



DETERMINANTS OF STOCK MARKET DEVELOPMENT: EVIDENCE FROM ADVANCED AND EMERGING MARKETS IN A LONG SPAN

Pınar Evrim-Mandacı¹, Bora Aktan², Guluzar Kurt-Gumuş³, Manuela Tvaronavičienė⁴

^{1,3}*Dokuz Eylul University, Faculty of Business Administration, Department of Accounting and Finance,
Kaynaklar Campus, 35160 Buca, Izmir, Turkey*

²*University of Bahrain, College of Business Administration, Department of Economics and Finance,
Isa Town, Kingdom of Bahrain*

⁴*Vilnius Gediminas Technical University, Saulėtekio al. 11, 10223 Vilnius, Lithuania*

*E-mails: ¹pınar.evrim@deu.edu.tr; ²gbora@uob.edu.bh (corresponding author);
³guluzar.kurt@deu.edu.tr; ⁴manuela.tvaronaviciene@vgtu.lt*

Received 02 December 2012; accepted 14 January 2013

Abstract. The paper analyses determinants of stock market development in thirty advanced and emerging countries within the period between 1960 and pre-financial global meltdown (2007). Our explanatory variables are foreign direct investment (FDI), remittances and bank credits to private sector. The application of SUR estimation disclosed that all variables had significant positive effects on market development measured by market capitalization. The obtained results unfolded the necessity for the countries to develop policies and regulations on facilitating FDI, remittances and bank credits.

Keywords: stock market, FDI, remittances, bank credits, SUR estimation.

JEL Classification: G15, G17, G18, C10

AKCIJŲ RINKOS VYSTYMOŠI VEIKSNIAI: IŠSIVYSČIUSIŲ IR BESIVYSTANČIŲ RINKŲ ELGSENOS PAVYZDŽIŲ TYRIMAS ILGUOJU LAIKOTARPIU

Pınar Evrim-Mandacı¹, Bora Aktan², Guluzar Kurt-Gumuş³, Manuela Tvaronavičienė⁴

^{1,3}*Dokuz Eylul universitetas, Verslo administravimo fakultetas, Buhalterinės apskaitos ir finansų katedra,
Kaynaklar teritorija, 35160 Buca, Izmiras, Turkija*

²*Bahreino universitetas, Verslo administravimo kolegija, Ekonomikos ir finansų katedra,
Isa miestas, Bahreino Karalystė*

⁴*Vilniaus Gedimino technikos universitetas, Saulėtekio al. 11, 10223 Vilnius, Lietuva*

*El. paštas: ¹pınar.evrim@deu.edu.tr; ²gbora@uob.edu.bh (corresponding author);
³guluzar.kurt@deu.edu.tr; ⁴manuela.tvaronaviciene@vgtu.lt*

Įteikta 2012-12-02; priimta 2013-01-14

Santrauka. Straipsnyje tiriama akcijų rinkos elgsena trisdešimtyje išsivysčiusių ir besivystančių šalių per ilgąjį laikotarpį (1960–2007 m.) iki pasaulinės finansinės ir ekonominės krizės. Teoriškai pagrindžiama tokių veiksmų, kaip tiesioginės užsienio investicijos, finansiniai mokėjimai ir bankų kreditai privačiajam sektoriui, įtaka akcijų rinkos elgsenai. Straipsnyje panaudotas

duomenų SUR įvertinimas ir gauta, kad visi nagrinėti veiksniai turi reikšmingą teigiamą poveikį akcijų rinkos vystymuisi, kuris savo ruožtu įvertinamas rinkos kapitalizacija. Gauti rezultatai įrodo, kad nagrinėtoms šalims tikslinga formuoti ekonominę politiką, skatinančią tiesiogines užsienio investicijas, finansinius mokėjimus ir bankų kreditus privačiajam sektoriui.

