Overcoming the Crisis

Economic and Financial Developments in Asia and Europe

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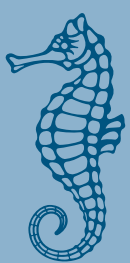

University of Primorska Press

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Editors' Introduction

This volume consists of papers selected from among those presented at two international conferences. One of these was the conference on Economic and Financial System Development in the Pacific Rim Region, which was held in Honolulu, Hawaii on May 16–19, 2012. This conference was organized by the Association for Comparative Economic Studies (ACES), the Japanese Association for Comparative Economic Studies (JACES), and the Society for the Study of Emerging Markets (SSEM). The conference focused on developments in the economic and financial systems of the Pacific Rim region and the region's interaction with the global economy. Empirical and theoretical papers related to the theme of the conference as well as papers of political economy and policy issues were presented and discussed. The second conference was EuroConference 2012 of the Society for the Study of Emerging Markets, which was hosted and co-sponsored by the University of Primorska, in Portorož, Slovenia and held during July 11–14, 2012.

While each conference had a regional focus, one on Asia, the other on Europe, each drew participants from many different countries. It is not surprising that the global financial crisis and its consequences were the focus of many contributions. Yet, despite this common preoccupation, the thrust of the papers presented at the two conferences differed considerably, in large part due to the experience of the two regions with the crisis. Many Asian countries already had considerable experience with global economic crises due to the lessons learned from the Asian Crisis of the 1990s. As a result, this time they were relatively insulated from United States financial markets due to strengthened regional financial ties, and they entered the recent crisis period with strong balance of payments and international reserve positions.

As a result, the focus of the papers presented at this conference was on the long-term development and integration of the economies of the region.

EuroConference 2012, on the other hand, had a heavy representation of contributors from Eastern Europe. There the experience with the crisis had been quite different. For all of these countries, this was their first experience with a 'capitalist' crisis, and for this reason it proved more traumatic and even unexpected. Moreover, most of the countries of the region entered the crisis with booming economies that had been receiving massive inflows of financial capital and FDI and whose economies were thus very vulnerable both to a stop in capital inflows and to a decline in demand for their exports. As a result many of the authors at this conference sought to reinterpret the region's development strategies, to examine their countries' links to international financial markets and to consider ways in which vulnerabilities to external shocks could be mitigated by means of hedging strategies of various sorts.

To reflect this diversity, we have organized the book into three Parts. The first deals with the European experience. Papers by Polona Pašić and Borut Bratina, by Primož Dolenc, Igor Stubelj, and Suzana Laporšek, and by Milorad Filipovic and Miroljub Hadzic examine what the implications of the crisis are for firms and banks in Eastern Europe and for the regulatory environment in which they operate. These papers, combined with that by Marzena Lemanowicz and Joanna Szwacka-Mokrzycka, raise the key questions facing East European policy makers. How effective can domestic regulation be, especially for banks, and what are the costs of greater integration into the global economy in terms of the ability to manage domestic economic activity and to maintain the competitiveness of locally-owned firms? The contributions to this section also show a lively interest in the financial sector, which is not surprising given the central role played by this sector in propagating the crisis. Two papers by Sławomir Juszczyk and Rafał Balina examine the microeconomics of risk avoidance using the example of commodity markets to show how market institutions allow participants to reduce the risks of price fluctuations by means of different hedging strategies. Péter Csillik and Judit Sági, Domagoj Sajter, and Jan Šedivý contribute papers that deal with various important behaviors and regularities in financial markets. Papers by Emilia M. Campeanu and Anna Jasiulewicz try to reinterpret the growth strategy followed by their two countries prior to the crisis and to offer some ways of modifying these strategies in light of the lessons of the crisis, and Miroljub Jevtić, Sofija Adžić, and Tanja Radović show some com-

plementarities between policies that are environmentally friendly and economic development.

The second section of the book deals with Asia and the Global Crisis, and it consists of five papers submitted to the Pacific Rim conference. Slawomir I. Bukowski, investigates the degree of the Chinese equity market integration with the Japanese and US equity markets, a topic also covered by authors in other sections of the book, perhaps a testimonial to the growing integration of capital markets worldwide. Farazi Binti Ferdous focuses on FTAs and prospects for export diversification in regional markets for East Asian economies while Yugo Konno develops a statistical analysis of trade liberalization in Russia, China, and India during the 1990s. Jan Kubíček tackles the thorny issue of exchange rate regimes for Asian economies and proposes a 'floating band' regime with a central parity of the band dependent on past values of the exchange rate. Eric Lin touches on some problems caused by the rise of China.

At each conference participants also took a more global approach to the analysis of the crisis and its aftermath, and in Part 3 we combine those papers from the two conferences that had a more global perspective. The two papers by Mine Aksoy, Selin Karatepe, Z. Oğuz Seçme, and Fatma Benli echo themes already developed in pervious parts of the book as they examine stock market regularities and cross-country linkages among financial markets. Kehluh Wang, Han-Hsing Lee, and Kuanyu Shih contribute an interesting and innovative paper on how to measure sovereign risk. Miloslava Filipović and Svetlana Mihić, Aleksandar Andrejević, and Milan Mihajlović offer ways of reimagining the global economy in a way that expands opportunities for growth and trade. Hae Kim's paper considers the impact of regionalism and globalization on economic development in the world, and Pedro Paulo Bastos Zahluth follows up the regional integration theme by examining the case of Latin America.

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Volatility of rates of return on the example of wheat futures

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Abstract: This article presents chosen examples of anomalies in the distribution of rates of return on the capital markets in the world, based on a review of literature. Moreover, the authors has shown that in the case of wheat futures listed on the FOREX market are also anomalies in the distribution of rates of return. It was noted that the rate of return and the coefficient of variation for a given asset in the last four hours of the day of trading are significantly higher than in the early hours

JEL Classification**:** G14, G13

Keywords: capital market, anomalies, wheat futures

Introduction

The thesis of the capital market efficiency even in its weak form states that the study of historical rates of return should not provide useful information for effectively predicting the rates of return in the future (Cone A. 1999). However in literature one can find numerous examples which are in conflict with this thesis. The basis on which can be predict rates of return are so-called anomalies or calendar effects. These phenomena constitute exceptions to the informational efficiency of capital markets. Anomalies in the distribution of rate of return may be dependent on the time of the transaction - the so-called temporary and seasonal anomalies, the delayed investors reaction for market or over-reacting on incoming information. Anomaly are any kind of deviation from the typical or average values of rate of return. Therefore, any deviation of the repeated subject of the days, month, hour, in which they can be considered as a manifestation of the capital market inefficiencies.

An example of "calendar effect" is "the effect of month of the year," also called "January effect". This research carried out by many researchers, among others Fam E. (1991), Haugen RA, Lakonishok J. (1988); Dimision E. (1988), Glutekin MN, NB Glutekin (1983), Reinganum M.R. (1983). They lead to the conclusion that the rate of return on stocks listed on U.S. and European stock markets in January are generally significantly higher than in the remaining months. This allows to use this relationship to predict future rates of return in January.

Another example, which is inconsistent with the hypothesis of efficient capital market in a weak form are researches carried out by the RA Ariel'a (1987) in which Ariel pointed to the significant difference between the decay rates of return in a month. He noted that the cumulative increase on the US capital market was caught in the first months, which also is the basis for consideration of the expected rate of return on investment in equities. Namely, it allows the use of this relationship for speculative investment decisions.

Another example, which allows to predict the direction of changes in the stock market, based on historical data is the so-called "day of the week effect," which assumes that the differences between the rates of return on each day are different. In numerous studies have shown that the average Monday returns in the U.S. market are much lower than average rates of return in the remaining days of the week (French K.R. 1980; D.K. Keim, Stambaugh R.F. 1985; Rogalski R.J. 1984; Smirlock M., Starks L. 1986). Another example of the anomalies in the distribution of rates of return is so-called "the effect on hours." In literature we can find many examples of study about relation between rates of return depending of an hour, or quarter of an hour (Smirlock M., Starks L. 1986 L. Harris, 1986). These studies show that the rate of return on in each trading hours are different and in many cases repetitive, which can be used successfully in practice.

Given the cited examples of "calendar effects" should be noted that all studies are conducted on the basis of data from stock exchanges. Given the literary achievements of issues should be noted that in principle there are no studies of the anomalies on the futures market for agricultural commodities.

Purpose and test methods

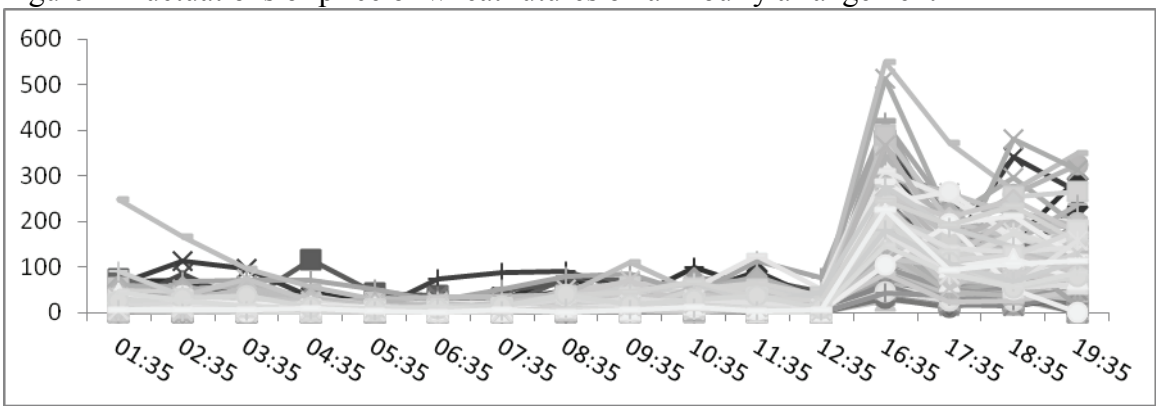
The main objective of this paper is to demonstrate the existence of significant differences in the volatility of wheat listed on the FOREX market during the hours of 04:35PM - 07:35PM compared to the quotation from 01:35AM - 12:35PM hours, as an anomaly in the futures market for agricultural products. The results are based on real data about closing price of wheat futures contracts for each hour from 27 January 2010 to 26 January 2011. Selection of the study period was deliberated and was intended to cover a full year to take into account factors related to seasonality of agricultural market.

For future consideration author formula for rate of return expressed as a quotient of the difference between the closing price in a given time and the closing price in the first hour of trading and the closing price of the asset in the first hour of trading. Moreover, the coefficient of variation was used as a measure of rate volatility during the considered period.

Results of research

Study period include periods in which followed an increase, decrease and consolidation quotes. Analyzing the quotes of wheat futures on an hourly arrangement may be notice a pattern. Namely, listing the hours 4:30PM – 7:35PM had significantly higher quotation than it have place in the hours before the 12:35PM - a graphical presentation of the above observations shown Figure 2.

Figure 2 Fluctuations of price of wheat futures on an hourly arrangement



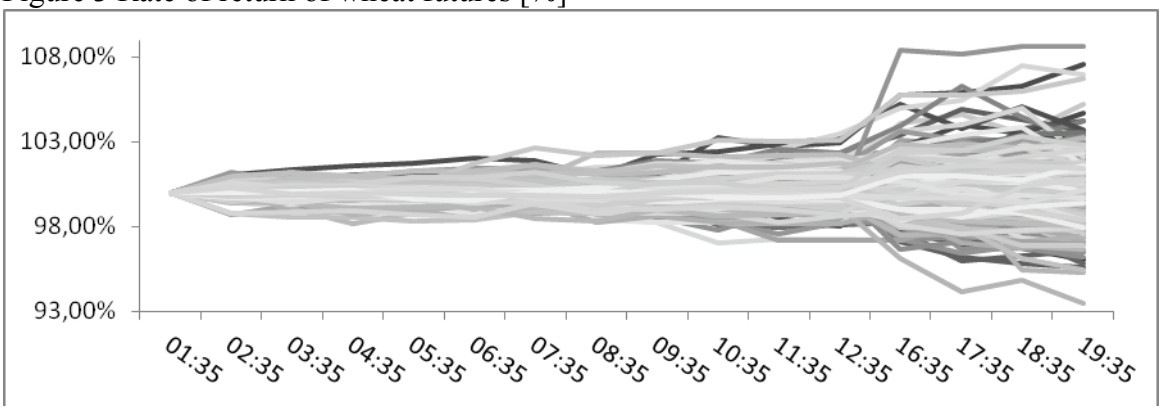
In order to confirm the observed dependence later was used following formula for rate of return for long position of wheat futures:

$$R_t = \frac{P_t - P_0}{P_0}$$

where:
R_t - the rate of return in a given time,
P_t - closing price at the time,
P_0 - the closing price in the first hour of trading.

Rates of return in individual hours is relate to daily changes. This assumption illustrate how will change the rate of return depending on the time to maintain a market position. The rates of return calculated by the above formula shown Figure 3. Analyzing Figure 3 should be emphasized that the rate of return during hours from 1:35AM to 12:35PM are relatively stable and ranged from -2.9% to 5.44%.

Figure 3 Rate of return of wheat futures [%]



Their level should be considered as relatively low obtained yields because after taking into account transaction spared not allow to obtain extraordinary results that an investor would be reach. During hours between the hours of 04:35PM and 07:35PM rate of return had significantly higher values than the rates of return obtained in the hours of 01:35AM and 12:35PM. Namely, these changes ranged from -9.98% to 8.61%. From the perspective of an investor opening positions in the first hour of trading wheat futures on a given day and keep it until the afternoon that same day gave the opportunity to gain a higher rate of return because the range of variability in the rate of return was much higher than in the morning. In order to indicate differences in volatility between periods was used the coefficient of variation as a statistical measure to determine the scope of changes allowing trading wheat

futures in periods. For the calculation was used formula: (Sobczyk M., 2006, p. 46; Witkowska D., 1999, p. 90):

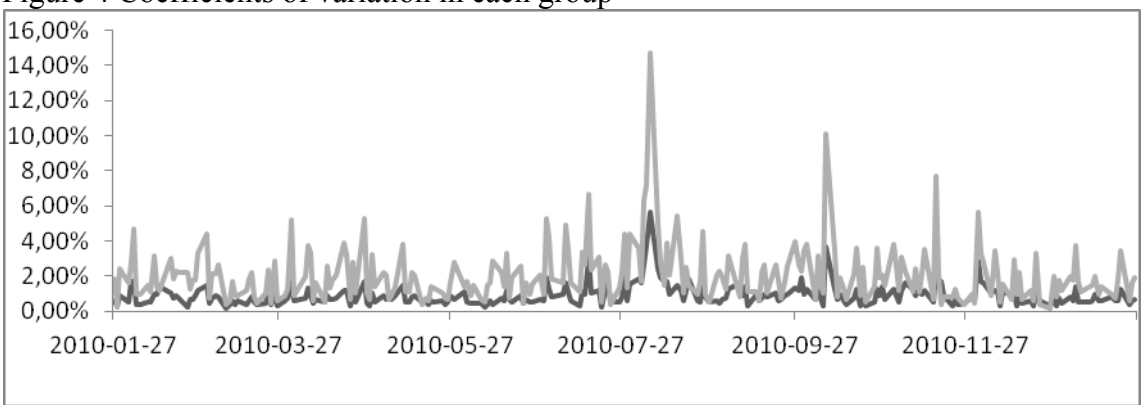
$$V = \frac{\sqrt{\frac{\sum_{i=1}^{n} (x_i - \overline{x})^2}{n}}}{\overline{x}}$$

where:
V - coefficient of variation,
n - number of observations,
x_i - value of the i-th observation,

$$\overline{x} = \frac{\sum_{i=1}^{n} x_i}{n}$$

The object of research were divided into two groups according to the previously observed decay rates of return. The first group consisted of observations from the period between the hours of 01:35AM and 12:35PM, the second group consisted of observations from 04:35PM to 07:35PM hours. For the each group was calculated the coefficient of variation. The obtained results shown Figure 4.

Figure 4 Coefficients of variation in each group



The study showed that the coefficient of variation calculated for the first group was in the case of 234 days of observation higher than in the second group. For the other 19 cases calculated the coefficient of variation was lower than in the first group. This means that the variability between the hours of 01:35AM and 12:35PM was lower than that between 04:35PM and 07:35PM in 92.5% of cases. The coefficient of variation in the first trading period ranged from 0.2 to 5.7% and in the second period ranged from 0.1 to 14.7%. Clearly demonstrates the significant differences between the extent of variation between the quotations of wheat futures in hours between 01:35AM - 12:35PM and quotations from 04:35PM to 07:35PM. It should be noted that the biggest changes in the wheat futures prices took place during the period form 04:35PM to 07:35PM.

Conclusions

On the basis of the analysis it was noted that in the case of wheat futures prices they are reach their highest level of variation between the hours of 04:35PM and 07:35PM each day, which has a decisive influence on the daily rate of return. In addition, rates of return from taking position before 12:35PM and keep it second trading period gave significantly better

results than closing it before 04:35PM. This phenomenon can be considered as an example of anomalies of futures market for agricultural products. Also result of author's research can be used to predict price movements of wheat futures.

Research conducted for the purposes of this article, due to significant differences in specifications and hours trading of futures market on agricultural products cannot be transferred to other markets.

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Corporate Governance and the Slovenian Banking Sector

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Abstract: The purpose of this paper is to investigate the level of corporate governance disclosure practice of the Slovenian banking sector. A research was conducted on all 19 Slovenian banks. To evaluate how the corporate governance disclosure has improved over the last few years, the research was based on the analysis of selected characteristics of annual reports in years 2005 and 2010. The results of the research show that in the period from 2005 to 2010 the level of disclosure practices of analysed disclosure characteristics and the index of disclosure have improved.

JEL Classification: G21, G34, K22

Keywords: corporate governance, banking sector, disclosure, Slovenia

Introduction

Corporate governance has been of significant importance in the last years and is growing even further. One of the most important functions of corporate governance is to provide mechanisms which will prevent the enforcement of managers' interests that are not in accordance with the owners' interests. Only honest, transparent and responsible management may lead to stakeholders' confidence in companies' performance and governance system.

A central problem associated with corporate governance is the principal-agent problem. As a direct consequence of the separation of ownership and control it reflects in how the principal (the owner) can ensure that agents (the managers) will indeed manage the company in the owner's interest, meaning that they will not put their own interests before.

Economies have developed various mechanisms which provide instruments for shareholders to exercise control over managers. Differences in adopted mechanisms across countries are mostly the result of different ownership structures in particular countries. Slovenian companies mostly have more concentrated ownership structures, unlike American companies which mostly have a more dispersed ownership structure.

As one of the mechanisms, the disclosure of corporate governance information should not be the result of a companies' tendency to satisfy rules or recommendations. It should be the result of the companies' tendency for symmetric information sharing and improvement. It should aim to achieve effective corporate governance structure that would lead to the companies' better performance. The disclosure of information leads to a comprehensive set of information available on the market which further leads to greater economic and social progress.

Due to the fact that the banking sector is generally different from the non-banking sector and since the disclosure of information is an important aspect in achieving a well-performing entity, this paper presents the particularities of the Slovenian banking sector with a special emphasis on the level of corporate governance disclosure practice of the Slovenian banking sector.

The Role of Corporate Governance

According to the OECD Principles (2004, 11) "corporate governance is one key element in improving economic efficiency and growth as well as enhancing investor confidence. Corporate governance involves a set of relationships between a company's management, its board, its shareholders and other stakeholders. Corporate governance also provides the structure through which the objectives of the company are set, and the means of attaining those objectives and the monitoring of performance are determined. Good corporate governance should provide proper incentives for the board and management to pursue objectives that are in the interests of the company and its shareholders and should facilitate effective monitoring. The presence of an effective corporate governance system, within an individual company and across an economy as a whole helps to provide a degree of confidence that is necessary for the proper functioning of a market economy. As a result, the cost of capital is lower and firms are encouraged to use resources more efficiently, thereby underpinning growth".

With a special focus on banking institutions in 1999 the Basel Committee on Banking Supervision (part of the Bank for International Settlements – BIS) published the guidance "Enhancing corporate governance for banking organisations". The purpose of the guidance was to assist banking supervisors in promoting the adoption of sound corporate governance practices by banking organisations in their countries (BIS 2006). The guidance drew from principles of corporate governance that were published earlier that year by the OECD with the purpose of assisting governments in their efforts to evaluate and improve their frameworks for corporate governance and to provide guidance for financial market regulators and participants in financial markets (BIS 2006). The guidance is intended for supervisory authorities and banking organisations. It is not intended to establish a new regulatory framework being above national legislation, but to contribute to sound corporate governance of banking organisations.

According to the guidance (BIS 2006) the general principles of sound corporate governance should be applied to state-owned banks and banks with all other types of ownership structures (e.g. family oriented, non-listed, etc.).

According to Love and Rachinsky (2007), who conducted a research among 50 Ukrainian banks in year 2004 and 107 Russian banks in 2003 and 2006, a better corporate governance results in higher ROA, ROE, net interest income and in lower nonperforming loan. They also present an evidence that banks with more concentrated ownership structure have worse corporate governance. Tandelilin et al (2007) and Selvaggi and Upton (2008) come to the conclusion that better corporate governance leads to a better bank performance. On the other hand Papanikolaou and Patsi (2010) present evidence that there is a negligible negative correlation between the corporate governance and the bank performance. Tandelilin et al (2007) also report that banks in foreign ownership have implemented better corporate governance than the banks in state ownership.

Moreover, Li and Song (2010) analyse the relationship between the level of transparency and the value of a bank and provide evidence that a higher level of transparency increases the value of a bank.

Corporate Governance in Slovenia

Slovenian corporate governance is regulated by numerous legally adopted regulations. The fundamental rule referring to corporate governance is the Companies Act. Concerning the transparency of operations, particularly important are the Takeovers Act and Financial Instruments Market Act. For proper financial operations the most important act is the Financial Operations, Insolvency Proceedings and Compulsory Dissolution Act. The field of corporate governance is also managed by the Worker Participation in Management Act, Slovenian Accounting Standards and other general acts of individual companies (e.g. proceedings, statues, rules, etc.). The latter specify in detail the particularities of certain companies.

According to the fifth paragraph of the Article 70 of the Companies Act companies whose shares are traded on a regulated securities market should include in the business report a Statement of Compliance with the Corporate Governance Code. Companies Act provisions also define what companies are required to disclose according to their size.

Alongside the before mentioned rules and regulations autonomous sources (e.g. codes) are also gaining in importance in Slovenia. A code is an independent source of law and it includes recommendations of good practice. It is not binding and if not complied with does not lead to legal sanctions. Nevertheless, incompliance with the code, which is an independent source of law, still results in some implications. A response to inconsistent behaviour is mainly the investors' reaction which is directly reflected in the securities market. In comparison to the statutory provisions, an advantage of the independent source of law is less formality with adoption and a faster and more flexible response to the market needs.

Slovenia has adopted the Management Code for Publicly Traded Companies in 2004, with the latest available version from 2009 with the title "Corporate Governance Code" (henceforth Code). According to the Code listed companies must disclose deviations from its provisions in a special statement on governance, whereas other public limited companies should follow this practice as well. According to the Code, remuneration, compensations and other benefits of the management (supervisory) board members should be disclosed in the Notes to the Financial Statements each year and shall be disclosed for each management (supervisory) board member in net and gross amounts. If a management board member is paid in company's shares, his earnings should be broken down separately, in money and in company's shares. Code also states that companies should publish a Statement of Compliance with the Corporate Governance Code where they disclose (in)compliance with the provisions of the Code. Reasons for any deviations from the Code should be given.

According to the Code, companies should disclose any changes in its ownership structure as soon as possible. Also the companies' web sites should include the ownership structure and any cross-holdings with other companies. It is recommended that the company refreshes the list of 50 substantial shareholders quarterly.

The governance of state owned companies is in the foreground in Slovenia recently. In the process of Slovenian integration to the OECD, corporate governance of publicly owned

companies has started gaining an importance. One of the conditions for Slovenia's successful integration to the OECD was the settlement of governance of publicly owned companies and the adoption of the law about the management of state owned capital investments. Consequently Slovenia adopted the Management of Equity Investments of the Republic of Slovenia Act and regulated this field in order to follow the recommendations and guidelines of the OECD and the European Union.

In 2009 Slovenia adopted the Policy on corporate governance of state-owned enterprises (henceforth Policy). The Policy follows the OECD Principles on Corporate Governance of State-Owned Enterprises, the OECD Guidelines on Corporate Governance of State-Owned Enterprises (SOE), regulations of the European Union and the principles of states' best practice in the field of corporate governance of SOEs. The Policy incorporates a clear policy on state ownership in SOEs, an accountability mechanism for the implementation of the policy and reporting to the National Assembly on the policy implementation (Policy 2009). The Policy (2009) has the objective to ensure efficient implementation of the principles of economy, efficiency, effectiveness and transparency and to determine the accountability and powers of individual state bodies.

Besides the Policy, Slovenia implemented the Management of Equity Investments of the Republic of Slovenia Act in 2010. The act manages the principles of equity investments of Slovenia, acts of management of capital investments, and the operation and jurisdiction of the Capital Assets Management Agency of the Republic of Slovenia (henceforth Agency). The role of the Agency is to manage a centralized policy of active management which should be reflected in the establishment of high standards of economic management of citizens' assets. By its establishment the Agency took over the corporate governance of capital investments of the Republic of Slovenia.

Regarding corporate governance of the Slovenian banking sector Slovenia has no specific regulation aimed only at the banking sector. Therefore national and international regulations aiming at corporate governance in general are applied. The level and form of appliance mostly depend on the bank's characteristics (e.g. ownership structure and size of the bank).

The Slovenian Banking Sector

According to the Financial Stability Review (2011) there were 25 credit institutions operating in Slovenia in 2010. Out of 25 credit institutions 19 were banks (three were savings banks and three branches of foreign banks). Since 2004 the total number of credit institutions in Slovenia has remained constant at 25, meaning that there was no consolidation process in the Slovenian banking sector.

In December 2010, according to the Financial Stability Report (2011), the Slovenian banks had total assets of EUR 50.3 billion and the banking system's total assets stood at slightly less than 140% of GDP. In 2010 the banking sector's total assets declined by 2.5% or EUR 1.3 billion. The decline in assets was mainly due to the debt repayments to the ECB, decline of government deposits and the continuing repayment of debt to banks in the rest of the world. According to the available data (Table 1) total assets of banks in EUR million and total assets as % of GDP both decreased in 2010 compared to 2009.

Table 1: Total assets of banks and GDP

	31.12.2006	31.12.2007	31.12.2008	31.12.2009	31.12.2010
Total assets of banks in EUR mio	33,868	42,343	47,628	51,612	50,319
GDP (current prices) in EUR mio	31,050	34,569	37,304	35,385	36,062
Total assets as % of GDP	109.1	122.5	127.7	145.9	139.5
No. of bank employees	11,707	11,868	12,046	11,933	11,935

Source: Financial Stability Review, Bank of Slovenia, May 2011, Table 5.1.

Slovenian banking sector is characterized by a high degree of concentration. As shown in Table 2 in 2010 large banks had 62.9% market share in total assets, foreign banks and small banks had 28.7% and 8.4%, respectively. Similar pattern appeared also in the period 2007-2009 and in March 2011 (Table 2). According to the Financial Stability Report (2011) the top five largest banks had 59.8% market share (in total assets) in 2010 (i.e. 0.3 percentage points decrease compared to 2009). In 2008 the market share was 59.4%, in 2007 59.9% and in 2006 62.7%.

Table 2: Market shares in total assets in %, by bank group

	2007	2008	2009	2010	March 2011
Large banks	61.5	61.3	62.6	62.9	63.5
Foreign banks	28.8	31.1	29.5	28.7	28.2
Small Banks	9.8	7.6	7.9	8.4	8.2
Overall	100	100	100	100	100

Source: Financial Stability Review, Bank of Slovenia, May 2011, Table 5.4.

Performance Indicators

Financial Stability Review (2011) reports that in 2010 net interest income was up by 11.3%, whereas net non-interest income was down by 11.5% (Table 3). Gross income and net income increased by 3.4% and 7.3%, respectively. Banks had pre-tax loss in amount of EUR 101.2 million in 2010, whereas in 2009 they had pre-tax profit in amount of EUR 160.5 million. In 2010 net loss amounted to EUR 98.1 million compared to net profit in amount of EUR 121.8 million in 2009. Net impairments and provisioning increased by 62% and were created at EUR 810 million in 2010.

Table 3: Banking sector income statement

in EUR mio	2009	2010	March 2011
Net interest income	932.2	1,037.8	256.2
Net non-interest income	493.1	436.6	96.6
Gross income	1,425.3	1,474.4	352.7
Operating costs	765.2	765.9	181.6

Net income	660.2	708.5	171.2
Pre-tax profit	160.5	-101.2	45.0
Net profit	121.8	-98.1	36.7

Source: Financial Stability Review, Bank of Slovenia, May 2011, Table 5.8.

As presented in Table 4 in 2010 the Slovenian banking sector recorded negative ROA (-0.2%) and negative ROE (-2.4%). Costs/gross income decreased for 1.8 percentage points to 51.9%. Interest margin on interest-bearing and interest margin on total assets rose by 0.1 percentage points to 2.13% and 2.02%, respectively. Non-interest margin declined for 0.1 percentage points to 0.85% in 2010. Gross income/average assets remained at the 2.87% in 2010.

Table 4: Selected bank performance indicators

in %	2006	2007	2008	2009	2010
ROA	1.3	1.4	0.7	0.3	-0.2
ROE	15.1	16.3	8.1	3.9	-2.4
Costs/gross income	57.8	52.8	57.1	53.7	52.0
Interest margin on interest-bearing assets	2.4	2.3	2.2	2.0	2.1
Interest margin on total assets	2.2	2.2	2.1	1.9	2.0
Non-interest margin	1.7	1.6	0.9	1.0	0.9
Gross income/average assets	3.9	3.8	3.0	2.9	2.9

Source: Financial Stability Review, Bank of Slovenia, May 2011, Table 5.10.

Bank Ownership

The Slovenian banking sector is characterized by a high degree of domestic as well as the state ownership. The state is the majority owner in the two largest Slovenian banks (Nova Ljubljanska Banka and Nova Kreditna Banka Maribor). At the end of 2010 there were ten banks under majority domestic ownership (one of them was under full domestic ownership). According to the Financial Stability Review (2011) central government and other domestic entities own 63% of the Slovenian banking sector, whereas non-residents own 37%, in terms of equity in 2010 (Table 5).

Table 5: Ownership structure of the banking sector (in terms of equity)

in %	2006	2007	2008	2009	2010
Central government	17.9	15.1	17.7	20.5	20.1
Other domestic entities	44.4	47.2	44.1	43.0	42.9
Non-residents	37.7	37.8	38.2	36.6	37.1
Non-residents (over 50% control)	27.7	26.8	27.6	26.8	27.9
Non-residents (under 50% control)	10.0	11.0	10.6	9.8	9.2

Source: Financial Stability Review, Bank of Slovenia, May 2011, Table 5.2.

In recent years several Slovenian banks changed its ownership structure and were taken over, mostly by foreign owners. In 2001 Italian group San Paolo IMI bought a majority share of

Banka Koper and SKB Banka was taken over by the French Société Générale. In 2002 the government sold a share of Nova Ljubljanska Banka to the Belgian KBC Group. In 2007 the minority interest of Nova Kreditna Banka Maribor was sold by a way of IPO.

Corporate Governance Disclosure in Slovenian Banking Sector

The purpose of this paper is to investigate the level of corporate governance disclosure practice of Slovenian banking sector. In order to evaluate the corporate governance disclosure of the Slovenian banks over the last few years, a research was conducted on all 19 Slovenian banks. The research was based on the analysis of selected characteristics of annual reports of corresponding banks in years 2005 and 2010. The time gap between 2005 and 2010 allowed for conclusions on the improvement of corporate governance disclosure of banks over the 5 year period. All examined banks had their annual reports available on banks' websites. The framework of the research was based on the research done by Berlöf and Pajuste (2005). The authors analysed what do firms in Central and Eastern Europe disclose and why. They analysed listed companies' website and annual report disclosures among several Central and Eastern European Countries, one of which was also Slovenia.

In order to measure the corporate governance disclosure in the annual reports of the Slovenian banking sector we analysed the presence of the hereinafter referred characteristics. First, we analysed whether the annual report contains a separate section on corporate governance. In case it does it scored 1 and 0 if it does not. Second, annual reports were checked for the inclusion of the corporate governance statement. Banks scored 1 if the statement was part of the annual report and 0 if it was not. Third, the disclosure requirement examined was also the presence of ownership structure in the annual report. Reports containing the ownership structure presented by the share and name of the owner scored 1, 0.5 if they included the aggregated data and 0 if ownership structure was not available. Forth, if earnings received by management board and supervisory board were disclosed on the individual level the bank scored 1, if disclosed on aggregate level it scored 0.5, and if earnings have not been disclosed at all they scored 0. Fifth, the disclosure of the related-party transactions (if disclosed on individual level) scored 1, if only part of the related-party transaction on the aggregate level was disclosed the score was 0.5, and if the data on related-party transaction was not disclosed the score was 0. Sixth, if the bank was audited by one of the Big 4 audit firms (Deloitte, Ernst&Young, KPMG, and PricewaterhouseCoopers) the bank scored 1 and 0 otherwise. Seventh, if the inside ownership was disclosed the bank scored 1 and 0 otherwise.

The scores of the analysed characteristics were added up to obtain the index of corporate governance disclosure.

Results

Table 6 shows the average score of the particular characteristic measure for years 2005 and 2010. In 2010 the disclosure of ownership structure, total earnings and auditor (Big 4) achieved the highest score (i.e. 0.9). They were followed by the disclosure of separate section on corporate governance, related-party transaction (both 0.8), corporate governance statement (0.5) and inside ownership (0.1). Over the five year period an evident improvement was perceived among the disclosure of separate section on corporate governance, corporate governance statement, total earnings, related-party transactions, ownership structure and

inside ownership. The index of corporate governance disclosure in the Slovenian banking sector shows an improvement by 46% in 2010 in comparison to 2005.

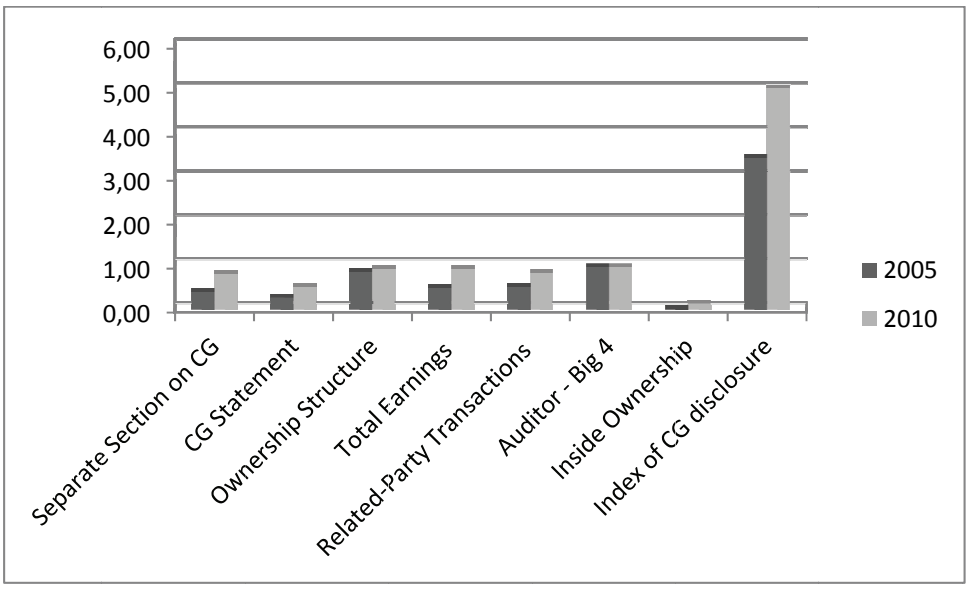
Table 6: Corporate governance disclosure in annual reports

Disclosure characteristic	2005	2010	diff. 2010/2005 (in %)
Separate Section on CG	0.4	0.8	103.0
CG Statement	0.3	0.5	90.0
Ownership Structure	0.8	0.9	9.4
Total Earnings	0.5	0.9	89.2
Related-Party Transactions	0.5	0.8	63.2
Auditor - Big 4	0.9	0.9	0.0
Inside Ownership	0.0	0.1	/
Index of CG disclosure	**3.4**	**5.0**	**46.4**

Source: Authors' calculations

Figure 1 shows a graphical presentation of the average score of the particular characteristic measure and the index of corporate governance disclosure in the Slovenian banking sector for years 2005 and 2010.

Figure 1: Corporate governance disclosure in annual reports



Source: Authors' calculations

In 2010 the presence of the separate section on corporate governance in annual reports of the Slovenian banks increased by 103% compared to 2005. The improvement of the corporate governance disclosure was particularly observed in the presence of corporate governance statement (+90 %), disclosure of the earnings received by management board and supervisory board, by name, (+89%) and the related-party transactions disclosure (+63%). Ownership structure disclosure and having one of the Big 4 as an auditor did not significantly improve in

2010 compared to 2005 (+9.4% and 0.0% , respectively), since they had already been the most disclosed characteristics analysed in 2005 (0.84 and 0.95, respectively).

Concerning the ownership structure the majority of the banks disclose the ownership share of the ten largest shareholders only. Ownership structure is disclosed by the name of the shareholder and not only at the aggregate level. The inside ownership disclosure is not present in annual reports in 2005 and in 2010 there were only a few banks disclosing the inside ownership structure.

In 2005 total earnings of the management and supervisory board were disclosed mostly on the aggregate level (cumulative or individually), whereas in 2010 banks disclosed total earnings of the management board and supervisory board per member to a very high extent.

Index of corporate governance disclosure in annual reports of the Slovenian banking sector amounted 3.4 and 5 (out of 7) in 2005 and 2010 respectively and has improved by 46%.

Conclusion

Corporate governance in Slovenia continuously follows the European and global trends. As one of the European Union member states and the OECD member Slovenia has adopted appropriate legally binding regulations and autonomous sources (e.g. Code) in order to enhance good corporate governance practice.

This paper presents some facts about corporate governance in general with a further special emphasis on particularities of corporate governance in Slovenia. Special attention is devoted to the brief introduction into the Slovenian banking sector. The main part of the paper is dedicated to the research of the corporate governance disclosure practice of the Slovenian banking sector. Research was done on 19 Slovenian banks in 2005 and 2010, which allows for conclusions on the improvement of the disclosure practice in the analysed time period. Banks' annual reports were evaluated on seven characteristics and the resulting scores were added up to obtain an index of corporate governance disclosure.

The results of the research show an improvement of the index of corporate governance disclosure practice in year 2010 by 46% (compared to the year 2005).

In the time period the improvement of the following characteristics was particularly noticeable: the containment of separate section on corporate governance in annual reports (+103%), the inclusion of the corporate governance statement in the annual reports (+90%), disclosure of the earnings received by the management and supervisory boards, by name, (+89%) and the related-party transactions disclosure (+63%).

The results are in accordance with the expectation that corporate governance improves over the years. One of the factors for the improvement could be the fact that the banking sector is under tight regulation and scrutiny. The banking sector has an enormous influence on the whole economy. It is therefore in the public interest that its corporate governance is in good shape.

In further research it would be challenging to analyse whether Slovenian corporate governance disclosure of the banking sector differs from the disclosure practices in other European Union countries and whether the disclosure practice has an influence on the banks' performance.

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Reinforce Investment or Growth: What Should be Done?

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Abstract: The fiscal and economic crisis imposes new challenges for the governments especially in emerging economies that were already involved in a "catching up" process. The difficulties come from the necessity to reduce fiscal imbalances and public debt while stimulating the economic activities. But, the main concern of governments of emerging countries is concentrated on increasing investment because it is considered a channel that will lead to economic growth in medium term. The aim of this paper is to investigate how governments can stimulate economic growth through investment or other fiscal instruments based on a study on European emerging economies.

JEL Classification: E20, E62, F43.

Keywords: fiscal policy; crisis; investment; growth.

I. Introduction

The crisis started in 2008 at the European countries was followed by a slowdown in all economic activities that lead to an important contraction of GDP. But, the emerging economies have been more affected by the crisis because of their low economic performances than more advanced economies within the EU. Therefore, governments from emerging countries applied fiscal measures in order to stimulate economic growth through investments.

The paper aims to analyse how governments can stimulate economic growth through investment or other fiscal instruments based on a study on European emerging economies (Bulgaria, Hungary, Latvia, Lithuania, Poland, and Romania).

The paper is divided into five sections as follows. Section two presents the investigation approaches as are used in the main stream of literature while describing the approaches used in this paper. The next section is dedicated to the transmission channels. Section four reveals the investigation results and policy recommendations based on the paper findings. Conclusions are presented in the last sections.

II. Investigation approaches

II.1. Investigation approaches in the main stream of literature

In the main stream of literature it can be identified almost five approaches for the investigation of fiscal policy effects on growth. The approaches consist in the following: i) theoretical approach based on economic theories; ii) narrative (descriptive) or dummy approach; iii) VAR (vector autoregression) or others statistical models such as SVAR (structural vector autoregression), PVAR (vector autoregression with panel data), BSVAR (Bayesian structural vector autoregression); iv) sign restrictions. Also, it was used Choleski decomposition to identify fiscal shocks' effects on economic activities (Fatas, A., and I. Mihov 2001).

Also, it must be considered the fact that the fiscal policy effects on growth depend on the type of fiscal policy even more if government expenditure is countercyclical while the government revenue is procyclical (Chirila, V., and C. Chirila 2011).

Therefore, it is proceed with their presentation without indicating the concrete results based on the main findings from the literature. This presentation is useful to highlight the investigation methods diversity to reveal fiscal policy contributions to economic growth through different channels. Also, it allows the possibility to indicate their features, to explain the differences in the investigation results as can be viewed in the literature, and, also, to point the methods which are used in this paper.

II.1.1. Theoretical approach

In order to understand the growth effects of fiscal policy through investments and other fiscal instruments it must be started from the basics according to economic theories. It is considered only the main theories describing the role in the economy as Bernheim (1989). In neoclassical theory, fiscal policy constrains private sector economic activities through crowding out effects (Buiter, W. H. 1977) because of fiscal expansionary effects on price and money supply. These crowding out effects are due to tax cut or government expenditure increase, especially for purchasing goods and services, which put downward pressures on private consumption and real wages. As consequence, taxes will have to increase in the near future which will generate a negative wealth effect. Therefore, economic growth is affected negatively.

On the other hand, Keynesian theory supports the active role of fiscal policy focusing on tax relief and/or government expenditure increases that improve welfare (welfare effects) in the short term followed by reduction of output (crowding-out effect) on long run. On the government expenditure side, increases of government consumption lead to higher fiscal deficit and public debt. Also, on long-run fiscal deficits involve higher interest rates that affect investments and, thus, reduce GDP. Otherwise (reducing expenditure, raising taxes) is observed a crowding-in effect as governmental measures produce relaxation of interest rates with positive consequences on investments.

It must not be omitted that there are cases when fiscal policy can be neutral because government measures have no effect on the economy. In reality, this seems not to hold because, generally, consumers do not base their consumption decisions on permanent income. In fact, the consumers' decisions involve their available income that is sensitive to any change in fiscal policy. Consumers also are forward looking regarding their consumption and savings that why any tax relief could increase saving because the tax cut is seen as a taxation postponement. Thus, in long term it will lead to increased taxation, and consumers will pay higher taxes based on the saved amount. Here's how the consumers' decisions does not change the macroeconomic variables. A presentation of neutrality theory is carried out by Barro (1989).

Given the neoclassical and Keynesian paradigms it can be said that the Keynesian approach refers to short term variations, while neoclassical is concerned by long term challenges.

A different perspective from the above is used in neo-Keynesian view that considers the expectation effects of fiscal policy on economic activities. Anticipations of tax increase induce investments and output contractions while expectations on a higher fiscal deficit cause increases of real interest rate on long run (Blanchard O. J., J. Sachs, A. D'Autume, and P. Kouri 1982). Also, fiscal contraction has different effects depending on consumers' expectations regarding the persistence of government measures. This was demonstrated by Barry and Devereux (1995) based on a model where fiscal contractions generate a positive path for the current consumption as a response for a raising disposable income. All these lead to a reduction of interest rate and an improvement of investments and output. Instead, in the case of government expenditure contraction, it is revealed a consumption increase while interest rate, investments and output are neutral. In the case of a perceived permanent fiscal

contraction, stronger effects are obtained on economic activities because of lower tax burden expectation in future.

Therefore, as it was stated in Neo-Keynesian case, the effects highlighted in economic theories may be different because it interferes with the consumers' expectation regarding the near future. This was named „expectational view of fiscal policy" by Zaghini (1999).

In addition, the effects of fiscal policy on economic growth depend not only on the relevant time horizon but also on other determinants such as: i) level and financing of fiscal deficit; ii) public debt (level and composition); iii) fiscal rules; iv) institutional factors; v) confidence in governmental measures.

II.1.2. Narrative or dummy approach

The narrative (descriptive) or dummy approach is useful to make the distinction between anticipated and unanticipated (surprise) fiscal shocks and can be used to indicate episodes of large movements of fiscal variables that lead to changes of macroeconomic variables from their normal path. While anticipated fiscal shocks depend on the announcement and implementation data (Mertens, K., and M. O. Ravn 2010), unanticipated fiscal shocks indicate the surprise movements of fiscal variables as a result of a different policy.

The idea of narrative/descriptive approach can by developed by dummy variables used to indicate the impact of "surprise" fiscal changes on economic activities. The dummy variables take value 1 for that dates when governments or policy makers take actions (for example, tax/expenditure cut in one period or increase in other period). The government measures announced in various political exposures may represent a good start to indicate a "surprise" and identify its effects (Romer, C.D., and D. H. Romer 2007, 2008).

Moreover, in the main stream of literature, these fiscal changes are perceived as fiscal shocks and dummy variables help to indicate these without "further assumption to identify fiscal shock" (Perotti R. 2007: 177). Such dummy variables were applied for expansionary government defence expenditure taken as exogenous and unpredictable. For instance, Romer and Romer (1989), Ramey and Shapiro (1998) applied this kind of analysis to investigate the effects of large military build-ups taken as unanticipated shifts in government defence expenditure. Perotti (2007) uses four dummy variables for the Korea war, the Vietnam war, the Carter-Reagan build up, and Bush build up and extended the research of Eichenbaum and Fisher (2004) and Ramey (2006). Also, there are studies that apply dummy variables to indicate other events that affect fiscal and macroeconomic variables (for example, Maastricht Treaty, Stability and Growth Pact, crisis).

