openness to international trade, domestic credit supply and GDP are quite successful candidates among the drivers of international financial integration (see Figure 3).

EU accession provides better market access for SEE firms and increased assistance from the EU budget, which leads to greater consumer confidence in light of the prospects of EU membership (Dvorak & Podpiera, 2006; Savva & Aslanidis, 2007). Beyond direct trade links, openness in general (possible through indirect trade links) make economies less prone to move with others (Onay, 2007). The positive impact of industrial production on stock exchanges in the SEE results, has proven the theory that industrial production affects stock returns positively and significantly – primarily through increasing the expected cash flow, which has been confirmed in many studies (Fama, 1981).

Cumulative FDI from 2003 to 2009 has been greater in Montenegro than in all other transition countries and remained surprisingly high despite the actual global slowdown of economic activities, partly due to the privatisation of the local power company and the aluminium industry.

Since 1999, Croatia's FDI inflows increased by up to EUR 1 billion and increased especially in 2005 (after its announcement as an EU candidate country). The great majority of FDI inflow in Croatia was through the acquisition of existing companies (mostly through privatisation in the service sector, telecommunications and financial services).

FDI in Serbia increased from 27% net in 2000 to 700% in 2003 due to privatisation and the interest of foreign investors (attracted by low taxes).

The amount of incoming FDI to Slovenia during the period before 2000 almost tripled due to EU accession. The stock market of Romania received massive foreign investment inflows with a 90% increase in 2004, while Bulgaria saw more than a 30% increase in stock indices due to EU accession.

Bulgaria, Romania and Slovenia, as countries already in the EU, had previously experienced strong capital inflows coupled with particularly high asset valuations and buoyant demand conditions due to their announcement of EU accession (Dvorák & Podpiera, 2006). Croatia and Montenegro, as EU candidate countries in observed period, have also seen strong capital inflows in the last decade connected with the EU membership (Horobet & Ilie, 2007). But the completion of EU accession of Bulgaria, Romania,

Slovenia and Croatia and ongoing negotiations with Montenegro have not yet resulted in the complete financial integration of these markets with the EU.

The empirical evidence of SEE countries, when united in a panel, also shows significant negative coefficients of government debt due to the global recession that started at the end of 2008 (Muradoglu, 2009). It provides us with evidence that the accession of the SEE countries in the EU required the implementation of reforms that lead to further economic expansion (see Figure 4). Probably the most important factors driving the acceleration of financial integration are related to the policy measures undertaken by the 'new' member states in order to meet European financial standards, including the liberalisation of capital accounts, as well as legal and institutional reforms (Poghossian, 2008).

Implementing reforms that includes cutting government spending is a pre-condition for EU accession, and was a strong motivation factor for SEE countries on their way to EU membership. Most reforms in Slovenia were done from 1996 to 2004 and in Bulgaria and Romania from 2001 to 2004, when they were motivated to join the EU. The reforms in Croatia started in 2005 when the official negotiation process began (Mohammad & Abdelhak, 2009).

In June 2010, the Slovenian government introduced a supplementary budget (reducing the government budget deficit) with plans to increase taxes and cut spending (reforming the pension and health care system) while the Romanian government is in the middle of taking measures (such as public sector restructuring and expenditure cuts) towards government spending. The flexibility of fiscal policy in many of the SEE countries could be improved by lowering the high share of nondiscretionary expenditures in total and also the high level of public spending. Without doubt, public sector wage bills and transfers are particularly large in most of the SEE countries, reflecting the still generous and often unreformed social security systems that these countries cannot afford (Sorsa, 2006).

The interest rates should also be an important factor in explaining stock market returns because it can influence the level of corporate profits, which in turn influences the price that investors are willing to pay for the stock through expectations of higher future dividends payments. A reduction in interest rates reduces the costs of borrowing, which has a positive effect on the future expected returns for the firm. Also, an increase in interest rates would make stock transactions more costly. Investors would require a higher rate of return before investing.