Reikšminiai žodžiai: akcijų rinka, tiesioginės užsienio investicijos, finansiniai mokėjimai, bankų kreditai, SUR įvertinimas.

Introduction

Financial development has received great attention from researchers, both in terms of its effects and the factors affecting it. Literature confirms the presence of strong relations between financial development, specifically stock market development, and economic growth (Rousseau, Wachtel 2001; Billmeier, Massa 2009; Gudonytė, Tvaronavičienė 2012). Recent studies have explored the factors influencing stock market development through different perspectives and a number of other variables. Yet, still there are some factors the effects of which have not been properly explored.

One of the above introduced factors - capital flows - consists of two basic types: foreign direct investment (FDI) and remittances. For instance, in 2001, remittances were the second-largest source of external funding behind FDI, especially for developing countries; they showed similar and, in some cases, even better performance than did private capital flows in the context of growth. Notwithstanding, the factors stimulating foreign investment have been frequently elaborated (Tvaronavičienė, Lankauskienė 2011; Tvaronavičius, Tvaronavičienė 2012; Tvaronavičienė, Grybaitė 2012), and the effects of FDI, especially on financial markets, have been largely neglected. Moreover, researchers have not leaned on the empirical relationship of FDI and remittances with stock market development. This study focuses on covering the gap analysing the effects of FDI and remittance in stock market development. Moreover, in line with the previous studies and considering the fact that some of these remittances are invested into the bank accounts of domestic countries and given as credits to private sector, we also incorporate bank credits into our set of variables to observe the overall effect of capital inflows into the financial system of the given countries.

This study is expected to contribute towards literature in terms of the longevity of the period it takes into account and the number of countries it intends to analyze, e.g. covers a 48-year period spanning from 1960 to 2007 and contains thirty advanced and emerging countries.

The major part of the previous literature on stock market development has focused on a few countries or regions and in large extent macroeconomic indicators such as inflation and interest rates. This paper is aimed at exploring an empirical relationship between stock market development and the factors other than the macroeconomic ones with an extended number of countries and a broader period.

The findings strongly supports the positive effects of leading capital flows such as FDI and remittances and bank

credits on stock market development, i.e. an increase in FDI, remittances and bank credits positively influence market capitalization. The received results demonstrate that stock markets might benefit from regulations that would remove the barriers like clumsy bureaucracy before the flow of capital and crediting.

The paper is structured in the following way: the next section revises related literature, Section 3 describes data and methodology and briefly discusses variables providing information about them, Section 4 explains the results of panel regression and Section 5 is assigned to concluding remarks.

1. Previous studies

Due to the dominance of banks over the financial systems of the countries throughout the world, most of the former studies have tended to use bank-based indicators of financial development such as La Porta *et al.* 1997, 1998; Beck *et al.* 2003 etc. Although worldwide stock markets form a respectively small part of the financial system, they are important because they meet long-term fund needs of companies, provide capital formation, attract foreign investors and help the companies in staying fairly valued. The focus of recent studies has increasingly shifted to stock market indicators due to the increasing contribution of stock markets in economies. However, the determinants of stock market development have been frequently ignored.

Among these studies, Garcia and Liu (1999) use the total market value to GDP as a proxy for stock market development. With a sample of fifteen industrial and developing countries covering a period from 1980 to 1995, they show that macroeconomic factors such as income, saving rate, domestic credit to private sector and stock market liquidity are important determinants of financial development, whereas inflation does not have any explaining power. They confirm that banks and markets are complement instead of substitutes. In the same vein, Naceur and Ghazouani (2007) use a similar indicator as a proxy for market capitalization and try to shed light on the macroeconomic determinants of stock market development. Their empirical study is conducted using unbalanced panel data from 12 Middle Eastern and Northern African (MENA) countries. It is found that saving rate, credit to private sector; stock market liquidity and inflation are important determinants of stock market development. In addition, it is accepted that financial intermediaries and stock markets are complements rather than substitutes in the growth process.