The dummy variables can be used in two ways according to Kuismanen and Kämppi (2010), such as: i) indicate the period for dummy variables without statistical testing by simply choosing in a priori basis according with the economic knowledge; ii) the a priori decision is supplemented with statistical inference.

II.1.3. VAR or others statistical model.

In contrast to the dummy approach, fiscal policy shocks and its effects can be identified as a residual from a VAR. This method was initially used for monetary policy shocks and extended to fiscal policy. As Blanchard and Perotti (2002) pointed out, it seems that a VAR model involving structural shocks is more adequate for investigating the fiscal policy effects on economic activities than in the case of monetary policy because fiscal policy movements are exogenous and "at high enough frequency-say, within a quarter-there is little or no discretionary response of fiscal policy to unexpected movements in activity" (Blanchard, O. and R. Perotti 2002: 1330).

The VAR model is useful because captures the linear interdependencies between different variables based on equation for each variable that explain its dynamic considering lags of its

own and of all other variables. More precisely, this approach is used to analyse the dynamic effects of random disturbances on variables by taking every endogenous variables as a function of lagged values of all other endogenous variables included in the model specification.

Also, the basic VAR model has been in a continuous diversification through SVAR, BSVAR, and PVAR. Despite of extensive use of VAR model and other derivate techniques, in the literature are pointed some difficulties such as: i) results are sensitive to fiscal decision lags; ii) "quality of national account data deteriorates quickly as one moves backward in time, and this problem is particularly severe" for the fiscal variables (Perotti, R., R. Reis, and V. Ramey 2007: 192). Limitations of SVAR were addressed by Auerbach and Gale (2009).

II.1.4. Sign restrictions.

Sign restrictions on the impulse responses are other investigation method for identifying fiscal shocks and indicating their effects. These restrictions are applied by Mountford and Uhlig (2009) considering that the revenue (or expenditure) shocks must occur only when taxes (or expenditure) increase for a year after the shock while government expenditure (or revenue) is constant. Also, the authors consider as a business cycle shock any simultaneity between output, consumption, non-residential investment and government revenue that are on an upward slope.

In the case of monetary policy, the authors take monetary shock as an increase of interest rate and a decrease of reserves and prices for one year (four quarters) after the shock. Having defined these, it is possible to make a clear distinction between fiscal, business cycle and monetary shocks. This can be regarded as an advantage of this approach despite the fact that the conditions are appreciated as being too tight without affecting the overall investigation results.

The authors reveal other advantages of this technique that deal with the VAR difficulties in the identification of fiscal shocks, such as: i) distinct designation of fiscal variables movements caused by fiscal shocks from those automatic movements of fiscal variables; ii) clear definition of fiscal shocks; iii) lag between the announcement and implementation of fiscal policy because announcement of fiscal decisions affects macroeconomic variables well before the fiscal movements took place.

II.2. Investigation approaches used in this paper

The investigation approaches indicated above have some difficulties as it is revealed in the literature. These cause controversies by differences in the results. Therefore, in this paper are used OLS regressions to reveal how governments can enhance growth through investments in the case of six EU emerging economies represented by Bulgaria, Hungary, Latvia, Lithuania, Poland, and Romania whose economic performances and difficulties.

III. Transmission channels

Among fiscal policy goals always can be found economic growth as policy objective. Thus, economic growth is a generall objective regardless of country, period, governments, political regimes, and development level. Also, it is a major objective imposed and monitored at international level[1].

[1] EU's growth strategy (Europe 2020) indicates the need that EU countries assess smart, sustainable, and inclusive growth.
European Central Bank is oriented more on sustainable and noninflationary growth.

Given the complexity of transmission mechanisms of fiscal policy effects, these channels are indicated in literature in many ways that are able to explain the spreading impact of fiscal instruments on economic growth.

However, fiscal policy spreads its effects on economic growth indirectly by influencing: i) the average level of workforce education through public investments in human capital (government expenditure for education and training, culture) that is able to lead to social benefits throughout the economy; ii) the productivity of stock of physical capital whereas it should provide basic social and economic infrastructure required by private sector activities; iii) the quality of physical capital or labour supply so that the public policies have to minimize the gap between supply and demand for capital and labour. More specifically, it is rather the impact that is transmitted through the allocation of public resources for investment and human resources than the aggregate supply of labour and capital (Gerson, P. 1998). Therefore, various transmission channels can be used to enhance growth through investments as it is revealed in the main stream of literature.

Investments and economic growth are stimulated using governments measure that influence aggregate demand and/or supply. Influences on aggregate demand are transmitted through two channels (Alesina, A. F., and S. Ardagna 2009), such as: i) disposable income; ii) interest rate. Regarding the first channel, disposable income is sensitive to wage, employment and confidence in government measures. In the case of confidence it should be noticed that it depends on the perception of fiscal regime changes capable to lower fiscal deficit and public debt in the future without applying costly fiscal adjustments that might affect the consumers' disposable income.

On the other hand, expectations on interest rates affect the economy through confidence in government stabilization measures that have to be credible and to avoid accumulating public debt. In this case, it is assess the reduction of interest rates on state loans, which will push market interest rates to align, with positive impacts on investments and, hence, economic growth.

Influences on aggregate supply are transmitted via the: i) labour market and labour tax (Alesina, A., S. Ardagna, R. Perotti, and F. Schiantarelli 1999); ii) cost (Lane, P. R., and R. Perotti 2003); iii) productivity (Baldacci, E., A. L. Hillman, and N. C. Kojo 2004). Labour market is taken as "a key channel by which fiscal policy movements affect the nongovernment sectors of the economy" (Lane P. R., and R. Perotti 2003: 2254) while through labour market and labour tax is established a link between fiscal policy and investments. When labour tax increases (income taxes and/or social security contributions) than the net wage is reduced and, hence, the total labour supply. At this point what matters is the level of public wages and employment compared with private sector where the requirements for a real wage increase will be stronger. These will lead slowly in time to a contraction of profits and, therefore, of investments. This is true because investments depend on future expected marginal profits as it is demonstrated by Alesina, Ardagna, Perotti, and Schiantarelli (1999).

Starting from the theoretical presentation of transmission channel it is interesting to view how these are integrated into policy decisions for the EU emerging countries investigated in this paper. The central concern is economic growth that can be achieved in these six countries by different channels. Despite all the general concern of policy makers, there are some obstacles for growth that have to be considered by active measures applied by governments. Some important obstacles consist in low efficiency of public services, and low level of confidence in economy. Also, "governments have been relatively unwilling to make unpopular decisions to reduce fiscal deficits" while fiscal policy has not suporte monetary policy which leads to a

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Also, OECD is focusing on strong and sustainable economic growth, while World Bank is dedicated more to growth for sustained poverty reduction.

„multitude of often-conflicting objectives" (Brada, J. C., and A. M. Kutan 1999: 6, 7). Therefore, it is much to do in order to correct all these and to expect a stable growth on medium term.

IV. Investigation results and policy recommendations

IV.1. Results

Using quarterly data from Eurostat over 1999:1-2011:4 period it will be revealed fiscal measures that can stimulate economic growth through public and private investments. Data are expressed in real terms using GDP deflator, and seasonally adjusted using Tramo/Seats. Also, all the variables are stationary in their dynamic.

The variables used in this investigation are presented in table 1.

Table 1 **Variables used in the investigation**

Name	*Notation*
Gross domestic product	GDP
Real GDP growth rate	g
Gross capital formation	TI
Total general government expenditure	E
Intermediate consumption	IC
Compensation of employees	CE
Subsidies	S
Social benefits and transfers in kind	TST
Interest	I
Gross capital formation of general government	PBI
Other expenditure	OE
Total general government revenue	R
Current taxes on income, wealth	CTIW
Taxes on production and imports	TPI
Social contributions	SC
Property income	PI
Other revenue	OR
Government consolidated gross debt	PD

Note: data sources are: Eurostat, Quarterly national accounts and Quarterly government finance statistics.

The results are synthesised in table 2 and indicate the government measures to enhance growth through investments. These indicated measures rely only on the real rate of variables and not necessary involve increases of some government revenue or expenditure. Also, governments can apply active measures to improve the revenue collection and reduce tax evasion which will ensure a positive path for government revenue.

Table 2 **Government measures to enhance economic growth through investments**

Country	**What should governments do to enhance economic growth through**				
	public investments		**private investments**		
	measures	*overall effect*	*measures*	*overall effect*	*overall measures*
Bulgaria	↑ IC, CTIW, PI, OR ↓ CE, I, TPI	0.024	↑ IC, TST, CTIW, TPI, SC ↓ I	0.032	↑ IC, CTIW ↓ I ? TPI
Hungary	↑ TST, CTIW, PD	0.165	↑ CE, TST, CTIW, TPI, SC	0.095	↑ TST, CTIW

	↓ IC, I, TPI, PI		↓ IC, S, I		↓ IC, I ? TPI
Latvia	↑ IC, TST, OE, TPI, SC ↓ CE, PD	0.061	↑ CE, S, I, CTIW, TPI ↓ OE	0.188	↑ TPI ? CE
Lithuania	↑ IC, TST, PI ↓ S, OE, SC, PD	0.109	↑ IC, CE, CTIW, SC, PI ↓ OE, PD	0.087	↑ IC, PI ↓ OE, PD ? SC
Poland	↑ CE, S, TST, PD ↓ I, OE, CTIW, TPI	0.123	↑ CE, S, TST, PI, PD ↓ IC, CTIW, SC	0.407	↑ CE, S, TST, PD ↓ CTIW
Romania	↑ S, TPI, SC ↓ IC, OE, PD	0.039	↑ CE, TST, I, TPI, SC, PI, OR	0.057	↑ TPI, SC

Note: all these measures must be considered in terms of variables dynamic (real rate of growth). More precisely, an increase (↑) indicates the need to preserve a positive dynamic of variable, while a decrease (↓) highlights the necessity to reduce the variable dynamic. All these indicated measures do not mean that it have to cut/increase government expenditure/revenue because the findings are based on real rate of growth for investigated variables.

Checking the accuracy of the investigation results for all six emerging economies is done through robustness test where it is considered the same variables and techniques as indicated above. The results reveal that governments from these emerging countries can enhance economic growth through investments but with differences in terms of magnitude and delayed reactions. The robustness test confirms the sign of the relationship between variables as it is described in section IV.1. Also, the paper' results are confirmed by other research such as Donath and Milos (2011) that indicate the positive relationship between public investments and economic growth within EU member states.

IV.2. Policy recommendations

Synthesising the results it can be formulated some policy recommendations for investigated emerging economies.

The general concern of governments from these six countries is to enhance economic growth through investments. But, data reveal also other challenge for these countries represented by the need to switch between propensities to consume and invest in order to stimulate more investment process. The results are indicated by the fact that any revenue increase in these economies is used more for the consumption than for investments. Therefore, this behaviour has to change. In this aspect, governments have to use taxation as a major instrument capable to ensure a more growth policy oriented based on investments that enhance and sustain growth on long run.

Economic growth is slightly stimulated by private and public investments and it is observed a slightly policy change from a growth policy based on consumption to a growth policy based on investments. This change has to continue in order to generate its positive effects on long term as it is shown by data.

Financing of public investments must rely less on distortionary taxes which prove the need to reconsider the allocation of budgetary resources, including government loan to different government expenditure. Also, public debt must be used more to support public investments and not current expenditure consumption as it is observed in almost all investigated country with Poland, and Hungary as exceptions.

Also, confidence in the government decisions affects evolution of growth due to the consumers' reaction to different fiscal measures. For instance, in Bulgaria' case, consumers

perceive increasing taxation only as a necessary sacrifice to ensure welfare increase of future generations. On opposite, in Lithuania, any expectation on increasing subsidies and public debt has negative effect on investments that decline. This is not true for the expectations on government revenue increase for social security contributions and property income that induce expansionary effects on investments.

In the Romanian's case, interestingly, taxes on production and imports positively influence public investments. This is because some part of VAT is transferred from central budget to local budgets to ensure financial support for local investments (György, A., and A. György 2011). In addition, positive relationship between social security contributions and public investments is a result of using temporary loans to finance public investments. These temporary loans are contracted by the government for a period of one year on account of budgetary surpluses recorded in some public budgets such as those where social security contributions are collected.

V. Conclusions

The basic idea of this paper starts from the governments 'declaration involving the necessity to increase investments in order to obtain economic growth. Therefore, investigation indicates that this can be achieved through different fiscal instruments capable to induce positive effects on investments and to enhance economic growth in some emerging economies (Bulgaria, Hungary, Latvia, Lithuania, Poland, and Romania). Even that is considered a homogenous group of emerging countries, the results varied because it matter the economic features of each country, the fiscal policy stance, and the confidence in the government decisions.

Economic growth is enhanced through both public and private investments as it is demonstrated in the paper with different contributions and gap. Overall, for all six emerging economies, it seems that private investments dynamic induce an economic growth by almost 0.144 percentage points while public investments only by 0.087 percentage points.

It must be mentioned the Poland' case where private investments induce a more positive effect on growth (0.407). Also, public investments have a positive and important impact on Hungarian economic growth with a contribution of almost 0.165 percentage points.

In the cases of Bulgaria and Romania, results indicate that public and private investments are slow instruments for growth which reveal that economic growth is obtained mainly based on consumption. This will affect further their economies on long term.

Also, in the paper are identified some measures that governments may apply in order to achieve growth through investments while indicating some measures that may have adverse effects.

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CDS as a Market-Driven Indicator of Sovereign Indebtedness and risk

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Abstract: By exploring the characteristics of credit default swaps, the spreads are considered an important indicator for sovereign default risk. This study aims at examining how the CDS spreads change may be related with the stock index to GDP ratio and the foreign exchange rates, applying data on an emerging European country's (Hungary's) CDS spreads in the period 2005-2011. Then, we analysed the determinants of CDS spread changes, working with sovereign CDS spreads in respect to a reference country's CDS spread. The authors found that excessively indebted counties carry higher risk premia (captured by CDS spreads) as compared to a benchmark country, Germany. The results showed that in the case of excessively indebted countries (countries with high debt to GDP ratios), a one percent increase in relative indebtedness has caused multiple (approximately seven times as much) effects on the countries' CDS spreads, depending on the eligible country's relative indebtedness.

JEL Classification Numbers: E44, F34, G01, G12
Keywords: credit default swap (CDS), sovereign debt

I. Introduction

While acknowledging the growing magnitude of credit derivatives and credit default swap contracts worldwide, and being aware of the current debates that are held around the riskiness of these instruments[1], this study sets out to explore the significance of CDSs in pricing sovereign debt exposures bearing in mind that under a CDS agreement the probability of a credit default is considerable.

In the next section this paper explores the characteristics of credit default swaps, foreign exchange rate behaviour and the concept of equilibrium exchanges rates. The authors assume that the change in the CDS spreads may influence the movements in the FX rates. By estimating an empirical model, data on Hungarian sovereign CDS spreads, and nominal HUF/EUR and HUF/CHF rates for the period 2010-2011 are to be considered. One prediction from this model that has not previously been tested empirically is that there should be a robust and significant positive relation between the growth of CDS spreads and the level of the nominal FX rates. CDSs are considered an important indicator for sovereign default risk as CDS spreads only assess the default risk instead of including liquidity premium or other characteristics like government bonds. In the circumstances of the financial crisis sovereign debt exposures and debt to GDP ratios increased, with severe consequences for the market (financing) conditions.

[1] "CDS came into existence as a way of providing insurance on bonds against default. Since they are tradable instruments, they become bear-market warrants for speculating on deteriorating conditions in a company or country. What makes them toxic is that such speculation can be self-validating." (Soros, 2009)

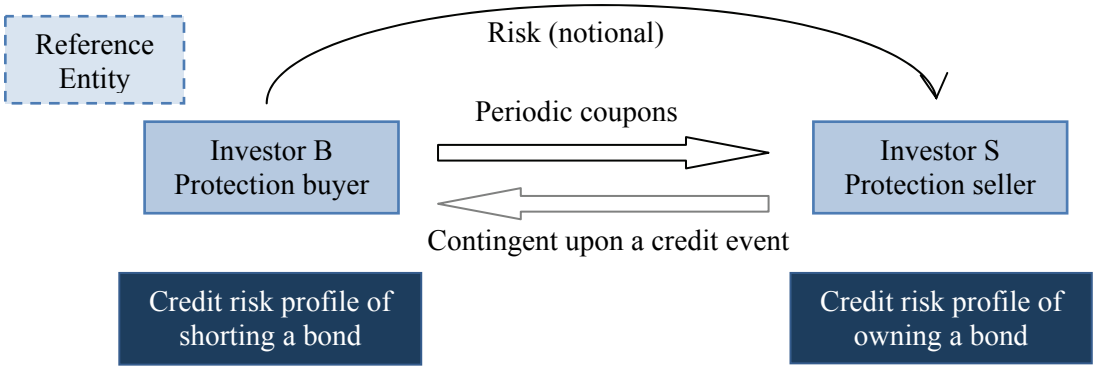
II. The significance of Credit Default Swap agreements

Credit derivatives, in general, are applicable for investors to express a positive or negative credit view on a single entity, and thus to take or reduce credit exposure, preferably on bonds or loans of a sovereign or corporate entity. Within credit derivatives, single-name credit default swaps represent a major share, accounting for approximately one third of the contracted volumes. (Barrett and Ewan, 2006, pp. 1-39)

By definition, a credit default swap (hereafter referred as: "CDS") is "an agreement in which one party buys protection against losses occurring due to a credit event of a reference entity up to the maturity date of the swap. The protection buyer pays a periodic fee for this protection up to the maturity date, unless a credit event triggers the contingent payment. If such trigger happens, the buyer of protection only needs to pay the accrued fee up to the day of the credit event (standard credit default swap), and deliver an obligation of the reference credit in exchange for the protection payout". (Beinstein and Scott, 2006, pp. 8-10)

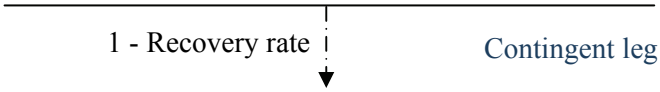
By explanation, the CDS is an agreement between two parties to exchange the credit risk of an issuer (reference entity). The buyer of the credit default swap is said to buy protection, against losses in the event of bankruptcy, the issuer failing to pay outstanding debt obligations, or in some CDS contracts, a restructuring of a bond or loan (called as credit event). The seller of the credit default swap is said to sell protection in the case of a credit event.

Exhibit 1: Single name CDS



Under a CDS contract, the buyer usually pays a periodic fee and profits if the reference entity has a credit event, or if the credit worsens while the swap is outstanding. At the same time, the seller collects the periodic fee and profits if the credit of the reference entity remains stable or improves while the swap is outstanding. According to the ISDA standards [12], CDS market price is quoted in basis points (bp) paid annually, and is a definite measure of the reference entity's credit risk (the higher the spread the greater the credit risk is). The CDS market price, also called as CDS spread or fixed rate, should be multiplied by the notional amount of the swap in order to calculate the regular payment due under the swap agreement.

Exhibit 2: Cash flows according to a single name CDS



The value of a single name CDS can be interpreted as a scenario analysis where the credit survives or defaults. The protection seller (long risk) hopes the credit survives, and discounts the expected annual payments by the probability of this scenario (called the fee leg). The protection buyer (short risk) hopes the credit defaults, and discounts the expected contingent payment (Notional Value less Recovery Rate) by the probability of this scenario (called the contingent leg).

Since one type of CDS may be contracted for different maturities, each maturity represents a spread that ensures the present value of the expected spread payments (Fee Leg) equals the present value of the payment on default (Contingent Leg). The formula for a Par CDS contract (with a Notional of 1) can be written as [1]:

$$S_n \sum_{i=1}^{n} \Delta_i P_{Si} DF_i + Accrual\ on\ Default = (1 - R) \sum_{i=1}^{n} (Ps_{i-1} - Ps_i) DF_i \quad (1)$$

Where,
S_n = Spread for protection to period n
Δ_i = Length of time period i in years
Ps_i = Probability of Survival to time i
DF_i = Risk-free Discount Factor to time i
R = Recovery Rate on default

Without further details of the calculation methods, it is a crucial point that the valuation theory of the CDS contracts certainly implies that default under the CDS is interpreted as

- the Cumulative Probability of Default (the probability of there having been any default up to a particular period),
- the Conditional Probabilities of Default or Hazard Rates (the probability of there being a default in a given period, conditional on there not having been a default up to that period), and also as
- Unconditional Default Probabilities (the probability of there being a default in a particular period as seen at the current time).

From our perspective this means that the credit event (default) under the CDS agreement is contingent upon the time period considered in the agreement, and also the expectations of the market agents. For longer periods, the probability of defaulting increases over time; however, the investors' behaviour attains more dependence on previous market trades. We applied the ISDA standard model for interpreting CDS spreads.[2]

III. Literature review

CDSs have been introduced to financial markets as structured products that convey market information about government bond yields, and that influence stock indices, share prices and foreign exchange rates to some instance. Related studies, including those of Naifar (2011, pp.

[2] http://www.cdsmodel.com/cdsmodel/; http://www.cdsmodel.com/cdsmodel/fee-computations.page?

412-430 and 2012, pp. 119-131) model the dependence structure between default risk premium, equity return volatility (stock market conditions) and macroeconomic variables. Notwithstandingly, Tang and Yan (2010, pp. 743-753) argue that at the market level, investor sentiment is the most important determinant of credit spreads.

Considering the risk awareness of the market agents, Garbowski (2008) and Zabel (2008, pp. 1-2.) investigate in the credit protection that is included in CDS contracts. This issue had been raised from regulatory aspects as well; as it has been documented from Williams (2009, pp. 1-32.) and Soros (2009).

While CDS spreads had been market indicators of the issuer's risk (default), the onset of the European sovereign debt crisis in late 2009 called into question the inter-linkages of the CDS spreads with other monetary indicators. Pu and Zhang (2012) asks if dual-currency sovereign CDS can predict foreign exchange rate dynamics at various phases of the crisis, and from dataset on the difference between US dollar and Euro denominated sovereign CDS spreads they find that the spread difference between dual-currency sovereign CDS spreads significantly affects the bilateral exchange rate returns.

Hui and Chung (2011., pp. 2945-2955) focuses the analysis on the currency option market's response to the sovereign CDS spreads (the former measured by daily OTC European-style option prices at six fixed maturities), and find strong correlation between the option-implied volatility and sovereign CDS spread increases, and thus confirm the information flow from the sovereign CDS market to the currency option market during the crisis. The empirical results are in line with those presented by Keblowski and Welfe (2012, pp.1473-1482.), by examining the sovereign credit default risk as perceived by financial investors and the currency market price movements, and the main conclusions are the evidence of a persistent relationship between the CDS spreads and the foreign exchange rates.

However, the foreign exchange rate is not the sole variable that responds to the change in CDS spreads. Calice, Chen and Williams (2011,) document that the sovereign CDS market has a substantial time varying influence on sovereign bond credit spreads. Their results (applied for euro area countries) suggest that the CDS market has a major role in liquidity formation in bond markets. Siklós (2011, pp. 83-100) considers some of the determinants of emerging market bond yield spreads, and finds that there are few common determinants of yield spreads across all the markets considered such as volatility, central bank transparency, and the onset of the global financial crisis. However, CDS spreads display pronounced regime specific behaviour (see Alexander and Kaeck, 2008, pp. 1008-1021 and also Kalbaska and Gatkowski, 2012).

Grammaticos and Vermeulen (2012, pp. 517-533) propose a model that incorporates stock market indexes to test for the transmission of financial and sovereign debt crises to EMU countries. Their results show that financial stock market indexes become significantly more dependent on changes in the difference between Greek and German CDS spreads after Lehman's collapse. Oliveira, Curto and Nunes (2012, pp. 278-304) concluded to similar results, showing that after the onset of the financial crisis, the market behaviour shifted to a different regime strongly determined by the international volatility and country-specific macroeconomic fundamentals. They also confirm that there are considerable similarities between the factors explaining the dynamics of the credit risk spreads and the factors driving the prices on the government bond markets.

Afonso, Furcen and Gomes (2012, pp. 606-638) tracks the sovereign credit ratings and financial market linkages, and from an event study analysis of the reaction of EU government

yield spreads to rating announcements, they find significant responses of yield spreads (particularly for negative announcements). Contrary to their findings, Ismailescu and Kazemi (2010, pp. 2861-2873) showed that positive events have a greater impact on CDS markets, and are more likely to spill over to other emerging countries.

The contributions of this paper are twofold. First, we analyse how the CDS spreads change may be related with the stock index and the foreign exchange rates, applying data on an emerging European country's (Hungary's) CDS spreads. Then, we analyse the determinants of CDS spread changes, working with sovereign CDS spreads in respect to a reference country's CDS spread. The authors have set the hypothesis that excessively indebted counties may carry higher risk premia (captured by CDS spreads) as compared to a benchmark country, Germany; and this premia is proportional to the income level of the indebted country and also to the imperfect information about the financial policy of this country.

IV. Interlinking CDS spreads with the BUX to GDP ratio

In this section the authors consider the interrelations of CDS spreads with the official index of blue-chip shares listed on the Budapest Stock Exchange, the BUX index[3]. We expect a strong relationship between the CDS spreads and the BUX to GDP ratio. The underlying concept in the case when constant capital accumulation and production ratios are perceived, is that in the long run there is a synchronised movement in the nominal GDP of a country on one hand and the free-float capitalisation weighted stock index on the other. If there is evidence that the level of the CDS spreads has increased, then this might be an indication of the existence of a price decrease in the stock market, perhaps caused by decreasing demand due to discouraged investors. With higher CDS spreads, lower BUX to GDP ratios are expected.

Consider for example the situation where some firms' total assets amount to "K" and the net income is "Y". In his frequently cited work Kaldor (1963) lists the stylised facts in the concept of equilibrium, and concludes that the ratio of physical capital to output is nearly constant.

Referring back to Kaldor's stylised facts regarding (the flow of) the process of economic change and development, they are stated as:

1. "the continued increase in the aggregate volume of production and in the productivity of labour at a steady trend rate;
2. a continued increase in the amount of capital per worker;
3. a steady state of profit on capital;
4. steady capital-output ratios over long periods;
5. a high correlation between the share of profits in income and the share of investment in output;
6. there are applicable differences in the rate of growth of labour productivity and of total output in different societies; these are associated with corresponding variations in the investment coefficient and in the profit share, but the above propositions concerning the constancy of relative shares and of the capital-output ratio are applicable to countries with differing rates of growth".

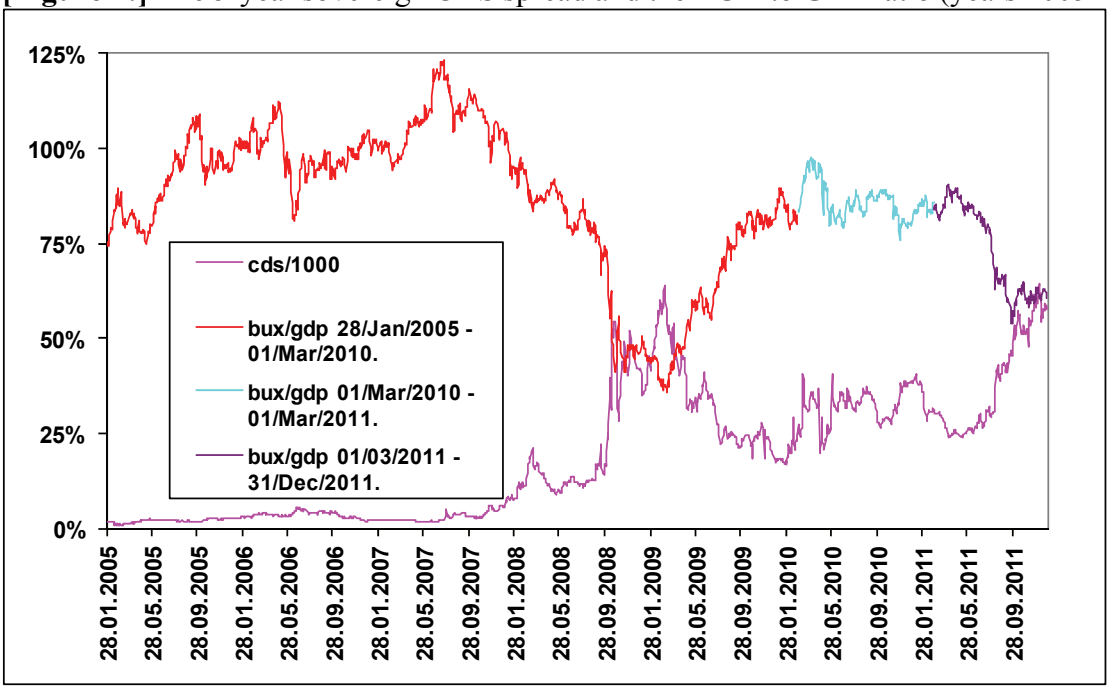
[3] The BUX index shows the average price change of the shares with the biggest market value and turnover in the equity section, and is calculated in real time by the BSE every five seconds based on the actual market prices of a basket of shares, with market capitalization weighting corrected for free float. Source: http://client.bse.hu/topmenu/marketsandproducts/indices/indicies/bux.html

The height of the K/Y curve relating to time period (according to Kaldor) is constant at 2.5, irrespective of price adjustments. In this regard, corporate shares can be seen as representatives of capital (K), and stock indices as averages of corporate share price trends. Nominal GDP is to be applied as income (Y).

By assuming a roughly unchanging level of debt to equity ratio in firms' asset financing within a few years' period, not only the constant K/Y ratio but the constant stock index to nominal GDP ratio is also rationalised within a general concept of equilibrium, unless there are misperceptions regarding the fundamentals. We argue that diminishing confidence of market agents (as indicated by increasing level of CDS spreads) could be a determinant of the stock index to GDP ratio. We also argue that there is no such direct influence on the nominal GDP.

By testing our hypothesis empirically, we conclude a significant and negative correlation among the two variables, as represented by the sovereign CDS spreads and the BUX to GDP ratio in Figure 1. Within the appropriate 7 years, the interlinking of the variables was depicted in two periods (from January 28 2005 to March 01 2010 and from March 01 2011 to December 31 2011, with R2 equalling 80%), split by a neutral 1-year period (from March 01 2010 to March 01 2011). Though uncertainties remain, there seems to be an evidence for effects of the CDS spreads in relation to the stock indices, despite the intermediate period, where other contributing factors had an effect. For an extended analysis of the issues surrounding the interactions between the sovereign CDS spreads and the BUX to GDP ratio, further investigations will be undertaken, however, the in-depth analysis will not undermine the usefulness of this discussion.

[Figure 1:] The 5-year sovereign CDS spread and the BUX to GDP ratio (years 2005-2011)



Source: Hungarian National Bank and DBR

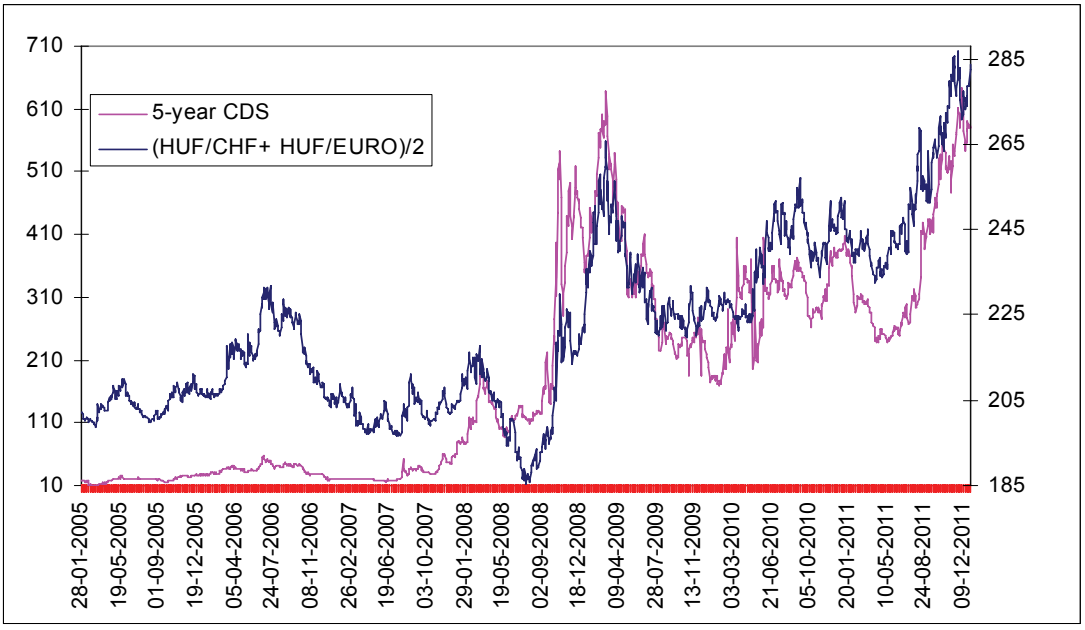
It might be adequate to investigate the stock index to GDP ratio with the example of other countries, since, according to our hypothesis, similar trends might be mapped out. Excessively indebted countries may appear as good examples; therefore these countries are to be examined in the next section.

V. Interlinking of the CDS spreads with the FX rates

The relationship between the CDS spreads and the foreign exchange rates seems to have significant evidence. However, there is an unspecified linkage between the CDS and the theoretical concepts of Interest Rate Parity and Purchasing Power Parity. We propose to examine the behaviour of CDS spreads in relation to a currency basket, thus subtracting the interdependencies between the bilateral exchange rates. The EUR and the CHF are represented on a 50-50 basis in the basket of the Hungarian Forint (HUF).

As represented in Figure 2, the correlation between the CDS spreads and the currency basket was not complete, though it has strengthened since the end of 2008. NEER (nominal effective exchange rate) refers to an index of a weighted average of bilateral exchange rates. In this respect, the HUF is valued in relation to a basket of key currencies (EUR and CHF). Further investigation about the non-Eurozone member states' currencies could be applied for distinguishing between the CDS on one hand, and the CPI and interest rate differences on the other.

[Figure 2:] The 5-years sovereign CDS spread and the HUF NEER (y 2005-2011)



Source: Hungarian National Bank and DBR

VI. Factors that explain the change in CDS spreads

Based on the monetary data of several countries, the authors enquired as to what factors determine the sovereign CDS spreads and found three explanatory variables in this regard:

- the sovereign CDS of the reference country,
- status of development (measured by debt to GDP ratio on one hand, and the level of GDP/capita on the other – the later performing as an indicator of the proportion of excess disposable incomes)
- mistakes in financial policy making.

Let's take Germany as a reference country. The CDS of a given country can be written as: CDS = worldwide recession * (status of development of the specified country / status of

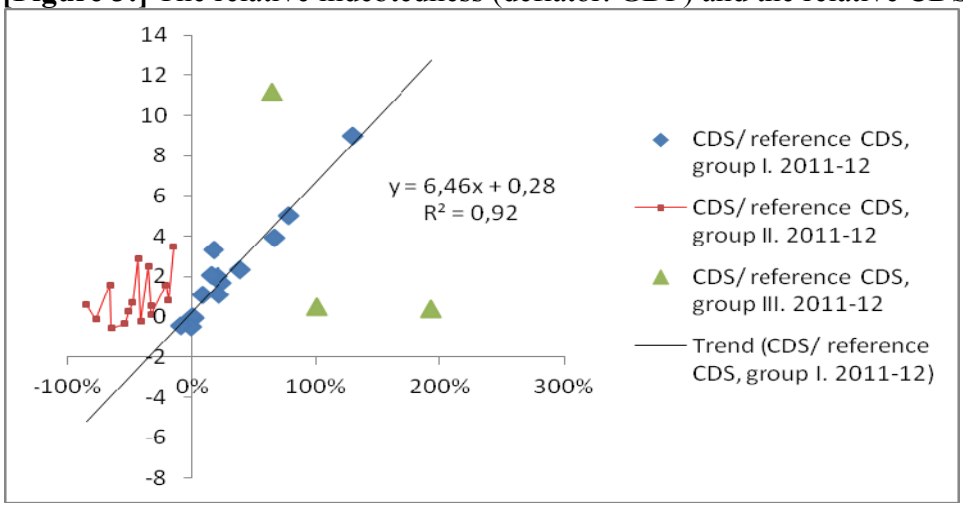
development of the reference country) + mistakes in financial policy making in the specified country. Investors are mainly interested in the indebtedness of the given country and how much space is kept for managing indebtedness. In this respect, mistakes in financial policy making in the given country are of minor importance.

Let's suppose for instance that both Germany and Hungary have 80% debt to GDP ratio, but the German GDP/capita is twice as much as the Hungarian one. Their relative status of development can be depicted as (D/D°)/(y/y°); in our model as [(D/D°)/(y/y°)-1]. Then the given countries' CDS spreads relative to the reference country's (Germany's) CDS spreads are calculated, on a daily basis. {In our example the relative CDS spreads in an average response to (0,80/0,80)/(1/2)-1=1} The results of our calculations for the period April 2011-April 2012 are in the table of Appendix I.

The columns of the table in *Appendix I.* are as follows:

1. Countries' name
2. Relative indebtedness in y 2010, calculated as
    a. sovereign debt/GDP, the specified country's relative to the Germany's
    b. GDP/capita, the specified country's relative to the Germany's
    c. with the formula: (D/D°)*(y°/y)-1
3. CDS/CDS°, group I.
    a. countries with high debt to GDP ratio have been considered (with the exception of Japan, China and Portugal)
    b. calculated on a daily basis as the average of the CDS spreads relative to the German CDS spreads (CDS/CDS°)
4. CDS/CDS°, group II.
    a. countries with low debt to GDP ratio have been considered, where greater allowance has been made for managing state indebtedness
5. CDS/CDS°, group III.
    a. Japan and China, being irrespective to sovereign CDS spreads, are exceptional, as characterised by high domestic savings and capital accumulation.
    b. Portugal, having turned to the path of Greece, seems to have no linkage to the reference country's CDS.

[Figure 3:] The relative indebtedness (deflator: GDP) and the relative CDS spreads



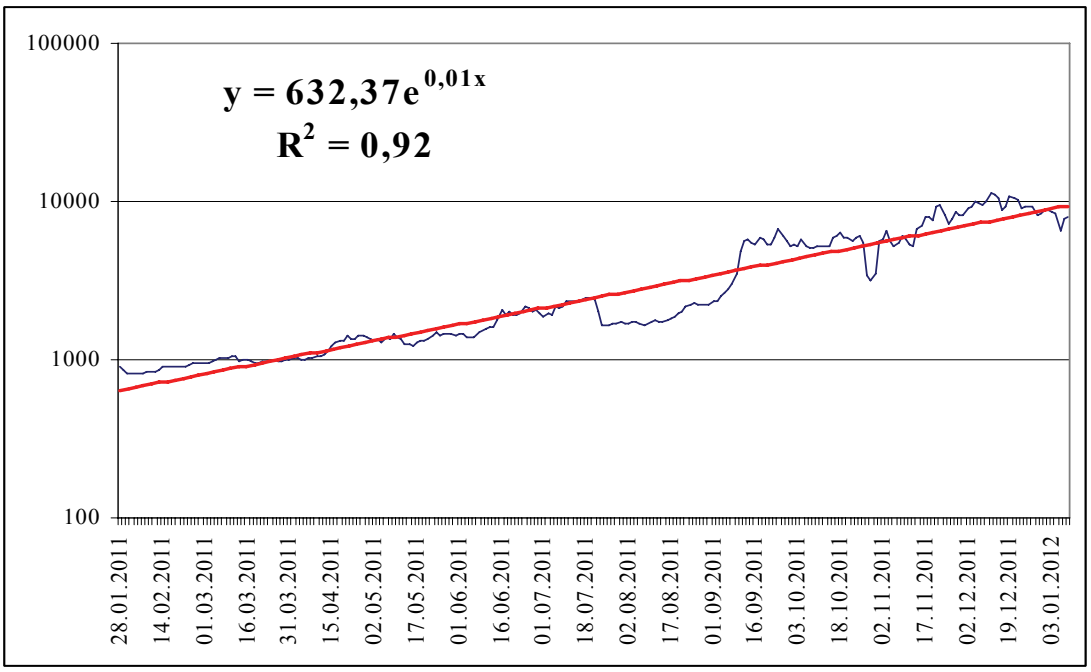
Source: DBR and analysts' estimates

In the case of excessively indebted countries (countries with high debt to GDP ratios), as marked by blue circles in Figure 3, a one percent increase in relative indebtedness has lead to 6.8 percent increase in relative CDS spreads. In other words, the reference country's CDS spreads have climbed due to the worldwide recession and it has caused multiple (approximately seven times as much) effects on the other countries' CDS spreads, depending on the other country's relative indebtedness. In the case of countries with moderate debt to GDP ratios, as marked by purple squares in Figure 3, there is no evidence for the relationship between relative sovereign indebtedness and relative CDS spreads. In the case of Japan and China, no evidence was found for the relationship either.

VII. Factors that explain the dynamics of the change in CDS spreads

CDS spreads are peculiar in terms of flexibility and the speed of alignment. The Greek sovereign CDS stood at 1000 basis points in January 2011, and crept to 10,000 basis points within a year. As the crisis accelerated, the probability of default on Greek sovereign debts increased. Default dynamics have followed an S-shaped curve (see Figure 4).

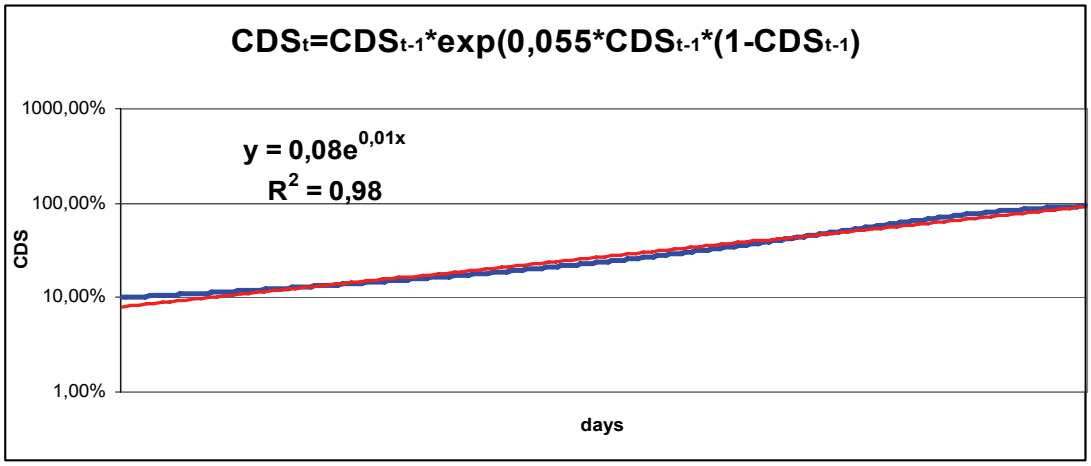
[Figure 4:] The Greek sovereign CDS spreads' curve



Source: DBR

The S-shaped curve, depicting the Greek CDS spreads, can be interpreted as a self-accelerating trend, where CDSt=CDSt-1*exp(0,055*CDSt-1*(1-CDSt-1). The investors' reaction was captured as 0.055; also confirmed by an exponential nature of the variables (see Figure 5).

[Figure 5:] The Greek sovereign CDS spreads' exponential curve



Source: DBR

VIII. Conclusions

This study set the hypothesis that excessively indebted counties may carry higher risk premia (captured by CDS spreads) as compared to a benchmark country; and this premia is proportional to the income level of the indebted country and also to the imperfect information about the financial policy of this country. This paper has also explored the relationship between the CDS spreads and the stock index to GDP ratios. The empirical results have confirmed our hypothesis, however, it might be adequate to investigate the stock index to GDP ratio with the example of other countries, since, according to our hypothesis, similar trends might be mapped out. This paper has also explored the characteristics of the 5-years CDS spreads in relation to a currency basket, and has found some evidence in this respect.

Based on the monetary data of several countries, the authors enquired as to what factors determine the sovereign CDS spreads and found three explanatory variables in this regard: (i) the sovereign CDS of the reference country, (ii) status of development (measured by debt to GDP ratio on one hand, and the level of GDP/capita on the other – the later performing as an indicator of the proportion of excess disposable incomes) and (iii) mistakes in financial policy making. We found that in the case of excessively indebted countries (countries with high debt to GDP ratios), a one percent increase in relative indebtedness has caused multiple (approximately seven times as much) effects on the other countries' CDS spreads, depending on the other country's relative indebtedness. In the case of countries with moderate debt to GDP ratios, there was no evidence for the relationship between relative sovereign indebtedness and relative CDS spreads.

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Appendix I.

	Relative indebtedness with GDP deflators	*CDS/ reference CDS, group I. 2011-12*	*CDS/ reference CDS, group II. 2011-12*	*CDS/ reference CDS, group III. 2011-12*
Japan	193%			40%
Greece	129%	900%		
China	101%			48%
Hungary	78%	500%		
Italy	67%	390%		
Portugal	65%			1120%
Latvia	39%	236%		
Poland	24%	170%		
Israel	22%	110%		
Turkey	21%	200%		
Romania	18%	330%		
Belgium	15%	210%		
France	8%	110%		
United Kingdom	1%	-3%		
Germany	0%	0%		
Lithuania	-1%	-49%		
United States	-9%	-44%		
Spain	-15%		349%	
Austria	-19%		83%	
Slovakia	-21%		160%	
Netherlands	-33%		10%	
Czech	-33%		55%	
Slovenia	-35%		250%	
Finland	-41%		-22%	
Bulgaria	-43%		287%	
Korean Republic	-48%		70%	
Denmark	-51%		29%	
Sweden	-54%		-33%	
Norway	-65%		-56%	
Russia	-66%		160%	
Australia	-77%		-11%	
Estonia	-85%		60%	

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What is the Objective of a Firm? Overview of Theoretical Perspectives

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Abstract: The paper studies theoretical views on corporate governance models from the perspective of perceived primary firm's objective. We find that there are two main theories on the primary firm's objective: shareholder theory and stakeholder theory. The first defines the primary firm's objective as value maximization for shareholders, whereas the second takes into account also other firm's stakeholders and therefore defines the firm's objective more broadly. We believe that the answer to the question of the firm's objective lies in between the two theories: firm should follow the principle of shareholder value maximization in the long run, however at the same time take into account also the stakeholders' interests, which should be subordinated to the shareholder value maximization objective.