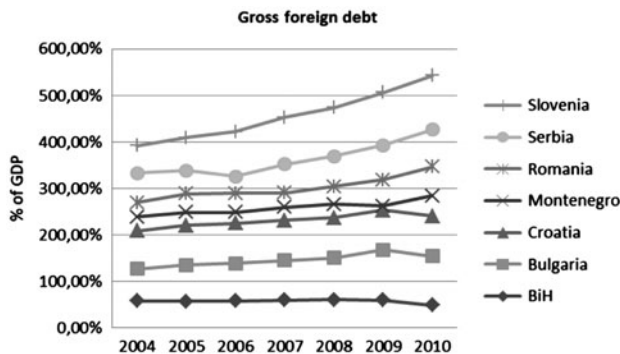


Figure 4. Macroeconomic environment in SEE – Gross foreign debt. Source: Designed by the authors according to the data from EC (2011) and UniCredit CEE Quarterly (2010).

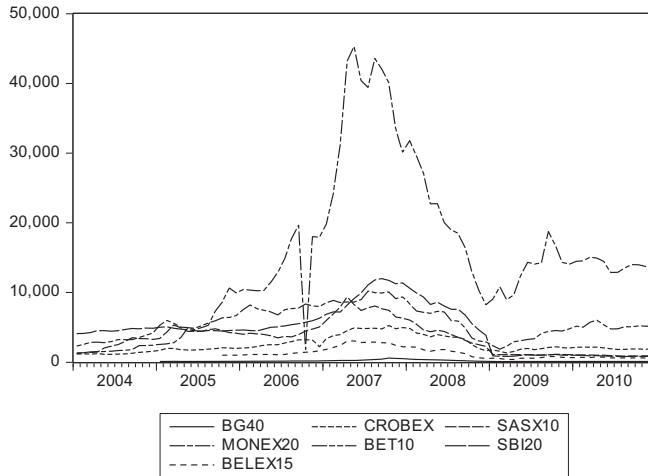


Figure 5. Indices of the SEE countries (01:2004–12:2010). Notes: CROBEX (Croatia), SBI20 (Slovenia), SASX-10 (Bosnia and Herzegovina), BELEX15 (Serbia), MONEX20 (Montenegro), BG40 (Bulgaria), BET10 (Romania). Source: Designed by the authors according to the data from EC (2011) and UniCredit CEE Quarterly (2010).

Negative interest rate in the SEE panel is in line with the theory that stock market returns are usually negatively correlated to interest rates (Alam & Uddin, 2009; Fama, 1981). A rather high interest rate is typical for transition countries due to insufficient money supply and due to lower national savings. The transition from planned to market economies in the SEE region has led to rapid financial developments, which were further boosted by a strong, mainly EU, foreign banking and other financial intermediaries presence (Baltzer, Cappiello, De Santis, & Manganelli, 2008; Mishkin, 1999; Stavárek, 2009). The strong presence of foreign banks in those countries during the last decade did not seriously help in reducing interest rates, but helped in the supply of different financial products and services to the government, companies and households. Foreign banks saw transition countries as a new market for applying their different financial products and services. The privatisations boosted confidence in banks, which in turn led to increasing monetisation with rapid deposit growth. Together with enhanced access to foreign loans by the new private banks, this has helped fuel a boom in lending in most of the region (Festić, Repina, & Kavkler, 2009; Poghossian, 2008; Sorsa, 2006).

## 6. Conclusion

Transition countries of the SEE were, during the last decade, exposed to large FDI inflows, followed by GDP growth, trade liberalisation and industrial production growth due to financial integration, opening of autarchical transitional economies toward liberal markets and due to EU accession as well. The positive influence of GDP, capital inflow and trade balance, which is confirmed in the SEE panel TSLs model, improves the theory that foreign direct investments in developing economies have grown rapidly following financial and political transformations. Local stock markets in the SEE countries were established as part of their transition process towards adopting the mechanisms of a market economy to intermediate funds towards investment projects.

This integration is positively associated with real per capita GDP, educational level, banking sector development, monetary growth, credit growth, stock market development, the legislation of the country and government integrity. These processes are also pushing the whole SEE region towards further international financial integration because almost all SEE countries are trying to follow European financial markets. Still, all countries in the region are prone to high deficits in their balance of payments proving the fact that certain countries of the SEE region have been living beyond their realistic possibilities in the years before the global financial crisis that started in the middle of 2008. The dramatic increase in stock prices in the SEE transitional countries was clear sign of the positive economic activities in this region. Our results presented in Table 1 confirmed positive influence of capital inflows, GDP, trade volume and industrial production on stock exchanges of the SEE countries. The empirical result also proved that stock indices in the transitional SEE countries are negatively correlated to interest rates and government. It provides us with evidence that recent financial crises are slowly overflowing, creating a 'contagion effect' obvious also in the observed SEE countries.

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