In their study, Claessens *et al.* (2000) investigate the development of stock markets in transition economies using panel data and find that low inflation, good shareholder protection and the size of institutional investor assets are important in explaining market capital, even after control over income and distance. In addition, they agree that market capitalization is positively correlated with private credit to GDP ratio. Catalan *et al.* (2000) examine the determinants of stock market development for OECD and some emerging markets and point out that the countries with more developed contractual saving sectors also have more developed stock markets both in terms of market capitalization and value traded. They find causality from contractual savings to market capitalization, particularly in the countries where capital markets are relatively small.

Boyd *et al.* (2001) analyse the effect of inflation on both bank based (liabilities for GDP, bank assets to GDP, credits to private sector and to GDP) and stock market based (value traded, market capitalization to GDP, turnover, volatility, equity returns) development indicators for the financial sector. Evidence indicates there is a significant, and economically important negative relationship between inflation and both banking sector development and stock market activity. Further, such relationship is nonlinear. As inflation rises, a marginal impact of inflation on banking lending activity and stock market development diminishes rapidly. They show that higher levels of inflation are associated with smaller, less active and less efficient stock markets. Similarly, Naceur and Ghazouani (2005) extend the work of Boyd *et al.* (2001) to the MENA region and find that inflation has a negative and significant influence on financial sector development. However, they do not find evidence of threshold levels even after controlling simultaneity and omitted variable bias and argue that a marginal increase in inflation is harmless to stock market performance and banking sector development whatever the rate of inflation.

Khan *et al.* (2006) use domestic credit to private sector, stock market capitalization to GDP and private and public bond market capitalization to GDP as financial market depth indicators: the growth rate of CPI index, GDP per capita, exports plus imports to GDP and a share of public consumption in GDP as regressors. By using a large cross-country sample, they find the relationship between inflation and financial depth. In contrast to the study of Naceur and Ghazouani (2005), they discover a threshold level of inflation below which it has a positive effect on financial depth, but above which the effect turns negative.

The importance of foreign direct investment for stock market development has also been discussed by Claessens *et al.* (2001), who find that foreign direct investment is positively correlated with stock market capitalization and value traded. By examining a sample of 77 countries for the period from 1975 to 2000, they argue that FDI is a complement and not a substitute of domestic stock market development.

Since workers' remittances to developing countries have become the second largest type of flows after foreign direct investment, Aggarwal *et al.* (2006) examine whether remittances contribute to increasing the aggregate level of deposits and credit intermediated by the local banking sector of 99 developing countries using data for the period from 1975 to 2003 and find strong support for the notion that remittances promote financial development in developing countries. Billmeier and Massa (2007) measure the macroeconomic determinants of stock market capitalization in a panel of 17 countries in the Middle East and Central Asia, including an institutional variable, remittances, GDP, gross fixed capital formation to GDP, inflation change, domestic credit to private sector and to GDP, stock value traded to GDP and oil price index among explanatory variables. They also agree that both institutions and remittances have a positive and significant impact on market capitalization; in resource-rich countries, stock market capitalization is mainly driven by the oil price.

2. Data and methodology

Random-effect SUR estimation is used along with data set that includes a panel of country observations gathered from the World Bank containing 30 countries over the period 1960-2007¹, which are available for 48 time series observations for each country².

This paper regresses stock market development to the set of variables of FDI, workers' remittances and bank credits as a proxy for the depth of the financial sector. Although stock market development has more dimensions than market capitalization (e.g. efficiency or infrastructural aspects), we use this measure in line with literature, as it is considered a better and less arbitrary proxy than a composite financial index that includes the selected dimensions of financial deepening such as the banking and non-banking sector. Market capitalization has commonly been accepted as one of the indicators of financial development, specifically the leading indicator of stock market development both in previous and recent studies (Billmeier, Massa 2009). The measures of independent variables are stated below³:

- foreign direct investment inflows-to-foreign direct investment outflows,
- remittances,
- bank credits to private sector.