JEL Classification Numbers: G0, G3

Keywords: firm objectives, shareholders, stakeholders, corporate governance

Introduction

What is the objective of a firm? In whose interests is it governed? Is the primary objective or purpose[1] of the firm's existence subordinated only to the shareholders or to all stakeholders, among which shareholders are just one of the interest groups without special status? All of these questions, despite voluminous literature, remain unsolved, both from theoretical and empirical perspective.

According to the shareholder theory, the primary purpose of a firm is usually defined as value maximization (for shareholders).[2] By this we refer to maximization of a firm's equity, which is in fact the present value of expected benefits (cash flows) that shareholders can expect from the firm.[3] According to this definition, a firm's value can be maximized only when expected benefits are maximized in the long-run. By this we should keep in mind that value maximization (of equity) is not equivalent to profit maximization. Expected profits can only

[1] In the literature, terms "purpose" and "objective" are often used as synonyms and there is no appropriate differentiation between them. In this paper we use these terms in accordance with the original literature. Therefore, we understand "purpose" as an answer to the question, why we have started with certain activity, why something exists (for example, why we started the firm). On the other hand, "objective" or "objectives" are defined as means to reach the purpose.
[2] By value maximization we refer to the market value of equity. Therefore, in the case of a public limited company, we define value maximization as the maximization of the market value of stock price.
[3] We can refer to this value also as the internal value of a firm.

to a certain extent explain the market value of the equity (see Stubelj 2010a). Namely, profits are an accounting category and represent the historical performance of a firm; however, they are not the best proxy of what investors can benefit from a firm. Thus, from the perspective of the shareholder value maximization, expected future (free) cash flows are a far more important measure of a firm's performance.[4]

On the other hand, if we define the primary objective of a firm from the perspective of all its stakeholders (i.e., shareholders, employees, customers, suppliers, creditors, local community, state and others), the primary objective would be defined more broadly, as the interests of stakeholders differ and cannot be expressed using a unique measure.

The question of a firm's primary objective relates to the question in whose interests is a firm governed. If a firm is governed (predominantly or exclusively) in the shareholders' interests, then its governance aims at the shareholder value maximization. In this vein, the shareholder theory explains the rationale of the value maximization for shareholders.[5] On the other hand, the stakeholder theory explains the rationale of firm's governance in the interest of all firm's stakeholders.[6]

The purpose of this paper is to study the corporate governance models from the perspective of perceived primary objective of a firm. In the first part of the study we provide an overview of the theory and relevant researches on the corporate governance models. Based on a synthesis of the existing theories and studies, we present our own view on raised questions.

The whole study continues with empirical analysis, which is – however due to the fact, that it is not yet finished - not included in this paper. Thus we provide here only the research framework. In the empirical part we will study the corporate governance model in Slovenia in order to find the most common corporate governance practice and find answers that relate to primary objective of firms in Slovenia. We will conduct our empirical research in two stages. Firstly we will conduct semi-structured interviews in five firms that differ in ownership structure (state ownership, private ownership, foreign ownership, family ownership, workers ownership). Taking into account the interview results we will form a questionnaire addressed to the management. The survey will be sent to 1400 Slovenian middle-sized and large firms. The results will then be adequately analysed and research questions will be properly addressed.

The paper is structured as follows. We continue with an overview of the theoretical framework and empirical studies, with special attention being put both on shareholder and stakeholder models. In section 3 we give our view on the corporate governance model and try to answer the question which model is more appropriate and would result in a sustainable growth and welfare in economies.

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[4] Cash flow that belongs to the shareholders in a given period can be calculated as net income plus depreciation minus gross investments in (long- and short-term) assets used to support firm's operations, plus change in firm's obligations.

[5] "Shareholder" is an English expression for an individual or institution (i.e., legal entity), who/which is a (legal) owner of the share of a firm (Fama 1980).

[6] The term "stakeholder" is an American version of the term "shareholder" (Fama 1980), however it is used also to refer to the firm stakeholders, i.e., "interested parties" (e.g., employees, other firms and institutions, creditors, local community, the state, etc.) that affect the firm and are at the same time affected by the firm's business. In terms of the stakeholder theory, a stakeholder is understood as a participant of the firm and not just as the (partial) owner of the firm.

Overview of Theoretical Framework and Empirical Studies

Several researches have addressed the diversity of corporate governance models, among others Boyd *et al*. (1996), Bradley *et al*. (1999) and Guillen (2000). An important element of these studies is the comparative analysis of how different countries view public limited companies. Do they perceive them as economic entities, aimed at increasing shareholder value, or as social institutions, aimed to promote the interests of the firm and its stakeholders (i.e., shareholders, employees, creditors, suppliers, customers, local and broader community). We can define the first view, in general, as an Anglo-American model of governance, whereas the second model is more common in other parts of Europe and in Asia (Fiss and Zajac 2004).

Corporate governance models differ significantly across European countries. For example, Germany has a system of co-determination in which employees and shareholders in large firms have an equal number of members in a firm's supervisory board. This means that the interests of both parties are equally represented (Allen *et al*. 2009).[7] Wymeersh (1999) documented the characteristics of different corporate governance practices in several other countries. He noted that Austria has a similar system of co-determination as Germany. In the Netherlands, corporate governance system is characterised with indirect workers representation – the representation is indirect in a sense that directors must enjoy the confidence of workers.[8] Denmark, Sweden and Luxembourg have one-tier board system, where also workers are members of the board. The number of workers' representatives differs between countries and between firms' sizes. In France, workers' representatives are observes in the boards. In Finland, firms can voluntarily decide on the workers' representation in the boards. In Japan, managers do not have a direct responsibility to shareholders. However, they may be liable for gross negligence in the performance of their duties, including the duty to supervise (Scott 1998). In fact, it is generally accepted in practice that Japanese managers represent all stakeholders (Allen *et al*. 2009).

Although corporate governance systems differ significantly among countries, it is obvious that in many countries both shareholders and other stakeholders are included in the decision-making processes. Moreover, in several countries workers have an important role in these processes and are therefore treated as an important stakeholder of a firm (Allen *et al*. 2009).

The shareholder approach, which states that managers are required to manage a firm in the interests of its shareholders, on the other hand, has always been the ruling concept in the Anglo-American corporate governance. However, several authors question why shareholders, as one of the firm's interest groups, should be treated as privileged. According to Easterbrook and Fischel (1996), this is because the shareholders take the majority of firm's risk. Namely, they are entitled to the residual after all other firm's obligations are paid. Their "claims" are subordinated to all other claims and are therefore entitled to the net cash flow of the firm. Consequently, a firm has to be managed in accordance with their interests. Therefore, the shareholder value maximization has to pursue two purposes: responsibility and efficiency. This ensures that managers are fully accountable to shareholders for their stewardship of the firm's assets, making managers focused on a single clear objective, which ensures the most efficient outcomes (Gamble and Kelly 2001).

With regard to the above interpretation, we may conclude that the shareholder theory is simple and raises no contradictions. However, this is not true in practice, mostly because of

[7] For more details see also Rieckers and Spindler (2004) and Schmidt (2004).
[8] This system holds for all larger firms.

different ways in which the firm is conceived, its purpose, legal foundation, and political environment. Like parliamentary sovereignty, shareholder value is a doctrine that arises in a specific institutional context and sharply contrasts with the operating doctrines in other systems of corporate governance, such as in Germany and Japan. Therefore, one cannot argue that that the shareholder value is the most appropriate objective a modern firm should follow. It is adopted for specific purposes and depends on the definition what the firm is and to whose interests it serves (Gamble and Kelly 2001). The need for a shareholder value doctrine arose from the separation of ownership and control, described as the ownership fragmentation (Berle and Means 1991). The separation of different functions of ownership among different agents is one of the defining features of a modern public firm, resulting in the creation of legal entities with legal personalities isolated from their shareholders (Ireland 1996). The legal and political revolution in the 19th century allowed the rise of corporate economy. However, it was not inevitable that the principle of shareholder value was interpreted in accordance with the managerial autonomy rather than with shareholder democracy (Hannah 2006). For instance, in the United Kingdom the corporate ownership became fragmented and the shareholding became dispersed, which gave to the new class of managers a high degree of managerial autonomy (Gamble and Kelly 2001).

According to Rose and Mejer (2003), several regulators and consultants have in recent years emphasized that it is necessary to provide an increase of the shareholder value, while some others have, at the same time, emphasized the importance of other stakeholders' interests. For example, OECD, which advocates the protection of the shareholders' rights, encouraged the active co-operation between corporations and other stakeholders in order to create wealth, jobs and sustainability of financially stable firms (OECD 1999). Rose and Mejer (2003) believe that the stakeholder orientation implies that a firm should be managed in the interest of all its stakeholders, not just in the interests of shareholders. With this regard they pointed on the issue of firms' social responsibility. However, there is no universal view on the definition of the stakeholder theory, although the term is widely recognized as the obligation of the management to take into account the interests of anyone who has a significant "stake" in a firm. .

According to Rose and Mejer (2003), advocates of the shareholder theory argue that the stakeholder orientation undermines shareholder's rights on the private property and that the definition of stakeholders is so broad that the responsibility is diluted.[9] On the contrary, proponents of the stakeholder approach argue that not only shareholders should be entitled to a firm's residual.[10] According to the authors, this is important (at least) in a situation when workers engage in firm-specific investments in human capital, for example, in technology-intensive production. In such firms, most of the added value comes from innovations, specialised products and specialised services. Such activities often demand investments in human capital, which make workers involved in the risk of a firm. In countries with strong trade unions, as for example in Denmark, workers are protected from dismissal at short notice and are in case of dismissal entitled to appropriate compensation.

In their in-depth study of the Danish system, Rose and Mejer (2003) showed that the Danish system of corporate governance has traditionally been oriented towards protecting interests of all stakeholders, not only shareholders. Nevertheless, in the last years the pressure of financial markets integration caused that the Danish system of corporate governance became more (market- or) shareholder-oriented. The increased proportion of contracts of Danish managers

[9] See, for example, Easterbrook and Fischel (1989), Romano (1996) and Jensen (1986).
[10] See Freeman (1984a), Blair (1995), Turnbull (1997), Blair and Roe (1999), Tirole (2006) and Vinten (2001).

in recent years, according to which managerial compensation is based on the firm's financial performance, confirms the trend towards the shareholder-oriented corporate governance.

Goodpaster (1991) pointed on the obvious paradox of the stakeholder approach: management has a contractual obligation to run the firm in the interest of shareholders and, at the same time, also a moral obligation to take into account the interests of all stakeholders (on this issue see also Boatright (1994), Goodpaster and Holloran (1994), and Maren and Wicks (1999)). There were also some other attempts to extend the stakeholder theory into, what Jones (1995b) defined as a central paradigm, which links agent theory, transaction costs theory and contract theory. Jones and Wicks (1999) explicitly tried to combine the divergent studies in the paper titled "Convergence stakeholder theory" (Freeman 2004).

La Porta *et al*. (1997) stressed the issue of legal protection of shareholders. They argued that protection of shareholders plays a key role in functioning of the financial markets, as it tries to ensure that management does not act in a way that harms shareholder's interests. This is important because shareholders provide capital in exchange for firm's control.

Yoshimori (1995) examined the views of managers in Japan, Germany, France, in the United States and in the United Kingdom. He found that managers in Japan, Germany and France believe that the firm exists for the interests of all its stakeholders. On the other hand, most of the American and English managers argue that a firm should give first priority to shareholders' interests.

Support to the Shareholder Theory

Williamson (1985) showed that shareholders should be entitled to special treatment, because the value of their investment in a firm (i.e., value of equity) is related to the firm's performance. This implies that they can lose everything in case a firm goes bankrupt. This, however, does not hold for other firm's stakeholders.

Rubach and Sebora (1998), Coffee (1998), Bradley *et al*. (1999), Useem (1999), Hansmann and Kraakman (2000) and Hopner (2001) focused their research on the estimation of the Anglo-American corporate governance model. According to their findings, Anglo-American shareholder-oriented governance model will soon prevail over other models, especially because of globalization and increased competition on the international capital markets. Namely, firms with shareholder-oriented corporate governance have access to cheaper capital sources, providing them with a competitive advantage over firms with other corporate governance models (Fiss and Zajac 2004).

In similar vein, Hansman and Kraakman (2000) showed that firms with shareholder-oriented governance enjoy competitive advantages on the market, as their corporate governance is more flexible and allows fast adaption to market changes. As these firms are not burdened with the interests of other stakeholders, they can adapt their management structures, enter the market more aggressively, and exit from inefficient investments more rapidly. Product-market competition gives a firm also an opportunity of social learning, because competition makes possible for firms to come in contact with other shareholder-oriented governance firms and to learn from them (Fiss and Zajac 2004).

Jensen (2001) studied the role of the corporate objective function in the corporate productivity and efficiency, social welfare and the accountability of management. Author claimed that since a firm cannot maximize more than one dimension, it needs a single objective function. However, a single objective function does not imply that only one aspect is important for a firm. On the contrary, single objective function is a complicated function of many different "goods and bads". Two hundred years of work in the economy and finance showed that in the absence of externalities (i.e., situations in which decision maker is not entitled to all benefits and does not bear costs of his/her decisions) and monopoly (and when prices for goods are formed on the market) value maximization within a firm can lead to social welfare maximization. Social welfare is created when a firm produces outputs that are valued by its customers at more than is the value of inputs for their production. Firm value therefore equals the present value of the difference between the expected prices of inputs and outputs. As long as the firm is capable of selling its outputs at higher market price than is the cost of its inputs, it should increase the supply of inputs for production of outputs. Given that the prices of inputs and outputs are set in a manner that all gain the highest benefits (in case of absence of externalities and monopoly), profit maximization (i.e., difference between costs of inputs and prices of outputs) would lead to social welfare maximization.

Stakeholder theory, on the contrary, does not offer managers a clear managerial objective, as it does not explain how managers could choose between competing interests of stakeholders. If a manager has to simultaneously maximize profits, market share, growth in profits and everything else, this will hinder his decisions and cause confusion. It is impossible to maximize more than one dimension at the same time if dimensions are not monotone transformations of one another. Furthermore, this theory can be ideal for managers who will try to follow their own (short-term) interests. As a consequence, stakeholder theory increases agency costs and economic inefficiency. So, firms that adopt stakeholder theory are limited in their competition for survival.

According to Jensen (2001), value maximization objective is more than just creation of a firm value. Sole value maximization does not boost energy and enthusiasm of workers and managers to create value; it serves only as a criterion for evaluating the firm's performance. Hence, the value maximization as a business objective has to be supported with the vision of a firm, strategy and tactics, which pull all firm's driving forces (i.e., managers and workers) in their eagerness for domination at the competitive market.

The stakeholder theory, as defined by Freeman (1984b, 2010) and the Clarkson centre (1999), does not provide an answer on how to make a trade-off between different interests of all stakeholders. This theory is harmful both for a firm and for social welfare. Based on a case of a small non-profit firm, Wruck *et al*. (1991) showed the consequences of following more objectives at the same time. According to the authors, maximization of several objectives at the same time almost destroyed the firm. Likewise, Cools and van Praag (2000) found that pursuing several objectives at the same time hinders firm's competition. Based on the analysis of 80 Danish firms between 1993 and 1997, authors demonstrated how important it is that a firm sets one objective in value creation process.

Senge (2000) presented an interesting definition of a firm as a living organism and not as money making machine. As it follows from the history, nature itself makes a selection among organisms that have to pass a natural test of creating value. He believed that firms and economic systems are like living organisms, yet their test of survival operates with a long time lag. Following this reasoning, Senge (2000) claimed that firms could follow also other

objectives than only an increase of shareholder value. Jensen (2001) opposed Senge and stated that setting the value-creation score front in every organization could stimulate and not hinder progress. Based on firms' examples, he showed that many firms have gone bankrupt because they did not devote enough attention to the value creation/destruction score.

Sundaram and Inkpen (2004) promoted shareholder value maximization as a decision-making rule that brings benefits to all stakeholders. Their recommendation is as follows: "maximize the long-run value for shareholders and you will maximize the value for firms on the long run." Discussions on stakeholders and their link to managerial decisions, on the role of firms in the society, and on the efficiency of ownership have played a crucial role in the evolution of legislation, social and political norms on corporate governance and significantly influenced managerial practice.

Sundaram and Inkpen (2004) presented an example of Merck, which was identified by Freeman *et al*. (2004) as a practical example of a successful stakeholders' approach governed company. They specified the following rule of Merck: "Our ability to meet our responsibilities depends on maintaining a financial position that invites investment in leading-edge research and that makes possible effective delivery of research results" (Merck 2004). In other words, firms such as Merck need to achieve the required return for shareholders to fund investments that will in turn be beneficial for all its stakeholders (Sundaram and Inkpen 2004).

Modern theory of finance offers a solid basis for controlling the firm's management. According to Tirole (2006), there is a concern that not the best managers will be chosen to run a firm, and, when they will be chosen, they will not be responsible. The financial view on the corporate governance is based on the following premises: 1) in order to obtain adequate financial resources, a firm has to provide investors (i.e., owners and creditors) an appropriate/required return on investment; 2) managers have their own interests, thus they might not run the firm in the investors' interests; they might rather exploit their experiences and superior information, and redirect these resources for their own benefits; 3) consequently, in corporate governance several issues depend on limitations set by managers (for themselves) or by investors in order to hinder the ex-post wrong allocation of resources, which will demand greater ex-ante need for assets (Shleifer in Vishny 1996).

Support to the Stakeholder Theory

Freeman and Evan (1990) argued that interests of other stakeholders can be highly associated with a firm's performance as well, implying that they too can face losses. On the contrary, shareholders are more secured as they can (usually) sell their stocks on a liquid market. Thus, managers should not be more devoted or responsible to owners, especially not on the expense of other stakeholders (Freeman 2004).

Wallace (2003) studied the issue of the long-term value for shareholders in the context of broader objectives of stakeholders. Using various measures of business performance (he focused on broader definition of business performance, not only shareholders' focus), he analyzed whether a broader focus on a firm's objective is inconsistent with pursuit of long-term value for shareholders. He found that long-term value creation is a necessary condition for maintaining corporate investment in stakeholder relationships. Namely, firms with higher levels of shareholder value creation have stronger reputation for treating shareholders well.

On the other hand, firms that create little value for shareholders end up short-changing their shareholders and also all their constituencies. Wallace therefore claims that investing in stakeholders can add value – additional dollar spent for relationship with stakeholders pays off as long as the present value of the expected (long-run) return is at least one dollar.

Allen *et al*. (2009) developed a model of stakeholder capitalism. According to the authors, most of the literature deals with a question whether firms are governed in accordance with the interests of shareholders. Nevertheless, in several countries firms do not focus only on the interests of shareholders, but also on other stakeholders. Using a simple model, authors showed that a firm and (almost) all stakeholders are better-off if a firm concentrates on the interests of all stakeholders. Namely, their findings showed that in cases when firms take into account also interests of other stakeholders (also if this is not required by the law), this increases the firm's value in comparison to firms focusing on shareholders alone. Some firms even consider interests of other stakeholders also if this is not directly associated with the value of a firm. However, this can result in increased prices of firm's goods and services, making consumers worse off. One of the limitations of their study is that they treat shareholders, stakeholders and consumers as different groups, although they in practice overlap (Allen *et al*., 2009).

An important issue in the context of globalization is also the entry of new firms in the market. By this we are referring to the situation in which firms that are stakeholder-oriented enter on the market with shareholder-oriented firms and vice versa. Allen *et al*. (2009) showed that regardless the prevailing type of firm governance in the market, existing firms in the market prefer an entry of a stakeholder-oriented firm. From our viewpoint, this is also in line with the shareholder theory view. The latter believes that in a stakeholder-oriented market the prices will be higher and competition will be lower.

Hilman and Keim (2001) analysed a sample of 500 American S&P firms and found that investing in stakeholder management may be complementary to shareholder value creation and may provide a basis for competitive advantage, as it enables a firm to develop capabilities and resources that differentiate a firm from its competitors. As regards firm's participation in social issues, it may be understood as a transactional investment that can be easily copied by competitors. Their findings tend to help the managers to clarify the dilemma they face when called up to serve an expanded role in the society. Authors suggest that if the activity is directly tied to primary stakeholders, investments might not only bring benefits to stakeholders but also result in an increased shareholders' value. Participating in social issues that go beyond the direct stakeholders interests, however, may have a negative impact on the firm's ability to create shareholders' value. In the decision-making process firms can rely on the reasoning of Moran and Ghoshal (1997), who claimed that things that are beneficial for society are not necessary bad for the firm, and what is good for the firm is not necessary a cost to society.

Based on the historical analysis of the development of shareholder value principle, Lazonick and O'Sullivan (2000) showed why the model of shareholder value maximization dominated in the corporate governance. They studied reasons for transformations from the strategy of retained profits and reinvestment, which prevailed during the 1970s in the United States, to the strategy of downsizing of corporate labour forces and distribution of earnings to shareholders during the 1980s and 1990s. In their opinion, these transformations were a consequence of the focus on maximizing the value of a stock. The latter resulted in immediate benefits for shareholders and managers, who were rewarded with stock options. Nevertheless,

this was done on the costs of workers – during this period the number of workers and also the incomes[11] significantly decreased, especially in the manufacturing sector. By reducing the proportion of retained profits and buy-outs of stocks, the short-term return on equity increased, while investments in research and development decreased, leading to lower perspectives for firms' growth. This was supported also with the financial deregulation, as the stock prices were shaped by financial speculations and not by the internal value of the company. In such cases managers have harmonised their interests with the interests of external financial institutions, and have not focused on the development and long-term perspective of the firms. As a result, American firms lost the competitiveness on international markets that they had for decades after the Second World War.

The US financial economists, who advocate shareholder value maximization as an optimal model of corporate governance, believe that when following the principle of shareholder value maximization also other firm's stakeholders benefit and, consequently, the entire economy. This strategy enabled reallocation of labour force to most perspective industry sectors with new technologies. They point to example of successful firms in the Silicon Valley. However, Lazonick and O'Sullivan (2000) disagree with these arguments and state that the success of firms in the Silicon Valley was a result of a long process of reinvestments of retained profits. Shareholders and upper management definitely benefited from the strategy of cutting jobs and great sell-out of profits, which occurred in the second half of previous century. But experiences in the United States showed that adoption of a shareholder value maximization strategy resulted in a contraction of firms and consequently the entire economy. Authors concluded that the economy needs a new corporate management strategy, which will boost the creation of new businesses and increase the economic activity.

Koslowski (2000) showed that the shareholder value can be used as a principle of management control, but not as the firm's objective. According to the author, the idea that the shareholder value maximization is the only firm's objective is a mistaken transfer from the financial to industrial firm. Namely, concentration on the shareholder value works as means to increase the allocation efficiency of investments, which is a desired effect. The shareholder value is also an instrument to prevent the shirking of managers and the shirking of whole firms.

Among all stakeholders of a firm, an increase of firm's value is an objective only for shareholders. For other groups, this objective is just a precondition that enables the success of the firm as a whole. Following this, Koslowski (2000) suggested that the main purpose why a company has been established should be the production of goods and services, and not the production of profits or shareholder wealth. However, this may only be accomplished if adequate return on investments is realized. From this perspective, the creation of shareholder value is only a precondition for achieving the main purpose of a firm; however it is not the most important. Accomplishment of this condition enables a firm's existence. The means of securing the purpose of the firm are, however, not the primary purpose of a firm.

The motivation of the entrepreneur and manager can be described with a concept of the »over-determination of action«, introduced by Sigmund Freud. The concept of over-determination of action and of overlapping determinants of economic action states that our economic behaviour is overdeterminated by several motives. In accordance with this concept, good shareholder value should be the side-effect of a good product and a good firm, rather than a

[11] In fact, the difference between managers' compensation and average wages increased.

good product and a good firm being the side-effect of shareholder value maximization (Koslowski 2000).

Using the case of Eurotunnel project, Vilanova (2007) explored the relationship between managers and shareholders, which is in the core of debate on corporate governance. This debate usually refers and defines two ideal models of corporate governance. On one side, we have a firm which is managed according to value maximization concept. Such firms are characterized with the concentration of power in the hands of shareholders and little autonomy of managers in decision-making or conflict resolution. On the other side, we have a firm, managed according to stakeholders approach, where managers have more discretion and act as mediators between different stakeholders and interests. Author found that: i) the traditional mechanism for resolving conflicts can be counter-productive and may result in increased conflicts; and ii) managers do not follow only the interests of shareholders or other stakeholders, but prefer the most powerful interest groups, so called "short-term salient stakeholders". Vilanova (2007) proposed a new descriptive and instrumental stakeholder theory, which adapts the concept of asymmetrical information and takes into account differences in bargaining positions of different stakeholders. Under these two assumptions the theory states that: i) firms are governed in the interests of one unique interest group; ii) management is prone to make the agreement with the most powerful group; iii) this autocratic type of governance is unstable in the long-term, as the legitimate stakeholders, who are not taken into account in one period, use influence strategy to gain power in the next period. According to this instrumental view, Vilanova's theory finds that chronic conflicts related to the short-term theory of main stakeholder management can lead to poor performance (Vilanova 2007).

Conclusion

Today firms operate in an environment where capital is a scarce resource. A firm is usually established with goals and entrepreneurial motives that are defined with psychological factors such as independence, need of achievement, sensation of control and risk. Nevertheless, a firm cannot survive in a long-run if it does not follow the financial objective of shareholder value maximization, which enables a firm to gather the necessary capital resources on the market.

When defining the shareholders' interests, we could start from the short-term aspect of the shareholders benefits. In this case, shareholders' interest would be focused on reaching the highest profit. However, it is clear that this is only the short-term perspective and may not work on long-run, because a firm may in a future fail to generate enough profits or even end-up in losses. Because equity is a long-term financial resource of a firm, we should, according to the definition, proceed out of the premise that the shareholders' interests can only be defined in the long-run. However, this can only be attained, if the firm can provide the highest possible profits (actually, cash flows) in the long-run and therefore maximize its present value. In a competitive market, a firm must build its competitive advantage using all the available resources and the best services (see Radosavljević *et al.* 2012). In order to achieve this, a firm must consider the interests of all the stakeholders involved with the firm.

We assume that a firm in a competitive environment by its operation satisfies the interests of all direct stakeholders (i.e., shareholders, creditors, workers, state, etc.), taking into consideration also the added value of different stakeholders to the performance of a firm (for

example, productivity, etc.). For instance, creditor's interest is that a firm will pay back its debt and make relevant compensation for the resources they invested (i.e., interests). The main interest of workers is an appropriate payment for their performed work. Moreover, state is interested that firm pays all its legal obligation (taxes, contributions, etc.) and eventual costs of negative externalities (for example, pollution of water, air, exceeded use of roads, etc.). And finally, shareholders or owners demand an appropriate compensation for the funds invested, i.e., required rate of return subjected to the risk they take.

If a firm does not follow the principle of value maximization in a long-run, it may be found in a situation, when it could not gather adequate financial resources for its investments. Yet, investments present a precondition for growth and development of a firm and as such enable satisfaction of interests of both stakeholders and shareholders.

Of course, we cannot go beyond the fact that regulators and supervisory bodies should assure that the firm's objectives of shareholder value maximization are not detrimental for the interests of other stakeholders, which are also influenced by the firm's decisions (for example, workers, environment and society).

We believe that the firm's management should follow also objectives of other stakeholders, however, these objectives should be subordinated to the long-term shareholder value maximization. Such objectives are, for instance, satisfaction of employees, customers, suppliers, local population, responsibility towards environment, respect of ethical norms, etc. We believe that the failure of achieving these objectives could have a negative impact on the shareholder value as a primary objective.

However, this holds only under the condition that the financial markets are more or less perfect, which assures that the value of a firm (i.e., the shareholder value) reflects the internal or basic value of a firm. The latter is defined as the present value of all future expected cash flows, implying that the value of a firm is subject to firm's long-term performance. However, in practice, financial markets are imperfect, some more and some less. In such a case, pursue of shareholder value maximization approach can imply only short-term increase in value and fails to comply with the long-term benefits for either shareholders or stakeholders. Therefore, firm's financial environment should be taken into consideration when deciding on potential deviation from the value maximization approach.

However, it should be noted that shareholder value maximization approach is quite fuzzy when refereeing to firms that are not public limited companies (either their shares are not in the stock market or they are, for example, a private limited company). In such a case, it is hard or even impossible to assess if the management really follows the value maximization principle (or at least increases the shareholder value). This could be estimated (for example, for the purpose of management control) if periodical independent evaluation of the firm is performed, but this is a costly and time consuming operation. As a result the operational objective of a firm (or the criterion for measuring management performance) often shrinks in practice to (accounting) parameters of business performance: profit, return on equity or similar.

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Banking Sector in Serbia: Impacts of late transition and Global Crisis

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Abstract

The modest recovery of Serbian economy has started from late 2009, but from the mid 2011 it is facing repeat recession. Last two years Serbian banks are in stagnation of crediting activity, assets and capital increase, with decreasing employment, increasing risky placement and changing credit structure oriented more toward state and public sector. The limits for further banking development one can see in domestic factors, like in no sustainable development of the real economy and also in foreign factors, like weak foreign demand, low foreign direct investments and relatively high share of Italian, Greece and Austrian banks.

JEL Classification**:** E44, E52, E58, E60

Key words: banking, transition, crisis, recovery

I. Introduction

Transition of the banking sector in Serbia has started in 2000, late in comparison to other countries in Eastern and Central Europe. The situation at the beginning was catastrophic, considering domestic and foreign debt and level of credit activity. The transition was difficult task as consolidation of large existed banks was impossible and entrance of foreign banks was inevitable. After ten years of transition one has to note that the first phase of the process was over. Until 2007 development of the banking sector was very fast, regarding increase in capital, assets, deposits collected, crediting and employment.

The Global Crisis has started to influence the national economy at the late 2008, and first negative impact was reported even before on Belgrade stock exchange, when foreign investors simply left the market. The banking sector was in better shape than in other transitory economies, considering high capital adequacy ratio, satisfied liquidity, safe deposits and low risk. The Central Bank has introduced urgent measures in order to increase liquidity and concluded so – called Wiener agreement with foreign banks, which prevailed in the banking sector. The measures introduced by the Central bank and by the Government were in right direction, but weak and the solution to overcome the crisis safely was seen in stand - by arrangement with IMF, only.

The modest recovery of Serbian economy has started from late 2009, but from the mid 2011 it is facing so – called W effect, or repeat recession. Last two years Serbian banks were in stagnation. Banks are changing their placements toward less risky – to state of different level and to public companies, as well. As an outcome private companies are facing severe liquidity problems, on the one side, while banks are improving liquidity, on the other side.

The limits for further banking development one can see in domestic factors, like in no sustainable development of the real economy, as it was not restructured and especially in still expansive fiscal policy. Foreign factors also can limit development, like weak foreign demand, low foreign direct investments and relatively high share of Italian, Greece and Austrian banks in the overall banking sector. Serbian banking sector finished the first phase of transition, so one can see modest room for further improvement in ending of the privatization process of still (partially) state owned banks, in further concentration of existed 33 banks, and in development of the financial market.

The aim of the paper would be twofold: firstly, to analyze implications of the crisis to Serbian banks, and secondly, to illuminate current stage and future prospects.

II. Fast development of the banking sector prior to the crisis

Serbian banking sector has started transition in 2000, as the last among countries of Central and Eastern Europe. The starting point for banks, after a decade of deep political and economic crisis, was very weak, even worse in comparison to the real economy. Total volume of credit lines was 14% only in comparison to volume a decade earlier, while the fall of the real economy was somewhat 45-50% considering GDP (Zivkovic, B.2001) This bad position of the banking sector was caused by several important factors, as follows: Firstly, total debts toward foreign creditors, mainly London and Paris club of creditors, EBRD and IFC, were estimated to USD 3.4 billion; Secondly, debts towards citizens related to the non-operating foreign currency deposits were estimated on USD 3.3 billion; Thirdly, the total loses of the banking sector related to hyper-inflation during 1992/94[1] were calculated on USD 8-10 billion, and fourthly, a very weak position of the Central Bank regarding political authorities.

The analysis of the banking sector (KPMG, Ernest & Young, 2001) was prepared and pointed out the main shortcomings of banking praxis, like: a) potential loses of large so-called big four banks were higher than ½ of their total assets; b) capital census[2] fulfilled 20 of 83 operating banks, only; c) there was a wide discrimination of different clients in banking practice, especially for credit approval; d) audit and control function were very weak and audit not in line with IFRS; e) legal misusing was not so rare and f) there were weaknesses in bank governance and human sources management.

The bad situation asked for urgent and serious measures. The measures introduced during several years were as follows:

a) Introduction of sound prudential control – National Bank of Serbia (NBS) became more independent toward the Government and introduced tight financial discipline;

b) Selection of banks– in six months period NBS asked banks to fulfill capital census or to lose license (23 banks lost license);

c) Forced merging – those banks without strength to fulfill capital census were forced to merge with other small banks in order to survive (18 used this chance);

[1]It was 25months long hyper-inflation episode and the second highest according to the price increase in economic history.

[2]Capital census acquired for the license was USD 5 million of cash or equivalent, as part of total capital of a bank.

d) Rehabilitation of the biggest banks – this step required amount of financial sources similar to GDP (92% of GDP or USD 21 billion)(Zivkovic, B.2001), and instead NBS decided to withdraw the licenses for all of those four biggest at early 2002;

e) Opening the room for foreign banks – 5 banks got license to start green field investment in 2001 – Raiffeisenbank, Hypo bank, National bank of Greece, Alpha bank and Micro Credit Bank (Pro Credit Bank);

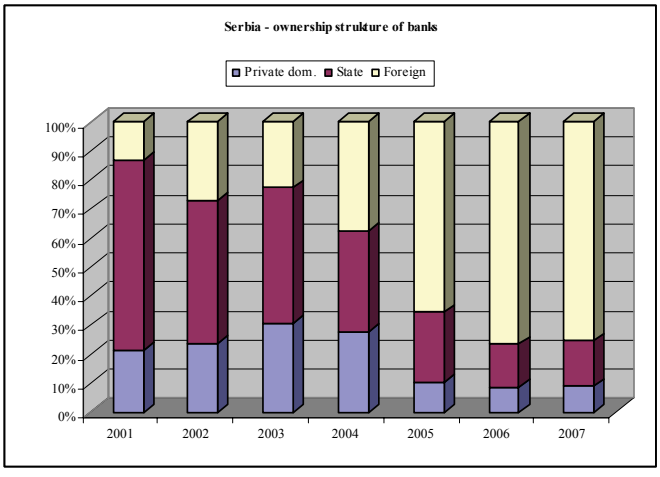
f) Solving problem of frozen foreign currency deposits – issuing state bonds for repayment in 15 yearly installments;

g) Transfer of payment operation – from Para-state institution into banking sector in 2003;

h) Introduction of international auditing standards – from 2004 on all economic subjects are obliged to prepare financial reports in line with IFRS.

Privatization process was very important for increase in banking efficiency and for integration into European banking system, as well. Prior to the transition Serbian banks were of mixed ownership structure. One the one hand, majority of banks were, as joint stock companies, owned by state and socially owned companies, practically state owned, but the main problem was related to the fact that those companies were at the same time main debtors. On the other hand, there were a several dozen of small privately owned banks, established during the 1990s. At the beginning of the transition NBS issued five licenses for foreign banks to start operations (2001) and withdraw license for the biggest four state - owned banks (2002). At the beginning of the same year the law was enacted by which debts toward foreign creditors was regulated, and by which some banks were (partially) nationalized[3]. The Government became shareholders of 13 banks and majority owner in 8 cases. During 2005 privatization of Serbian banks got momentum, when four state banks were acquired (Republican Budget got revenues of EUR 288.9 million), and additionally six private banks change owners (total price of EUR 490.5 million)[4]. According to the origin the main interest was shown by Greek (4banks), Italian (2 banks) and Austrian banks (2 banks).

Figure 1 – Serbia – Banking ownership structure



Source: NBS, Banking Supervision, The Fourth Quart Report 2007, p.7

[3]Law on regulation between FR Yugoslavia and legal entities and banks from FR Yugoslavia who were original debtor or underwriters in relations to the Paris and London club creditors, Official Gazette of FRY No36/02

[4] Source: Agency for Bank Rehabilitation and Liquidation and Deposits Insurance of Serbia

After the first privatization wave Serbian banking system changed ownership structure completely. At the beginning of transition 65% of banks (by total assets) were state (socially) owned, 21% were private and 4% only were foreign. At the end of 2007 foreign banks became major players, as 76% of total assets were related to those banks, 16% to state banks and 9% to domestic private banks (NBS, 2009).

At the same time the number of banks on domestic market was decreasing considerably, unlike to other transitory economies. From 108 prior to transition process at the end of 2007 total number of banks was 35.

In line with overall development of banking activities the banking network increased considerably and human sources within banking sector, as well. Total number of organizational banking units at the end of 2007 was 2.435, out of which 519 branches, 1.544 sub-branches, 258 shelters and 80 organizational units. Total employment reached at the same time more than 29 thousands (NBS,2009).

The main result of market reforms within banking sector was increased share of the banking sector (total assets) in total GDP to 2/3 of total GDP. It was possible due to very fast development of all banking categories, especially in the period 2004-2007. Total assets of commercial banks amounted at the end of 2007 more than EUR 19 billion. The confidence into the banking system was fully recovered, as total deposits reached at the same time more than EUR 12 billion. Crediting activity increased fast, as well, and reached EUR 9.5 billion. Total capital of Serbian banks amounted EUR 4.1 billion. From 2005 on Serbian banking sector for the first time became profitable as a whole (total profit EUR 280 million), although a dozen of banks were not profitable till now(NBS,2009)

III. Consequences of the crisis to the banking sector

The first negative effect of the crisis on Serbian economy was produced by the leave of international players from Belgrade stock exchange in May 2007, when the prices of different securities dropped by 30% on average, like in other financial markets within the region. The world economic crisis caused severe problems on financial sector of Serbian economy and non - financial companies also from the last quart of 2008. Foreign direct investments have shrunk and capital outflow has started, foreign demand decreased considerably, saving deposits of citizens within banks (FX deposits mainly) decreased for 1 billion € in few months (NBS,2009), credit conditions worsened very much (due to increase in the country risk up to 2% p.a. and increase in the referent interest rate of NBS to 17.5% p.a.), liquidity problems sharpened, as collecting claims became extremely difficult, especially from Government and public companies.

One has to bear in mind that the World economic crisis did not caused economic problems in Serbia solely, but rather sharpened them. Precisely, during the last decade a neo – liberal attitude was prevailing with negative consequence to overall development. Fast economic growth (5.4% GDP increase on average in the period 2001-2008)[5] was based on expansive public and personal consumption mainly. Free formation of wages resulted in their high increase over 10% per year in real terms. High share of public consumption in GDP was signal that public services were not restructured, from governmental to pension. During the period 2001-2008 the share of public consumption in GDP was 45-50% and increase in indirect tax duties was 9.8% p.a.(Ministry of Finance RS,2012) Also public companies did not start restructuring at all. Macro economic policies were not coordinated well: fiscal policy

[5]Statistical Office of RS

was expansive and monetary policy had to be very restrictive, in an aim to safe macro economic stability. So, GDP increase was sub – optimal – less than potentially possible. All in all, development before the crisis was non – sustainable in medium – term and the crisis from abroad was sharpened economic problems only.

Serbian banks were not directly hampered, as they had high reserves. The structure of financial sources was favorable (70% deposists,24% capital respectively). Ratio of capital adequacy was in the third quarter of 2008 even 28%(NBS,2009), much higher than in countries within the region and developed countries, as well. High capital adequacy ratio was result of the legal requirement of minimum 12%. One third of banks assets were in cash. Compulsory reserves were very high – deposits of banks within NBS - at level of 40-45% for foreign currency deposists and 5-10% for deposists in domestic currency. Recovery of credit issued was very high and risk low (92% for companies and even 95% for citizens)(NBS, 2009). Foreign exchange deposists of citizens within banks were secured by 80% within Agency for deposists insurance, which gauaranteed up to EUR 3.000 per deposit.

If one consider direct effects of the global crisis to Serbian banks than has to be avare of problems within banks headquarters (centrals) abroad, taking into account that majority of banks (3/4) have foreign shareholders from countries severeley atacked, like Greece, Austria and Italy. FDI were stopped and cross border credit lines as well, as previously used as important source for crediting (with almost ½). So, instead domestic sources – deposists - were seen as only source for investments. Some domestic banks faced with liqudity problems and NBS had to intrevene. The price of all banks' shares on Belgrade stock exchange decreased a lot(BB BELEX and belex line dropped for more than 80% in 208. The usual reactions of banks were to increase interest margin in order to prevenet loses and to increase interest rate on domestic deposits up to 8-9% (maximum9.5%) p.a.

When the World economic crisis started to influence Serbian economy the Government and the Central bank were reluctant, were late in reaction and measures introduced were week to prevent recession. National Bank of Serbia firstly introduced measures to improve liquidity (decrease in compulsory reserves obligation for both, FX and dinar deposits). In order to prevent outflow of FX deposits from banks, amount guaranteed by the state (insured) was increased from 3 thousand € up to 50 thousand € per single deposit. An agreement between NBS and foreign banks present on Serbian market was achieved (so - called Wiener agreement) not to dismantle exposure of clients, companies and citizens. Unlike other central banks, which put down interest rate near to zero in order to prevent recession, NBS instead increased referent interest rate aiming to prevent inflation expectations (up to 17.5% p.a.). In spite of intervention of NBS with more than EUR 1 billion on FX market a decrease in FX exchange rate was invetibale for 20% in a few months(Filipovic, M, Hadzic, M.2009).

The Government introduced weak encouraging measures with an aim to prevent recession. Tax duties on saving deposits from capital gain were annulled in order to recover domestic savings. Tax duties related to securities transfer were annulled, as well, in order to recover volume of transfers within Belgrade stock exchange. In order to curb recession the Government supplied support to different credit lines subsidized interest for: 1) Companies in liquidity problems (0.8 billion €); 2) Companies investing (0.17 billion €) and 3) Citizens for consumption and mortgage credits (0.2 billion €)(NBS, 2009).

The Government and NBS measures were mainly in right direction, but late and weak. It was clear that influence of the Global economic crisis was stronger then they expected. An overcome of the crisis was inevitably seen with IMF support only. The stand – by arrangement with IMF was made in March 2009 for the period until April 2011, based on

financial support of EUR 2.9 billion (EUR 799 million instantly), aiming to strengthen FX reserves and to prevent deterioration in FX rate of domestic currency.

The National economy suffered in 2009 a lot. GDP dropped by 3.5%industrial production 13%, trade 12% and traffic by 15%. Export volume decreased for 26%, due to weaker foreign demand and import volume even more, dropped for 35%[6].

During 2009 the national banking sector faced with problems of lower liquidity, more costly and scarce than before foreign sources for investments, worsened capital adequacy, and higher share of non - performing loans into total loans. After strong attacks to liquidity especially in October 2008 and in February 2009, liquidity of the whole banking sector was in good shape thanks to NBS supporting measures (mainly due to decrease in the rate of obligatory reserves). The reputation risk within foreign banks was a trigger of the flight of EUR 1 billion FX saving deposits during the last months of 2008, but was stopped. Generally speaking, the banking sector was not depended of foreign sources as in other neighboring countries and more than 75% of foreign liabilities were related to domestic sources. The average liquidity ratio was 2.1 at the end of 2007, 1.9 and 1.8 in September and December 2008, and 1.9 in March 2009 (NBS, 2009).

Considering sources of credit potential banks were occupied with strengthening of deposit basis and dismantling importance of foreign sources for financing. The proportion between total credits and total deposits was solid, especially comparing to other transitory economies, and pointed the use of stable domestic sources for crediting, mainly.

Table 1 Credits to Deposits Ratio

	2005	**2006**	**2007**	**J08**	**S08**	**D08**	**M09**
Total credit/total deposits	94.9	86.7	89.3	95.2	96.1	104.3	105.9
Total credit/long term deposits	196.6	163.4	154.0	160.6	205.2	206.5	197.0
Long term deposits/long term credits	14.9	15.9	12.0	14.4	8.6	7.6	7.0

Source: NBS, Annual Financial Stability Report 2009, p.42

Credit activity in the period 2004-2008 after rapid expansion was slowing dawn from October 2008, in spite of measures introduced by NBS and the Government. In the structure of new loans, credits to corporate sector still grow in real terms, while credits to citizens were decreasing in nominal terms. It was due to the governmental support, on the one hand, and due to lower demand, on the other hand, and at the same time lower supply by banks related to scarce foreign sources. The Credit risk became much higher than before and quality of classified assets worsened. The Non - performing loans increased their share in total loans, as the outcome of slow - down in economic activity, weakening of domestic currency and problems within the labor market. The share of non - performing loans in total loans within corporate sector increased from 5% in 2007 to 12% in the first quart of 2009, while for citizens from 2% to 4% respectively(NBS, 2009).

The increase in capital from October 2008 was slowing dawn, and capital adequacy worsened rapidly, due to faster increase in risky assets than capital. Until the last quart of 2008 capital increased rapidly in a few years 45-60% p.a., but in 2009 capital increase was 18% only.

[6]Source:Republican Statistical Office.

Although capital adequacy ratio felt from 28% at the end of 2007 to 24% and 21% in September and December 2008 respectively, the sustainability of the banking sector was safe, mainly due to strict and higher requirements.

Serbian banking sector was profitable in 2008. For the first time it became profitable in 2005 and total profit generated increased from year to year.

IV. The Banking sector and repeated recession

As it was noted before, as an outcome of the world economic crisis Serbian economy faced with problems, as follows: the lack of financial sources from abroad, capital flight, difficulties in collecting claims, especially from the government and public companies, decreasing FDI (the share of FDI in total investments dropped from 68% in 2006 to 24% in 2010), decreasing foreign demand, increasing foreign debt (74% of GDP)(NBS, 2011a) liquidity problems, increasing Budget deficit (up to 4.5% of GDP) and increase in unemployment.

From the third quarter of 2009 there were the first signals of recovery, or rather stop of the recession trend. During the crisis exporting sector of the economy suffered mainly from lowering demand in EU. Financial sector was facing two development problems: non – well developed financial market and weak economy, which implies limits for further fast development.

Considering macroeconomic environment it has to be noted that effects of the world economic crisis were not annulled, but some modest recovery was achieved. In line with recovery all over the world, especially in US and Germany, economic recovery in Serbia started from ending 2009 and during 2010. After deep drop in 2009 (12.6%) industrial production was in 2010 higher by 2.5%. Retail trade was also increasing from July for the first time after the end of 2008, although lower than year before (-0.9%). GDP increased 1% in 2010. Due to Dinar depreciation for more than one year, export volume increased more than import (19% and 9%, respectively). In the structure of import raw materials and equipment increased the most, which produced further increase of industrial production. In 2010 current balance deficit was EUR 2.1 billion and FDI inflow EUR 1.1 billion (NBS, 20011b).

After modest, but encouraging recovery from ending 2009 and during 2010, there were signals of so – called W effect – repeat recession all over the world, from the second quarter of 2011, mainly due to negative development and fiscal policy problems in US and especially EU Southern Periphery. OECD projection for 2011 and 2012 corrected rate of growth down (USA 1.7 and 2% GDP growth, EU 1.6 and 0.2%) (OECD, 2011). National Bank of Serbia did the same, correcting GDP growth down to 2% in 2011 and 1.5% in 2012 (NBS, 2011b)., but unfortunately later had to correct projection further down to 0.5% GDP growth in 2012, only (NBS, 2012).

Macroeconomic policies in circumstances of the repeat recession have less room for maneuver than before. Fiscal policy has little room for relaxation, because of high share of the public debt in GDP (45%) and because of increasing Budget deficit (4.5% of GDP) (NBS 2012). The repeat recession calls for monetary relaxation - decreasing the rate of obligatory reserves, and further decrease of the referent interest rate (Zivkovic, B., Stamenkovic, S., Vuckovic, V.,2007). NBS has relaxed monetary policy, considering that referent interest rate dropped from maximal level of 17.5% p.a. at the end of 2008 to 9.5% in the first quarter of 2012. FX rate of domestic currency is continuously under the downfall pressure. It is difficult

to defend Dinar in circumstances of so - called Eurization of the economy and decreasing FX reserves. Although FX reserves are still high, EUR 11.6 billion or 8 months import value, NBS spent in the first four months of 2012 more than EUR 600 million for interventions on the FX market(NBS, 2012). Pressure down to national currency strengthened additionally from March 2012, when IMF froze new already signed stand – by arrangement, amounted EUR 1.1 billion with precaution purposes, as Serbia broke agreed proportions, in public spending especially.

Serbian banking sector is relatively safe, regarding problems in Greece and Italian financial sector. The share of Greece and Italian banks in the national banking sector is high and the role important. Five out of six those banks are among the first ten banks on the market. There are two Italian banks: Banca Intesa and Unicredit Bank and their share in total is high: 22% of total assets, 20% of capital, and 14% in total employment. There are four Greece banks on the market, as well: EFG, NBG, Alpha, and Piraeus Bank and their share is also relatively high: 16% in total assets, 16% in total capital and 19% in total employment[23].One has to consider potential problems in case of a) Return of Greece Drachma and Italian Lira, because of inflationary written of debts and b) Need for restructuring of those "mother banks". In spite of high importance of those banks the national banking sector is safe due to several arguments. Domestic banks are domestic legal entities, with their own capital. Domestic banks do not have securities from Euro zone and share of foreign securities is very low, generally. The capital adequacy ratio is still relatively high and higher than in surrounding countries. Domestic banks are more and more oriented toward domestic savings as the source for investing. The structure of foreign sources of financing is favorable – short - term foreign borrowing dropped from 39.7% in 2009 to 16.2% in the third quarter of 2011. The indebtedness of domestic banks to their foreign headquarters is very low - 3%. Long - term borrowing of banks abroad was shifting toward international financial institutions from EUR 0.6 billion in June 2010 to EUR 1 billion in September 2011 (NBS, 2011b). The negative effects are related to increasing share of non-performing loans (NPLs) into total loans.

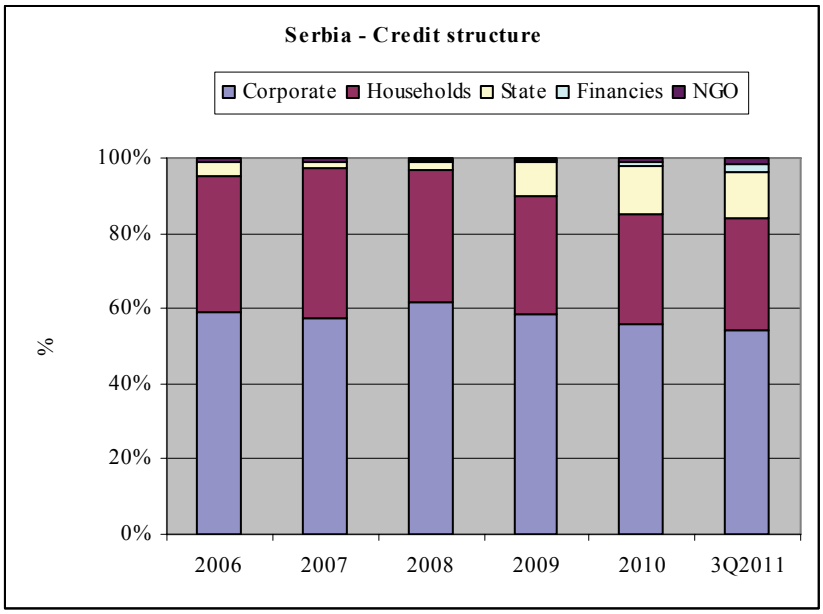
Serbian banking sector is now generally stagnant, with development limits and difficulties related mainly to the real economy. The downward trend in the banking sector employment, which begun in 2009, and halted for the first time in March 2012, has continued. With large number of banks holding only a small share in total assets, lending, deposits and incomes, the Serbian banking sector is considerably fragmented. At Q3 of 2011 HHI[7] concentration index did note exceed 1000- the level indicating only moderate concentration – in any of the mentioned categories. Two of banks had more than 10% of the market share only (Banka Intesa14.6% and Komercijalna banka10.2% in total assets) (NBS, 2011a).

Serbian banking sector is also stagnant regarding lending activity, as growth of total credit was 3% in the first three quarters of 2011, only. It is important to note that during past several years the structure of credits is worsening, as banks were more and more oriented toward more safely debtors, like the government (different level) and public companies(Urosevic, B., Zivkovic, B., Bozovic M.2011). Companies were still dominant with 53% of total credits, but decreasing as banks are reluctant to borrow to corporate sector generally. Households were stable with the share of 30% in total credits. Public sector increased its share in total credit lines very much in recent years from 1.7% in 2008 only to 18% in the third quarter of 2011 (NBS, 2011a).

[7]Herfindahl Hirchman Index HHI is calculated as the sum of square values of individual banks shares in the category observed (assets, loans, deposists, etc.). HHI up to 1000 indicates that there is no market concentration; 1000-1800 indicate moderate concentration; above 1800 indicates high concentration.

The share of NPL (non – performing loans, past due for more than 90 days) in total loans was stagnant, after sharp increase after the start of the crisis (from 5.3% at the end of 2008, to 16.9% at the end of 2010 and 18.8% in Q3 2011, respectively). Corporate NPLs now make 68% of total NPLs, which can explain why banks are so reluctant to invest into corporate sector. Accounting for 70% of overall NLP rise corporate NPLs were one of the key factor that pushed up non - performing loans. In the structure of corporate non- performing loans the highest share had sectors as follows: processing industry 37%, commerce 29% and construction 12%. Households' NPLs holds 14% in total and 18% of the total increment may be attributed to them. In the structure of NPLs of individuals highest shares were related to current account overdrafts 14%, credit cards 12%, cash loans 9% and consumer loans 7%.

Figure 2 – Serbia – Credits structure



Source: NBS, – Bankin Supervision – The Third Quarter Report 2011, p. 10

In comparison to the previous periods risky classified assets (D and E categories) increased its share in total assets (from 13% at the end of 2008 to 19% at the end of 2010 and 20% at Q3 2011(NBS, 2011a).

Table 2 Serbia – Non - performing loans indicators

	2008	2009	2010	3Q2011
Gross NPL/Total gross loans	11.28	15.69	16.92	18.76
IFRS provisions of total loans /Gross NPL	73.15	61.40	53.91	50.02
Regulatory provisions/Gross NPL	153.56	142.53	133.59	128.21
NPL net of IFRS provision /capital	13.39	22.13	29.02	33.21
NPL net of regulatory provisions/capital	-11.53	-15.81	-14.48	-13.26

Source: NBS, Banking Supervision – The Third Quarter Report 2011, p. 12

Total capital of the banking sector increased 11% in 2010 and 7% in the first three quarters of 2011. Capital adequacy ratio of the banking sector equaled 19.7% at the end of Q3 2011 and one can recognize that decreasing tendency was halted (19.9% in 2010 after the drop from 28% in 2007 to 22% in 2008). Serbian banking sector can be consider as well capitalized in the view of the high average value of the capital adequacy ratio, but in eight banks was recorded a capital adequacy ratio under 15% and those are banks with state (majority) ownership (NBS, 2011a).

Pre-tax profit of the banking sector in the year to September 2011 amounted EUR 0.24 billion, up by 21% y-o-y. The number of banks operating with loses increased by one to 10 banks. Current RoA, RoE and cost-to-income ratio were slightly better during Q1-Q3 2011 than in the same period 2010 (September 2010 RoA 1.2%, RoE 5.9%, cost - to - income 67.7%)(NBS, 2011a).

V.Conclusion

Serbian banking sector has developed very fast during transition period until the global economic crisis started to influence Serbian economy. It was changed dramatically as numbers of banks shorten from 108 to 33 and ownership structure shifted from 2/3 of state owned into ¾ of the share of foreign banks in total assets. The confidence into the banking sector has recovered. Deposits increased and credit activity, as well, in line with increasing banks' capital and their total assets.

The first phase of transition of the national banking sector was over prior to the crisis. The crisis hampered banks, but not as much as within the Region, as Serbian banks were highly capitalised, on the one hand, and clients were not highly indebted, on the other hand. Banks were faced with stagnant development and increasing non-performing loans. The main problem was related to worsened economic situation – recession, increasing public debt and liquidity problems of companies.

After modest recovery from late 2009 and in 2010 there were clear signs of repeat recession from the mid of 2011. Development of Serbian banking sector is limited now by weak corporate sector and low income citizens. Although potential for growth is relatively high in comparison to other countries in transition new recession opened room for further deterioration of their claims, as real economy is not restructured (lagging behind financial sector in the process of transition). Banks, for time being, found solution into reorientation of crediting from corporate sector, as too risky, to government and public sector, as less risky. However, it is not long lasting solution. The transition of real economy and public sector can open room for further development of the banking sector, which one can expect to be performed in circumstances of global recovery only.

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Economic Crisis Influence on the Polish Consumer Behavior

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Abstract: The paper consists of two parts. The first one presents the literature background in the scope of impact of the economic crisis on the Polish consumers behaviors on the market. In the second part the author presents the results of the quantitative research that include consumers' subjective opinion on such issues as the definition of "economic crisis", the evaluation of Polish economy condition and the household financial situation, the ways of money locating, the methods of protection against the negative crisis results, the ways of coping with current financial difficulties and changes in consumption structure. Author relates the results to the previous studies. The paper shows that in spite of creating Poland as a "green island" by Polish media, Polish consumer feels, sometimes painfully, the economic crisis consequences.

JEL Classification Numbers: D1

Keywords: economic crisis, consumer behavior, consumption, household

INTRODUCTION.

The world crisis causes adverse effects in national economies. Politicians, economists, journalists and market researchers ask the same question: "how to live in times of crises?". This question is also posed by consumers around the world. Economic crisis triggered the inevitable impact on Polish social and economic reality. Initially the impression was that it avoided Polish economy and Polish situation was evaluated moderately positively comparing to the other European countries. The main threat was dangerous Polish zloty dependence from speculative short-term investments, high State dept and significant share of imports in production. In a short time reduction of credits given by banks, speculative "attack" on Polish currency and the reduction of Polish zloty value caused that world crisis began to be perceptible also in Poland. The macroeconomic effects included GDP decline and severe reduction in enterprises economic activity. The microeconomic consequence was consumption decrease. The social dimensions of crises are: unemployment increase, households income decline, fear of job loss, difficulties in finding new job, material status deterioration, inability to repay loans. Therefore, there has been a change of consumers lifestyles, and some of them feel severe anxiety and even depression.

Polish media and especially Polish government are still trying to convince the public that Poland is a European "green island", one of the few countries that managed to survive the crisis painlessly. Unfortunately, this rhetoric of success hides a much sadder reality. Economic growth does not necessarily directly submit to the proper life conditions of citizens.

LITERATURE REVIEW

The consumers purchasing patterns tend to change during stressful and difficult times such as global economic crises (Mansoor, D. and A. Jalal 2011, 102-105).Consumer behavior in

the crisis is characterized by consumption smoothing at various levels. The significant reallocation of consumption expenditures may be noticed (Dutt, P. and V. Padmanabhan 2011, 491-512). People are not so willing to pay more for products that has close substitutes with cheaper prices (Flatters, P. and M. Willmott 2009, 106-112, Mansoor, D. and A. Jalal 2011, 102-105). Therefore such products as designers goods products are replaced by casual brands or even designers fakes and organic food purchase decreases (Aguirre, G. and A. Juan 2009, 5-18 , Flatters, P. and M. Willmott 2009, 106-112). Consumers simplify their demand, start to recycle, buy used goods, less donate for charity (Flatters, P. and M. Willmott 2009, 106-112). They have redefined what they consider as "necessities" and what are considered "luxuries" but they have found it was hard to save (Mansoor, D. and A. Jalal 2011, 102-105).

Many surveys investigated the influence of the economic crisis on consumer behavior, such as Research and Markets and it occurred that i.e. in 2009: 56% US, 53% British, 81% Italian and more than a half of German consumers felt that their lifestyle has been impacted by the recession. They have been forced to reevaluate their spending and lower prices had a big influence over where people did their shopping.

Amalia P. and P. Ionut (2009, 779-782) indicate that consumers have different perception about hard situation like economic crisis and therefore they present various behaviors in the face of negative effects of crisis. They propose consumers segmentation using the risk attitude and risk perception factors. Four consumers segments were suggested: panicked consumers, prudent consumers, concerned consumers and rational consumers. Each of segments acts differently regarding the influence of the crisis on their behavior. The real crises impact is visible in the case of first and second segment while in the case of others it has moderate (concerned consumers) or very weak effect (rational consumers).

In recent years Polish consumers behaviors and preferences were shaped by many factors connected with globalization, spread of different lifestyles and social status. Poles wanted to catch up previous "lean years" and consumption importance increased in context of prestige and life quality improvement. Many consumers began to feel happiness by buying and in some way consumerism has become the standard of living (Słaby, T. 2009, 8-10). They shortened the distance of civilization to the richer countries and started to uphold materialistic attitude. After the years of communism Poles "began to disperse" in achieving level of life and consumption characteristic for western countries and therefore they don't feel yet the surfeit of materialistic lifestyle and excessive consumption (Bombol, M. 2011, 153).

The economic crisis has surprised the Poles. They had to deal quickly with crisis progressive effects and also to take long-term adaptive steps. In some cases emotional reaction such as feeling of fear, helplessness or apathy appeared. Symptoms resulting from the economic environment generate fear about the Polish economy and consumers future. But from the economic point of view we do not observe drastic slump in consumer spending. Financial constraints and the uncertainty of the future influence also positive changes in consumer behavior. Consumption has become less ostentatious, more thoughtful and more balanced (Bombol, M. 2011, 8-9, 142, 158).

The present attitudes of Poles may be divided into three groups: belay, remedial and alternative. The belay attitude is characterized by the limiting the consumption only to necessary goods. Consumers representing remedial attitude mainly look for a help in family and social organizations, go abroad for a work purpose and work in shadow zone. The consumers with alternative attitude are ready to take a job below qualifications or agree to work for lower salary just to maintain the financial liquidity (Słaby, T. 2009, 21).

Bombol M. (2011, 157) has made attempts to systematize the consumers behaviors in the various stages of crisis:

I. The first stage (2008): limitation of unnecessary pleasure goods purchasing, emotional purchases controlling, denying the necessity of conscious reduction in consumption;
II. The second stage (2009): substitution of more expensive products with cheaper, postponing expensive purchases for later, reducing the necessary expenses;
III. The third stage (2010): getting used to the crisis, ostentatious savings and bigger consumer awareness.

RESEARCH RESULTS IN RELATION TO THE PREVIOUS STUDIES

Methodology and respondents characteristics.

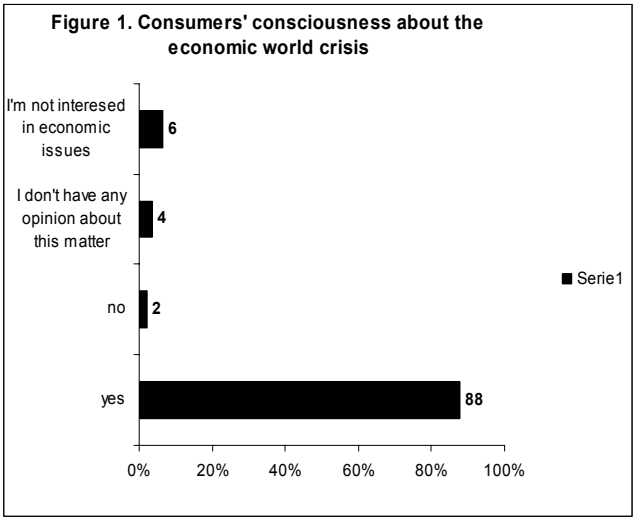
This study investigates the impact of global economic crises on consumers behavior and presents consumers subjective opinion on such issues as the definition of "economic crisis", the evaluation of Polish economy condition and the household financial situation. A sample survey of 300 consumers was carried out in March 2012. A structured interview was used.

50% of respondents were male and 50% women. The education level of respondents was as follows: primary 7%, secondary 39%, university 54%. 70% of the population lived in cities and 30% in village. The age structure was as follows: under 30 years old : 10%, 31-40: 34%, 41-50: 37%, 51-60: 11%, over 60: 8%.

Research results in relation to the previous studies.

Economic crisis perception

The respondents consciousness about the world economic existence was checked. It seems that exploitation of the crisis topic by media during last four years caused that it is nearly impossible to be not aware of its existence. The vast majority of consumers (88%) are aware of the global crisis (Figure 1). Notable is the fact that respondents perceive the economic crisis mainly through consumers material status aggravation (4,6 in 5-point Likert scale). The crisis is also understood as less profit for entrepreneurs (4 points), dismissal and unemployment increase (3,8) and higher prices on the market (3,2) the loan and credit application refusals by banks, property value decline, decline in the value of Polish zloty (Figure 2).



Respondents are rather pessimistic and consider that economic crisis is perceptible in Poland and it will take a long time before it ends (40%) or even the situation will deteriorate in the future (34%). The improvement of the difficult Polish economy situation is expected by 19% and only 6% perceive Poland as a "green island" and believe that the world economic crisis doesn't threaten Polish economy (Figure 3).

Figure 2. Undertstanding of the "economic crisis" concept by consumers (5-point Likert scale)

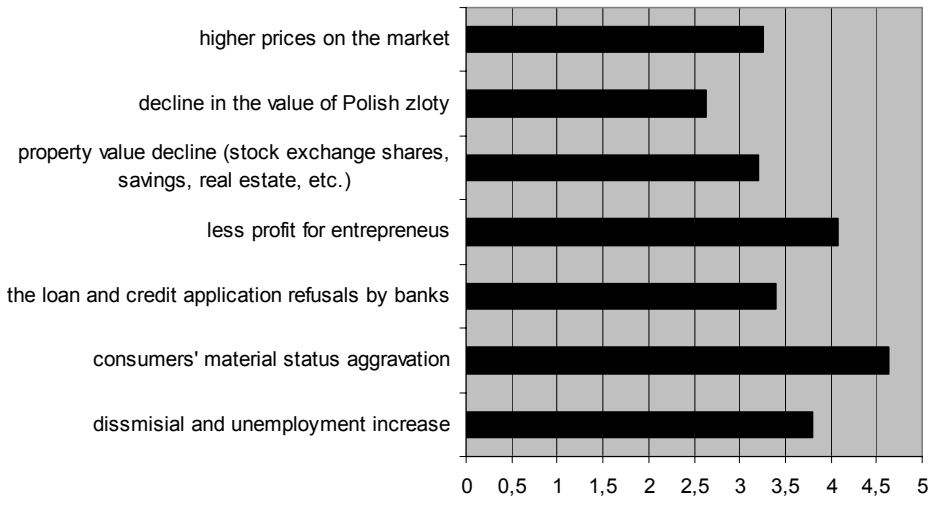
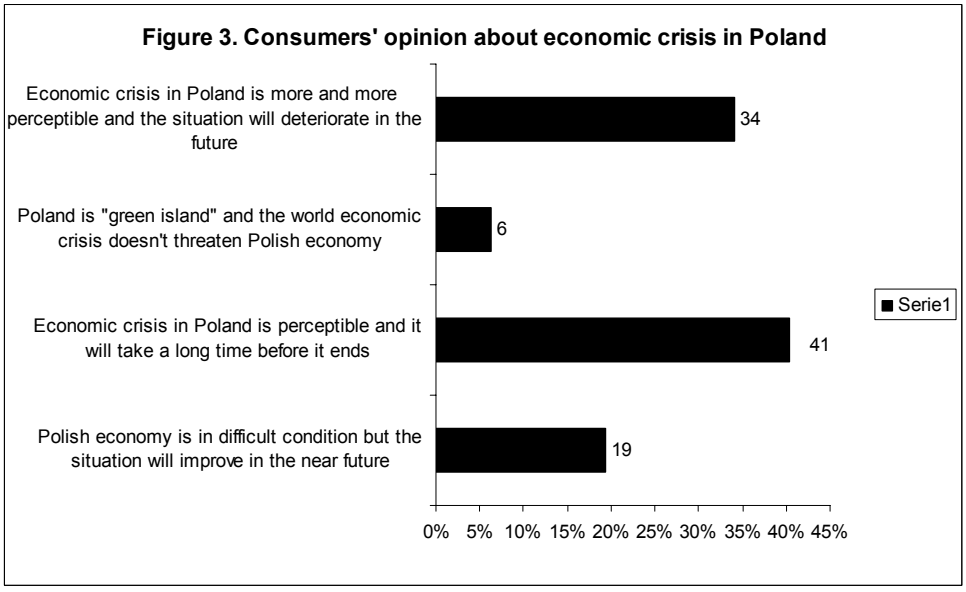


Figure 3. Consumers' opinion about economic crisis in Poland



According to the Eurobarometer survey carried out in 2010 Poland was the only EU Member State where less than half of respondents felt that poverty had “strongly” or “slightly” increased in their country. According to the Eurobarometr survey carried out in 2009, 34% of Polish respondents positively evaluated the Polish economy condition, but only 1% evaluated it very well. Almost two in three respondents had the opposite opinion (62%): half of Poles (50%) perceived the situation of the Polish economy as rather poor, and only 12% considered it very bad. Although the negative responses predominated, Polish respondents evaluated their economy better than the general population of the European Union. An average of 23% of EU citizens assessed their economy positively and three

quarters (75%) negatively. What is interesting, the major part of Polish respondents (69%) consider that Polish economy is in worse condition than Community average economies.

According to the TNS Pentor Report (February 2012) the current condition of the country's economy is evaluated as a worse by 50% of Polish respondents comparing to evaluation in previous year (46%). 6% of respondents believe the current economic situation is better than last year (+ 1 pp) and 44% perceive it as the same. The research results allowed to create the typology that reflects the attitude of Poles to the economic situation of the country. "Pessimists" are the people positively or partially positively evaluating the current economic situation Polish but pending changes for the worse (20.1% of the population). "Frustrated" are the people negatively evaluating current economic situation and also expecting a further deterioration of the situation (25.7% of the population). "Resigned" are the people badly evaluating current situation and not counting on any changes in the future - either for better or for worse (13.2% of the population). "Optimists" are the people positively or partially positively evaluating the current situation and expecting a further improvement in the future (18.4% of the population). "Tough optimists" are the people negatively evaluating current situation but hoping for improvement in the future (4% of the population). "Satisfied" are the people positively or partially positively evaluating current situation and not hoping for major changes in the future (18.6% of the population).

Households economic situation

The respondents were asked to assess their households economic situation (Table 1). Most of the respondents believe that their financial situation is average (37%). Every third consider it as very good and good or bad and very bad. The correlation with the education level was noticed: people with higher education evaluate their situation better than those with lower education. According to the Central Statistical Office (2011) more than half of Polish households assessed their financial situation as an average, every fourth as good or very good and every fifth as rather bad or bad.

Table 1. Respondents households financial situation evaluation depending on the respondents education level (%)

	Education level			
Financial situation	Total	University	Secondary	Primary
Very good	10	7	3	-
Good	22	17	5	
Average	37	20	15	2
Poor	20	10	8	2
Very bad	11	-	8	3

More than a half respondents (53%) don't expect changes in their household financial situation in the next 12 month, nearly every third anticipates deterioration (30%) and 17% hope for better.

The similar results were achieved in the Barometer survey (2010) where more than a quarter (28%) of EU citizens said they expected their household's financial situation to deteriorate during the next 12 months. 25% of Polish respondents expected their household's financial situation to get worse, 52% Poles considered that situation would remain the same and 19% expected an improvement. According to the Central Statistical Office (2011) total household disposable average monthly income per capita in 2011 was lower by 1.4%

comparing to the income in 2010. After six years of real income increase, decline in household income was reported.

Crisis impact on households situation

Three quarters of respondents believe that global economic crisis affects their households condition (Figure 4). Available funds are sufficient only for current expenses in the case of 43% respondents and in the case of 10% funds are insufficient even for current expenses. A quarter are able to make some savings form their funds and 23% devote a greater share of funds for current expenses and the rest spend on leisure (Figure 5). It seems that very often consumers that were not largely affected by the crisis, still live beyond their means and do not accumulate savings for future.

Also according to Smyczek S. (2011, 96) research results, 30% of consumers prefer rather spend money than save despite economic crisis and 13% of them consider that it is not worth to save .

According to the Eurobarometer survey (2010) one in six EU citizens stated that their household had no money to pay ordinary bills, buy food or other daily consumer items, on at least one occasion (20% respondents in Poland), and a similar proportion – 20% – were having difficulties in keeping up with household bills and credit commitments. 53% Polish respondents kept out with household bills and credit commitments without any difficulties.

Figure 4. The economic crisis influence on the households condition

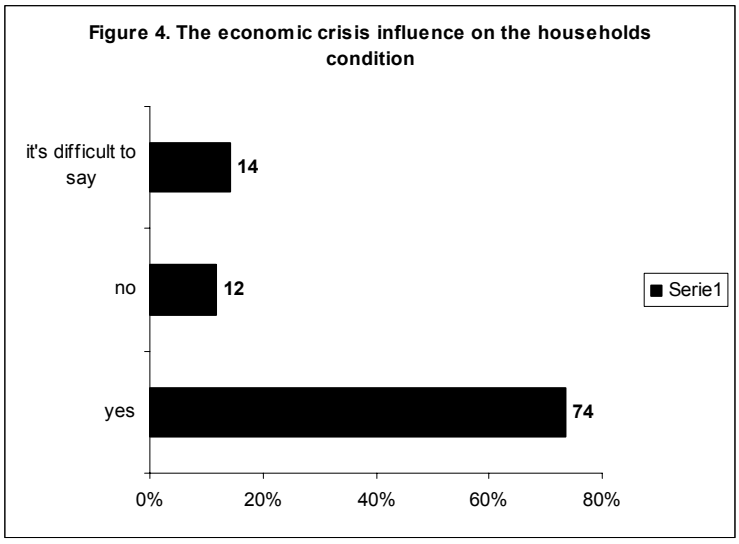
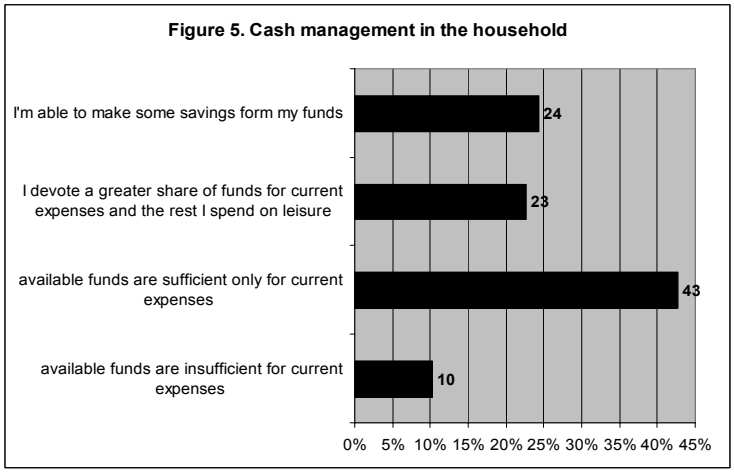


Figure 5. Cash management in the household

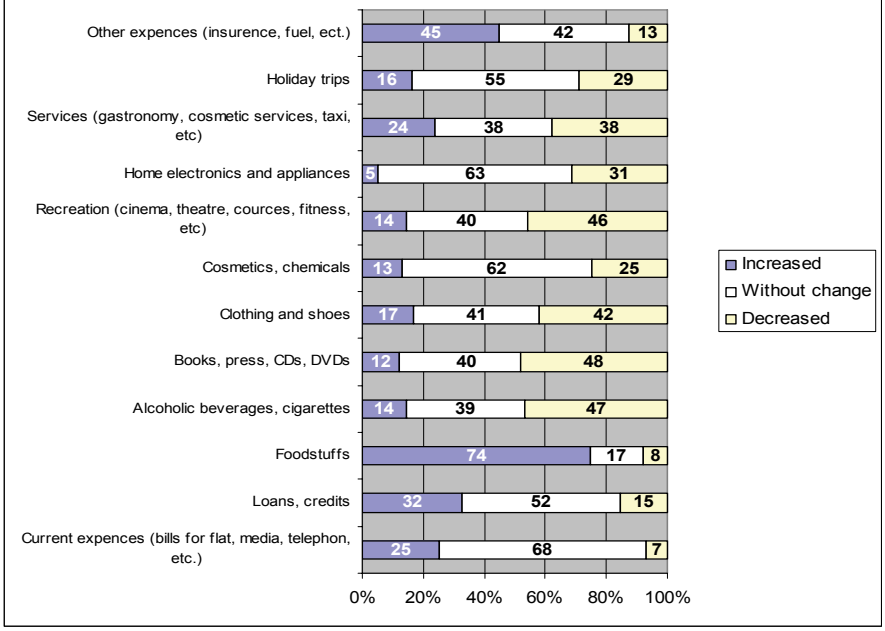


Respondents were also asked how their expenses changed in comparison to the previous year (Figure 6). It occurred that they spend more especially on foodstuffs (74% respondents) and such expenses as i.e. fuel. Contrary they spend less on alcoholic beverages, cigarettes (48%), books, press, CDs, DVDs (48%), recreation (cinema, theatre, courses, fitness, etc) (46%), services (gastronomy, cosmetic services, taxi, etc) (38% respondents), clothes and shoes (42%). Smaller consumption is connected with the limitation of expenditures attempt.

According to the Provident Barometer (2012) Poles expect food (31%), fuel (28%), electricity (17%) and gas (10%) price increases. For further positions Poles mentioned drug costs (3%) and water (2%). None of the respondents expect to increase spending on entertainment.

There are different ways of expenditure limitation in households in the times of economic crisis (Figure 7). Only 4% respondents do not care about crisis and do not limit their expenditures. First of all respondents reduce expensive durable goods purchases (64%), they don't take new loans or credits (57%), they cancel holiday trips or choose cheaper offer (49%), reduce expenditure on entertainment(cinema, theatre, etc.) (45%), limit meals outside home (37%). About a quarter of respondents purchase cheaper foodstuffs, every fifth chooses public transport instead of car (23%), reduces of expenditure on the barber, beautician, gym (20%) and reduces consumption of electricity, gas and water (19%), limits paid services associated with the house and its surroundings (repair services, flat cleaning, garden care, etc.)(19%). Less popular ways of dealing with the crisis are: resignation or limitation of paid extracurricular activities for children (16%), limitation of the outsourced babysitting (6%), resignation from additional medical insurance/paid medical care (4%).

Figure 6. Households expences changes in comparison to the previous year

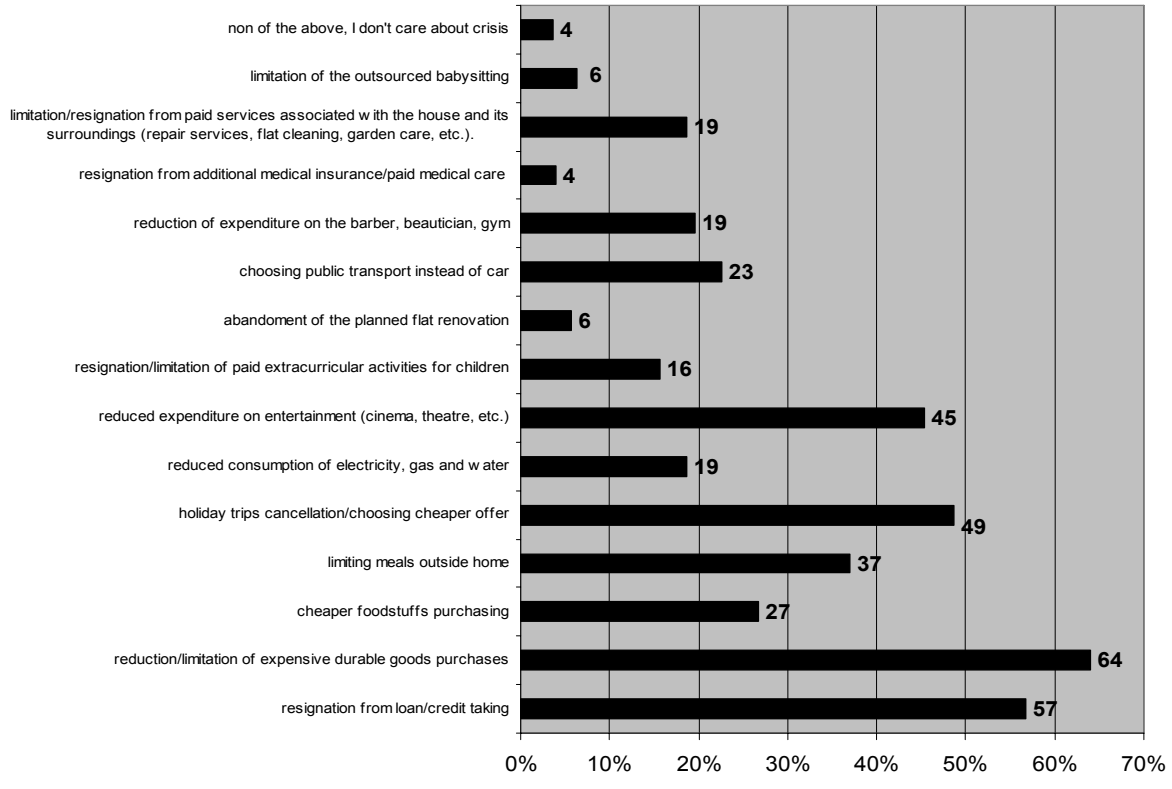


According the Eurobarometer survey (2010) high proportions of respondents said that things had changed for the worse in terms of affordability of healthcare and social care. About 3 in 10 EU citizens reported that it had become more difficult to bear the costs of general healthcare for themselves or their relatives: 11% felt it had become "much more difficult" (21% of Polish respondents) and 18% thought it had become "somewhat more difficult" (22%

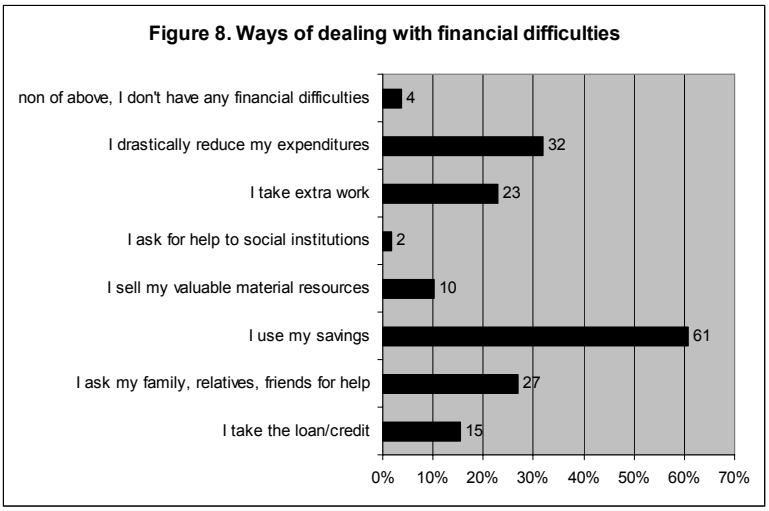
of Polish respondents). More than a quarter (28%) of respondents – who considered the question applicable to their personal situation – thought that it had become "somewhat" or "much more difficult" to afford childcare (12% of Polish respondents).

Also Bombol M. (2011, 136-137) and Janoś-Kresło M. (2009, 54) indicates that consumers behaviors changes are bigger than their earlier predictions in this matter. They limit new clothes and durable goods purchases, reduce services connected with entertainment and leisure, buy cheaper foodstuffs and alcohol beverages, postpone replacement of old equipment (mobile phone, computer) for new. According to Kieżel E. (2011, 143) consumers reduce expenses and buy only necessary goods (46% respondents) or limit expensive expenditures (41%). Janoś-Kresło M. (2008) points that worsening consumers financial situation affects limiting the use of paid services. Interestingly it was also found that up to 36% of respondents buy fake designer goods instead of originals despite of media actions discouraging from the fakes purchasing. Perhaps this can be explained by desire of showing that we can afford expensive thing (while we can't) in the times of crisis and yet we want to stand out from the crowd.

Figure 7. Ways of expenditure limitation in households in the times of crisis



According to the Zalega T. (2011, 483-484) in the case of high yield households small impact of the crisis may be observed. Only 20% of households suffer the consequences of the crisis and take in this regard specific remedy and assurance actions. Research results show that financial crisis in high-yield households contributed mainly to the reduction of tourism and catering services that are at further positions in the hierarchy human needs.

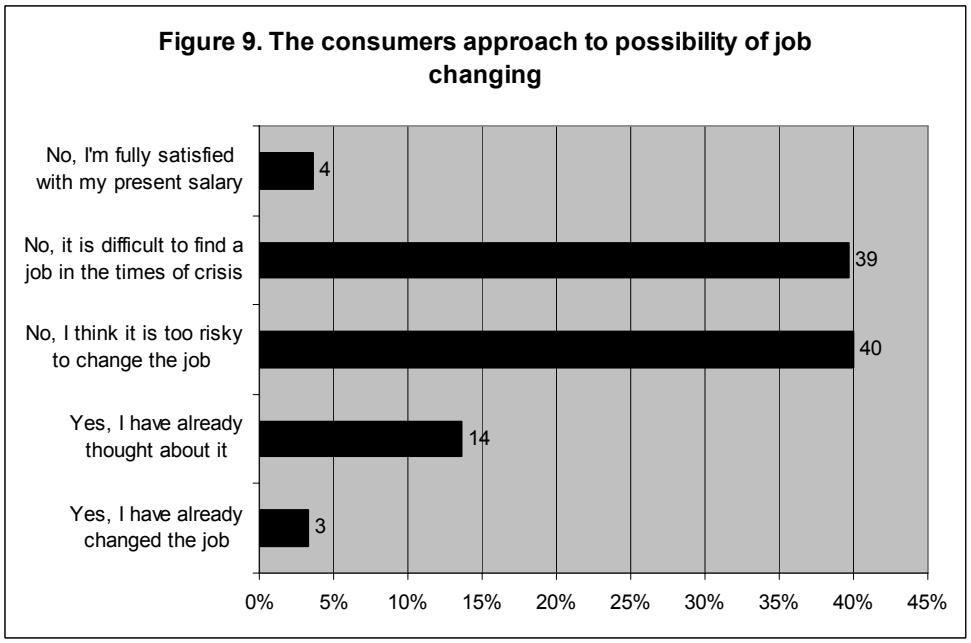


Only 4% respondents don't have any financial difficulties. In the case of such difficulties other respondents use their savings (61%), drastically reduce their expenditures (32%), ask their family, relatives or friends for help (27%), take extra work (23%), take the loan or credit (15%), sell valuable material resources (10%) (Figure 8).

Research results of Mróz B. (2011, 110) shows that respondents reduced their expenses (31 %), looked for a job in shadow zone (11%), sought help in the family (11%), friends (10%) and social institutions (9%) and went abroad for work purposes (8%).

Consumers approach to the possibility of job changing in the times of crisis

Respondents were asked if they would consider changing the job in order to increase the salary in the times of crisis. Results show that respondents are rather cautious and they do not believe in the lucrative possibilities on the present work market. They think that it is difficult to find a job in the times of crisis (39%) and it is too risky to change the job (40%). Only 14% respondents take into account such possibility, 3% have already changed the job and 4% is fully satisfied with their present salary (Figure 9).



According to the Barometer survey (2010) in March 2010, about a sixth (18%) of respondents actually in employment were "not very confident"(8% of Polish respondents) or "not at all confident" (17% of Polish respondents) that they would be able to keep their current job in the next 12 months and roughly half (49%) thought it would be "fairly unlikely" (27% of Polish respondents) or "not at all likely" (12% of Polish respondents) that they would be able to find a new position within six months, in the event that they were laid off. Pessimism about the ability of respondents to keep their current job in the next 12 months was the highest in eastern and south-eastern European countries. But 58% of Polish respondent expected to be able to find a job after being laid off.

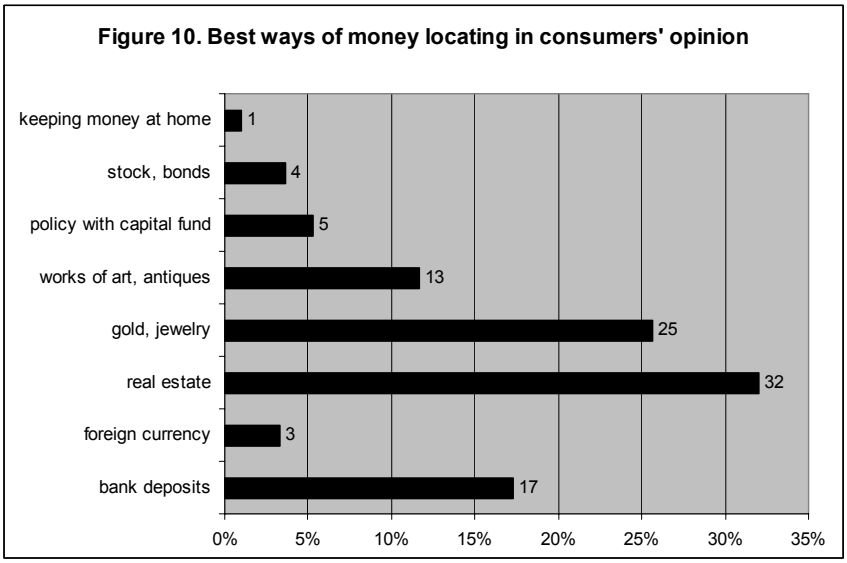
According to the Barometer survey carried out in 2009 every second Pole believes that the most important problem in our country is unemployment. Poles (44%) generally more likely than Europeans (54%) believe that the impact of the crisis on the labor market has already reached its peak. But a few less of Polish respondents (42%) say that the worst is yet to come.

Opinion about profitable ways of money locating in times of crisis

Real estate is the best form of safe investing savings in times of economic crisis in respondents opinion (32%). Slightly less popular is gold and jewelry as a method of money locating (25%). Less trust they have in bank deposits (17%) or investing in work of arts and antiques (13%). Policy with capital fund, stock, bonds and foreign currency are not perceived as a safe (Figure 10).

Similar ranking was achieved by research commissioned by Deutsche Bank PBC in 2011 (BankierPress 2011) but bank deposits were on the second place before gold.

Figure 10. Best ways of money locating in consumers' opinion



The mood of respondents in the light of the economic crisis

Respondents were asked to indicate what they feel thinking about the economic crises impact on their life. Research results show that high concern dominates: 37% of respondents feel a big fear, 21% are scared, 21% start to panic and 14% are depressed. A very few respondents (4%) are not worried and think that crisis has not affected their life.

According to the TNS Pentor Report (2012) consumers more often negatively perceive future state of the household budget and more often think about the future with anxiety comparing to previous year. Households economic condition evaluation is becoming more and more relevant to Polish economy future situation evaluation. Basing on everyday life

experience and numerous experts opinions they less and less have a basis for positive ratings formulation.

CONCLUSIONS.

The study allows to summarize the results and reach some conclusions:

1. Exploitation of the crisis topic by media during last four years and the own respondents experience in that matter caused that it is nearly impossible to be not aware of crises existence. The great majority of respondents are aware of global economic crisis and perceive it mainly through consumers material status aggravation.
2. Respondents are rather pessimistic and consider that economic crisis is perceptible in Poland and it will take a long time before it ends. More than a half respondents don't expect changes in their household financial situation in the next 12 month and nearly every third anticipates deterioration.
3. In spite of creating Poland as a "green island" by Polish media, respondents feel, sometimes painfully, the economic crisis consequences in their households: available funds are sufficient only for current expenses in the case of 43% and for every tenth funds are insufficient even for current expenses. In the case of financial difficulties respondents are forced to use their savings, drastically reduce their expenditures, ask relatives for help or take extra work.
4. The significant reallocation of consumption expenditures is visible. Respondents spend more especially on foodstuffs and such expenses as i.e. fuel. Increase of expenditures is mainly caused by higher prices. Contrary smaller consumption of some goods (alcoholic beverages, cigarettes, books, recreation, services, clothes and shoes) is connected with the attempt of expenditures limitation.
5. Expenditures limitation in households caused by economic crisis forces a change (sometimes serious) in respondents lifestyle. They spend less on their pleasures such as holiday trips, entertainment, meals outside home, services associated with caring for body and beauty. Every fifth respondent chooses public transport instead of car, reduces consumption of electricity, gas and water and limits paid services associated with the house and its surroundings in order to save some money.
6. Respondents are rather cautious and they do not believe in the lucrative possibilities on the present work market. They think that it is difficult to find a job in the times of crisis and it is too risky to change the job.
7. The best forms of safe money investing in times of economic crisis in respondents opinion are Real estate and gold and jewelry.
8. The crises negatively affects the respondents' mood and their perception of future: high concern dominates and pessimistic attitudes are noticeable: sometimes even panic and depression.