¹ The panel consists of Argentina, Belgium, Brasil, Bulgaria, Canada, Australia, China, Czech Republic, Denmark, France, Germany, Greece, Hong Kong, Hungary, Italy, Japan, Mexico, Netherlands, Poland, Portugal, Romania, Slovenia, Slovak Republic, Singapore, Spain, Sweden, Switzerland, Turkey, the UK, and the US.

² As missing data of the countries decrease the total number of observations, the panel is unbalanced.

³ Natural logarithms of the variables are employed in the analysis.

Next, brief information about regressors and logic behind their insertion into analysis is provided.

FDI may affect stock market development in the way of having a positive influence on the current market value of the firms receiving flows. Furthermore, FDI strengthens capital structure, fosters institutionalisation and increases profitability, thus indirectly enhancing stock market fundamentals. Similarly, the relation between FDI and economic growth promotes stock market development via the effect on those fundamentals. This variable is measured as FDI inflows-to-FDI outflows to search the combined effect of inflows and outflows.

Some part of remittances is likely to be spent, while some could be saved and invested in various investment alternatives. The part invested in stock markets could have effect on market capitalization as the trade volume and an increase in prices. We, hence, expect a positive relation between remittances and market capitalization.

Credit provided by the banking sector is accepted as the indicator of financial sector depth, thus measuring the role of banks in financing. It is guaranteed by total credit provided by the banking sector. The logic behind employing financial sector depth as another regressor is that the remaining remittances after consumption may deposit in a bank account or are invested in stock markets. The developed finance sector is beneficial to transmitting that amount to the economy via credit channels, while catalyzing the economy in general and so does stock market fundamentals. An effective finance sector is expected to have a positive impact on stock market development.

Table 1 shows descriptive statistics on the selected variables over the sample period. Credit provided by the banking sector has the largest amounts comparing with other variables. The minimum net FDI-inflow is lower than net FDI-outflow. Standard deviations of all variables are considerably high.

Table 1. Descriptive statistics on regression variables for the period from 1960 to 2007 (billion USD)

Variables	Mean	S.D.	Max.	Min.
Mrkt Capa	59,300	205,000	1,990,000	41.11
FDI- inflowb	1,280	3,590	27,600	-20,600
FDI- outflowc	1,200	2,890	29,300	-3,370
Remd	2.22	3.14	25.7	0.005
Depthe	128,000	360,000	3,310,000	6.78

Source: World Bank

^a Market capitalization in dollars

^b Foreign direct investment-net inflows

^c Foreign direct investment-net outflows

^d Remittances

^e Credit provided by banking sector

After the liberalization process, an increase in capital flows among countries started. The total FDI inflows of the world slightly increased up to 1997 when sharp growth could be observed and reached a record in 2000 that was followed by a severe declining period. The recovery process began in 2003 and FDI reached the record of \$ 1,833 billion in 2007 after a four-year period of continuous growth. Figure 1 demonstrates the co-movement of FDI inflows to developed and developing countries. According to the UNCTAD-World Investment Report (2008), the total FDI inflows of the world denominated in dollars had growth rates of 47.2 and 29.9 in 2006 and 2007 respectively. From a regional perspective, South America has a leading position among developing countries with a growth rate of 66.9. On the other hand, the European Union as the leader of developed countries reached the rate of 43.0. Additionally, a pro-cyclical movement of FDI is noticeable, i.e. increases when the economy goes well and declines when conditions are in a down-turn.

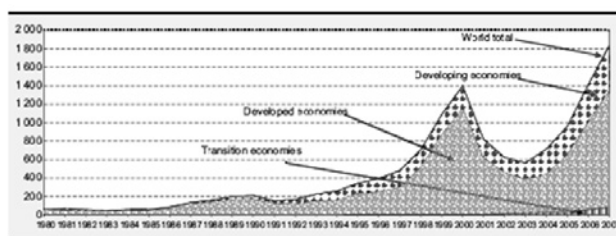


Fig. 1. FDI inflows (1980–2007). Source: UNCTAD World Investment Report 2008

Figure 2 reports that remittances are more stable than FDI, which is also verified by such researchers as Buch and Kuckulenz (2004), and contrarily rise during the crisis due to a less violent reaction to economic conditions. For instance, in 1995, 1998, 2000 and 2001, they continued to increase during the crisis in Mexico, Thailand, Indonesia and Turkey. Some studies (Ratha 2003) provide evidence for changes in remittances during the crisis, natural disaster or conflicts between the countries. Furthermore, India, Mexico and China are the top-three remittance-receiving developing countries similarly to the situation faced in India, Mexico and Philippines in 2001. According to the World Bank statistics and IMF BOP Yearbook for 2006, France, Spain and Belgium are the leaders of the developed countries. On the other hand, considering changes in ranking, Moldova, Tonga and Guyana become the top-three countries when the criterion is remittances as a percent of GDP; in 2001, a similar situation was observed in Tonga, Lesotho and Jordan.

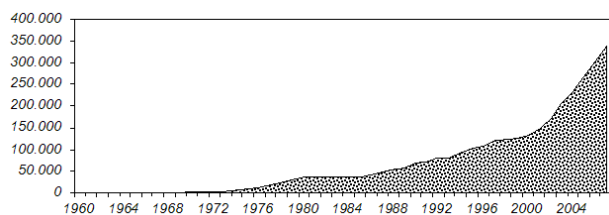


Fig. 2. Remittances for the period from 1960 to 2007 (million USD). Source: World Bank

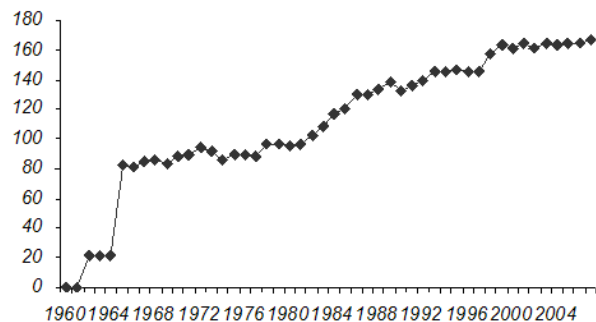


Fig. 3. Credit provided by the banking sector/GDP, 1960–2007. Source: World Bank

Stable and continuously increasing banking sector credits, similar to remittances, (as the percentage of GDP) are interpreted in Figure 3. During the early and late 1960s, a sharp increase can be noticed. After the early 1980s, the credits given by the banking sector started surpassing GDP with percentages higher than 100 per cent and achieved 180 per cent in the middle 2000s.

3. Results

The estimates of the equation are interpreted in Table 2. All variables of the first regression have significant and positive coefficients. The results strongly support the effects of FDI, workers’ remittances and total bank credits on stock market development. The coefficients showing the magnitude of regressors on stock market development signify that a 1% increase in FDI, workers’ remittances and total credit provided to private sector respectively results in % 0.09; 0.06 and 0.17 increases in market capitalization. The signs of significant explanatory powers of the variables are consistent with the expectations mentioned before.

The results of the model, having a dummy variable included to explore the reliability of classifying countries as advanced or emerging, show similarities with the model having no dummy. All regressors except the dummy one have positive coefficients - a setting inferring their positive effects on market capitalization. A negative coefficient of the dummy variable points to the fact that an emerging country reduces the magnitude of variable effects on market capitalization.