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Wind Energy and a New Model of Energy Sector Development: Case Study for Serbia

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Abstract: The main objective of this paper is to analyze the conditions for the use of wind energy in a surrounding with very limited resources in Serbia. The performed analysis of trends for wind energy application in the world, countries in the region and Serbia suggests directions for optimization of the energy sector and concrete solutions in the field of energy development and organization of production of electricity from wind power. The general conclusion is that its presence and orientation towards the increased use is an important indicator of overall vitality and development of (new) factors for the development in Serbia.

JEL Classification: Q42, Q48, L52, O21
Keywords: New model of energy sector, Wind energy, Investment, Public-private Partnership

I. Introduction

The world energy crisis that arose during seventies, as a result of increasing energy prices, have made that governments of the developed industrial countries become worried about the problem and forced to think about the alternative solutions for energy production. Another important fact which has also awakened the global community and put emphasis on the need for accelerated development of alternative energy sources have been more frequently reports of relevant scientific institutions about the increasing environmental pollution due to combustion of fossil fuels, the impact of greenhouse gases in the atmosphere to the drastic climate changes which are occurring and consequences caused by such situations which could be expected (Labriet et al. 2010).

Research in the field of development and improvement are numerous and largely no longer a matter of individual countries already belong to a group of emerging priorities at the global level and for its application the large sums of money spent on it. According to a report submitted by the United Nations Environment Program (UNEP) in July 2008, investments in clean energy were three times higher than planned in 2007 due to the rapid rise in prices of fossil fuels and high emissions of carbon dioxide. Thus, the total global investment in renewable energy this year increased by 60% and amounted to 148 billion dollars, which places them in one of the strongest sectors in terms of investment activities. UNEP analysts also believe that the renewable energy sector continues to grow and predict that increase to 450 billion dollars by 2012, or about 600 billion by 2020, which makes the whole thing about this type of energy, according to them, reminiscent of the former "gold rush" (UNEP Report 2008). It is enough to pay attention to the made comparison that attractiveness of participation throughout this process become extremely clear. The data obtained by UNEP saying the same, so for them the most amount of money in renewable energy has been invested in the European

Union and the United States, but also China, Brazil and India also attracted significant 26 billion dollars what is 14 times more than investment in 2004 (UNEP Report 2008).

Methods of producing energy from renewable sources are numerous, but their current cost-effectiveness and applicability is not equal. Depending on that, it was made and determined the distribution of funds so that more money spent to investments in wind power sector, where it was invested 50.2 billion dollars. Investment in solar energy was amounted 28.6 billion and into the energy obtained from bio-fuels 2.1 billion dollars (UNEP Report 2008).

The matter of this paper, in addition to an introduction and conclusion, is divided into two main parts. In the first part, the focus is on the analysis of potential and current situation in the utilization of wind power for electricity production in the world, Europe, the Western Balkans countries and Serbia. In the second part, it is analyzed the various aspects related to the use of wind power in the new model of energy sector development in Serbia.

II. Development of the Wind Energy Utilization and World Current Status

Wind energy is the kinetic energy of air that flows under the principles of physics and directly depends on the speed of the wind and temperature and air pressure. It is not known whether the ancient Egyptians knew the exact relations of these parameters, but notes that they were successfully using wind energy to run their ships on the river Nile, more than five thousand years ago. What makes the ancient Persians great innovators, when the use of this energy is concerned, is the fact that they were applying it as the primary energy in the mills for grinding wheat and other grain, and pumping water. Later in history, numerous examples of using wind energy for the same purpose were recorded but the primary wind turbine construction is being changed during the time.

Using the wind energy for the different purposes was generally sporadic until the seventies and the great energy crisis, after which using of it has become very important. The application of wind energy can be regarded as one of the best solutions to generate electricity in the future and it is constantly working on increasing of the efficiency of existing usage.

During the last decade, wind power experienced a leap in usage – since the beginning of the 21st century, the world wind electricity generation capacity has doubled approximately every three and a half years (Wikipedia; Ackermann, T, Der, L. S. 2000).

Current Status of World Wind Energy

Wind turbine industry can be regarded as one of the fastest growing renewable energy technologies in the last twenty years, if compared to the other renewable energy sources (RES) (Mostafaeipour 2010).

According to the data published by the World Energy Association, at the end of 2009, the world wind energy's installed capacity reached 158 GW, a 31% increase over 2008. At the end of the first half of 2010, the installed capacity reached 175 GW, and it is estimated that the capacity will hit 292 GW by 2012 and 425 GW by 2015 (ABS Energy Research 2010). The European Wind Energy Association (EWEA Report 2011) reports the same. In the Annual report of EWEA it was published that total installed wind energy capacity in the world reached 238.4 GW at the end of 2011.

The Global Wind Energy Council (GWEC) statistics show that China had the most cumulative installed wind power capacity at the end of 2011 – 62.7 GW. According to the facts that China had 12 GW of installed capacity at the end of 2008 and mentioned information about capacity from 2011, it can be said that expansion is huge and rapid. The next goal of Chinese wind power market is to reach 90 GW by 2015 and 200 GW by 2020.

The plan is to build an independent technical system by 2020 year and that the wind power play a major part in China's energy structure in the middle of this century (GWEC Report 2011; Xu, J., He, D. and Zhao, X. 2010).

The United States is in the second place with 46.9 GW. 2009 was a record year for the US wind industry with more than 10 GW installed in one year, but the growth slowed down in 2010. It is estimated that by 2030, wind energy will generate 20% of the US electricity if there are proper US policies, while at present it provides around 2% of the nation's electricity (GWEC Report 2011).

Current Status of the Wind Energy in Europe

During 2011, 10.3 GW of wind power was installed across Europe, of which 9.7 GW was in the European Union (EU-27), similar to the previous years. Of the 9,616 MW installed in the EU, 8,750 MW was onshore and 866 MW offshore.

Germany was by far the largest market in 2011, installing almost 2.1 GW of new capacity. The UK came in second with just under 1.3 GW, followed by Spain with 1.0 GW, Italy with 0.9 GW, France with 0.8 GW, Sweden 0.8 GW and Romania 0.520 GW. Investment in EU wind farms in 2011 was €12.6 billion, a similar figure to 2010. The onshore wind power sector attracted €10.2 billion, while the offshore wind power sector accounted for around €2.4 billion (19%) (EWEA Report 2011).

The total installed capacity in Europe reached 96.6 GW, of which 94.0 GW installed in the EU-27, and 1.9 GW in Candidate Countries and 0.6 GW in the countries of European Free Trade Association (EFTA).

Germany remains the EU country with the largest total installed capacity of 29.1 GW, followed by Spain with 21.7 GW, France with 6.8 GW (provisional figure), Italy with 6.7 GW, the UK with 6.5 GW, Portugal with 4.1 GW and Denmark with 3.9 GW. Seven other countries have over 1 GW of installed capacity: the Netherlands, Sweden, Ireland, Greece, Poland, Austria and Belgium (EWEA Report 2011, GWEC Report 2011).

Current Status of the Wind Energy in Serbia and Other the Western Balkan Countries

In contrast to the clear trends that were established in the world and EU, the situation is different in the Western Balkan countries (Serbia, Montenegro, Croatia, Bosnia and Herzegovina, Macedonia, Albania). Current activities in the wind energy sector are mostly in the initial phase and according to the available data only Croatia has installed capacity of 131 MW at the end of 2011 (EWEA Report 2011; Rogers, J. C., Simmons, E. A., Convery, I. and Weatherall, A. 2008; Lalić, D., Popovski, K., Gečevska, V., Popovska-Vasillevska, S. and Tešić, Z. 2011).

The possibilities for development and utilization of the wind energy are quite limited in Montenegro, Bosnia and Herzegovina and Albania, but obtained experimental date indicate that Croatia, Serbia and Macedonia have a good locations for wind energy (Lalić, D., Popovski, K., Gečevska, V., Popovska-Vasillevska, S. and Tešić, Z. 2011).

Most of these countries have signed The Treaty establishing the Energy Community (EC) of Southeast Europe and EU in 2006 and accepted the proposed obligations for reaching EC level in using the renewable energy sources (Luxembourg Office for Official Publications of the European Commission 2006). In all of the countries the renewable energy sources development is accepted as a high priority for the country and approached in a strategic and active manner. Defining of the necessary measures and instruments for their implementation in accordance to the European experience, as well as the strong endorsement of the defined EU goals, plan for sustainable energy Europe and plan for energy efficiency Europe is in

process (Balkan Energy Future 2010), so it is possibly to expect the better days for investigations, investments, concrete solutions and installations of the wind energy capacity also.

III. RES and Wind Energy Potential in Serbia

Serbia is located in South-Eastern Europe, in the heart of the Balkan Peninsula. It is an energy wise medium-dependent country, whose the annual consumption of all types of energy is greater than the domestic production, with a total dependence of around 40% (Golušin *et al.* 2010a). Renewable energy sector in Serbia is in the process of establishment. According to the available data, renewable energy potential in Serbia could cover almost half of its primary energy needs and total potential of the RES is estimated to 3.83 million toes annually. The major part of total RES technical potential belongs to the biomass (2.40 Moe), than follow by solar energy (0.64 Moe), small hydro plants (0.40 Moe), geothermal energy (0.20 Moe) and wind energy (0.19 Moe). Serbia also has potential in energy sources like landfill gas, sewage treatment plant gas, biogas and biofuels (Government of the Republic of Serbia, Energy Sector Development Strategy of the Republic of Serbia by 2015 2005). Utilization of this potential is currently 18%, but it is almost entirely based on production of electricity in the large hydro power plants (Golušin, M., Tešić, Z. and Ostojić, A. 2010).

The Energy Sector Development Strategy of the Republic of Serbia by 2015 has identified RES as one of the priority programs, right after the priority of continuous technological modernization of existing facilities and energy efficiency, and economical use of quality energy products. Technical available potential of RES in Implementation Program of the Energy Development Strategy of the Republic of Serbia by 2012 has been estimated according to the available national researches (Government of the Republic of Serbia, Energy Sector Development Strategy Implementation Program 2007–2012 2007).

The wind energy potential estimations was based on the available data from hydro meteorological stations based on the wind speed measurements taken 10 m above the ground. Among the first major research in this area was done during the 1980s by the Serbian Academy of Science and Arts where the regions with most favorable wind speeds were identified. Research has shown that eastern Serbia and regions around the Danube have a great potential for wind energy utilization. Parts of the territory in the Sava basin and the left bank of the Velika Morava River have also been identified as regions with favorable wind conditions (Grubcek, P., et al. 1984).

During the 2002, the study "Possibilities for Wind Energy Utilization for Electricity Production" was done by the Public Enterprise Serbian Electric Power Industry (PE EPS) (Putnik. R., et al. 2002). Research was based on the wind speed data from 20 meteorological stations obtained in the period from 1991 to 2000. The measurements were taken 10 m above ground and locations with average wind speeds above 5 m s^{-1} were taken into account. It was concluded that Serbia have wind energy potential, and some locations in southern and eastern Serbia, especially in the part of the Pannonia Basin named southern Banat, are suitable for the construction of wind plants. According to the EPS study, annual electricity production from wind turbines could be approximately 2.2 TWh.

The Ministry of Science and Environmental Protection financed a study on Serbia's potential to utilize the wind and solar energy in 2004 and the study led to the national wind and solar power maps (Grubcek, P., et al. 2004). The applied methodology was in agreement with the methodology used for European Wind Atlas and data sample was taken for the period from 1971 to 1990 from available meteorological stations. The research has identified regions with the most favorable wind resources in the eastern part of Serbia, especially around Vršac (Southern Banat), and in the Danube basin east of Belgrade and Požarevac.

Another study which has gave like a result wind atlas for Vojvodina, the northern part of Serbia, was done in the last decade. The study "Wind Atlas of AP Vojvodina" was financed by Secretariat for Energy and Mineral Resources of Vojvodina and finished in 2007. Wind energy potential was estimated using the data from eight meteorological stations based in Vojvodina for the period 2001–2007. Authors of the study identified southern and southeastern Banat as the most favorable areas for the construction of wind farms (Katić, V. et al. 2008).

Sufficient wind energy resources were identified in several regions of the country (Mikičić, D., Radičević, B. and Đurišić, Ž. 2006; Karakosta, C., Doukas, H., Flouri, M., Dimopoulou, S., Papadopoulou, A. G. and Psarras, J. 2011; Komarov, D., Stupar, S., Simonović, A. and Stanojević, M. 2012), but already time-consuming wind farm feasibility studies have been prolonged due to the current legislative framework and lack of experience both on the part of competent authorities in terms of the issuance of all required permits and on the part of investors.

Legal Background

Development of renewable energies market is in direct correlation with the accepted and implemented legal, financial and organizational measures that support their introduction into different economy sectors. To reach out to some of the goals of the utilization of wind energy, as the utilization of other forms of renewable energy also, Serbia has made some major steps.

The former Energy Law was modified in 2004 according to the current EU rules and regulations (Government of the Republic of Serbia, Energy Law 2004), but in August 2011 new Energy Law has been entered into force (Government of the Republic of Serbia, Energy Law 2011) with clear aims to reduce some of the previously identified regulative obstacles. The Energy Law defines national energy policy goals, energy market, conditions for continuous and high quality energy supply to the buyers, conditions for safe, reliable and efficient energy production, management of transmission, transport and distribution of energy. The Law also regulates the terms and conditions for energy related activities, the conditions for energy efficiency and environmental safety in energy activities.

As result of the Energy Law, two government independent regulatory institutions have been formed: The Energy Agency of the Republic of Serbia and The Serbian Energy Efficiency Agency. The Energy Agency of the Republic of Serbia is an independent regulatory body the purpose of which is to promote energy market and to provide fair energy market environment, to track implementation of the regulations for energy systems, to coordinate various activities of the entities dealing with energy in order to maintain a continuous electricity supply to customers and protection of their rights. The activities of the Energy Agency that are of interest to wind energy sector and RES energy sector development in general are: determination of the tariff systems for calculating electricity prices for the tariff customers, determination of the methodology for calculating electricity prices base on the tariff system, determination of the criteria and methodology for transmission and distributive grid connection costs, issuing and withdrawing of energy licenses, decisions on appeals from energy entities for grid access that was denied by the system operators, determination of minimum annual electricity consumption for qualified buyers, fulfillment of necessary conditions for the status of qualified buyer and register management of qualified buyers. The Energy Efficiency Agency is responsible for the improvement of conditions and measures for rational and efficient use of energy and fuels, as well as increases in energy efficiency in all the segments of energy utilization. One of the main activities of this agency is the promotion of RES utilization and environmental protection.

In 2006, Serbia has signed the Treaty establishing the Energy Community of Southeast Europe and EU, and accepted the obligation to apply directives related to the increased use of renewable energy sources (2001/77/EC and 2003/30/EC). Application area of renewable energy is governed by the Republic of Serbia legislative framework in the field of new and RES. The strategy for development defines priority directions, and renewable sources are in the third place. Creation of Energy Development Strategy of the Republic of Serbia until 2015 and program implementation for achieving that strategy is given greater importance to the RES. By ratifying the Treaty establishing the Energy Community (Treaty between the EU and SEE countries) on 14th of July 2006 the Republic of Serbia has accepted inter alia the obligation of implementation of directives aimed at the increase of the use of RES. Such are the Directive 2001/77/ES on the promotion of electricity from renewable energy sources in the internal electricity market and the Directive 2003/30/ES on the promotion of the use of biofuels or other renewable fuels for transport. This implies that the Republic of Serbia is obliged to make a plan for the implementation of these directives. With the Energy Development Strategy of the Republic of Serbia until 2015, within the framework of selective use of renewable energy sources, it is particularly pointed out that there are special benefits and the need for organized use of RES in Serbia, in the so-called decentralized production of heat (biomass burning, and "collecting" solar radiation) and electric energy (the construction of small, mini and micro hydropower plants and wind turbines up to 10 MW). In order to satisfy local consumer, all this needs and to supply surplus electricity to local electricity network in the system of Serbia. New renewable energy in Strategy until 2015 was predicted to reach 200,000 ten and to enter the energy balance sheet of Serbia (Golušin, M., Ivanović-Munitlak O., Bagaric, I. and Vranješ, S. 2010). Subsequent Energy Sector Development Strategy Implementation Program of the Republic Serbia by 2012 (Katić, V., et al. 2008) was adopted in 2007.

The Energy Agency of the Republic of Serbia is the responsible regulatory body for issuing the energy licenses, but the wind power plants, as the other form of plants for using the RES, have to be planned, designed, constructed and operated in accordinance with the mentioned Energy Law, the Low on Planning and Construction (Government of the Republic of Serbia, Law on Planning and Construction, 2010), set of laws on environmental protection (Government of the Republic of Serbia, Law on Impact Assessment on Environment 2009; Law on Strategic Environmental Impact Assessment 2010; Law on Environmental Protection 2009) and technical regulations on the distributions and transmission networks. All of them are adapted to the requirements of the EU.

New Model of Energy Sector Development in Serbia

Serbia is characterized by mass consumption of low quality energy[1)]. Performed analysis indicates that utilization of wind energy for electricity production is an important a market niche, which would be able to significantly impact on competitiveness of the Serbia as a state in the future, as well as the competitiveness of the national business and financial sectors (Đuričin, D. 2005, 32-37). Competitiveness of a state is achieved by ratification and the real implementation of the international agreements. The competitiveness of business and financial sector can be achieved by attraction of entrepreneurs and capital of the companies interested in investing in renewable sources (in this case, wind energy), but in a way that will lead to the creation of new working places, increase energy efficiency and integration into European and global energy markets. The development of renewable energy does not have (currently) the technical and environmental alternatives, and it has become a strategic issue for the management of each energy companies, and the national governments. The task of government is design of the strategy and the program of substitution, which will include a

range of measures, from the fiscal stimulus to raise funds for the restructuring on the other energy sources (Jeremić, Z. 2005, 106-107). In a country such as Serbia, for the implementation of these trends it is needed to direct the reform of the energy sector towards the qualitative changes. This is especially true for the electric power sector.

In this sector, it was missing reorganization of the business processes and functions, which should lead to increasing of energy and economic efficiency and providing a space for orientation on renewable sources for electricity production. Which is the way to this model? The key of the solution is that the state becomes responsible owner of the system. This means that the effects of their property are based on development and long-term basis and not on the application of interventionist measures in function of preserving of social peace and inefficient energy production and jobs. It should be very clear that some one would capitalize the fact that it will inevitably (multiple) increase in electricity prices on a national market (Šagonović, D. and Todorović, M. 2006, 145). The question is whether its effects will be directed at modernization of the electric power system, which necessarily includes and construction of referential capacity in the field of wind energy, or it will spill over to other purposes that are beyond the scope of this paper.

In considering the role of wind power in the new model of production and consumption of energy in Serbia, it should accept the view, that science, least in the dominating understanding of its essence, it cannot effectively develop the methods and mechanisms for solving this problem. So, the crucial questions of using the wind energy in electricity generation, whether we like it or not, depend on voluntarism of the politicians. This volunteerism is far away from what might be called the best achievable (the principle of "best practices"), even in societies with developed democratic deciding. But, on the other hand, possession and usage of: (1) specific knowledge and skills, (2) ability to credibly understanding of problems and managing in complex and uncertain environment, and, especially, (3) ability to create specific solutions and persistence during their realization, provide a successful solution of this problem. It is important to identify two facts. The first is that no direct or final answer to the question: How to create the conditions for the use of wind energy in electricity production in Serbia? A second is that the destruction of this project would be, primarily, the result of incompetent (political) management.

IV. Conclusion

Serbia is the energy dependent economy which 40% of needed energy covers from import[2)]. That is an energy-poor country[3)]. The most important energy resource is coal with low calorific power, which exploitation and conversion seriously threatens the environment. Therefore, strategic decision has to be seeking of the solutions for the implementation of renewable energy sources. Today, the presence and growth of the participation of renewable sources in electricity production is one of the key indicators of the vitality of the energy system of each country. Investments in renewable energy, particularly wind energy, would have a positive effect on the national economy. It would be directly contribution to the reduction of import dependence and environmental pollution, and indirectly to increase employment and strengthen the role of small and medium enterprises (Filipović, S. and Pavlović, M. 2006, 134).

The utilization of wind energy is one of the main challenges for the creators of reforms and politics in their activities in the planning of energy needs and choices of their solutions in the new model development of Serbia. Its use for electricity production requires a large number of additional analyzes in order to get the answer: What is a place of wind energy in the new (partially) privatized model of development of the electricity system (concessions, tenders, taking the primary capital market, public-private partnership) in Serbia? Finally, it is

necessary to presents the fact that rushed decisions on restructuring and privatization of the electricity system, with reference to the European standards, can hinder the long term use of this form of energy in Serbia. There is no doubt that the European standards in the field of development of renewable energy have a real scientific foundation and that the power system reform in Serbia are necessary, but there is no guarantee that they will radically improve the implementation of national development performance in the short to medium term. Flows of socio-economic development of Serbia in the last few decades, indicate that much better (scientifically established and empirically validated) models of production management (in this case power to the status of mixed, commercial and public goods – remark of the author's) were not accepted by the (national) practices, i.e. it raises the question: Why does not the practice use considerably more opportunities which offered to it?

In this context, the basic characteristics of the process of searching for good solutions for using of wind energy in the new development model in Serbia are: (1) multi-criteria of the problems to be solved, (2) a better understanding of transitional phenomena, in particular, resistance to change that marks the process of reconstruction and improvement of performance energy system, and (3) the instability of social preferences in determining the scope, structure and quality of energy resources. On the other side, utilization of wind energy in electricity production is a complex political, social, environmental and economic phenomenon. At the same time and in relation to decisions about the distribution rights to the (minimum) living and working conditions, i.e. operating of public and commercial entities, the fiscal pressures, public consumption, changes in reproduction structures, i.e. private consumption, employment, modernization of technology, public and private investment, imports and exports. In accordance with that, the problem of introducing of wind power in the new model of the energy sector is the primarily a matter of the human creation, i.e. its essence is to understand the risk who stands behind every (public) decision.

Acknowledgment

1. In the period of international blockade (1992-1995), the energy consumption in Serbia is reduced by half. After that, the power consumption is gradually increasing, but not as a consequence of economic growth. Energy consumption in Serbia in 2010 exceeded consumption in 1990, although GDP was at a level of 65% and industrial production at 40% from the same year (Statistical Yearbook 2011, 119, 228, 233).

2. Within the structure of energy import, it is a dominant the share of oil with 58% and natural gas with 32%. Four-fifths of the total annual oil production is meeting from the import, what are spending the current prices about 1.5 billion euro (Statistical Yearbook 2011: 285-286).

3. Exploitation of the coal reserves in Serbia is around 2.3 billion tons with an estimated value of 260 billion euros. 70% of the reserves is of lignite own calorific power as, practically, the dirtiest energy source. In Serbia, 2/3 GH gas emissions comes from power plants. For example, in the radius of 100 km of Thermo power plant (TPP) Nikola Tesla, more than 300 kg of sulfuric acid falls on every hectare. It is about fifteen times more than maximum allowed amount of that specific pollution.

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Wheat Futures as a Tool of Stabilization of Raw Material Costs in Bakery Sector

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Abstract: The article presents the example of using relations between the price of wheat flour sold by the milling companies and the price of wheat futures listed on the FOREX market to protect the companies from bakery sector against adverse price movements of raw material – wheat flour. The paper aims to present a method which can help to reduce risk of changes wheat flour price in the market by using wheat futures traded at FOREX market.

JEL Classification**:** G14, G13

Keywords: futures contracts, cost advantage, market risk

Introduction

The risk is considered as one of the biggest challenges in the theory and practice of finance of the XXI century (Bennett, 2000). It is a global issue which is very important for the Polish economy which is undergoing extensive structural changes. The basis for economic decisions is the economic calculation that takes into account analysis of the cost of alternative activities and is taking into account the impact of internal and external business environment (Baranoff, 2004). As is known, we are not able to accurately predict and control the future. Both practitioners of economic life, as well as its theorists are aware of the insufficient knowledge of economics, why there is a continuing need to improve the methods of reducing the risks associated with doing business (Rejda, 2010). This is because of the need of taking decisions that should only stem from information which should use various methods of research. Also the decision-making process in the company will need to continuously look for new instruments and should adapt existing instruments for changing the breathtaking speed reality (Miciuła, 2012). From the selection of appropriate methods of risk reduction in a company it depends on its success (Dragos, Beju, Dragos, 2009)

Given the above reasons companies increasingly tend to manage risk. The concepts of risk management policies that include risk associated with the company (Harrington, Hiehaus, 2004). Its primary object is to improve the company's financial results and provide such conditions that the institution did not incur losses greater than originally intended (Dziawgo, 2010). In practice, the idea is that the maximum limit and how best to protect themselves against it (Adamski, 2004). In the case of companies in the baking industry risk management of commodity price changes seems to be necessary today because lower harvest wheat in Poland and East Central Europe, in 2010 contributed to a considerable increase price of wheat grain on the domestic market. Limited supply of raw material and its high price on the Polish market has forced milling companies to increase import of wheat grain. Price increase of raw

material resulted in higher prices of wheat flour which is the basis of bakery production. Cause of higher wheat flour price was increase share of flour cost in the net selling price of bread which has doubled in the second and third quarter of 2010 and the estimated increase the price of bread sales by producers reached 20-30% (Mielczarski 2010). In addition, the increased level of economic uncertainty in the current crisis has changed the way of functioning of many businesses from the bakery sector. When the increased volatility of exchange rates, interest rates and commodity prices on commodity markets, bakery company discovered that their growth was not only contributes of the risk specific to the type of their business, but also of the risk of price changes in the financial markets (Gryglik, 2001). In order to avoid significant changes in the prices of flour, bakery companies may use futures contracts that allow reducing the risks associated with fluctuations in commodity prices (Reilly, Brown, 2001). Hedge against adverse movements in prices of raw material which is wheat flour, can afford to attain the cost advantage against other market participants because it gives a chance to keep the cost of raw materials at the current level and thus will not need to raise prices of bread.

Futures contracts are known for more than four centuries - the first mention of the futures contracts become from the seventeenth century from Japan where feudal lords needing money for a lavish life, often selling their future harvest (Zalewski 2006). Despite a long history of using in practice futures contracts are considered to be extremely complicated. Consequently, the futures contracts are not popular in Poland (Reilly, Brown 2001) which explains their rare use as a tool to protect against market risk caused by changes in commodity prices. However studies show that they are a good tool with high efficiency to protect against adverse price changes for livestock farmers, consumers and producers of feed and other agricultural products (Bliźniak, Gontarski 1996). Going forward it can be concluded that the futures contracts can also be used in the bakery industry to protect against uncontrolled changes prices of flour. Furthermore the use of futures contracts on wheat consumption as a tool for reducing the risk of adverse fluctuations in raw material prices may affect the stabilization of the entire production process (Gore, Haapasalo, Kess, 2011).

Purpose and methods

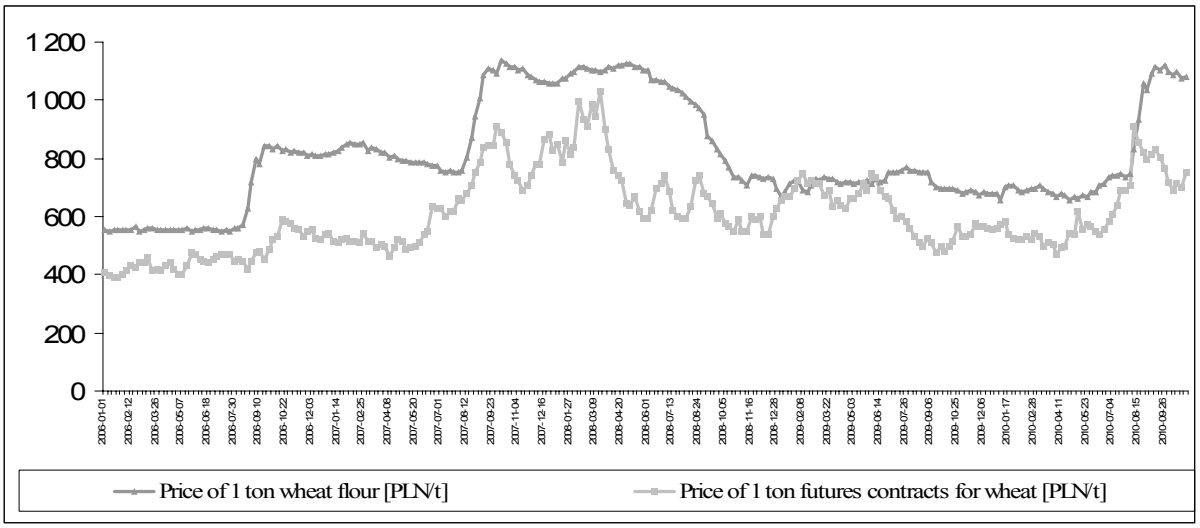
The paper aims to present a method which can help to reduce the risk of changes wheat flour price in the market by using wheat futures traded at over the counter market (OTC).
Authors used statistical analysis tool for determining the strength of the relationship between the price of wheat flour and the wheat price on the domestic market and the wheat futures price. In addition, the study used a comparative analysis which helped to select the most favorable strategy.
For the analysis authors used weekly data since January 2006 until October 2010 about wheat flour price [PLN/t], the wheat grain price [PLN/t], wheat futures prices [PLN/bushel], quotes a currency pair USD/PLN [PLN/$]. Wheat flour prices came from studies of the Department of Agricultural Markets, Ministry of Agriculture and Rural Development in Poland and represented the average sales price of wheat flour by milling companies. Information about wheat futures and quotes a currency pair USD/PLN reflect the actual trading of the FOREX market.

The study assumed one unit for the articles comparison - PLN/t as a result of this authors had converting the wheat futures using the fact that a bushel of wheat has a mass of 27.2 kg. In addition to determining the value of the wheat futures was used its specification - the price of a wheat futures is based on the market value of 100 wheat bushels, with delivery term within 2 or 3 months multiplied by a $ 400.

Results of research

The results of analysis showed that the selling price 1 ton wheat flour by Polish companies leading grain milling [PLN/t] are quite strongly correlated with the price of wheat futures [PLN/t] listed on the FOREX market. The correlation coefficient between them was 0.763. Therefore, the change in trading wheat futures contracts at the world market results in a change of the net sales of wheat flour on the Polish market. For the enterprises of bakery a fairly strong correlation between these changes is a good start to use futures contracts to secure their wheat flour purchases on the Polish market as rising prices of wheat flour in the domestic market - which translates to the company on higher costs purchase of raw materials, may well be offset by the purchase of wheat futures where the wheat grain price increase could generate additional revenues that could cover the increased costs resulting from higher flour prices. Weekly changes in the wheat flour price and wheat futures price are presented in Figure 1.

Figure 1. Evolution of the price 1 ton wheat flour [PLN/t], and the price of futures contract price for 1 ton of feed wheat [PLN/t]



As can be seen the price of 1 ton wheat flour has a similar trend as the price fluctuations of 1 ton wheat futures. Therefore it could be concluded that it is reasonable to use wheat futures to protect against the risk of wheat flour price changes.

In order to recognize the effectiveness of futures contracts to mitigate the impact of adverse changes on wheat flour prices in the domestic market, in further consideration authors have take following assumptions: The company buys every seven days a tone of wheat flour, which is consumed entirety until the next delivery. The price paid for the delivery by bakery company is accounted by price applicable on the day of delivery, delivery shall be implemented without delay.

For further test authors used seven options that can help to use future contracts to reduce fluctuations in the flour price which can be used in bakery businesses.

The first variant assumes that the bakery company buys a wheat futures contract for 1 ton on the day of delivery, and then after seven days, on the next delivery closes bought seven days ago future contract and in the same time buys another to protect against fluctuations flour price, and so progressing through the whole period from January 2006 to October 2010 (Strategy I). Second scenario assumes that the company in each day of the flour delivery buys a wheat future and held the position until final delivery at the end of the month, whereupon company is repeated this procedure throughout (Strategy II). Third option is assumed that the

company buy in each week wheat futures and is keeping them to the end of the calendar year. In the last day of delivery in a given year the company close all positions (Strategy III). In another variant the company secures, at the beginning of the month in the first day of delivery, planned volume of supplies for one month, and then on the day of last delivery in the month company realized profits or losses from transactions (Strategy IV). Fifth option envisages securing the quarterly consumption in the first day of the delivery of the quarter, and then taking profit on the day of last delivery of the quarter (Strategy V). In the sixth option it's assumed that the company will secure the purchase of flour by buying a wheat futures contract for half a year, which means that the first day of delivery in the first half of year company is secure the entire planned volume of supplies for a given period, and then in the day of last delivery in half of year is taking profits or losses from the transaction, and so proceed throughout (Strategy VI). Last option proposed by the authors is strategy that involves securing the annual consumption of wheat flour by buying the corresponding wheat futures contract which secure the estimated annual consumption of wheat flour by company (Strategy VII).

Using the above assumptions and the collected data authors calculated annual performance which are results of using above options by bakery company. Calculated results of using propose strategies are the sum of profits and losses of using wheat futures contracts and profit or losses from flour price changes on the market. Adopted by the fact that the loss of the wheat futures contract should be covered by a drop in wheat flour prices in the market. Profit from the wheat future contract should compensate increase cost of wheat flour.

Table 1. Result of market risk protection simulation [PLN]

	2006	2007	2008	2009	2010	Total
Strategy I	-126	43	165	-51	-211	-180
Strategy II	-8	984	-242	136	40	909
Strategy III	3 650	9 393	-3 249	-2 693	5 183	12 285
Strategy IV	348	1 198	-266	-183	596	1 694
Strategy V	1 518	3 810	-2 229	-675	2 163	4 586
Strategy VI	951	9 582	-4 823	-1 600	3 186	7 297
Strategy VII	6 779	14 688	-10 009	-3 415	7 934	15 978
Lack of strategy	-261	-244	364	15	-401	-527

As is apparent from the above calculations all presented strategies had higher overall results than the wheat flour purchase without securing wheat flour price changes by using wheat futures contracts. Analyzing table 1 it can be concluded that if we take into account only sum of the results of the survey period the most effective strategy is strategy VII which has generated the best result. But when we look at the results in individual years it turns out that they were of considerable volatility. For example in 2007 the amounted profit was almost 14.7 thousand PLN but a year later there was a loss - over 10 thousand PLN. Using Strategy VII to obtain the cost advantage in the bakery business was not satisfactory because in one year this strategy can cause significant cover wheat flour prices changes on the market while in others years not. Discrepancies between the results obtained in each year covered by the survey are shown in Figure 2.

Figure 2. The assumed result of investment strategies

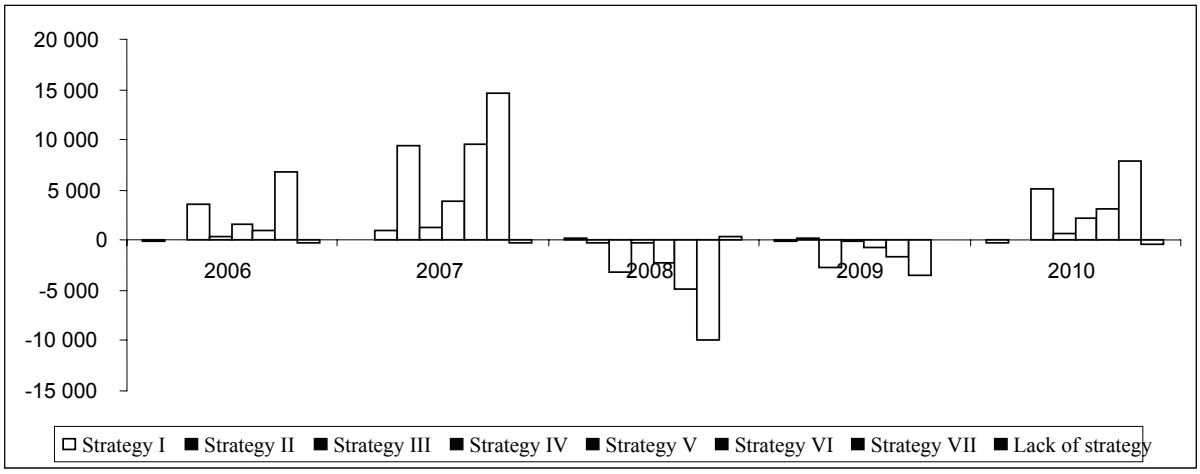
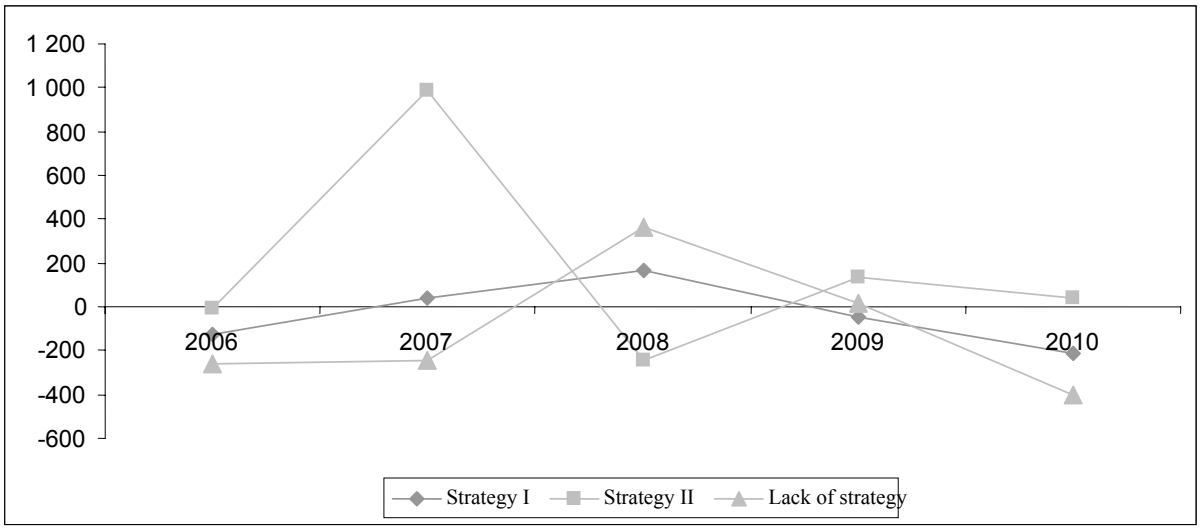


Figure 2 shows that the effectiveness of each strategy was conditioned by changes in prices of feed wheat on the world markets. In 2008-2009, presented strategy was characterized by negative results in those years because in this time was decline price of wheat flour and wheat futures contracts for wheat. In order to find the optimal strategy, which was effective in the period when the price of flour rising and when the prices falling must be sought such a strategy in which the discrepancies between the results obtained in different years were the smallest. Strategies to meet this assumption is the Strategy I and Strategy III. In both cases the results obtained from use of these strategies give suitable results for the bakery companies. The result were higher than the results in case of refusal of securing the purchase of flour.
Figure 3 presents the results obtained from the Strategy I and Strategy III. They don't provide throughout favorable results, an example of the negative effect of the application of the protection strategy is the year 2008 in the case strategy III where the outcome of its application has brought a much worse outcome than the situation without any protection. The same situation we have with strategy I. In 2009 the results of applying strategy I. have been worse than if we didn't use any protective strategies.

Figure 3. The result obtained by the use of seven investment strategies in PLN



Despite appearing in some years adverse results from using selected strategies the results obtained by the bakery business in the whole period can be considered beneficial. In most of

the value obtained from using selected strategies have generated results well above the value which reached bakery company without using any protection against adverse movements in prices of wheat flour.

Conclusions

This article showed that someone can effectively use wheat futures contracts listed on the FOREX market to protect the bakery business against adverse movements wheat flour prices. Application in practice strategy I and strategy III can allowed bakery companies to achieve cost advantages by reducing the adverse changes in the wheat flour prices. As we can see from the studies the strategies are more efficient if the prices of flour in the domestic market are rising. Evidence of this are the results obtained in 2006-2007 and 2010 where the prices of flour increased significantly. If prices dropped down which took place in 2008-2009, the effectiveness of using wheat futures contracts was lower. It should be noted that wheat futures contracts are a good tool to achieve cost advantages in the bakery industry, especially when the wheat flour prices are increased on the domestic market.

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Innovativeness of Companies in Poland in View of Experiences of the European Union

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Abstract:. Innovations are a basic source of getting a competitive advantage in modern economy. As a result, companies need innovations, including new products, services, technologies, methods of management, in order to develop dynamically. There is no one clear determination of the innovation in literature. In the paper, there were described theoretical frameworks connected with the concept of the innovation, innovativeness, and measure of innovativeness. The basic part of the study includes presentation of results of innovative operations in Polish companies and their comparison with innovative operations of companies in other Member States of the European Union.

JEL Classification Numbers: D22, L26, O31

Keywords: innovation, innovativeness, Innovation Union Scoreboard, Summary Innovation Index.

Introduction

Involvement in innovative activities is a basic condition for a company to gain a competitive advantage as well as to maintain competitiveness in the modern economy. Each company needs innovations in forms of new products, technologies, or organisational systems if it wants to develop. Furthermore, the concept of the innovation and innovativeness has become more important after the Polish accession to the European Union but also in the context of intensifying globalisation and increasing competition between companies. The innovative activity influences development of companies and determines their competitive position in the market.

There are many interpretations, from various authors, concerning the concept of innovations, and to this day, there is no one acceptable norm. The idea of innovation was introduced to the world economic literature by Schumpeter, who described it as "creative destruction" of the existing economic balance. The aim of the study is to bring the various concepts together, connected with innovations as well as describe the level of innovativeness of companies in Poland and compare Polish innovativeness with innovativeness of other EU Member States. In order to realize this objective, statistical data was used, in reference to the processes, published by the Eurostat and the Polish Central Statistical Office. The Union Scoreboard published every year by the European Commission is also an important source of information.

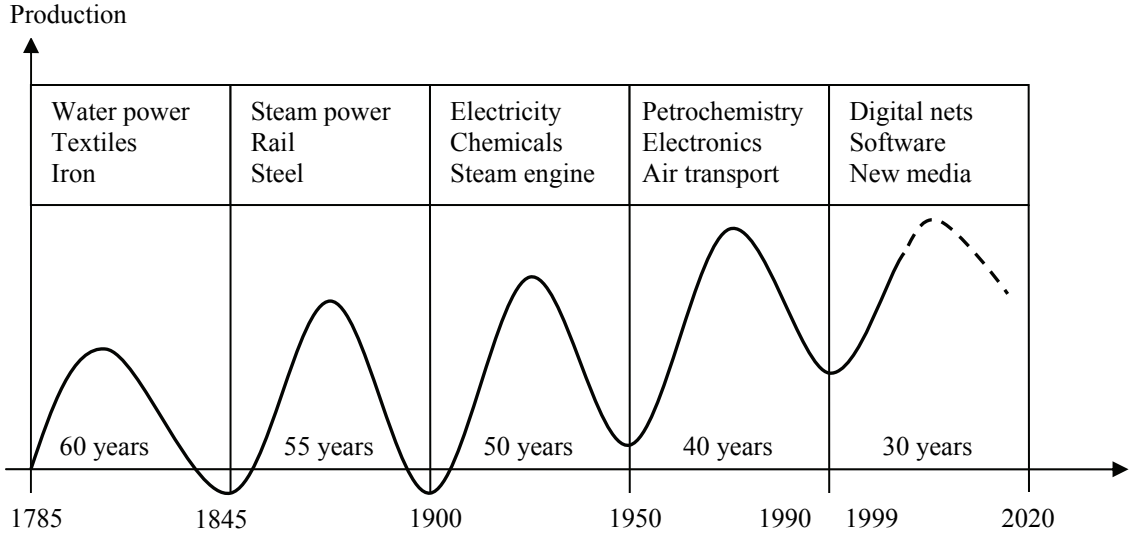
Essence and kinds of innovations – review of definitions

Innovations are defined by different representatives of the scientific world – economists, humanists or researches of exact sciences. As it has been already mentioned – Schumpeter

introduced this term to economy. According to his concept, innovations can concern five cases (Schumpeter 1960: p. 64):
1. The introduction of new products in the market.
2. The introduction of new methods of production and technologies.
3. The opening of new markets.
4. The use of new raw materials, half manufactured goods.
5. The introduction of changes in production organization.

Such defining of innovations points out their wide use in the economy. They include a significant part of all important changes, which take place in economic operations. An analysis of innovative activities, through the past few centuries, provided the acceleration of implementation, crucial for innovations to have been taking place. This process is displayed by so called "Schumpeterian waves" (Figure 1.), which shows that the range between crucial innovations has been shortening and contemporary innovative operations of companies are connected with a rule of permanent improvement of products, services, processes, not relying solely on crucial discovers.

Figure 1. Schumpeterian waves



Source: Kukliński, A. 2001. *Gospodarka oparta na wiedzy: wyzwania dla Polski XXI wieku*. Warsaw: KBN, p. 14.

As it has been mentioned before, innovations are defined by researchers of different scientific disciplines, so there exist many different terms of this idea. Examples of definitions of Polish and foreign authors were presented in table 1.

Table 1. Definitions of innovations according to selected authors

Author	Definition
E.M. Rogers	An innovation means an idea or object which is perceived as a new one by a person or other entity adopting it.
J.A. Allen	An innovation is the introduction of new products, processes or ways of operating for a wide use.
Ch. Freeman	An innovation is the first commercial

	introduction (use) of a new product, process, system or equipment.
Ph. Kotler	An innovation refers to each good which is perceived as a new one.
A. Sosnowska	Innovations for a contemporary company means: - the introduction of new products - the implementation of new technologies - changes in the production and distribution infrastructure - operations aiming at better use of employee's knowledge and skills - development of information networks
Oslo Manual	An innovation is the implementation of a new significantly improved product (good or service) or process, a new marketing methodology, or a new organizational method in business practices, workplace organization or external relations

Source: own elaboration basing on publications listed as references

Examples of innovation definitions, presented in table 1, indicates that this concept concerns not only new products; it includes also technological, organisational or marketing aspects. Both the theory as well as economic practice is a field of the evolution of this concept. Technological aspects stressed significantly in the previous years are not so emphasized nowadays. On the other hand, increase in awareness of innovations from the organisational or marketing point of view has taken place. Basing on the review of suitable references, we can distinguish different kinds of innovations. For example, taking into account a scale of changes we can have crucial and small innovations; according to a level of originality we can talk about creative, imitating innovation or taking into account an object – we can distinguish product, technological, organisational or marketing innovations.

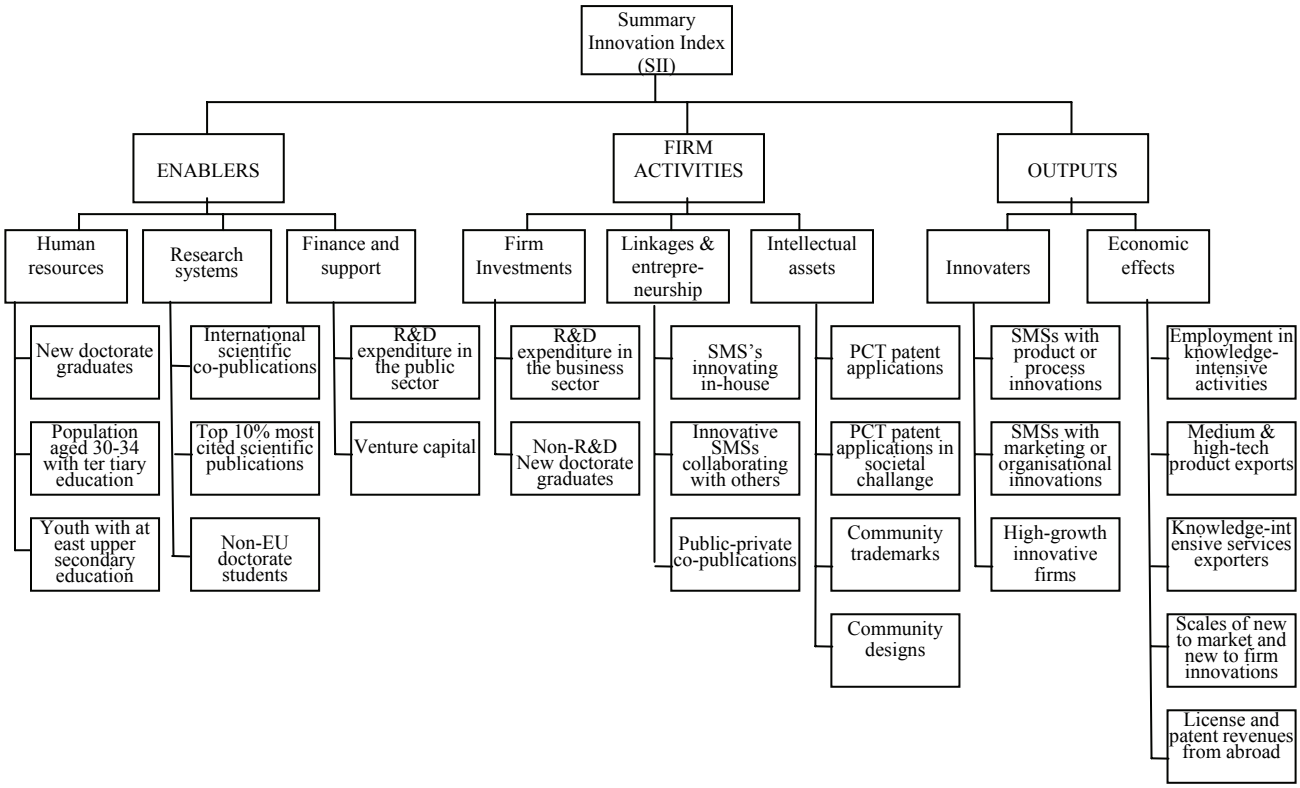
Concept and measurement of innovativeness

The concept of innovativeness, similarly as in the case of the innovation, can be defined in different ways. According to the Polish government document "Directions for the increase of economic innovativeness for the years 2007-2013" (2006), innovativeness means an ability and motivation of entrepreneurs for looking for and practical use of results of scientific research as well as R&D, new concepts, ideas and inventions. The Polish Central Statistical Office uses the definition proposed in the Handbook Oslo Manual, where innovativeness is understood as an ability of companies to create and implement as well as an actual ability to introduce new and modernized products, technological or organisational processes

Innovativeness measurement is so important that it is performed by the European Union, OECD or the World Bank. Innovativeness can be assessed on different levels: macro-, mezo-, and micro. The European Innovation Scoreboard was worked out with use of various measures on the macroeconomic level. At the beginning it included 17 indicators. Recently, the European Innovation Scoreboard was used for working out the Innovative Union Scoreboard (IUS). The IUS includes innovation indicators and trend analyses for the EU27 Member States, as well as Croatia, Iceland, The Former Yugoslav Republic of Macedonia, Norway, Serbia, Switzerland and Turkey. The IUS 2011 distinguishes between 3 main types of indicators and 8 innovation dimensions, capturing in total 25 different indicators (Figure 2).

The Enablers capture the main drivers of innovation performance external to the firm and cover 3 innovation dimensions: Human resources, Research systems as well as Finance and support. Firm activities capture the innovation efforts at the level of the firm, grouped in 3 innovation dimensions: Firm investments, Linkages & entrepreneurship and Intellectual assets. Outputs cover the effects of firm's innovation activities in 2 innovation dimensions: Innovators and Economic effects.

Figure 2. Framework of the Innovation Union Scoreboard



Source: European Commission. *Innovation Union Scoreboard 2011*. European Union 2012, 6.

Innovativeness measurement conducted by the World Bank is based on the Knowledge Economy Indicator – KEI and groups 12 indicators from the field of education and human resources, innovative environment, institutional environment or information infrastructure.

Different measures are used in research assessing companies regarding to their innovation operations, for example a number of new products or technologies introduced in the current year, proportion of new products in a value of annual sale, relation between input for research and development and a value sold in the current year.

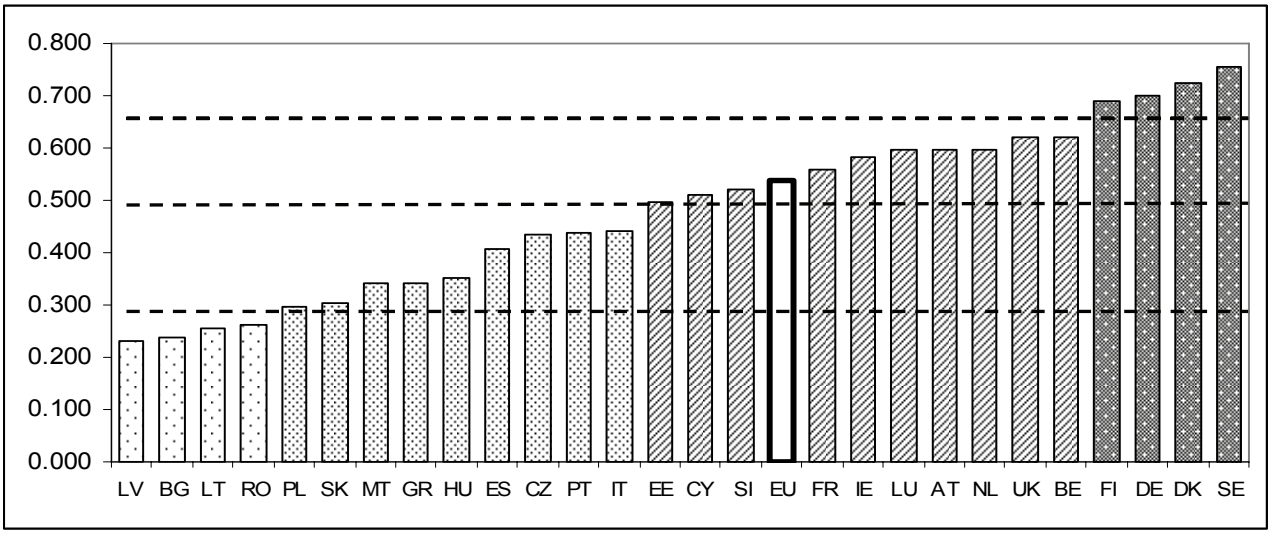
Innovativeness in EU27 Member States

European countries can be divided into 4 groups using the methodology, which is a base in the research of the Innovation Union Scoreboard 2011. The average for the EU is a reference point in this division. Figure 3 shows the performance results for 27 EU Member States.

The European Union countries were divided into four groups on the base of innovativeness results. First group of countries is "Innovation leaders". Their innovation results are higher than the average for the EU-27. This group consists of Denmark, Finland, Germany, and Sweden. Next group consist of Austria, Belgium, Cyprus, Estonia, France, Ireland, Luxembourg,

Netherlands, Slovenia and the UK. All show a performance close to that of the EU27 average. These countries are the "Innovation followers" and their innovation results are higher than the EU average. The next group of countries is characterized by the value below the EU-27 average: Czech Republic, Greece, Hungary, Italy, Malta, Poland, Portugal, Slovakia and Spain. These countries are "Moderate innovators". The performance of Bulgaria, Latvia, Lithuania and Romania is well below that of EU27 average. These countries are "Modest Innovators". Poland has the innovation performance below the EU average although it should be noticed that it was in the last group in the previous year.

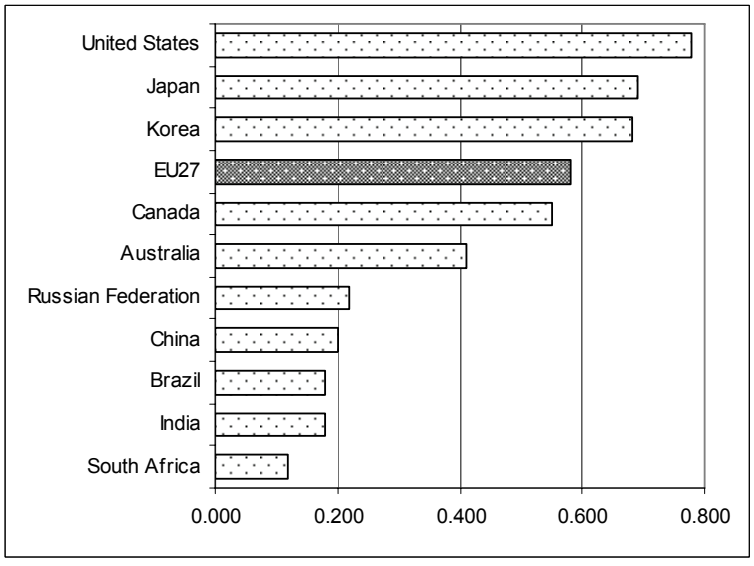
Figure 3. EU Members States' innovation performance



Source: European Commission. *Innovation Union Scoreboard 2011*. European Union 2012, 12.

Research on innovativeness conducted by the European Union consisted also a comparison of the average innovation performance of the 27 EU Member States with other important economic centres (Figure 4).

Figure 4. EU 27 Innovation performance compared to main competitors



Source: European Commission. *Innovation Union Scoreboard 2011*. European Union 2012, 18.

Figure 4 summarizes the performance for the EU27 and its major global competitors. Innovation performance in the US, Japan and South Korea is above that of the EU27. The performance of Canada is close to that of the EU27, results of Russian Federation, China, India, Brazil, South Africa are below that of the EU27 average.

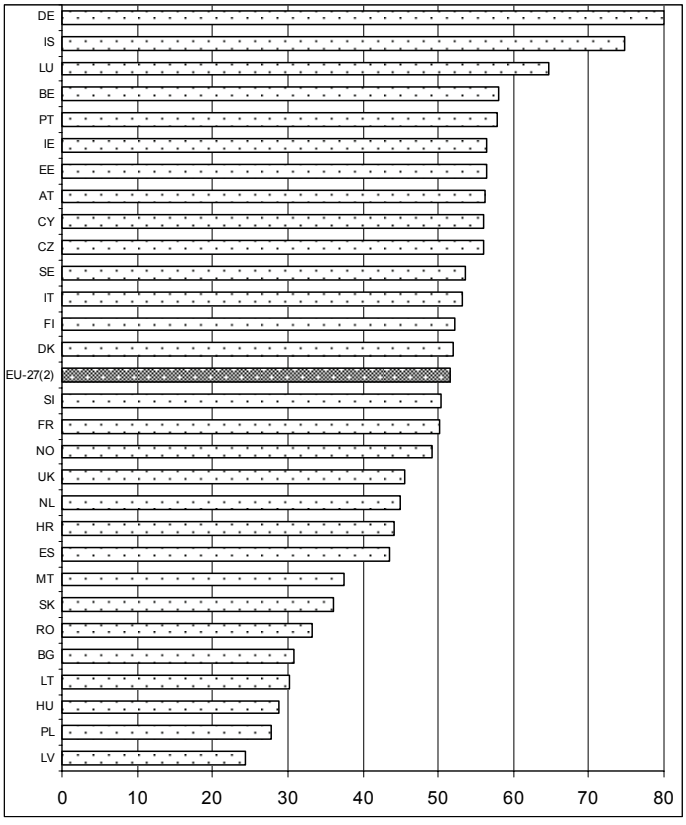
The analysis of innovation performance in different European countries should also refer to expenditure of these countries on research and development activities. In 2010, R&D intensity (R&D expenditure as a percentage of GDP) in the EU27 stood at 2%, which is below the 3% target set for 2010 by the Lisbon strategy. R&D intensity in the EU was below that in Japan (2008 - 3.45%), South Korea (2008 – 3.36%), and the United States (2008 – 2.79%), but higher than in China (2008 – 1.47%). Among the EU Member States, only Finland (3.87%), Sweden (3.42%) and Denmark (3.06%) exceeded the EU goal of devoting 3% GDP to R&D and also outperformed the United States. Another four Member States – Germany (2.82%), Austria (2.76%), France (2.26%) and Slovenia (2.11%), although not achieving the 3% goal, were above the EU27 average. In Poland expenditure for R&D stood at the level of 0.61% of GDP; it is a value considerably different from the EU average (Eurostat 2012).

Innovative activity of companies in Poland

A proportion of companies implementing innovations is one of the most popular indicators for assessment of innovation activity of companies. Poland occupies one of the last positions in the EU27 in such comparison.

In the EU 27 Member States (excluding Greece), 51.6% of enterprises from industry and services reported innovation activity between 2006 and 2008. The highest proportion of enterprises with innovation activity were recorded in Germany (79.9%), Luxembourg (64.7%), Belgium (58.1%). The lowest rates were observed in Latvia (24.3%), Poland (27.9%), Hungary (28.9%). Figure 5 shows companies with innovation activity in different European countries.

Figure 5. Enterprises with innovation activity in 2008 (%)[1]



[1] Innovative enterprises mean enterprises with innovation activity (product, process, ongoing or abandoned, organisational and marketing innovation)
[2] EU27 excluding EL
Source. Eurostat 2012. *Science, technology and innovation in Europe*, European Union 2012.p. 72.

When questioned about the objectives of innovation, more than half of innovative companies in the EU 27 mentioned the improvement of quality of goods and services as the primary driver and an increased range of goods and services as secondary drivers. Around 40% of them pointed to gaining market shares and entry into new markets.

As far as the innovation level of Polish enterprises is considered, it depends to a large extent on a size of a company. Although the proportion of companies with innovation activity is quite low (27.9%) and places Poland on the end of the ranking of countries in this field, there are clear differences taking into account company's size. The proportion of innovative enterprises is 22% in the group of small companies whereas in companies employing more than 250 persons it is on the level of 62% (Łapiński 2010, p.10-12). Generally, it was proven that larger companies more often conduct innovation activity. It results from a fact that larger companies have more significant potential for innovation activity, better access to highly educated staff, considerable financial possibilities as well as better educated and prepared managerial staff.

As far as a type of implemented innovations is concerned, 40% of enterprises in the EU 27 (excluding Greece and UK) were considered innovative in terms of technological innovation. Enterprises reporting marketing or organisational (non-technological) innovation were slightly more numerous and represented at the EU 27 level 41% of all enterprises. As far as Poland is concerned, the popularity of technological and non-technological innovations was similar in companies which implemented innovations.

As for the type of organisational innovation implemented, new methods of organizing work responsibility and decision-making were the leading innovation in twenty countries. In contrast in Belgium, Germany, the Netherlands, Slovakia, Finland and Sweden, the foremost organisational innovation implemented was new business practice. Other mentioned organisational innovation was new method of organizing external relations. In Poland, new methods of organizing work, responsibility and decision-making (72.5%) and new business practice (55.9%) were the most popular ones in enterprises which implemented organisational innovation. The main aim of organisational innovation implementation in Poland was to improve quality of goods and services (51.6%), reduce time to respond to customer or supplier needs (48%), and improve communication or information sharing (38.8%). Companies questioned about the types of marketing innovation firstly indicated the new media or techniques for product promotion, changes to aesthetic design or packaging, new methods of pricing goods or services. In Poland, the most popular marketing innovations implemented in enterprises were new methods of pricing goods or services and new media and techniques for product promotions.

The proportion of innovative enterprises shows how many innovators are in the total number of companies. Although this indicator is very important, it does not illustrate real sizes of innovation activity in companies. That is why, investments for innovative activity is an important indicator. Average expenditure of Polish enterprises, hiring more then 9 employees, for innovation activity was at the level of 809 thousand euro in 2008. This result is very good and places Poland on the 11th position in the group of the EU Member States. For example, expenditure for innovations of one enterprise in Sweden – the leader of this ranking – was 3 million euro in 2008, whereas in Bulgaria occupying the last position in the ranking, respectively 186 thousand euro (Łapiński 2010, p.17-18).

The analysis of innovation activity of enterprises in Poland should also include paying attention to sources on information in a process of working on innovations. According to the Polish Central Statistical Office, direct information from companies plays the most important role in looking for information for innovations. This source is more important for a company as it is larger. Even 57% of big companies indicate this source of information as the most important one whereas in the group of small firms it was indicated by 40%. Market resources are also more popular within big companies than in the group of medium and small ones. However, customers, suppliers and competitors are the most important sources of information for the whole population of researched companies – they stand respectively for 26%, 17% and 16%. Institutional sources or universities, scientific associations, professional entities, bodies of the Polish Academy of Science or research and development institutions are used to a small extent (Łapiński 2010, p.59-61). Taking into account the rapid development of clusters in Poland, it should be expected that the role of institutional sources as an important source of innovations will increase. Clusters' functioning establishes possibilities of closer cooperation between institutions, science and enterprises. Research and development entities participate nearly in all clusters so work on a common technology is often the main goal of a cluster. Very small enterprises (employing less than 10 workers), which have already had some experience in cooperation within cluster structures, indicate advantages from setting out common quality standards and implementation of new marketing and organisational solutions (Juchniewicz and Grzybowska 2010, p.40-42).

As far as financing innovation is concerned, external sources of financing, play a less significant role in bigger companies according to the data of the Polish Central Statistical Office. Based on this relationship, it can be concluded that lager companies are more willing to finance their innovation activity using their own investments. It probably results from the fact of uncertainty connected with innovations. A larger company investing considerable internal capital can reduce this type of risk and financing risky activities. Smaller firms have to finance innovation activity, using to a larger extent, external sources, including bank credits – the most popular form (36% for small firms, 29% for medium ones, and 20% for big ones). Running innovation activity based on external investments, in the form of bank credit, is in reality a factor limiting innovation activity of enterprises.

Conclusions

Nowadays, innovation activity of companies is a condition of reaching a competitive advantage. In the age of globalization, integration and dynamic market development, innovations give a chance for enterprise's development because they allow to introduce new products, new technologies or processes. Innovation effort of particular EU Member States contributes to the total level of the EU innovativeness. Data presented in the paper displays that the European innovativeness (of UE 27) has such competitors as the USA, South Korea or Japan. As far as innovativeness of particular EU Member States is considered, it is much diversified. The proportion of companies taking up any innovation activity is various in different countries. The highest proportion of companies take up innovation activity in Germany, Luxemburg, and Belgium, whereas the lowest ones are in Latvia and in Poland. In the group of companies introducing innovations, technological, organisational as well as marketing innovations are popular. Regardless of a kind of implemented innovations, there are important goals which enterprises want to achieve thanks to innovation activity. The objectives set by Polish companies are similar with the average of the EU and mainly consist of improvement quality of goods and services, increase of range of goods, services or increase market share, entering new markets. In the contemporary economy, reaching these goals is impossible without taking up innovation activity. However, the proportion of enterprises implementing innovations is not enough to asses the country's innovativeness. The Summary

Innovation Index is a very good indicator for such analyses; it takes into account not only enterprises introducing innovations but also more than 20 other measures.

Summing up, it can be concluded that innovations have been still fascinating despite the fact that one hundred years has passed since the first publication of Schumpeter "The Theory of Economic Growth", which introduced this term to the theory of economics. What is more, research on innovativeness is a very important part of research on the level of an enterprise, a country or a group of countries and results of innovation activity are taken into account in comparisons of economies of different countries. It may seem that we now know much more on innovative performance than Schumpeter but we have still had a problem how to use this knowledge in the everyday life. Polish companies face significant challenges in the context of competitiveness. As the referred data displayed, results of innovation activity of Polish enterprises are not very good; the proportion of innovative enterprises is not more than 30%. Also the Summary Innovation Index does not qualify Poland as innovators; we occupy only 23rd position in the group of the EU Member States. Innovativeness of Poland results from a direction of country development in the past as well as a present transformation of the national innovation system, which requires quite a long period of time. Causes of this situation are connected with slow adjusting processes in the sector of science, a low priority of innovativeness in a public agenda as well as a dominating imitative paradigm of companies' development.

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Monday and January Effects on Croatian, Serbian, and Slovenian Stock Exchanges

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Abstract:

The aim of this article is to detect Monday and January effects on stock markets in Croatia, Serbia, and Slovenia.

Average daily stock market returns are examined using standard statistical tests. There are no stable and constant signs of January effect in these countries, while there is an indication of the Monday effect in Croatia, and a Tuesday effect in Serbia and Slovenia, which could partly be described as a function of Monday effect in the US stock market.

It is argued that the causes of these seasonalities lie mainly in the irrational behaviour of market participants.

JEL Classification:

G02, G15, P34, R11

Keywords:

Monday effect, January effect, seasonality

1. Introduction

Monday effect, as well as January effect, are known and documented phenomena which can be observed on many stock exchanges throughout the world. The average daily stock returns on Mondays are lower when compared to other weekdays; given this empirical finding one could expect the stock markets to decline on Mondays (on average, in most markets). Similarly, the average stock return is higher on January than on other months in the year. This paper aims to research if Monday and January effects can be detected on Croatian (Zagreb Stock Exchange), Serbian (Belgrade Stock Exchange), and Slovenian (Ljubljana Stock Exchange) markets, using their blue chip indices.

The aforementioned markets were studied bearing in mind the impact of the global financial crisis, and regarding the two idiosyncratic and distinctive trends in the observed markets; the sharp growth, followed by the severe fall of stock prices after the financial crisis broke out. Hence, observation period was examined in totality, and was also split in two sub-

periods: the period of growth, and the period of contraction. Moreover, this paper also examines if Monday and January effects still persist in the US stock market, in order to compare and contrast selected emerging markets against it.

This study is based upon the seminal work of French (1980), where he applied rigorous statistical testing of the difference in weekday returns results, as he studied the S&P 500 index over the period 1953-1977. An extensive research of the Monday effect literature (104 references) was performed by Pettengil, and he found that "negative Monday returns for equity securities have existed for over 100 years of trading activity" (Pettengill, 2003:8).

When considering the internationality of the effect, Jaffe and Westerfield (1985) exhibited that Monday effect can also be observed on stock markets outside USA – in the U.K., Japan, Canada, and Australia. Tong (2000) found Monday effect within 23 European, Asian and North American markets. The Monday effect is also found in emerging markets; Aggarwal and Rivoli (1989) found it in Asia (Hong Kong, Singapore, Malaysia, and the Philippines). Along with the strong Monday effect they also found a "Tuesday effect", which they suggested was linked to the time-zone difference between the Asian and US markets.

Among the first to investigate the January effect were Rozeff and Kinney (1976), who found seasonal patterns in the prices at the New York Stock Exchange during the period 1904 – 1974. The January effect is also found in Canada (Berges, McConnell, and Schlarbaum, 1984), Japan (Kato and Schallheim, 1985), whereas Gultekin and Gultekin using the sample of 16 countries found January effect in 15 of them (1983). Thaler (1987) published an overview of the papers which scrutinized the January effect.

Asteriou and Kavetsos (2006) searched for January effect in Slovenia. Their paper was published before the global financial crisis, when stock markets in the region experienced severe contraction (burst of the bubble). However, research which aimed for January effect in Croatia and Serbia, as well as Monday effect in each of these countries, before and after these markets peaked, was not previously published (to the best of our knowledge). Therefore, the main hypothesis of this paper states that Croatian, Serbian, and Slovenian stock markets exhibit Monday and January effects.

The paper is organized as follows. The following chapter presents the methodology. Results are submitted in the subsequent chapter, separately for Monday and for January effects. Afterwards, obtained results are discussed. Finally, conclusion presents the main findings of the paper.

2. Methodology

Croatian, Serbian, and Slovenian stock markets are Central- and Eastern-European emerging markets, and were chosen for this research because these countries are neighbours, they share common economic and political history (ex-Yugoslavia), and their economies were and still are interconnected. They are represented by the main blue chip indices quoted on their national stock exchanges; Croatian market is embodied in the Crobex, Serbian in the Belex 15, and Slovenian in the Sbitop index. US stock market is also taken into account for the purpose of comparison, as well as to examine if the observed seasonal effects still exist there. The US stock market is in this paper represented by the Standard and Poor's 500 index.

Average daily stock market returns are examined using an array of statistical measures of central tendency, using t-test[1] with the hypothesis that weekday's (or month's) expected return is zero or positive, and employing regression analysis.

When comparing average stock return on January with the average returns on other months, a decision had to be made upon calculation and comparison of the average returns for a given month. There are two main approaches:

1) the return of a given month can be examined by taking the first and the last trading day in that month, and by calculating the return of that month using only these two data points; using this approach the average January return in a 10-year period would then be calculated by taking an average of ten cases (i.e. ten January returns) in that period;

2) the return of a given month can be examined by taking all of the daily returns in a given month and then calculating an average; in this case the average January return in a 10-year period would be calculated by taking an average of all the daily returns in Januaries in that 10-year period, which is well more than 200 cases.

First approach relies heavily on the appropriateness of the first and the last trading day in a month as good examples and representatives of the daily returns in that month. However, one could presume that one or both of these two data points could be misleading or an outlier, which could alter the aggregate statistics. Hence, in this paper the second approach was employed; when examining January effects in this paper we observe the average daily return in a given month, not the average monthly return.

Each of the three emerging market indices displays the two similar trends, and these trends are both intense and opposite in nature. Croatian, Serbian, and Slovenian stock markets experienced exceptionally high growth phase. Nevertheless, stocks later collapsed into sharp fall with the advent of the late 2000s global financial crisis. Crobex increased for more than 700% from May 1999 until January 2008; it then lost 75% of its value in the subsequent year. Belex 15 expanded from October 2005 to May 2007 for 330%, but then fall dramatically; – 90% until March 2009. Sbitop had the similar path: it rose for 490% from April 2003 to November 2007; afterwards it decreased for almost 80%. Evidently, one can monitor a typical "boom-bust" cycle in these markets. In order to examine the impact of the global financial crisis, and having in mind these events, the effects were observed in the full period and also in two sub-periods; first being the period of the high growth, and second being the one of decline.

The effects were also searched for using regression model, as presented by French (1980) and applied elsewhere[2]. If the observed stock markets are efficient, and if the stock prices follow random walk, expected returns would be the same for each day of the week, and for each month of the year. To test these propositions standard equations were used:

$$R_t^{Monday} = \alpha + \beta_2 D_{2t} + \beta_3 D_{3t} + \beta_4 D_{4t} + \beta_5 D_{5t} + \varepsilon_t^{Mon} \quad (1)$$

$$R_t^{January} = \gamma + \lambda_2 d_{2t} + \lambda_3 d_{3t} + \ldots + \lambda_{11} d_{11t} + \lambda_{12} d_{12t} + \varepsilon_t^{Jan} \quad (2)$$

[1] It allows to test hypothesis about the population mean; i.e. the observed mean is compared to an expected mean of the population (theoretical mean), and the variation in the population is estimated based on the variation in the observed sample.

[2] Gultekin and Gultekin (1983), Jaffe and Westerfield (1989), Asteriou and Kavetsos (2006), etc.

where Eq. 1 tests for the existence of the Monday effect, and the Eq. 2 for the January effect.

R_t is the return on the stock market index at time t, α is the intercept which represents the mean return for Monday, β_i are the coefficients which represent the difference between the return of Monday and day i, and D_{it} are dummy variables, which take the value 1 if the return at time t corresponds to day i, and zero otherwise. Null hypothesis states that β_i coefficients are equal to zero, and that F-statistic measuring the joint significance of the dummy variables is insignificant. Indication of a negative constant could be considered as a proof of a Monday effect.

Similarly, January effect is monitored using the same concept; R_t is the return on the stock market index at time t, γ is the constant which represents the daily mean return in January, λ_i are the coefficients which represent the difference between the daily return in January and month i, and d_{it} are dummy variables. If returns are same throughout the year, λ_i coefficients should be equal to zero, and a positive γ could be considered as a proof of a January effect.

3. Data and results

Historical data – daily closing values of the indices – is collected from the official internet websites of the respective exchanges. The maximum quantity of data was employed. Time horizon, therefore, spans from the establishment of the exchanges until October 13th, 2011, which is the most recent observation at the time this paper was being prepared. Consequently, periods of examination are not parallel[3], since the exchanges were not founded and did not start operating (and publishing their data) at the same time. Croatian stock market is examined from May 31st, 1999[4], Serbian from October 4th, 2005, and Slovenian from April 1st, 2003. Total data set used consists of 6,749 daily returns: 3,094 observations for the Crobex, 1,519 for Belex 15, and 2,137 for Sbitop index.

In contrast, the S&P 500 index is examined from January 3rd, 1950, with 15,545 cases.

3.1. Monday effect

Before examining the Croatian, Serbian, and Slovenian markets, which are of prime interest in this paper, it is worth noting if the Monday effect still persists in the US market. S&P500 index is used as an approximation for the US stock market, and the results are presented in Table 1.

[3] The purpose of this paper is not to compare these markets, but to inspect each of them separately for the Monday and January effects. Hence, non-parallel time periods are not considered as unacceptable.

[4] Zagreb Stock Exchange publishes Crobex data from January 2nd, 1997, but for unknown reason daily closing Crobex values for Mondays are published only from May 31st, 1999.

Table 1. Daily returns of the S&P500 index, grouped by weekday

S&P500	Mean, %	Trimmed mean,5%	Median, %	Min., %	Max., %	Stand. Dev., %	Skew.	Kurt.	t-stat
Monday	-0.06	-0.04	-0.03	-20.47	11.58	1.14	-2.28	45.08	-3.08***
Tuesday	0.04	0.02	0.01	-5.74	10.79	0.98	0.77	8.91	2.16**
Wednesday	0.08	0.08	0.09	-9.03	9.10	0.93	-0.03	9.93	4.87***
Thursday	0.04	0.04	0.05	-7.62	6.92	0.93	-0.22	6.69	2.19**
Friday	0.07	0.08	0.10	-6.77	6.32	0.88	-0.42	5.53	4.21***
Period of observation: January 3rd, 1950 – October 13th, 2011 * – significant at 10% level; ** – significant at 5% level; *** – significant at 1% level									

Monday is the only weekday with the negative average daily stock returns. The t-statistics shown in Table 1 indicate that the hypothesis that weekday's expected return was zero (or positive) can be rejected with high level of significance (p = 0,002). Hence, there is still an indication that Monday effect could still be observable in the US stock market, which is in line with previous studies.

Daily index returns for the Croatian stock market are presented in Table 2. The average stock return is lower on Mondays than on other weekdays. The kurtosis is higher on Mondays than on other trading days, which indicates a leptokurtic (fat tailed) distribution. The average return on Monday remains lowest when the upper and the lower 5% of sample were discarded (regarding the trimmed mean). However, the Monday effect is significant only after the beginning of the global financial crisis, in the period of contraction of the stock market.

Table 2. Daily returns of the Crobex index, grouped by weekday

Crobex	Mean, %	Trimmed mean,5%	Median, %	Min., %	Max., %	Stand. Dev., %	Skew.	Kurt.	t-stat
Period of observation: May 31st, 1999 – October 13th, 2011 (full period)									
Monday	-0.07	-0.08	-0.11	-8.63	15.93	1.75	1.44	17.09	-1.03
Tuesday	0.06	0.03	0.02	-8.34	8.94	1.56	0.63	6.50	0.95
Wednesday	0.07	0.08	0.09	-8.47	6.92	1.47	-0.42	6.14	1.19
Thursday	0.12	0.10	0.04	-7.59	13.54	1.46	1.01	15.56	1.95**
Friday	0.03	0.06	0.10	-10.20	7.91	1.41	-0.86	11.11	0.50
Period of observation: May 31, 1999 – December 31, 2007 (sub-period of growth)									
Monday	0.06	0.03	0.00	-8.63	12.07	1.49	0.94	13.54	0.76
Tuesday	0.11	0.10	0.07	-8.34	7.63	1.43	0.15	6.77	1.59
Wednesday	0.09	0.06	0.02	-8.47	6.92	1.35	0.08	6.71	1.31
Thursday	0.17	0.13	0.03	-5.90	13.54	1.38	2.23	22.97	2.54***
Friday	0.08	0.10	0.12	-8.03	6.87	1.29	-0.40	8.61	1.32
Period of observation: January 2nd, 2008 – October 13th, 2011 (sub-period of decline)									
Monday	-0.36	-0.38	-0.35	-6.47	15.93	2.19	1.93	16.51	-2.24**
Tuesday	-0.05	-0.12	-0.12	-5.08	8.94	1.82	1.20	5.81	-0.40
Wednesday	0.04	0.10	0.17	-7.98	4.96	1.71	-0.95	4.81	0.29
Thursday	-0.01	0.03	0.06	-7.59	6.47	1.64	-0.61	5.76	-0.07
Friday	-0.10	-0.03	-0.00	-10.20	7.91	1.66	-1.27	11.84	-0.79
* – significant at 10% level; ** – significant at 5% level; *** – significant at 1% level									

Table 3 presents the daily returns for the Serbian stock market, and it exhibits Tuesdays as trading days with the lowest average returns. The distribution of the returns has fattest tails on Tuesdays (highest kurtosis).

Table 3. Daily returns of the Belex 15 index, grouped by weekday

Belex 15	Mean, %	Trimmed mean,5%	Median, %	Min., %	Max., %	Stand. Dev., %	Skew.	Kurt.	t-stat
Period of observation: October 4th, 2005 – October 13th, 2011 (full period)									
Monday	-0.12	-0.14	-0.16	-8.09	12.93	1.79	1.00	11.49	-1.15
Tuesday	-0.19	-0.16	-0.16	-10.29	12.79	1.76	0.32	14.06	-1.91**
Wednesday	0.00	0.00	-0.02	-9.19	8.58	1.59	-0.35	8.24	0.02
Thursday	0.12	0.12	0.07	-7.85	7.76	1.50	0.14	6.62	1.43
Friday	0.06	0.03	0.04	-6.15	11.44	1.58	1.07	10.17	0.65
Period of observation: October 4th, 2005 – May 3rd, 2007 (sub-period of growth)									
Monday	0.09	0.13	0.19	-3.88	2.88	1.04	-0.79	2.71	0.74
Tuesday	0.25	0.23	0.15	-1.75	2.80	0.90	0.36	0.27	2.49***
Wednesday	0.40	0.33	0.23	-1.29	3.65	1.02	1.04	1.23	3.44***
Thursday	0.53	0.48	0.44	-1.45	4.96	1.05	0.99	2.97	4.45***
Friday	0.29	0.24	0.18	-2.02	3.89	0.99	0.90	2.95	2.57***
Period of observation: May 4th, 2007 - October 13th, 2011 (sub-period of decline)*									
Monday	-0.19	-0.23	-0.22	-8.09	12.93	1.98	1.11	10.0	-1.43
Tuesday	-0.35	-0.33	-0.26	-10.29	12.79	1.95	0.49	12.35	-2.67***
Wednesday	-0.13	-0.13	-0.08	-9.19	8.58	1.73	-0.29	7.57	-1.17
Thursday	-0.02	-0.02	-0.07	-7.85	7.76	1.60	0.20	6.44	-0.15
Friday	-0.02	-0.05	-0.06	-6.15	11.44	1.73	1.14	9.28	-0.17
* – significant at 10% level; ** – significant at 5% level; *** – significant at 1% level									

The data indicates that, rather than the Monday effect, there is more of a "Tuesday effect" in Serbia. To be more exact, the low returns on Mondays continue and widen for the next day. Lowest returns on Tuesdays are significant in the full time period, as well as in both sub-periods.

When examining the Monday effect in Slovenia (Table 4), one can detect results similar to Serbia. Monday and Tuesday are the only days with negative average returns, but Tuesday dominates. Comparable to Serbia, Tuesday effect in Slovenia is significant both in the full time period, and in the period of the contraction of the Slovenian stock market.

Table 4. Daily returns of the Sbitop index, grouped by weekday

Belex 15	Mean, %	Trimmed mean,5%	Median, %	Min., %	Max., %	Stand. Dev., %	Skew.	Kurt.	t-stat
Period of observation: April 1st, 2003 – October 13th, 2011 (full period)									
Monday	-0.05	-0.03	-0.01	-6.38	5.84	1.12	-0.36	6.08	-0.91
Tuesday	-0.18	-0.14	-0.07	-6.42	8.72	1.23	-0.24	10.19	-3.06***
Wednesday	0.06	0.06	0.05	-7.40	6.61	1.07	-0.20	9.28	1.19
Thursday	0.07	0.09	0.06	-8.09	7.00	1.11	-0.66	13.00	1.23
Friday	0.17	0.17	0.13	-6.80	6.58	1.03	-0.13	9.23	3.44***
Period of observation: April 1, 2003 – August 31, 2007 (sub-period of growth)									
Monday	0.07	0.08	0.11	-3.07	3.00	0.77	-0.23	2.16	1.40
Tuesday	0.01	0.03	0.02	-3.34	4.10	0.88	-0.07	3.87	0.24
Wednesday	0.14	0.13	0.09	-2.44	3.38	0.78	0.31	2.27	2.74***
Thursday	0.26	0.23	0.16	-2.13	5.16	0.76	1.53	8.07	5.20***
Friday	0.24	0.22	0.15	-2.71	3.17	0.66	0.36	3.13	5.27***
Period of observation: September 3, 2007 - October 13, 2011 (sub-period of decline)									
Monday	-0.18	-0.17	-0.13	-6.38	5.84	1.38	-0.16	4.42	-1.85*
Tuesday	-0.39	-0.32	-0.26	-6.42	8.72	1.49	0.00	8.84	-3.77***
Wednesday	-0.03	-0.02	-0.06	-7.40	6.61	1.31	-0.17	7.71	-0.28
Thursday	-0.15	-0.10	-0.04	-8.09	7.00	1.37	-0.70	9.89	-1.55
Friday	0.10	0.10	0.08	-6.80	6.58	1.33	-0.07	6.18	1.10
* – significant at 10% level; ** – significant at 5% level; *** – significant at 1% level									

After observing the negative returns on Tuesdays in Serbia and Slovenia, a new question emerged: is there a spillover effect from the US market onto the Serbian and Slovenian markets? In other words, can a time series process be observed, where the Serbian and Slovenian stock markets follows the US market with a one day lag?

A regression was modelled[5], where the Belex and Sbitop return on Tuesdays were regarded as a function of S&P500 return on previous trading day, i.e. Monday[6]:

$$R_{Tuesday}^{Belex} = \alpha + \beta R_{Monday}^{S\&P500} + \varepsilon \quad (3)$$

$$R_{Tuesday}^{Sbitop} = \gamma + \delta R_{Monday}^{S\&P500} + \varepsilon \quad (4)$$

Results of the regression are given in Table 5. Using one variable – S&P500 return on Mondays – one can yield a statistically significant model that explains 25-26% of the variations of the Belex and Sbitop on Tuesdays. More than a quarter of the returns on Tuesdays in Serbia and Slovenia could be regarded as a function of the return in the US market on Monday; consequently, it can be inferred that the Tuesday effect in Serbia and Slovenia are to a certain (not negligible) extent a reaction to the Monday effect in the USA.

[5] Data was tested for stationarity; standard ADF test showed no unit roots. Detailed data is available from author upon request.

[6] Only subsequent Monday-Tuesday pairs were considered; if a Monday was not a working day in the USA, than Fridays were not used and the week was ignored, the same as if a Tuesday was not a working day in Serbia/Slovenia.

Table 5. Belex and Sbitop on Tuesdays as a function of S&P500 on Mondays

		coeff.	Std. Error	t(265)
Belex	α	-0.187	0.096	-1.951**
	β	0.527	0.053	9.873***
	R^2= .269; Adj. R^2= .266; F(1.265)=97.467***			
Sbitop	γ	-0.207	0.055	-3.746***
	δ	0.383	0.035	11.069***
	R^2= .248; Adj. R^2= .246; F(1.371)=122.52***			
** – significant at 5% level; *** – significant at 1% level				

As mentioned, the stock markets were also being examined for the Monday effect using regression analysis (Eq. 1). However, after observing the predominant Tuesday effect instead of Monday effect in Serbia and Slovenia, Eq. 1 was employed only in Croatia, whereas in Serbia and Slovenia regression was modelled to search for the Tuesday effect. While Eq. 1 positions the constant on Monday, Eq. 5 shifts the intercept to Tuesday, as follows:

$$R_t^{Tuesday} = \beta_1 D_{1t} + \alpha + \beta_3 D_{3t} + \beta_4 D_{4t} + \beta_5 D_{5t} + \varepsilon_t \quad (5)$$

The results are presented in Table 6. Null hypothesis (β_i coefficients are equal to zero, and F-statistic measuring the joint significance of the dummy variables is insignificant) is rejected in Serbia (sub-period of growth) and in Slovenia (full period and both sub-periods).

Significant negative constant on Monday is found in Croatia in the sub-period of the market decline, whereas significant negative constant on Tuesday can be observed in Serbia (full period and both sub-periods), and also in Slovenia (full period and sub-period of contraction).

Table 6. Monday (Croatia) and Tuesday (Serbia, Slovenia) effects

		Full period		Sub-period of growth		Sub-period of decline	
		coeff.	t	coeff.	t	coeff.	t
Crobex	α	-0.001	-1.17	0.001	0.82	-0.004	-2.71***
	β_2	0.001	1.52	0.001	0.57	0.003	1.65*
	β_3	0.001	1.64*	0.000	0.31	0.004	2.13**
	β_4	0.002	2.14**	0.001	1.20	0.003	1.87*
	β_5	0.001	1.16	0.000	0.28	0.003	1.38
	F-statistic	F(4.3088)=1.2922		F(4.2143)=.41274		F(4.940)=1.3802	
Belex 15	α	-0.002	-2.05**	0.003	2.24**	-0.003	-2.90***
	β_1	0.001	0.55	-0.002	-1.03	0.002	0.91
	β_3	0.002	1.47	0.001	0.89	0.002	1.26
	β_4	0.003	2.37**	0.003	1.70*	0.003	1.95**
	β_5	0.003	1.89*	0.000	0.23	0.003	1.91*
	F-statistic	F(4.1513)=1.8776		F(4.385)=2.0639*		F(4.1123)=1.3016	
Sbitop	α	-0.002	-3.37***	0.000	0.28	-0.004	-4.07***
	β_1	0.001	1.72*	0.001	0.80	0.002	1.53
	β_3	0.002	3.20***	0.001	1.74*	0.004	2.69***
	β_4	0.002	3.26***	0.003	3.40***	0.002	1.77*
	β_5	0.004	4.64***	0.002	3.01***	0.005	3.60***
	F-statistic	F(4.2131)=6.2226***		F(4.1099)=4.1219***		F(4.1027)=3.6362***	
* – significant at 10% level; ** – significant at 5% level; *** – significant at 1% level							

When regression model (Eq. 1.) is applied on the S&P500 index, negative (albeit relatively small) and significant Monday coefficient shows that US market still performs lower on Monday than on other weekdays, which reassures the existence of the Monday effect in this segment of the US stock market (Table 7).

Table 7. Monday effect in the USA

S&P500	coeff.	t
α	-0.001	-3.59***
β_2	0.001	4.09***
β_3	0.001	5.81***
β_4	0.001	4.04***
β_5	0.001	5.22***
F-statistic	F(4.155)=10.226***	
Period of observation: January 3rd, 1950 – October 13th, 2011 *** – significant at 1% level		

3.2. January effect

January effect is presented using the similar statistical concepts as the Monday effects. Again, first presented are the daily stock returns on the US market (Table 8). The average daily stock return is significantly higher than zero on January. On the other hand, November, December, and April all outperform January, as they exhibit higher average returns with more significant statistical results. Hence, there is no indication of the January effect in the US market, as stock returns generally do increase in January, but not higher than on other months in the year.