Table 2. Panel regression results, 1960–2007

Regressor	Model (1)	Model (2)
Inflow/Outflow	0.09 (3.33)***	0.08 (2.90)***
Rem	0.17 (3.24)***	0.17 (3.23)***
Depth	0.057 (2.21)**	0.05 (1.77)*
Dummy ⁴	---	-1.24 (-1.92)*
Constant	8.75 (3.14)***	9.32 (3.36)***
Adj.R-squared	0.12	0.13
F-statistic	67.94***	55.83***
Observations	1416	
Periods	48	
Cross-sections	30	

Notes: Dependent variable: log of market capitalization. The table contains coefficients with t-statistics in parenthesis. The panel is not balanced. Symbols *, **, and *** denote significance at 10, 5, and 1 percent respectively.

A high coefficient of remittances signals out that the involved variable affected stock market development twice as high as other determinants, and, in addition, relieved countries from undesirable effects from FDI, the higher volatility of which, compared to remittances, was proved in literature.

4. Concluding remarks

Our paper is aimed at emphasizing the role of some selected variables, including FDI, remittances and credits provided by the banking sector in explaining stock market development. Our paper is different from the previous ones in terms of the longevity of the period it takes into account and the number of the countries it intends to analyze, e.g. covers a 48-year period spanning from 1960 to the starting point of financial crisis in 2007 and contains thirty advanced and emerging countries.

By using SUR estimation, we find that all variables have statistically significant positive effects on market capitalization as a proxy for stock market development. Our results are also consistent with the findings of the previous studies such as Claessens *et al.* (2001), Aggarwal *et al.* (2006) and Billmeier and Massa (2007). The obtained results indicate that stock markets might benefit from regulations that would remove the barriers like clumsy bureaucracy before the flow of capital and facilitate the credit system.

⁴ Dummy is used to classify countries into two: advanced and emerging according to the IMF classification. Emerging countries are given “1”, advanced countries are given “0”.