Table 8. Daily returns of the S&P500 index, grouped by month

S&P500	Mean, %	Trimmed mean,5%	Median, %	Stand. Dev., %	Min., %	Max., %	Skew.	Kurt.	t-stat
January	0.05	0.06	0.09	0.93	-6.77	5.01	-0.43	5.17	1.91**
February	-0.01	0.01	0.00	0.84	-4.91	4.01	-0.48	2.89	-0.38
March	0.05	0.05	0.05	0.91	-4.66	7.08	0.46	7.23	2.18**
April	0.07	0.07	0.09	0.89	-5.83	4.37	-0.07	4.31	2.98***
May	0.01	0.01	0.03	0.89	-6.68	5.02	0.06	5.06	0.49
June	0.00	0.00	0.02	0.85	-5.38	3.44	-0.29	2.70	-0.14
July	0.04	0.05	0.08	0.88	-3.84	5.73	0.15	3.95	1.85*
August	0.00	0.00	0.03	0.97	-6.80	4.76	-0.39	6.39	-0.08
September	-0.03	-0.01	0.03	1.04	-8.81	5.42	-0.70	8.54	-0.95
October	0.04	0.04	0.02	1.40	-20.47	11.58	-1.91	45.40	0.93
November	0.08	0.09	0.13	1.06	-6.71	6.92	-0.17	7.81	2.58***
December	0.08	0.08	0.07	0.88	-8.93	5.14	-0.54	11.25	3.38***
Period of observation: January 3rd, 1950 – October 13th, 2011 * – significant at 10% level; ** – significant at 5% level; *** – significant at 1% level									

Contrary to the US stock market, the mean return on Croatian stocks is considerably higher in January than on other months (when observing the full time period), a result that is statistically significant at the 0.009 level. Nevertheless, January effect in Croatia faded away in the sub-period of the market decline. Descriptive statistics for average stock returns in Croatia grouped by month are presented in Table 9.

Table 9. Daily returns of the Crobex index, grouped by month

Crobex	Mean, %	Trimmed mean,5%	Stand. Dev., %	t-stat.	Mean, %	Trimmed mean,5%	Stand. Dev., %	t-stat	Mean, %	Trimmed mean,5%	Stand. Dev., %	t-stat.
	full period				sub-period of growth				sub-period of decline			
January	0.24	0.25	1.40	2.65***	0.34	0.33	1.37	3.25***	0.01	0.07	1.45	0.07
February	-0.01	-0.01	1.41	-0.16	0.16	0.12	1.27	1.64*	-0.37	-0.32	1.60	-2.07**
March	0.10	0.05	1.43	1.10	0.15	0.07	1.43	1.43	-0.02	-0.00	1.43	-0.12
April	0.05	0.07	1.54	0.54	0.03	0.05	1.47	0.29	0.09	0.07	1.67	0.49
May	0.14	0.09	1.80	1.23	0.03	0.00	1.88	0.24	0.36	0.28	1.62	2.00**
June	-0.10	-0.09	1.35	-1.24	0.02	0.02	1.19	0.25	-0.39	-0.36	1.63	-2.14**
July	-0.01	0.01	1.34	-0.08	-0.00	0.04	1.23	-0.04	-0.01	-0.03	1.55	-0.07
August	0.05	0.05	1.05	0.78	0.09	0.11	1.03	1.23	-0.05	-0.08	1.10	-0.40
September	-0.09	-0.07	1.54	-0.93	-0.07	-0.02	1.54	-0.61	-0.13	-0.16	1.56	-0.76
October	-0.04	0.00	2.04	-0.34	0.11	0.08	1.23	1.30	-0.48	-0.48	3.35	-1.20
November	0.03	0.01	1.88	0.25	0.24	0.16	1.73	1.91*	-0.61	-0.57	2.18	-2.19**
December	0.16	0.12	1.38	1.87*	0.10	0.08	1.06	1.30	0.33	0.25	1.99	1.35
* – significant at 10% level; ** – significant at 5% level; *** – significant at 1% level												

January effect is not observable in Serbia (Table 10). When examining Serbian stock market for January effect, consistent, statistically significant results cannot be found. In the period of market growth January did exhibit high average returns (which are also statistically significant), but in that sub-period July and March outperform January.

Table 10. Daily returns of the Belex 15 index, grouped by month

Belex 15	Mean, %	Trimmed mean,5%	Stand. Dev., %	t-stat.	Mean, %	Trimmed mean,5%	Stand. Dev., %	t-stat	Mean, %	Trimmed mean,5%	Stand. Dev., %	t-stat.
	full period				sub-period of growth				sub-period of decline			
January	0.17	0.12	1.35	1.32	0.44	0.45	0.89	2.97***	0.04	-0.05	1.51	0.22
February	-0.02	0.01	1.42	-0.12	0.45	0.47	0.86	3.26***	-0.25	-0.26	1.59	-1.36
March	-0.02	0.01	1.75	-0.13	0.64	0.56	1.34	3.20***	-0.35	-0.31	1.83	-1.82*
April	0.22	0.20	1.36	1.70*	0.35	0.34	1.61	1.29	0.16	0.14	1.24	1.12
May	0.21	0.05	2.51	0.94	-0.11	-0.09	0.67	-0.77	0.29	0.10	2.75	1.04
June	-0.17	-0.17	1.28	-1.48	-0.24	-0.19	0.91	-1.26	-0.15	-0.15	1.35	-1.17
July	-0.04	-0.06	1.04	-0.39	0.73	0.69	0.90	3.61***	-0.17	-0.20	1.01	-1.81*
August	0.06	0.06	1.69	0.40	0.34	0.36	1.05	1.57	-0.00	0.00	1.80	-0.01
September	-0.16	-0.12	1.42	-1.30	0.45	0.43	0.78	2.65***	-0.28	-0.25	1.49	-1.97**
October	-0.31	-0.18	2.37	-1.57	0.13	0.11	0.80	1.04	-0.50	-0.39	2.76	-1.80*
November	-0.30	-0.22	1.31	-2.57***	0.13	0.14	0.63	1.36	-0.52	-0.46	1.51	-3.15***
December	0.14	0.08	1.49	1.08	0.29	0.26	0.79	2.44***	0.07	-0.03	1.72	0.36
* – significant at 10% level; ** – significant at 5% level; *** – significant at 1% level												

In Slovenia January effect could only be found in the sub-period of market expansion, as shown in Table 11. During that phase average stock returns were considerably higher in January than on other months.

Table 11. Daily returns of the Sbitop index, grouped by month

Sbitop	Mean, %	Trimmed mean,5%	Stand. Dev., %	t-stat.	Mean, %	Trimmed mean,5%	Stand. Dev., %	t-stat.	Mean, %	Trimmed mean,5%	Stand. Dev., %	t-stat.
	full period				sub-period of growth				sub-period of decline			
January	0.15	0.18	1.28	1.54	0.35	0.34	0.72	4.48***	-0.05	-0.04	1.65	-0.26
February	-0.13	-0.11	0.80	-1.95**	-0.09	-0.06	0.52	-1.47	-0.16	-0.15	1.01	-1.44
March	-0.01	-0.01	1.07	-0.18	0.12	0.14	0.82	1.40	-0.15	-0.15	1.27	-1.13
April	0.15	0.16	1.24	1.64*	0.32	0.32	0.85	3.74***	-0.06	-0.06	1.57	-0.32
May	0.00	-0.01	1.08	0.05	-0.01	-0.03	1.01	-0.13	0.03	0.02	1.17	0.20
June	0.01	-0.01	0.85	0.22	0.07	0.06	0.58	1.26	-0.06	-0.10	1.09	-0.48
July	0.08	0.04	0.94	1.16	0.23	0.19	0.99	2.48***	-0.11	-0.14	0.84	-1.29
August	0.03	0.09	0.89	0.49	0.18	0.22	0.68	2.82***	-0.16	-0.09	1.07	-1.40
September	-0.05	-0.03	1.12	-0.56	0.16	0.16	0.75	1.96**	-0.21	-0.21	1.32	-1.64*
October	0.01	0.08	1.64	0.06	0.16	0.18	0.66	2.23***	-0.13	-0.07	2.15	-0.58
November	-0.06	0.00	1.31	-0.55	0.21	0.20	0.81	2.34***	-0.32	-0.24	1.64	-1.78*
December	-0.06	-0.02	0.99	-0.72	0.03	0.05	0.62	0.37	-0.14	-0.08	1.26	-0.99
* – significant at 10% level; ** – significant at 5% level; *** – significant at 1% level												

After reviewing basic descriptive statistics, January effect was tested using regression analysis, namely Equation 2.

January effect in the US stock market is relatively weak (γ =0.00049), and is found only with lower level of statistical significance (p=0.068), as presented in Table 12. This result is relevant because January effects were found neither in the examined emerging countries. When examining Croatia, Serbia, and Slovenia, indications of January effect could only be found in Slovenia, and just in the sub-period of market expansion (**Napaka! Vira sklicevanja ni bilo mogoče najti.**results available from author upon request).

Table 12. January effect in the US stock market, regression results

S&P500	coeff.	t
γ	0.000	1,82*
λ_2	-0.001	-1,50
λ_3	0.000	0,12
λ_4	0.000	0,64
λ_5	-0.000	-0,97
λ_6	-0.001	-1,38
λ_7	-0.000	-0,11
λ_8	-0.001	-1,36
λ_9	-0.001	-2,00**
λ_{10}	-0.000	-0,37
λ_{11}	0.000	0,74
λ_{12}	0.000	0,88
F-statistic	F(11.155)=1.889**	
* – significant at 10% level; ** – significant at 5% level		

4. Discussion

Market participants in Croatia, Serbia, and Slovenia on average exhibit pessimistic behaviour at the beginning of the week (Mondays in Croatia, Tuesdays in Serbia and Slovenia). The Tuesday effect in Serbia and Slovenia can partly be described as a function of Monday effect in the most influential market in the World – the US stock market, which is consistent with Aggarwal and Rivoli (1989). The absence of the strong Monday effect in Serbia and Slovenia could also be attributed to the smaller size of data sample, and longer information response time.

On the other hand, when compared to the weekday effect, regression results exhibit that January effect is not so consistent, as January effect could only be found in Slovenia, and only in the sub-period of market growth, while there were no indications for it in Croatia and Serbia. Therefore, above-average optimism on stock markets in January cannot be coherently perceived across observed countries, and across different periods.

When it comes to the explanation of the noted Monday (Tuesday) effect, it should be noted that the term 'Monday effect' is not endemic for stock markets, as it can be found in other social sciences, invoking the behavioural finances to come into act. The similar object of research – unconventional Monday behaviour – is also examined by psychologists, sociologists, demographers, and others, and Monday effect should therefore be examined in the context of other social sciences. Areni and Burger (2008) present evidence of a survey of

202 participants, where Monday was cited most frequently as the worst day of the week morning and evening, whereas Friday and Saturday were the best morning and evening. Additionally, Areni makes a vibrant claim: "If aliens landed on earth and began observing human behaviour, three temporal patterns would become obvious - behaviour varies by hours of the day, days of the week, and seasons of the year." (2008; 1228).

The lack of inspiration and driving force that suppresses workers' optimism, whereas they "lack motivation on a Monday as a consequence of this day being the point furthest from the next available day of rest or leisure" (Bryson and Forth, 2007: 11-12), reflects significantly on workers' productivity, and should be considered when explaining Monday effect.

The evidence for high levels of pessimism at the beginning of the week can easily be found outside the stock markets. Irrational human behaviour, as presented in the Monday effect, frequently produces severe repercussions. It is frequently found that the weekly distribution of suicides is highest on Mondays, and lowest on Weekends (Bollen, 1983; Massing and Angermeyer, 1985; Gabennesch, 1988; Maldonaldo and Kraus, 1991; Jessen et al., 1999; Nishi et al., 2000; UK Office for National Statistics, 2005; Ohts et al. 2009). This 'suicide-on-Monday' phenomenon, which is observable in Croatia as well (Kozarić-Kovačić, 2000), is without a doubt an extreme and radical representation of the above-average pessimism that many people experience at the beginning of the week.

Hence, we argue that Monday effect, when it exists, is a demonstration of human irrationality (i.e. emotionality) which is reflected on the stock market, and that researchers who seek to clarify behaviour of market participants utilizing only rational explanations disregard remarkably important aspects of investors' market assessment practices.

5. Conclusion

The main hypothesis of this paper, which states that Croatian, Serbian, and Slovenian stock markets exhibit Monday and January effects, is partially rejected. To be more exact, there are no convincing signs of January effect in these countries, while there is an indication of the Monday effect in Croatia, and stronger signs of Tuesday effect in Serbia and Slovenia.

We argue that the causes of these seasonalities lie mainly in the emotionality of market participants, as they express above-average subjective level of pessimism at the beginning of the week. On the other hand, there is no clear evidence that market participants in Croatia, Serbia, and Slovenia generally feel more optimistic at the beginning of the year. Since this is the domain of the behavioural finance, the experts from other fields of social sciences are called upon to further investigate and propose explanations of these phenomena.

There are certain drawbacks constraining the findings of this paper, and they should be addressed. These markets are rather small and narrow. Furthermore, the modern history of the financial markets in Croatia, Serbia and Slovenia is not lengthy. This does not constitute an extensive research period; nonetheless, it does not absolutely hinder the findings, as the results (although not definite and decisive) still present an important insight into functioning of these markets. In the future, when a larger dataset is obtainable, this kind of research should certainly be repeated.

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Estimation of Risk Premium: Bond Issuer's Approach

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Abstract: The paper is aimed at the estimation of future risk premium for an envisaged bond issue. The objective of the paper is to propose how to handle the risk of fluctuation of risk premium, how to measure such a risk and how to minimize it. Factors determining risk premium fluctuations are analysed. Special attention is paid to economies with insufficiently developed bond market, particularly to the Czech Republic. Modified Value at Risk and Expected Shortfall models based on observed risk premiums are proposed as the measures of the risk of fluctuations of changes in risk premium.

JEL Classification Numbers: G22, G32
Keywords: Risk premium, Refinancing risk, Value at Risk, Expected Shortfall

I. Introduction

Financial institutions that are financed by an issue of bonds are exposed to the risk of an increase in their own risk premium. That implies an increase in their costs of acquisition of new funds. This risk is also called a refinancing risk. A sharp rise in risk premiums is typical of financial crises when risk premiums (often identified with credit spread) may rise even by several tens of points within a few days. The aim of this paper is to analyse the factors determining risk premium and its movements; and particularly, to analyse a bond issuer's situation at the time after financial crisis when the level of credit spread is a significant factor influencing the costs of acquisition of external funds. Outputs of this analysis are recommendations and proposals how to handle refinancing risk, how to measure it and manage its level.

Section 2 is devoted to the theoretical framework of modelling credit risk and credit risk premium. Factors determining movements of the risk premium level based on both the theory and empirical studies are presented. In Section 3 a model is used to describe the situation of a financial institution issuing its own bonds. A concept of the measure of risk resulting from the movement of credit spreads is proposed on the basis of Value at Risk and Expected Shortfall models. Possibilities of refinancing risk management are also mentioned. Section 4 deals in greater detail with the Czech market in corporate bonds and its specificities. It is proposed how to apply the measure of refinancing risk through Value at Risk and Expected Shortfall models in conditions of the Czech Republic.

II. Determinants of risk premium

An investor buying bonds in the primary market demands from the issuer, besides the yield as market rate, additional yield by virtue of risk premium. Such a yield is demanded for undertaking additional risks that are undertaken in comparison with investment in a risk-free asset. Government bond with the same maturity date is usually considered as a risk-free asset. Currently, it is possible to successfully doubt of the risk-free character of some government

bonds; this is the reason why the bond of an issuer with the highest possible confidence of market participants can be considered as risk-free asset for further analyses. Risk margin is usually considered as payment for credit and liquidity risk while credit risk has been taken for a long time as the main factor determining the level of risk premium. Risk premium for credit risk is generally given by two factors: firstly, there exists a default risk of the counterparty, and secondly, in the event of default investors will receive only a part of promised payments. For random variable L, representing the position loss, this formula holds good:

$$E(L) = PD \cdot EAD \cdot RR \,, \tag{1}$$

where $E(L)$ = the mean value of random variable L designating the loss,
PD = probability of default,
EAD = exposure at default,
RR = return rate.

Particularly the probability of default is a variable which hides other measureable factors. So called default models are designed for modelling the stochastic process of default describing whether the firm will be able to fulfil its obligations. They model the random process of default mostly by means of market data from stock and bond markets, and currently they are often used as the considered theoretical framework for modelling credit risk.

Two approaches to default models based on different assumptions have gradually developed: structural (firm-value based) approach and reduced-form (intensity based) approach. Structural models analyse the structure of a firm's liabilities and quantify credit risk on the basis of economic fundaments. This group of models was formulated in articles published by (Black and Scholes 1973) and (Merton 1974). Within this approach the firm's debt is viewed as an option whose underlying instrument is the firm's assets. The firm's default will occur if the value of the firm's assets falls below a certain threshold. The reduced-form approach to modelling credit risk is a more recent method. This approach is mostly reported to have been described in detail by (Jarrow and Turnbull 1995). In this approach particular parameters enter into the model exogenously and based on existing time series default probability of a firm is sought. Such an approach is more statistical (hence more easily calibratable to real data) but it does not examine from what fundamental variables credit risk is derived. In (Jarrow and Proter 2004) a relationship of these models was analysed using the information set on which the models were based. The authors drew a conclusion that reduced-form models are a specific case of structural models in which we work with a limited information set that is available. The information set of structural models is often identified with detailed information possessed by the owner. The information set of reduced-form models is somewhat more limited and it is better represented by the information that the other participants in the market have about the firm.

A reduced-form approach better corresponds to the situation analysed in this paper because the level of risk premium is mostly determined by the other participants in the market without having complete information about a firm as its owner does. However, this approach does not interpret the particular variables that can influence the level of credit risk premium. This is the reason why in the first step I will use the methodology of structural models for a deeper analysis of credit risk premium.

A number of particular variants of structural models have developed from the above-mentioned articles. In general they assume that default occurs if the firm's value falls below a

certain threshold. In models this threshold is often a function of the volume of debt financing. It is mostly assumed that the value of a firm is determined by a random process. Then it holds good that the value of the firm's debt is identical with the value of an option on the firm's assets. Its valuation may be based e.g. on the classical Black-Scholes option model. Hence the following determinants of credit risk and/or credit spread result from the methodology of structural models:

1) **spot interest rate** – faster growth of the firm's assets is assumed in the model with higher interest rate. Hence a probability that the value of a firm will fall below the default threshold is decreasing. There exists a negative correlation between spot interest rate and credit risk premium.

2) **yield curve shape** – this variable is not mostly present in the model directly but the random process that generates spot interest rate is mostly related to this variable. Particularly the level and slope of yield curve are important. With the increasing slope the forward risk-free spot interest rate increases, which results in lower credit risk premium similarly like in the preceding case. On the other hand, a decrease in the slope of yield curve (and/or a decrease in interest rate) is usually perceived as an indicator of lower performance of the economy and implies a worse forecast for the firm's value development.

3) **leverage ratio (debt-to-equity ratio) –** the indebtedness of a firm sets the threshold below which the value of assets must not decrease. At lower indebtedness of a firm the probability of a firm to be able to fulfil its obligations will be higher. On the other hand, a higher leverage ratio implies a higher demanded risk premium because the firm will have to reach a higher level of efficiency.

4) **volatility of the firm's value –** similarly like spot interest rate this variable influences the random process of the firm's value. At higher volatility of this random variable a probability increases that the default threshold will be exceeded, hence higher volatility implies higher credit risk.

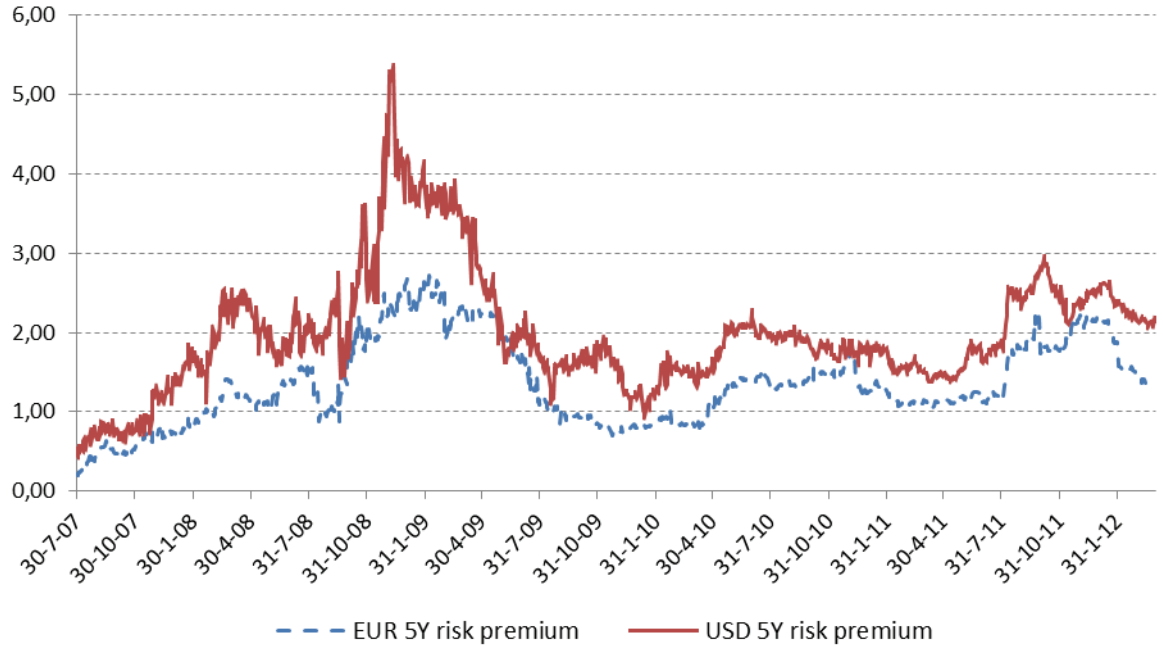
5) **probability of a sharp decrease in the firm's value –** recent versions of structural models included in the random process modelling the firm's value also a possibility of sharp decreases representing great shocks caused by a situation in the economy. The higher the probability of these sharp decreases, the higher the demanded credit risk premium, which takes into account an increased number of supply and demand shocks in the economy.

Informative capacity of the above-mentioned determinants of risk premium was investigated in several empirical studies. E.g. (Collin and Goldstein 2001) drew conclusions in their empirical study that regression analysis could explain only 25% of the observed changes in credits spreads. According to this study, residuals of regression analysis are highly cross-correlated and they are probably given by a common factor or factors. Changes in credit spread are probably influenced by other factors that are not specific to a particular firm but that are common to the whole economies or sectors. This conclusion of an empirical study corresponds with a statement that structural models are based on information that is not available to market participants. Nevertheless, it is just the market participants who will finally determine the level of risk premium they demand from the bond issuer.

It is necessary to seek other factors the investors are concerned with. Besides credit risk, other important factors were mentioned e.g. in the text of the Bank of England (Churm and Panigirtzoglou 2005). A very important fact is the liquidity of issued securities and/or a comparison of the liquidity of these securities with bonds issued by governments. A bond may be liquid in some periods but there is uncertainty about the liquidity of this bond in the future. Of course, it also influences the risk premium. In a financial crisis investors demand a higher liquidity risk premium, while some securities may be fully rejected by counterparties. Another factor may be different taxation of bonds compared to the other types of investments. The level of risk premium may also be influenced by the debt volume the firm envisages to refinance in the issue (Xing 2010). These other factors that do not stem directly from credit risk have often in common that they cannot be related to a particular firm but they influence the whole sectors or economies.

For further analysis data accessible in the Reuters Market Data System database were used where average credit spreads are available according to sectors and rating. Fig. 1 shows the average level of credit spreads for the financial sector participants with rating A issuing securities in EUR and USD. The graph illustrates a sharp increase in risk premiums in the 2008 financial crisis, when liquidity crisis occurred in financial markets. Within three months risk premiums sharply rose in the U.S. market by more than 200 basis points. An increase in the European market was less pronounced. Gradual calming was followed by another shock in July 2011 which was connected with increasing problems of public budgets of some European governments.

Figure 1: EUR and USD risk premiums of participants in the financial sector with rating A



Source: Reuters Market Data System, own calculations

Risk premiums daily yields analysis shows that probability distributions of both variables do not correspond to normal distribution. On the contrary, it shows pronounced positive skewness. At the same time, the probability distribution documents relatively significant sharp fluctuations of credit spread to both sides that are however little probable.

III. Analysis of bond issuer's situation

After a detailed description of factors influencing the movement of risk premium, I will analyse the position of an issuer of own bonds. In order to manage refinancing risk properly, we should also know how to measure it. The following simple model describes how there arises a refinancing risk.

Discrete values from 1 to N are considered for time t. The use of discrete values is justified when the risk is monitored e.g. on daily or monthly basis. Furthermore, a risk-free flat yield curve is given. The issuer of securities has, on the side of liabilities and assets, a portfolio of trades that generate future cash flows. Let us designate the sum of cash flows at time t as cf_t while cash flows cumulated from time 1 to time t are designated as l_t.

$$l_t = \sum_{i=1}^{t} cf_i \tag{2}$$

The variable l_t expresses the gross liquidity position of an issuer at time t. If l_t is positive, it indicates the surplus of funds at time t. On the contrary, the negative variable l_t shows the shortage of funds at time t. The issuer does not manage their liquidity position passively, at excess liquidity such liquidity is invested in the market. Let us assume that when investing excess liquidity, issuers avoid needless risk and therefore they invest in risk-free assets on which they will take the yield as risk-free interest rate i_t. On the other hand, if market participants are short of funds at a time point, they must issue securities. Because the investment in these securities is not perceived by market participants as risk-free, they demand on it a yield equalling the sum of risk-free interest rate i_t and risk premium (credit spread) cs_t. Let us adjust the gross liquidity position from equation (2) for paid or received interest rate:

$$l_t = \sum_{i=1}^{t} cf_i + l_{t-1} \cdot \left(i_{t-1} + cs_{t-1}\right) \tag{3}$$

while for the excess liquidity position let us put the term $cs_{t\text{-}1}$ equal zero. This asymmetry resulting from an assumption of the issuer's increased risk aversion is not quite unreal in the context of proposed changes in bank regulation, especially in the sphere of liquidity risk management (Basel Committee on Banking Supervision 2010).

Both interest rates i_{t-1} and risk premiums cs_{t-1} are considered as random variables undergoing a certain random process. Because the subject of this paper is refinancing risk, i.e. the risk resulting from changes in risk premium, let us abstract from changes in risk-free interest rate for drawing further conclusions. We can assume equivalently that market participants perfectly hedge against changes in market interest rate by means of interest rate derivatives. The total costs of risk premium C are expressed as follows:

$$C = \sum_{t \in M} l_t \cdot cs_t \quad \text{when} \quad M = \{x : l_x < 0\} \tag{4}$$

The objective is to measure somehow how the costs C may increase at a change in risk premium. Because cs_t is a random variable, we will handle the costs C also as a random variable. The objective specified in greater detail is to describe the probability distribution of

random variable *C*. In a more realistic situation it is necessary to abandon some simplifying assumptions. The bond issuer in the model is financed separately for each period. Thus they are redundantly exposed to additional risk resulting from a change in credit spreads in refinancing their obligations. If the issue of bonds for more than one period is admitted, then it is necessary to distinguish risk premiums for different maturities of bonds (all premiums were related to bonds with maturity one period until then). Similarly, the assumption of flat yield curve can be abandoned. Taking into account these factors, the issuer must properly choose the volume and length of the period of particular issues. It is a solution of an optimization problem when the issuer seeks an optimum financing structure while considering the risk of changes in credit spreads and their time structure.

In the sphere of risk measurement the Value at Risk model is a frequently used tool for the quantification of risk associated with the movement of realizations of random variables. Value at Risk indicates the threshold value of loss at a given probability level and at a given time horizon. It corresponds to the value of the quantile of random variable of profit or loss of the observed issuer. However, with regard to the probability distribution of risk premiums Value at Risk need not express all risks adequately. Significant, little probable changes in risk premium may pose a problem for the Value at Risk model because Value at Risk is not a coherent measure of risk under these conditions (Artzner 1999) . Therefore the Expected Shortfall model should be used. This model measures the mean value of little probable losses , beyond the threshold of the random variable quantile (Acebri and Tasche 2001). Nevertheless, the application of these models assumes that the issuer has at disposal a sufficiently long historical time series of their own risk premiums. This requirement is met only if the number of issues in the past was sufficiently extensive and if they were traded actively. These conditions are satisfied only by large issuers.

For the other issuers there are basically several alternatives how to deal with this lack of input data; I will describe two of them. One alternative is to use a credit spread model whose input variables have available historical time series. One of the credit risk models may be applied. As mentioned in Chapter 1, these models cannot fully explain movements of risk premiums. Therefore other proxy variables for the factors of liquidity, situation in financial markets etc. should be included in the model. This possibility implies not only the correct definition of the model but also its calibration on appropriate data. Moreover, some inputs, especially asset volatility, are not easy to express and certain transformation of share volatility is used. But the bond issuer need not have their own quoted shares, which brings about further complications. The other alternative is based on the fact that many factors affecting risk margins have an influence on the whole sector or on companies with the same rating. In my opinion, an acceptable scenario is to use a simplified approach based on data of market participants whose bonds are quoted and traded. Instead of the own model of risk margin it is possible to use as approximation the historical time series of average credit spreads that are grouped by sectors and rating categories. These time series are offered by information sources such as Reuters or Bloomberg.

Expected Shortfall (or Value at Risk) calculated on a historical time series of average credit spreads and for cash flows based on liquidity assumptions may represent the measure of refinancing risk that makes it possible to handle such a risk and to allocate resources for its coverage. Taking into account data collected during the 2008 financial crisis a stress scenario calculated on these data is recommended. This stress scenario may provide managers of a financial institution with an adequate view on a potential sharp increase in the costs of the future issue in case that the situation after the fall of Lehman Brothers repeated. Although

refinancing risk and its measurement are not explicitly defined by available regulations, it may be significant in institutions that are financed by the issue of their own bonds, and these institutions should be able to measure it at least passively.

As regards the management or reduction of refinancing risk, unfortunately, no complete elimination of refinancing risk is possible. Theoretically, it is possible to hedge against refinancing risk by credit default swaps (CDS). E.g. the issuer envisages a three-year bond issue within six months. In order to partially hedge against the movement of the own risk premium, they will buy a credit default swap issued on their own name. They will pay a premium for such a CDS derivative. On the date of realization of the envisaged issue (and fixation of credit spread) the CDS derivative is sold. In case that the issuer's credit spread has increased in the meantime, CDS is sold at a higher price and the profit from the sale may compensate the credit spread increase. However, if credit spread has decreased, the issuer does not benefit from such a decrease because CDS is sold at a lower price and a loss is incurred from the sale. But this operation results in the fixation of risk premium in such a way that its level will be predictable. Nevertheless, this theoretical construction is difficult to realize (the respective CDS must exist, the issuer's information and internal system must be able to handle the CDS contract, there must exist a market where CDS can be resold without significant additional costs, etc.); in addition, this form of hedging need not be accepted by the regulator. The costs of refinancing can be cut by an appropriate choice of the structure of funds and their maturity dates. Particularly the distribution of maturity dates of the issues within several years may contribute to a decrease in risk premium. Of course, it is necessary to have a plan how to react if credit spreads increase sharply. With a sufficient volume of reserve funds envisaged issues may be postponed in this situation until the market calming. In this sense an amendment in the regulation for liquidity risk is proposed that requires having a sufficiently large liquidity cushion.

IV. Application in conditions of the Czech Republic

The above text was focused on a more general approach to the problem regardless of conditions of particular markets or economies. This chapter is aimed specifically on the problem of refinancing risk in conditions of the Czech market in corporate bonds. I will deal with the sector of financial institutions that plays a crucial role in the corporate bond market in the Czech Republic. As documented in Table 1 and 2, the number of issuers issuing their own bonds is rather low. The bond market underwent the greatest expansion shortly before the financial crisis when a volume of issued bonds amounted to nearly 200 billion CZK. The worsening situation in markets in 2008 and outbreak of financial crisis in the second half of the year caused a significant decline in own issues. Factually, only Ceska exportni banka (state-owned Czech Export Bank), Ceska sporitelna (member of Erste Group) and Unicredit Bank remained major institutions issuing their own bonds. The situation of these issuers is different. Ceska sporitelna and Unicredit Bank are banks with a wide portfolio involving also retail clients. Improvement mortgage bonds are a part of securities issued by these banks that are designed for financing granted mortgages. In these banks financing through an issue of bonds is a complement to the whole structure of funds. On the contrary, Ceska exportni banka does not have any retail banking and its activity is financed exclusively from issues of its own bonds. Conclusions drawn in the previous section how to handle refinancing risk are applicable especially to Unicredit Bank CZ, Ceska exportni banka and other large issuers in the Czech market. As results from annual reports of the particular issuers (Ceska exportni banka, 2008-2011, Ceska sporitelna, 2008-2011, Unicredit Bank CZ, 2008-2011), at least

Ceska exportni banka works with refinancing risk in the framework of its risk management system.

Table 1: The volume of bonds issued by private financial institutions in the CR (billion CZK)

Issuer's name	2006	2007	2008	2009	2010	2011
Ceska Exportni banka a. s.	1,29	8,88	4,13	18,57	19,97	13,00
Ceska Sporitelna a. s.	11,50	29,15	0,55	15,50	7,90	9,00
Hypotecni Banka a. s.	8,00	75,80	0,00	0,00	0,67	3,70
Komercni Banka a. s.	0,15	49,46	0,00	0,00	0,00	0,00
Raiffeisenbank a. s.	1,37	15,20	5,00	3,43	0,00	4,45
Unicredit Banka CR a. s.	0,55	15,40	4,30	5,90	0,57	31,77
Volksbank CZ a. s.	0,50	1,50	0,00	0,50	0,80	0,30
Wustenrot Hypotecni Banka a. s.	1,00	3,67	0,00	2,37	1,63	1,39
Total	**24,36**	**199,06**	**13,98**	**46,27**	**31,54**	**63,61**

Source: Reuters Market Data System, own calculations

Table 2: The number of particular bond issues of private financial institutions in the CR

Issuer's name	2006	2007	2008	2009	2010	2011
Ceska Exportni banka a. s.	1	5	2	10	6	6
Ceska Sporitelna a. s.	4	15	1	7	5	2
Hypotecni Banka a. s.	2	24	0	0	1	2
Komercni Banka a. s.	1	29	0	0	0	0
Raiffeisenbank a. s.	1	10	2	4	1	10
Unicredit Banka CR a. s.	1	8	7	12	7	40
Volksbank CZ a. s.	0	2	0	1	2	1
Wustenrot Hypotecni Banka a. s.	1	2	0	2	3	2
Total	**11**	**95**	**12**	**36**	**25**	**63**

Source: Reuters Market Data System, own calculations

In the previous section I proposed to use Expected Shortfall and Value at Risk methods for the computation of stress scenarios of refinancing risk. None of the Czech issuers has a sufficient amount of traded issues in the market to be able to take a time series of their own credit spreads directly from the market. There also isn't a deep market of credit default swaps. This is the reason why a series of average risk premiums of comparable issuers could be used. However, no such a time series is available for bond issues in Czech crowns. A possible application in conditions of Czech crown issues is to use data from the EUR bond market (in the same way as if we analysed a euro issue). However, this series should be adjusted for the value of basis swaps for the interest rate pair EURIBOR- PRIBOR. This structure would correspond to the issue of bonds in euros that is converted to Czech crowns by means of a currency swap. The value of basis swaps expresses different factors determining the level of particular interest rates that is demanded by market participants in the exchange of interest rate payments in various currencies (it also includes different credit and liquidity risk of particular currencies). The value of basis swaps was very low before the financial crisis, and also in this segment, similarly like in other spheres of financial markets, premiums sharply increased after the crisis. In the lack of input data in the Czech crown market the historical series of euro risk premiums adjusted for the basis swap curve should guarantee more exact results.

Similarly like in the preceding part of the paper, Czech bond issuers are recommended to set up a stress scenario that, based on the past experience, makes it possible to estimate a loss at a sharp increase in risk premium. The adjustment for the value of the respective basis swap should be used for bond issues in a currency for which the time series of risk premiums is not available. The regulator of the financial sector, i.e. Czech National Bank in the Czech Republic, should require from bond issuers the monitoring of refinancing risk and its stress testing.

V. Conclusion

The world of financial markets has substantially changed after the 2008 financial crisis. The crisis has shown that many issuers underestimated credit risk while, after awakening, the market responded by an increase in demanded risk premium. A certain level of credit risk is also ascribed to counterparties that were considered as almost risk-free in the past. This paper was focused mainly on the situation of a bond issuer who must newly deal with refinancing risk, with the risk resulting from a change in the own credit spread. This risk was often omitted in the past, partly also because risk premiums did not show such volatility as they did during the financial crisis. The Expected Shortfall model seems to be an applicable tool to measure refinancing risk. It is more suitable than the Value at Risk model because the probability distribution of risk premiums shows positive skewness and significant fat tails. Time series of average risk premiums for a selected sector and issuer's rating can be used as inputs in the model. As the majority of movements of risk premiums is determined by factors common to the whole sector, the use of these historical series is an acceptable simplification. Using this tool, bond issuers can estimate potential losses incurred by refinancing to which they may allocate sufficient capital to avoid these loss events. Particularly the application of a stress scenario based on data from the recent financial crisis should be a standard in measuring refinancing risk and should be required by the regulator.

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The Degree of the Chinese Equity Market Integration with the Japanese and US Equity Markets

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Abstract: The aim of the paper is to answer the following questions: What is the degree of the Chinese equity market integration with the equity markets in the USA and Japan? What are the main determinants of that degree of the equity market integration? What is the future of the Chinese equity market integration with the global equity market? The analyses show tendencies in the integration degree changes of the Chinese equity market with the Japanese and US equity markets in the 1990-2012 period. The author formulates also conclusions concerning future integration of the Chinese equity market with the global equity market.

JEL Classification: G10, G15, G19

Keywords: financial market integration, equity market, news-based measures

Introduction

Globalization of financial markets means their global integration within the framework of the world's economy and hence increased interrelationships between the stock market cycle, stock market indices and yield of financial assets. Obviously the degree to which financial markets of particular countries are integrated with the global market varies and depends on the following factors: the degree of the economy's openness, the exchange rate system, the degree of capital flow liberalization, the integration degree of a given economy with global economy and/or economies of other countries within the framework of regional integration, the degree of synchronization between the business cycle in a given country and the business cycle abroad, participation of transnational corporations in economy, the degree of financial market deregulation, the degree of the financial sector internationalization including the equity exchange(s) in a given country, the size of the financial market in a given country and its importance in global and regional economy, progress in the field of Information and Communication Technologies (ICT) in a given country, development of financial engineering and its application in the financial market of a given country.

One of the most important segments of the financial market is equity market.

The larger the role of global shocks – not local shocks - common for many markets in influencing yields of stock exchange indices is, the more globally integrated equity markets are. The equity market integration can be defined in the narrow way according to the law of one price. Application of the law of one price means that the assets generating identical monetary flows have the same price (rate of return, yield). According to G. Bekaert and C. R.

Harvey (1995) equity markets are considered fully integrated if all the assets characterized by identical risk have identical expected yield rates regardless of the market in which they are traded. In the case of shares in two countries (regions) the price of the capital raised in the financial market by issuing shares should be the same (see: Adam, K., et al. 2002, 4). L. Baele, A. Ferrando, P. Hördahl, E. Krylova and C. Monnet (see: Baele, L., et al. 2004, 6-7) put forward a broader definition of the financial market integration. According to them one can conclude that equity markets are fully integrated if all the possible economic agents involved in transactions at the same price:

- are governed by the same rules when they decide to participate in share trading,
- have equal access to shares,
- are treated equally when they operate on the market.

Such a broad approach to the equity market integration implies also functioning of the law of one price. The law of one price causes that assets are characterized by identical risks and yields. The quoted definition comprises the law of one price. If the law of one price is not met then there is room for arbitration which restores validity of the law (on condition there are no barriers for the equity market integration) (see: Baele, L., et al. 2004, 7; Kowalak, T. 2006, 34-38).

Chinese economy has been developing extremely dynamically since the end of the 1980s and its importance in global economy is already immense. Also the Chinese financial market including equity market is becoming increasingly bigger and more influential. Growth of the Chinese equity market is fostered by the growth of internal savings which has been noted for a long time, inflow of foreign capital and, last but not least, equity market deregulation which became effective in February 2001. On the one hand, Chinese economy has a strong impact on tendencies in world economy but, on the other hand, this is not synonymous with its strong financial integration with the global market. This refers in particular to the equity market (see also: Masson, P., Dobson, W., and R. Lafrance 2008) .

The aim of the paper is to answer the following questions: What is the degree of the Chinese equity market integration with the equity markets in the USA and Japan? What are the main determinants of that degree of the equity market integration with the Japanese and US equity markets? What is the future of the Chinese equity market integration with the global equity market?

Methodology

The following measures of the equity market integration degree can be distinguished:

- yield and price- based measures,
- news-based measures.

Price- and yield-based measures include measures of spreads between prices or yields of assets across different national financial markets. The theoretical basis for the construction of such indices is the law of one price. The indices let us test the degree to which the law is implemented on the international scale. If assets have the same or similar characteristics then we can directly compare prices or yields. Otherwise, the measures of this type must also reflect the influence of factors specifically related to the markets in particular countries, differences in the systematic risk levels and the degree of liquidity.

News-based measures analyze the impact of information concerning predicted shocks in financial markets and the investment risk related to them. In fully integrated markets investment portfolios consisting of shares should be well-diversified. The information coming from local markets should not have a significant effect on prices of assets contrary to global news concerning the entire integrated market, which has a significant effect on price changes. The degree of systematic risk is the same in different countries whose markets have been integrated. Thus, the measures from this group indicate to what extent the information specific for the local financial market is essential for the remaining markets in comparison to the effect of the information of global nature (see: Baele, L., et al. 2008, 20; Kowalak, T. 2006, 38, and onwards, Bukowski, S. I. 2011, 46-47). In the case of the equity market, a model of the "increased impact of the common news component on equity market yields" is such a measure. The "common news component" is the news concerning changes in yields of the US equity market indices (global news).

The higher the degree of particular countries' equity market integration with the global market is, the lower the impact of local (domestic) turbulences on the yields of assets in particular countries but the higher the impact of global factors (information, signals) coming from the United States.

The model of the "increased impact of the common news component on equity market yields" can be used for assessing the degree of a given country's integration with the global market and additionally one or more equity markets.

In the case of the equity market, the impact of global factors (news from major world markets) is more significant than that of local factors. It can be assumed that such global factors include information about yields of equity in the United States. The higher the degree of market integration is, the lesser the impact of local turbulences on yields of shares in particular countries is but the higher the impact of global factors (information, signals) coming from the United States is. The model takes the following form:

$$R_{i,t} = \mu_{i,t} + \varepsilon_{i,t} \tag{1}$$

where: $R_{i,t}$ – is the rate of return on assets (yield of the stock exchange index) for a country i over time t, expected yield element

$$\mu_{i,t} = \alpha_{i,t} + \gamma_i R_{i,t-1} \tag{2}$$

$\varepsilon_{i,t}$ – unexpected yield element.

The unexpected element ($\varepsilon_{i,t}$) can be further decomposed into a purely local shock $e_{i,t}$ at the stock exchange of a given country i over time t, the stock exchange response in a given country i over time t to the global shocks ($\varepsilon_{us,t}$) (from US stock exchanges):

$$\varepsilon_{i,t} = e_{i,t} + \beta_{i,t}^{us} \varepsilon_{us,t}, \tag{3}$$

where: $\beta_{i,t}^{us}$ is dependent on country i over time t sensitivity to information concerning yields in the United States.

To examine the integration degree of the equity market in country *i* with the equity market in country *j* and global equity market (US equity market) the unexpected element must be supplemented by the impact of information about yield changes in the equity market in country *j*, which – in turn – are affected by yield changes in the global (American) market. Then, the model will take the form:

$$\varepsilon_{i,t} = e_{i,t} + \beta_{i,t}^{us}\varepsilon_{us,t} + \beta_{i,t}^{j}\varepsilon_{j,t}, \tag{4}$$

where: $\beta_{i,t}^{j}$ denotes dependent on country *i* over time *t* sensitivity to information concerning yields from the equity market in country *j* over time *t*.

The models of yields for the equity market in the United States and in country *j* assume the form:

$$R_{us,t} = \alpha_{j,t} + \gamma_{us,t}R_{us,t-1} + e_{us,t} \tag{5}$$

$$R_{j,t} = \alpha_{j,t} + \gamma_{j,t}R_{j,t-1} + \beta_{j,t}^{us}\varepsilon_{us,t} + e_{j,t} \tag{6}$$

Thus the model of yield of the stock exchange index in country *i* over time *t* can be written down as:

$$R_{i,t} = \alpha_{i,t} + \gamma_{i,t}R_{i,t-1} + \beta_{i,t}^{us}\varepsilon_{us,t} + \beta_{i,t}^{j}\varepsilon_{j,t} + e_{i,t} \tag{7}$$

To compare the relationship between shocks in the equity market in country *i* and in the United States and the yields in particular countries we calculate the variance ratio, i.e. the proportion of yield changes in the market of a given country accounted for by the shocks in the equity market in country *j* and the United States.

Assuming that local shocks in country *i* are of idiosyncratic nature (they are not correlated with shocks in other countries or equity market indices in country *j* and in the United States, we can calculate the total variance for country *i*:

$$\sigma_{i,t}^2 = h_{i,t} + (\beta_{i,t}^{j})^2\sigma_{j,t}^2 + (\beta_{i,t}^{us})^2\sigma_{us,t}^2 \tag{8}$$

where: $h_{i,t}$ is the conditional variance of the local shock element, $\sigma_{eu,t}^2$ is the conditional variance for the equity market in country *j*, $\sigma_{us,t}^2$ – is the conditional variance for the US market.

The variance ratio for country *j* takes the form:

$$VR_{i,t}^{eu} = \frac{(\beta_{i,t}^{j})^2\sigma_{j,t}^2}{\sigma_{i,t}^2} = \rho_{i,j,t}^2 \tag{9}$$

The variance ratio for the United States looks as follows:

$$VR_{i,t}^{us} = \frac{(\beta_{i,t}^{us})^2 \sigma_{us,t}^2}{\sigma_{i,t}^2} = \rho_{i,us,t}^2 \tag{10}$$

Conditional variances for the US equity market, equity market in country *j* and local equity market in country *i* are obtained from the standard GARCH (1,1) model.

The higher the value of the variance ratios (the ratios of the impact of shocks from country *j* or global shocks (from the USA) to the local shock impact) is, the higher the integration degree of the equity market in country *i* with the equity market in country *j* and the global market is.