References

- Aggarwal, R.; Demirgüç-Kunt, A.; Peria, M. S. M. 2006. *Do Workers' Remittances Promote Financial Development?* World Bank Policy Research Working Paper 3957.
- Beck, T.; Demirgüç-Kunt, A.; Levine, R. 2003. Law, endowments, and finance, *Journal of Financial Economics* 70: 137–181. [http://dx.doi.org/10.1016/S0304-405X\(03\)00144-2](http://dx.doi.org/10.1016/S0304-405X(03)00144-2)
- Billmeier, A.; Massa, I. 2007. *What Drives Stock Market Development in the Middle East and Central Asia—Institutions, Remittances, or Natural Resources?* IMF Working Paper, Middle East and Central Asia Department.
- Billmeier, A.; Massa, I. 2009. What drives stock market development in emerging markets institutions, remittances, or natural resources?, *Emerging Markets Review* 10(1): 23–35. <http://dx.doi.org/10.1016/j.ememar.2008.10.005>
- Boyd, J. H.; Levine, R.; Smith, B. D. 2001. The impact of inflation on financial sector performance, *Journal of Monetary Economics* 47: 221–248. [http://dx.doi.org/10.1016/S0304-3932\(01\)00049-6](http://dx.doi.org/10.1016/S0304-3932(01)00049-6)
- Buch, C. M.; Kuckulenz, A. 2004. *Worker Remittances and Capital Flows to Developing Countries*. ZEW – Centre for European Economic Research Discussion Paper No. 04–031.
- Catalan, M.; Impavido, G.; Musalem, A. R. 2000. *Savings or stock markets development: Which leads?* The World Bank Financial Sector Development Department Financial Sector Vice Presidency.
- Claessens, S.; Djankov, S.; Klingebiel, D. 2000. *Stock markets in transition economics*. Financial Sector Discussion Paper No. 5, The World Bank.
- Claessens, S.; Klingebiel, D.; Schmukler, S. L. 2001. *FDI and stock market development: Complements or substitutes?* Working Paper, University of Amsterdam and World Bank.
- Garcia, V. F.; Liu, L. 1999. Macroeconomic determinants of stock market development, *Journal of Applied Economics* 2(1): 29–59.
- Gudonytė, M.; Tvaronavičienė, M. 2012. Išsivysčiusių ir besivystančių kapitalo rinkų sąveika: Baltijos šalių ūkio sektorių indeksai pasauliniame kontekste, *Business: Theory and Practice* 12(2): 141–149.
- Khan, M. S.; Senhadji, A. S.; Smith, B. D. 2006. Inflation and Financial Depth, *Macroeconomic Dynamics* 10: 165–182. <http://dx.doi.org/10.1017/S1365100506050152>
- La Porta, R.; Loperz-De-Silanes, F.; Shleifer, A.; Vishny, R. W. 1997. Legal determinants of external finance, *The Journal of Finance* 52(3): 1131–1150. <http://dx.doi.org/10.1111/j.1540-6261.1997.tb02727.x>
- La Porta, R.; Lopez-de-Silanes, F.; Shleifer, A.; Vishny, R. W. 1998. Law and finance, *Journal of Political Economy* 52: 1113–1155. <http://dx.doi.org/10.1086/250042>
- Naceur, S. B.; Ghazouani, S. 2005. Does inflation impact on Financial sector performance in the MENA region?, *Review of Middle East Economics and Finance* 3(3): 219–229. <http://dx.doi.org/10.1080/14753680500407225>
- Naceur, S. B.; Ghazouani, S.; Omran, M. 2007. The determinants of stock market development in the Middle-Eastern and North African region, *Managerial Finance* 33(7): 477–489. <http://dx.doi.org/10.1108/03074350710753753>
- Ratha, D. 2003. *Worker Remittances: An Important and Stable Source of External Development Finance*. Global Development Finance, World Bank.
- Rousseau, P. L.; Wachtel, P. 2001. Inflation, Financial Development and Growth, in *Economic Theory, Dynamics and Markets: Essays in Honor of Ryuzo Sato*. Edited by T. Negishi, R. Ramachandran and K. Mino. Kluwer. http://dx.doi.org/10.1007/978-1-4615-1677-4_23
- Tvaronavičienė, M.; Grybaitė, V. 2012. Sustainable development and performance of institutions: approaches towards measurement, *Journal of Security and Sustainability Issues* 1(3): 167–175.
- Tvaronavičienė, M.; Lankauskienė, T. 2011. Plausible foreign direct investment' impact on sustainable development Indicators of differently developed countries, *Journal of Security and Sustainability Issues* 1(1): 25–36.
- Tvaronavičius, V.; Tvaronavičienė, M. 2012. *Innovations, Fixed Investment and Economic Growth: the EU context*. Monography. Edited by Evelyn Wamboye. Pennsylvania State University, LAP LAMBERT Academic Publishing, Germany. 324 p. ISBN 978-3-659-00122-2.
- UNCTAD. 2008. World Investment Report.

Pinar EVRİM- MANDACI. Professor of Finance, Doctor at the Department of Accounting and Finance, Faculty of Business, Dokuz Eylül University, Turkey. Research activities: capital markets, corporate finance, international investments, security analysis, portfolio management, emerging markets, merger and acquisitions, asset pricing models, capital structure and corporate governance.

Bora AKTAN. Assistant Professor of Finance, Doctor at the College of Business Administration, University of Bahrain, Kingdom of Bahrain. Research activities: emerging financial markets, global investments and real estate investment trusts, stock market behavior, asset pricing and financial time-series analysis, volatility modeling-forecasting, and energy issues.

Guluzar KURT-GUMUŞ. Associate Professor of Finance, Doctor at the Department of Accounting and Finance, Faculty of Business, Dokuz Eylül University, Turkey. Research activities: global investing, emerging capital markets and corporate finance.

Manuela TVARONAVIČIENĖ. Professor of Economics, Doctor at the Department of Enterprise Economics and Management, Faculty of Business Management, Vilnius Gediminas Technical University, Lithuania. Research interests: economic growth, sustainable development, globalization, investment, innovation, performance of stock markets.