Equity Market Significance in the Chinese, Japanese and US Economy

The equity market in China was re-established in 1990. The Shenzhen Stock Exchange began operation on 1 December 1990 and the Shanghai Stock Exchange began operation on 19 December 1990. From the very beginning of both Stock Exchanges, the Chinese government introduced a regulation consisting in the division of shares into 3 groups. Yuan (RMB) – denominated "A" shares were available exclusively to investors from the People's Republic of China; "B" shares – denominated in US dollars on the Shanghai Stock Exchange and in Hong Kong dollars on the Shenzhen Stock Exchange were available to qualified foreign investors; "S" shares – denominated in Hong Kong dollars – were still available to any investor. The shares of few blue – chip companies (e.g. China Mobile, China Unicom, CNOOC, Legend) were listed on foreign markets and were not available to domestic investors from the People's Republic of China. The Chinese government also tightly controlled initial public offering. The government limited the number of companies applying for the listing and decided on companies' eligibility for listing on stock exchanges.

In this way the Chinese equity market was not integrated. On 19 February 2001 the equity market in China underwent the process of liberalization (deregulation). Investors from the People's Republic of China were allowed to open special foreign currency accounts and to buy B shares. Since 5 November 2002 foreign investors have been allowed to invest in A shares.

Table 1: Basic indicators of equity market development in China, Japan and the USA over the years 1990-2000

Country/year	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
China											
STOCK MARKET CAPITALIZATION / GDP	0,0	0,0	2,4	6,7	7,5	5,9	9,1	16,8	21,5	26,0	38,1
STOCK MARKET TOTAL VALUE TRADED / GDP	0,0	0,2	4,0	9,9	17,4	6,8	29,9	38,8	27,9	34,8	60,2
STOCK MARKET TURNOVER RATIO	0,0	40,4	91,3	106,9	224,2	118,4	225,1	179,1	123,1	114,0	124,2
NO. OF LISTED COMPANIES PER 10K POPULATION	0,0000	0,0001	0,0004	0,0016	0,0024	0,0027	0,0044	0,0062	0,0069	0,0076	0,0086
Japan											
STOCK MARKET CAPITALIZATION / GDP	122,6	87,8	73,8	62,6	70,7	70,8	73,4	62,6	61,2	80,5	83,3
STOCK MARKET TOTAL VALUE TRADED / GDP	53,1	28,9	16,9	22,1	23,6	23,5	27,0	29,4	24,6	42,3	57,7
STOCK MARKET TURNOVER RATIO	54,9	31,8	26,5	31,8	30,1	33,6	40,5	56,5	38,0	40,7	85,3

NO. OF LISTED COMPANIES PER 10K POPULATION	0,17	0,17	0,17	0,17	0,18	0,18	0,19	0,19	0,19	0,20	0,20
USA											
STOCK MARKET CAPITALIZATION / GDP	57,5	60,2	68,4	73,1	73,0	81,5	99,2	120,2	142,7	163,5	163,7
STOCK MARKET TOTAL VALUE TRADED / GDP	30,4	36,7	33,1	50,8	50,8	69,6	91,7	123,8	151,2	201,5	326,3
STOCK MARKET TURNOVER RATIO	57,2	53,4	46,4	65,3	70,3	74,5	83,9	90,3	97,7	111,7	211,0
NO. OF LISTED COMPANIES PER 10K POPULATION	0,26	0,27	0,26	0,28	0,29	0,29	0,31	0,32	0,31	0,27	0,27

Source: Beck, T., and E. Al-Husainy 2010.

Table 2: Basic indicators of equity market development in China, Japan and the USA over the years 2001-2009

Country/year	2001	2002	2003	2004	2005	2006	2007	2008	2009
China									
STOCK MARKET CAPITALIZATION / GDP	42,1	34,2	35,1	34,5	31,9	60,6	131,8	51,0	71,7
STOCK MARKET TOTAL VALUE TRADED / GDP	33,9	22,9	29,1	38,7	26,1	61,5	237,5	0,0	0,0
STOCK MARKET TURNOVER RATIO	85,7	72,0	70,0	117,0	75,1	67,4	125,1	0,0	0,0
NO. OF LISTED COMPANIES PER 10K POPULATION	0,009	0,010	0,010	0,011	0,011	0,011	0,012	0,012	0,013
Japan									
STOCK MARKET CAPITALIZATION / GDP	66,8	56,2	61,4	73,5	93,1	109,6	105,8	102,3	98,4
STOCK MARKET TOTAL VALUE TRADED / GDP	44,6	40,2	53,7	74,5	109,9	143,1	148,4	153,7	159,8
STOCK MARKET TURNOVER RATIO	81,1	74,0	74,8	93,3	105,5	132,3	145,9	159,7	176,6
NO. OF LISTED COMPANIES PER 10K POPULATION	0,19	0,24	0,24	0,25	0,26	0,26	0,30	0,35	0,41
USA									
STOCK MARKET CAPITALIZATION / GDP	145,2	120,7	117,0	132,2	135,5	139,7	143,7	147,8	152,3
STOCK MARKET TOTAL VALUE TRADED / GDP	288,2	243,5	142,5	166,0	173,5	252,7	308,5	383,5	484,1
STOCK MARKET TURNOVER RATIO	209,6	228,6	109,0	118,6	126,7	171,3	213,6	271,8	350,9
NO. OF LISTED COMPANIES PER 10K POPULATION	0,22	0,20	0,18	0,18	0,17	0,17	0,17	0,17	0,17

Source: Beck, T., and E. Al-Husainy 2010.

Obviously deregulation accelerated equity market development in China and the process of integration of this market with the global market. In the years 1990-2000 the Chinese market developed fairly quickly, however, the main indicators (stock market capitalization/GDP, stock market total value traded/GDP, stock market turnover ratio, no. of listed companies per 10K population) diverged significantly from the values for the Japanese and American equity markets (see: Table 1). Since 2001 these differences have been diminishing (see: Table 2). However, the analysis of indicators included in Tables 1 and 2 reveals that the Chinese equity market has not achieved the size of the Japanese one. Yet, it is worth mentioning that its importance in Chinese economy is huge. As regards the value of annual turnover, in mid-2009, the Shanghai Stock Exchange was the world's third biggest stock market. Between August 2008 and August 2009 the joint value of all transactions handled there reached 3.3 trillion dollars. Only the NYSE and NASDAQ market had a higher turnover in the said period. The shares of 881 companies are listed on the three floors of the Shenzhen Stock Exchange. Apart from the main market, the Shenzhen Stock Exchange possesses also a special market for small and medium-sized enterprises and the OTC market – "ChiNext" – the Chinese equivalent of NASDAQ. It was created having in mind new companies operating in the most technologically advanced sectors which have a great potential and at the same time would not be able to meet fairly rigorous criteria allowing shares for turnover in the main market. Thus the Shenzhen Stock Exchange differs in its character from the Shanghai Stock Exchange. Some time ago there were plans to transfer listings from the main floor in

Shenzhen to the Shanghai Stock Exchange. Shenzhen was to specialize in the turnover of smaller companies and the sector of new technologies – in other words – to become the stock exchange supporting everything new and innovative. Since relatively small companies are listed on the Shenzhen Stock Exchange, and not market giants like in Shanghai, its capitalization is much lower. At the end of August 2009 it amounted to 596 billion dollars, which made it the 20th biggest stock exchange in the world. However, when it comes to annual turnover, with the sum exceeding 1.7 trillion dollars, it ranked 6th among the world's stock exchanges[1].

Model of "News-Based Measure" of Chinese Equity Market Integration with Japanese and Global Market (US Equity Market) and Statistical Data

To measure the stock exchange integration degree we applied the measures based on the model of the "increased impact of the common news component on equity market yields", i.e. the above mentioned measures of global shock spillover and yield variance proportion[2]. The model was estimated in three stages by means of the GARCH (1,1) process[3]:

Firstly, the equation for the US market yields was estimated:

$$R_{US,t} = \mu_{US,t} + \varepsilon_{US,t} \tag{11}$$

where

$$\mu_{US,t} = \alpha_{US,t} + \gamma_{US} R_{US,t-1}. \tag{12}$$

Secondly, the conditional variance for the US equity market was estimated:

$$E(\varepsilon_{US,t}^2) \equiv \sigma_{US,t}^2 \tag{13}$$

where $E(.)$ is the expected value operator.

The subsequent stage consisted in an estimation of the Japanese equity market yield equation:

where

$$\mu_{J,t} = \alpha_{J,t} + \gamma_J R_{J,t-1} \tag{14}$$

[1] Statistical data on the basis of:
www.sse.com.cn/sseportal/en/c01/c05/c02/p1110/c15010502_p1110.shtml (Accessed 25, March);
www.szse.cn/main/en/AboutSZSE/SZSEOverview/(Accessed 25, March);
World Federation of Exchanges, www.world-exchanges.org.

[2] About this measurement method of the equity market integration see more in: (Adam, K., et al. 2002; Baele, L., et al. 2004; Baltzer, M., et al. 2008).

[3] On the subject of the GARCH (1,1) model application for examining the relationships between the yields of equity market indices, see more in: (Brzeszczyński, J., and R. Kelm 2002, 95-119; Jajuga, K. 2008; Mills, T. C., and R. N. Markellos 2008, 182, 323 and onwards).

and

$$\varepsilon_{J,t} = \beta_J^{US} \varepsilon_{US,t} + e_{J,t}, \tag{15}$$

and the conditional variance

$$E(e_{J,t}^2) \equiv \sigma_{J,t}^2 \tag{16}$$

In the last stage the yields for the Chinese equity market were estimated.

Equation for the Chinese equity market:

$$R_{Ch,t} = \mu_{PCh,t} + \varepsilon_{Ch,t}, \tag{17}$$

where

$$\mu_{Ch,t} = \alpha_{Ch,t} + \gamma_{Ch} R_{Ch,t-1} \tag{18}$$

and

$$\varepsilon_{Ch,t} = \beta_{PL}^{US} \varepsilon_{US,t} + \beta_{Ch}^{J} e_{J,t} + e_{Ch,t} \tag{19}$$

and the conditional variance

$$E(e_{Ch,t}^2) \equiv \sigma_{Ch,t}^2. \tag{20}$$

Then the variance ratio was computed:
Japanese variance ratio:

$$VR_{Ch,t}^{J} = \frac{(\beta_{Ch,t}^{J})^2 \sigma_{J,t}^2}{\sigma_{Ch,t}^2} = \rho_{Ch,J,t}^2 \tag{21}$$

Global variance ratio:

$$VR_{Ch,t}^{US} = \frac{(\beta_{Ch,t}^{US})^2 \sigma_{US,t}^2}{\sigma_{Ch,t}^2} = \rho_{Ch,US,t}^2. \tag{22}$$

In our examinations we used monthly data for the period: 1990:12-2012:2 concerning yields of the following indices: Shanghai Stock Exchange Composite Index (SSE), Dow Jones Composite Index and NIKKEI 225. The whole sample was divided into two sub-samples: 1990:12-2001:1 I 2001:2-2002:2. This division was prompted by a very important fact which was the capital market deregulation in China implemented on 19 January 2001. It had a considerable effect on the equity market trends as a stimulant of the growing demand for shares of Chinese companies listed on the Shanghai Stock Exchange in result of the new regulation which allowed foreign investors to purchase yuan-denominated A shares and Chinese citizens – B shares priced in US dollars and Hong Kong dollars.

Results

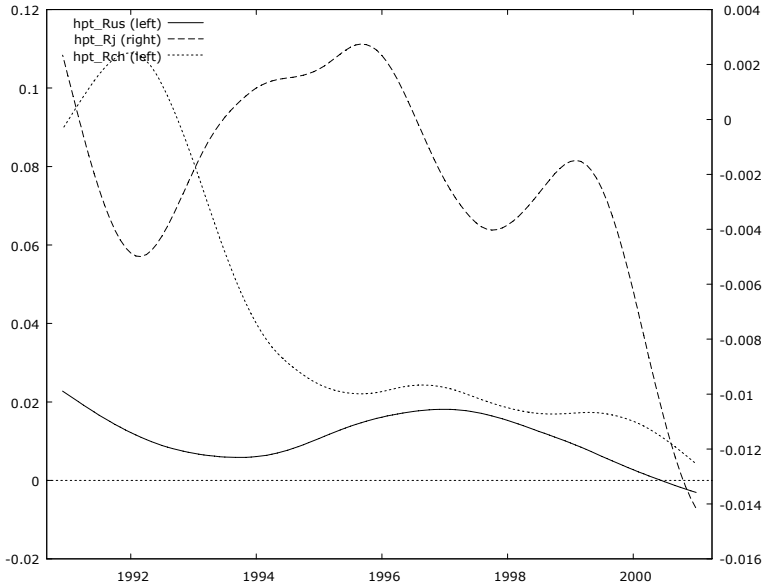
In the period 1990:12-2001:1, the Chinese equity market was poorly integrated with the global market. It is indicated by the yields of the SSE, DJ and NIKKEI 225 indices (see: Figure 1). This is also confirmed by the correlation coefficients included in Table 3.

Table 3: Linear correlation coefficients for observations of the 1990:12-2001:01 sample

R_{Ch}	R_{us}	R_J	
1.0000	0.0195	0.0360	R_{Ch}
	1.0000	0.3139	R_{US}
		1.0000	R_J

Critical value (at two-sided 5% critical area) = 0.1779 for n = 122.
Source: author's own calculations with the use of the GRETL program.

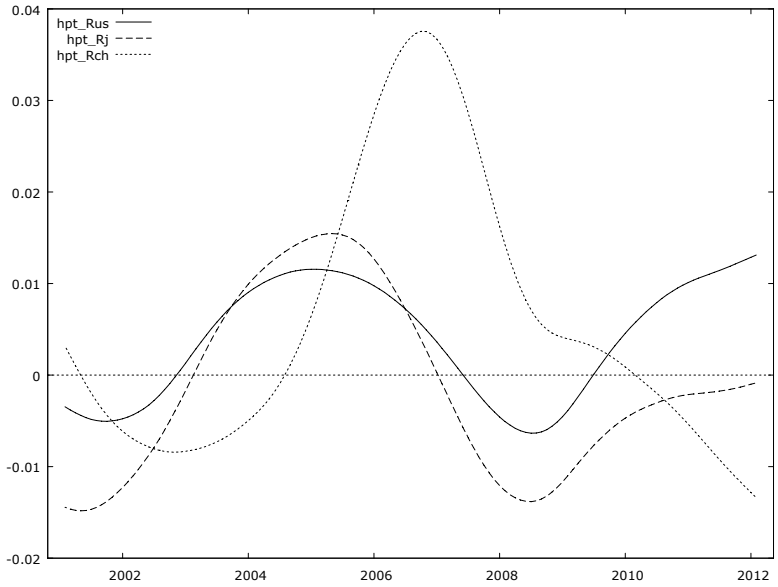
Figure 1: Yields of Dow Jones Composite Index (R_{us}), Nikkei 225 (R_J) and Shanghai Stock Exchange Composite Index – SSE (R_{ch}) over the period 1990:12-2001:1, smoothed by means of the Hodrick-Prescott (λ=14400) filter



Source: author's own compilation with the use of the GRETL program.

In the period 2001:2-2012:2 the integration degree increased which was proved by a slightly bigger convergence in the yield values of such indices as DJ and NIKKEI 225 (see: Figure 2). Also the correlation between yields of the SSE index and yields of the DJ and NIKKEI 225 indices clearly increased (see: Table 4).

Figure 2: Yields of Dow Jones Composite Index (R_{us}), Nikkei 225 (R_J), Shanghai Stock Exchange Composite Index – SSE (R_{ch}) over the years 2001:2-2012:2, smoothed by means of the Hodrick-Prescott (λ=14400) filter



Source: author's own compilation with the use of the GRETL program.

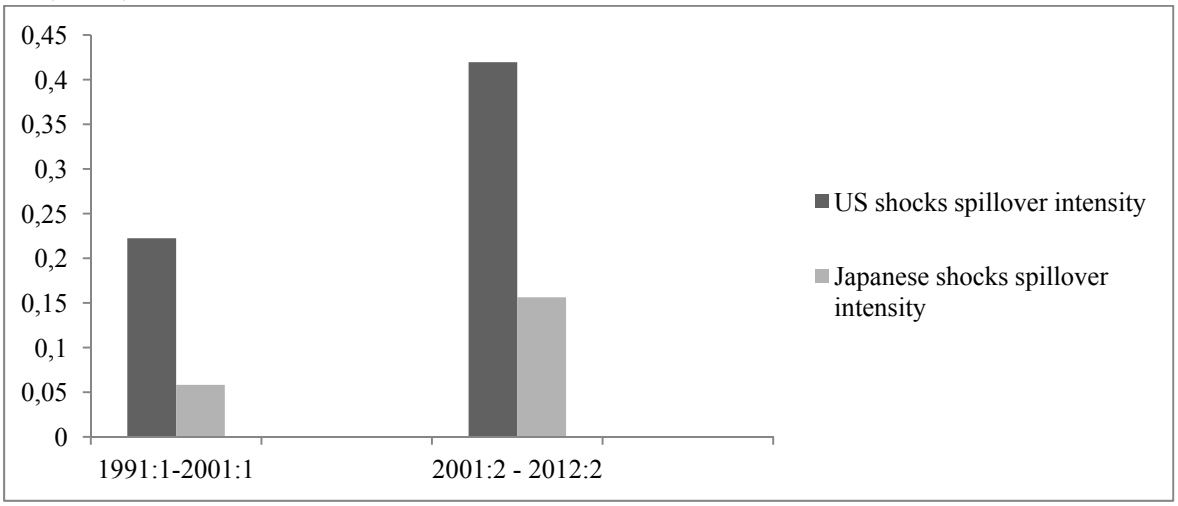
Table 4: Linear correlation coefficient for the observations of the 2001:02-2012:02 sample

R_{Ch}	R_{us}	R_J	
1.0000	0.2829	0.2995	R_{Ch}
	1.0000	0.5960	R_{US}
		1.0000	R_J

Critical value (at two-sided 5% critical area) = 0.1703 for n = 133.
Source: author's own calculations with the use of the GRETL program.

Spillover intensity of global shocks (from the USA) in the Chinese equity market was much higher than in the Japanese equity market both in the period 1990:12-2001:1 and in the period 2001:2- 2012:2 (see: Figure 3).

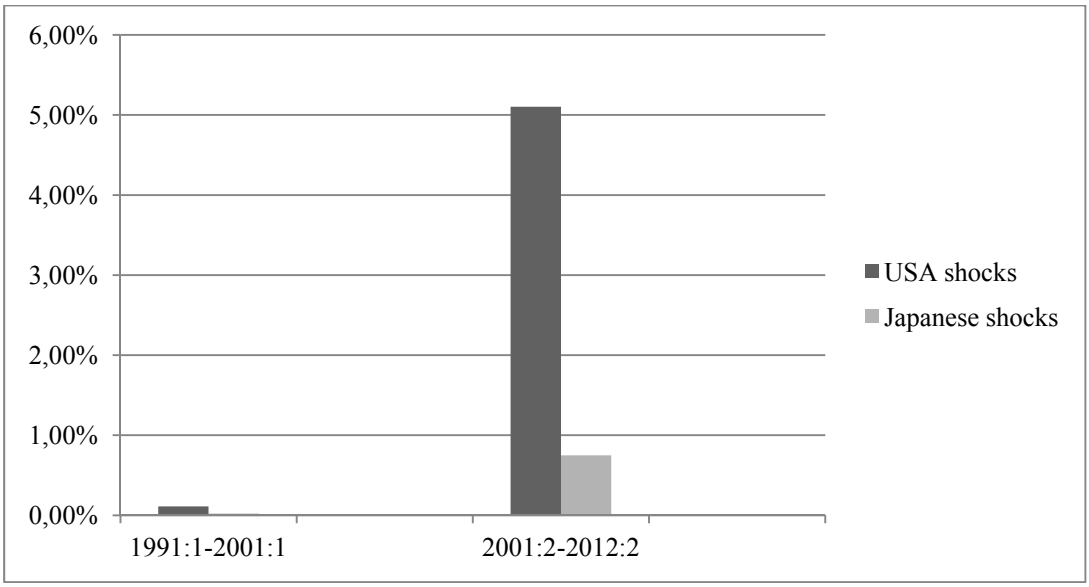
Figure 3: Spillover intensity of global shocks (from the United States) and from Japan in the Chinese equity market over the years 1990:12-2001:1 and 2001:2-2012:2 measured by $\beta^{us}_{Ch,t}$, $\beta^{J}_{Ch,t}$ ***coefficients***



Source: author's own compilation on the basis of the estimation of the model of the "increased impact of the common news component on equity market yields" with the use of the GRETL program.

What is more, spillover intensity from equity markets in the USA and in Japan increased significantly over the years 2001:2-2012:2 when compared with the period 1990:12-2001:1. It was caused by the increased signals and shocks coming from the equity markets in the USA and Japan affecting yields of the Chinese equity market as a result of the stock exchange deregulation in this country. It consisted in allowing foreign investors to invest in A shares which previously were available to domestic investors only and allowing Chinese investors to invest in B shares. Unlike Chinese investors, foreign investors are very much influenced by signals coming from the global market. On the other hand, from the very beginning of this category's existence, yields of B shares were influenced by the signals from the global market and it was quite natural that Chinese investors investing in B shares started to make decisions based on signals coming not only from Chinese economy but also on global signals.

Figure 4: Chinese equity market – proportion of yield variance of the SSE index explained by shocks from Japan ($VR^{J}_{Ch,t}$) and the United States ($VR^{US}_{Ch,t}$) over the years 1990:12-2001:1 and 2001:2-2012:2



Source: author's own compilation on the basis of the estimation of the model of the "increased impact of the common news component on equity market yields" with the use of the GRETL program.

Yet, the degree of the Chinese market integration with the global equity market is relatively low. There is no doubt that in comparison to the period 1990:12-2001:1 in the years 2001:2-2012:2 considerable progress occurred. Over the years 1990:12-2001:1 changes in the Chinese equity market yields were accounted for by changes in yields (shocks) in the US or Japanese equity markets to a very little – close to zero - extent. Following the market deregulation, over the years 2001:2-2012:2, shocks from the US equity market accounted for more than 5% changes in yields of the Chinese equity market, whereas shocks from the Japanese market accounted for 0.8% of changes. This marks clear progress but still the Chinese equity market integration with the global market is very low. Only full deregulation of the Chinese market, a merger of A and B type shares into one market can bring about significant increase in the Chinese market integration with the global market.

Conclusions

The conducted analysis of the Chinese equity market integration with the equity markets in Japan and the USA allows us to formulate the following conclusions:

- the degree of the Chinese equity market integration with the global equity market as well as Japanese equity market is relatively low;
- in comparison with the period 1990:12-2001:1, in the years 2001:2-2012:2 clear progress in integration of the Chinese equity market with the global equity market occurred, which resulted from the equity market deregulation in China;
- the integration degree of the Chinese equity market with the US and Japanese equity markets is still very low although it increased considerably over the years 2001-2012 when compared with the period 1990-2000;
- the Chinese equity market is more integrated with the US equity market than the Japanese equity market;
- further integration of the Chinese equity market with the global market depends on further deregulation of the equity market in China, including a merger of A and B share segments into one market open for foreign investors.

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FTAs and Prospects of Export Diversification in Regional Markets for East Asian Economies

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Abstract: Recent research in international trade has focused on changes in extensive margin (new goods). Theoretical models as Melitz, M. J. (2003), predict that changes in the underlying fundamentals of an economy have an effect on the extensive margin. Following the model this study uses highly disaggregated (HS 6-digit) data in order to pick up the FTAs impact on the extensive margin of regional trade in China, Japan and Korea. The study finds that there are changes in the extensive margin of export in the regional trade and FTAs affect export diversification positively during the period (2001-2010) of booming FTAs in East Asia.

JEL Classification: F15, F14, F23

Keywords: East Asia, Export Diversification, Free Trade Agreements, Regional Market

Introduction

Economists, policymakers and businesspeople in the world are concerned about the business impact of the booming free trade agreements (FTAs) in the economically important East Asia. Asia has begun emphasizing FTAs as a trade policy instrument in the late 1990s, and the region is at the front of world FTA activity today (Kawai, M., and G. Wignaraja 2011, 3). In 2000 there was hardly any FTA activity in the East Asian region, only three regional FTAs in effect. However by the end of the decade, FTAs in effect increased more than tenfold with 44 FTAs in effect (Asia Regional Integration Center, Asian Development Bank 2011). Under the circumstances, this study gives an attempt to find whether there is any change in the diversification pattern of regional export during the period of booming FTAs in People's Republic of China (hereafter China), Japan and Republic of Korea (hereafter Korea). The study selects these three countries due to the fact that these three largest Northeast Asian economies are stirring the spread of FTAs in East Asia. This study examines the changes in the export diversification patterns of China, Japan and Korea to each other while there is no FTA between them. Additionally, exports from these three countries to Indonesia, Malaysia, Philippines, Singapore and Thailand are covered for the study whereas China, Japan and Korea have either bilateral or plurilateral FTAs with these ASEAN (the Association of Southeast Asian Nations) countries (Figure 1). Therefore this study has three exporters and seven corresponding importers to investigate.

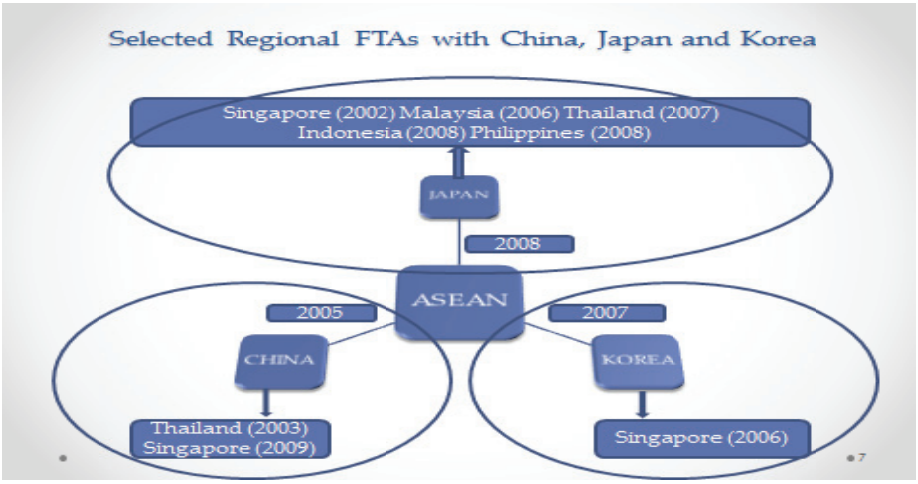

Figure 1: FTAs in effect for China, Japan, Korea and ASEAN economies during 2001-2010
(Information compiled from Asia Regional Integration Center, Asian Development Bank)

Export diversification has been measured in many ways by the researchers. For example, using concentration indexes, counts of exported products or indexes that take into account the productivity content of the export basket. Besides the counting of exported products, this study looks at the extensive margin of export or the new goods margin which is a new trend in this research area. Recent research in international trade has focused on changes in trade patterns driven by countries starting to export goods that they had not exported before. These sorts of changes are referred as changes on extensive margin or the new goods margin. At the same time, changes in intensive margin are changes in exports of goods that were previously exported.

Recently, models have been developed which rely on the extensive margin. Models as Melitz, M. J. (2003) use the extensive margin to explain the changes in the trade volumes. The theoretical models as Melitz, M. J. (2003), predict that changes in the underlying fundamentals of an economy, for example changes in tariffs due to FTAs, have an effect on the extensive margin. Thus following the model and recent studies in this field, this study aims to test the hypothesis that FTA usage lowers trade costs bilaterally and thus expands the range of products traded between regional partners of East Asia. The highly disaggregated data is used in this study in order to pick up the FTAs impact on the extensive margin of regional trade in China, Japan and Korea.

The study finds that there are changes in the extensive margin of export in the regional trade of China, Japan and Korea. It also finds supportive results with the thesis hypothesis that, FTAs affect export diversification positively. The study confirms that FTAs increase the probability of exporting new varieties of export to the trade list of these countries. All three countries have maximum extensive export with FTA partner countries. At the same time, the extensive margin share is concentrated in some sectors like machinery, metal and related products, minerals and chemicals. Destination country size and distance of the market are always important determinants for export diversification as found in the study.

Literature Review

One of the leading literatures on growth and diversification is done by Imbs, J. and R. Wacziarg (2003). They find hump-shaped pattern of export diversification, a non-monotone path of production and employment as functions of per-capita incomes which discovers that

diversification is followed by re-concentration. Cadot, O., C. Carrère, and V. Strauss-Kahn (2007) also explores evolution of export diversification pattern along the economic development path. They use HS (Harmonized System) 6-digit level trade data for intensive and extensive margins and finds hump-shaped pattern of export diversification. Their findings reveal that low and middle income countries diversify mostly along the extensive margin whereas high income countries diversify along the intensive margin and ultimately re-concentrate their exports towards fewer products.

Among the literatures about the determinants of diversification, Agosin, M. R., R. Alvarez, and C. Bravo-Ortega (2012) finds that financial development helps countries to diversify and trade openness induces higher specialization. They used SITC (Standard International Trade Classification) 3-digit code for calculating Herfindahl-Hirschman Index (HHI) and also for Gini coefficient. Parteka, A., and M. Tamberi (2008) finds distance from the major markets and the country size are the most relevant determinants of export diversification process. They use panel data-set for 60 countries and twenty years at SITC 3-digit level trade data. Matthee, M., and W. Naude (2007) finds distance (and thus transport costs) matter for export diversity.

While considering the theory related to export diversification, Ricardian trade theory explains that open economies are predicted to specialize in producing a specific range of goods, so that specialization is expected to accompany any reduction in the impediments to trade, be they policy or technology driven (Imbs, J., and R. Wacziarg 2003, 63). Economic activity in integrating economies tends to be increasingly agglomerated, i.e., increasing observed degrees of concentration at the sector level within such countries (Imbs, J., and R. Wacziarg 2003, 64). Therefore, traditional trade theory predicts that trade liberalization reduces export diversification where the new-new trade theory suggests that FTAs induces export diversification by lowering trade costs. In the field of East Asian studies, Ando, M., and S. Urata (2011) examines the impact of Japan-Mexico EPA on bilateral trade and EPA utilization rate. They find that EPA has contributed to the opening up of protected markets but they do not use the new-new trade model. Moreover Athukorala, P.-Chandra, and N. Yamashita (2006), Ando, M. (2007), Damuri, Y. R., R. Atje, and A. B. Gaduh (2006), Ng, F., and A. Yeats (2003) and others studies about the export pattern of East Asian economies but either they do not use the highly disaggregated data for trade or the new-new trade model, which is the specialty of this study.

As mentioned above, this study particularly follows the assumptions of the new-new trade theory or the Melitz, M. J. (2003) model and also keeps an eye on the researches that use this model and relates it to the trade liberalization as a cost reducing tool for increasing export diversification. Among very few of such studies, the study of Amurgo-Pacheco, A. (2006) are one where Melitz, M. J. (2003) model is used to explain the effect of trade liberalization on the range of products. He uses HS 6-digit data on Euro-Mediterranean trade and finds expansion in the range of products at the time of FTA. Again Amurgo-Pacheco, A., and M. D. Pierola (2008) use Melitz, M. J. (2003) model to explain the geographical and product diversification patterns across a group of developed and developing nations, using HS 6-digit trade data. They conclude that FTAs have positive impacts on export diversification for developing countries.

Baldwin, R. (2005), Baldwin, R., and D. Taglioni (2004) show in their study that the euro is stimulating the export of new products rather than simply increasing the volume of already-traded varieties. They used Melitz, M. J. (2003) model as a reference point and explained that the euro makes Eurozone nations look like a single nation from the exporters view, the euro could induce firms to export varieties that they had previously only sold domestically.

Whereas Baldwin, R., and V. Di Nino (2006) tests the hypothesis that euro boosted trade via the extensive margin as well as intensive margin, using HS 6-digit data. Their empirical evidence can be considered as supportive to the hypothesis but not conclusive.

After critical examination of the existing trade and diversification literatures, the study finds that the researchers in the previous studies regarding regional export diversification in China, Japan and Korea have ignored the presence of zero's in the bilateral trade matrix and the FTA's impact on them. Therefore this study gives an attempt to analyze the extensive margin of export trend in selected East Asian economies using highly disaggregated export data. And thus this study tries to fill the gap in the existing literatures.

Trends and Patterns of Export Diversification

Amurgo-Pacheco, A., and M. D. Pierola (2008) considers the existence of zeros in the trade matrix as the non-successful experience of diversification and thus it is an important piece of information. Figure 2 represents the evolution of zero exports for China, Japan and Korea to the partner countries from 2001 to 2010. The percentage share of non-traded (export) goods to the regional markets under consideration, out of the total number of exporting goods at the HS 6-digit level are calculated for each corresponding exporter. The declining trend of zero export is found for China and Korea while it is increasing for Japan. This chart shows that the number of zero exports between China, Japan, Korea and the regional markets have been changing during the last decade. In other words, the numbers of exported goods have been changing for the East Asian countries under investigation and thus there are changes in the export diversification pattern.

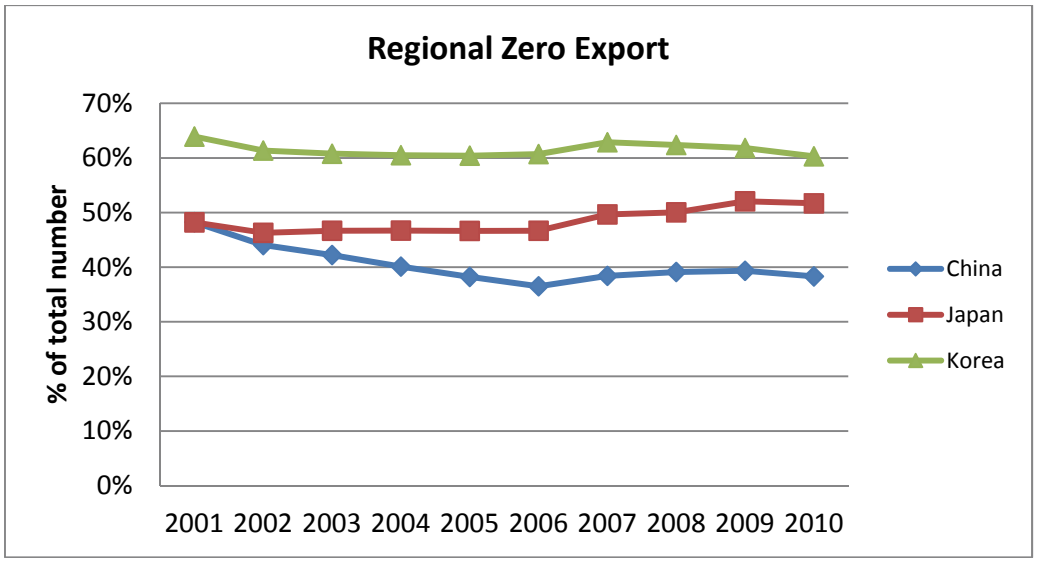

Figure 2: Evolution of number of zero export
Source: Own calculation using export data compiled from ITC, Trade Map database

Data, Calculation and Extensive Margin of Export

The ideal dataset for this kind of study should contain product-level, firm-level bilateral trade data; this would allow picking up bilateral switches in export behavior at the individual product and firm level (Baldwin, R., and V. Di Nino 2006, 6). Since these data are not available to the researchers, the common practice is to use the most detailed trade data that is

available for a wide range of nations. This study focuses on the regional export diversification of China, Japan and Korea from 2001 to 2010. The reason is that it wants to investigate the impact of the booming FTAs on export diversification in the East Asian economies during this time period. The export directions in this study are China, Japan and Korea's export to each other. At the same time the export of China, Japan and Korea to Indonesia, Malaysia, Philippines, Singapore and Thailand are also considered.

For this study the extensive or new products have been defined as those products (at the HS 6-digit level) that have not been exported for the first two years but have started to export afterwards, either consecutively or not. On the other hand the exports of the products (at the HS 6-digit level) that have been positive from the beginning of the study period are defined as intensive export. There are more than 5000 product lines at the 6-digit level for each exporter so the total set of data for 3 exporting countries and 7 corresponding partners in the study for 10 years is large. The HS 6-digit level data of this study is compiled from the Trade Map, International Trade Center (ITC) based on UN Comtrade database.

One important issue is that each of the HS 6-digit level product categories in this study encompasses a range of individual goods, so it is not possible to pick up the full extensive margin. As a consequence this paper cannot identify cases where FTA usage induces more varieties to be bilaterally traded in an HS 6-digit category that has always had positive export flows. However this paper can detect the extensive margin in cases where a bilateral trade flow switches from zero to positive since the number of export varieties was zero before and positive afterwards. Accordingly, when it observes a positive export flow between a pair of nations in a particular product category, the study considers that it includes many different varieties but cannot identify how many. Therefore this study cannot establish the full link between FTA usage and the number of varieties.

This section presents the evolution of extensive margin of China, Japan and Korea. As shown in Figure 3, the extensive margin of China's export is more for Philippines, Indonesia and Thailand. These ASEAN countries and China have China-ASEAN CECA and China-Thailand FTA. On the other hand the lowest cases of extensive margin of exports are for Japan and Korea who have no FTAs with China. Similarly, Figure 4 and Figure 5 show the evolution of extensive margin of Japan and Korea's export accordingly. Again, maximum increases in the extensive margin of export in these countries are found for the partners with FTAs and less with non-FTA partners. Thus it can be summarized that FTA partner countries have increasing trend of extensive margin of export for the regional trade in China, Japan and Korea.

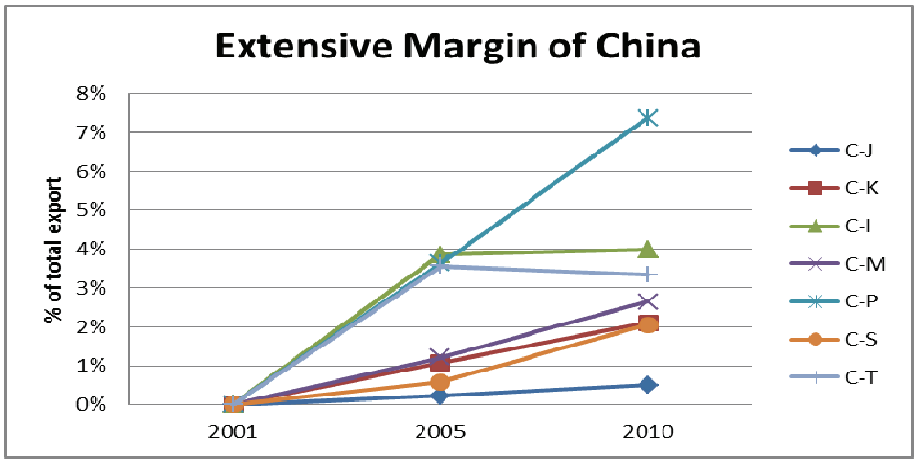

Figure 3: Evolution of extensive margin of export in China (2001-2010)
Source: Own calculation based on the data of ITC, Trade Map

Note: C = China, J = Japan, K = Korea, I = Indonesia, M = Malaysia, P = Philippines, S = Singapore, T = Thailand

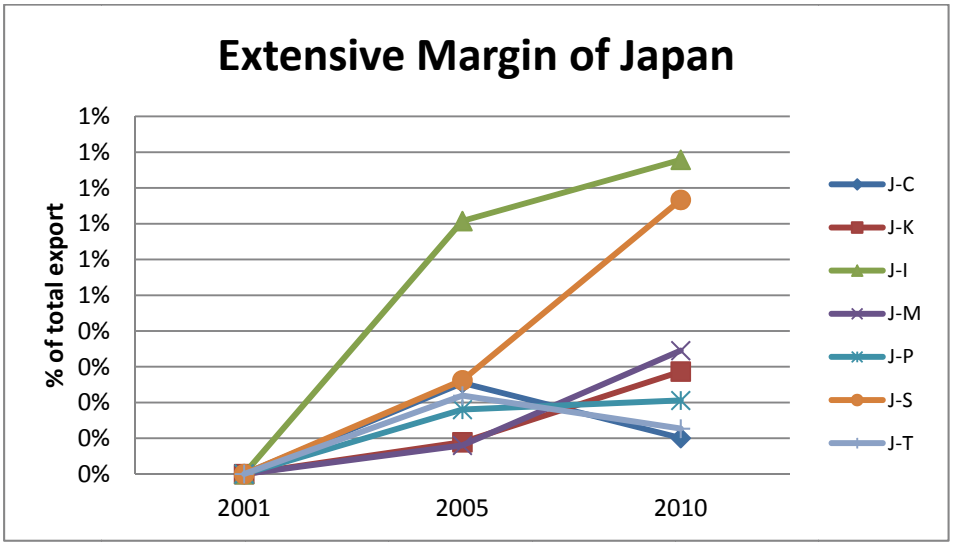

Figure 4: Evolution of extensive margin of export in Japan (2001-2010)
Source: Own calculation based on the data of ITC, Trade Map

Note: C = China, J = Japan, K = Korea, I = Indonesia, M = Malaysia, P = Philippines, S = Singapore, T = Thailand

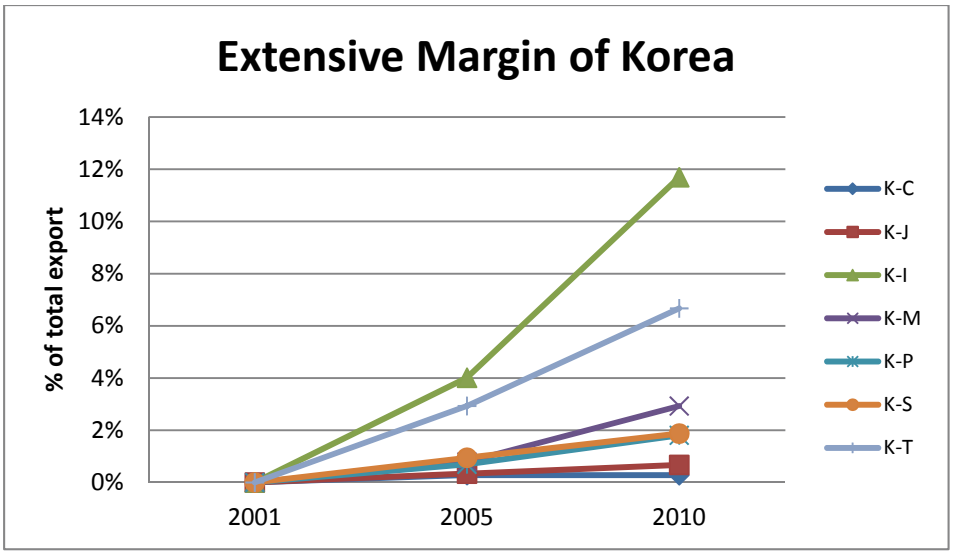

Figure 5: Evolution of extensive margin of export in Korea (2001-2010)
Source: Own calculation based on the data of ITC, Trade Map

Note: C = China, J = Japan, K = Korea, I = Indonesia, M = Malaysia, P = Philippines, S = Singapore, T = Thailand

Extensive Margin of Export by Region

This section looks at the regional share of extensive margin of export value for China, Japan and Korea. As shown in Figure 6, 7 and 8, all three countries have maximum extensive export with the FTA partner countries for the case of regional share of export. For example, China's extensive export share is larger with Philippines, Indonesia, Thailand and Malaysia. Japan's extensive export is more with Singapore, Indonesia, Philippines and Malaysia. Korea's exports of new goods are found mostly with Indonesia and Thailand. In other words, the level of extensive margin of export is lowest between each other of the exporting countries (China, Japan and Korea) and this study assumes that this might be due to the absence of FTAs.

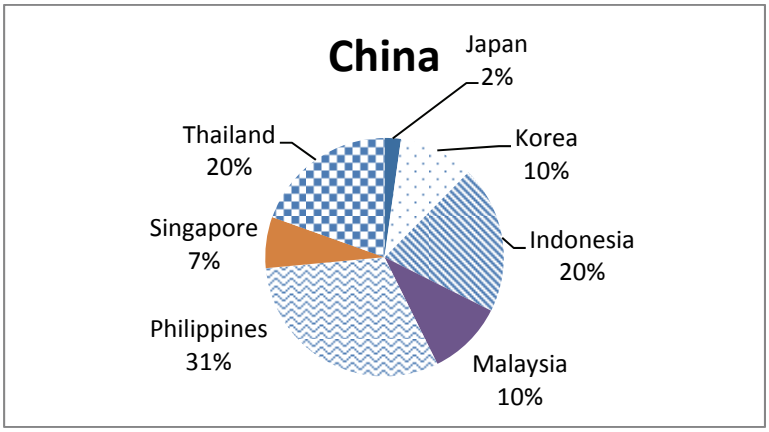

Figure 6: China's regional share of extensive margin of export
Source: Own calculation based on the data of ITC, Trade Map

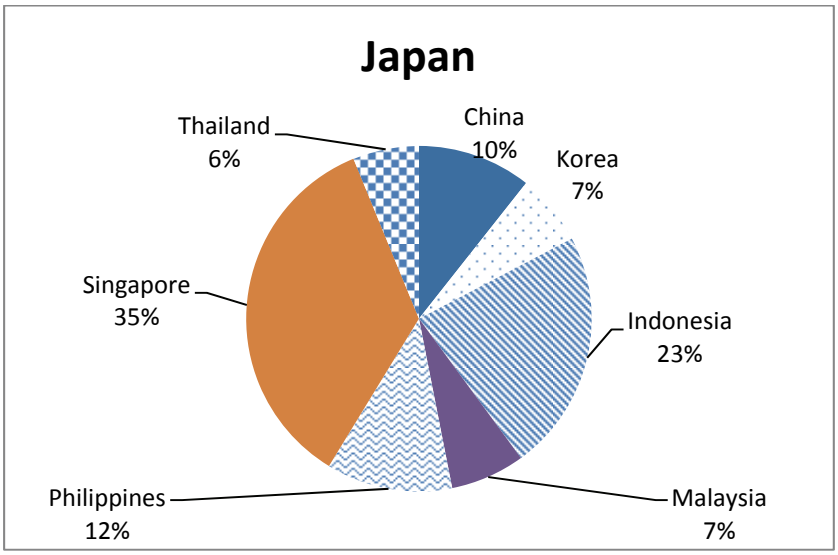

Figure 7: Japan's regional share of extensive margin of export
Source: Own calculation based on the data of ITC, Trade Map

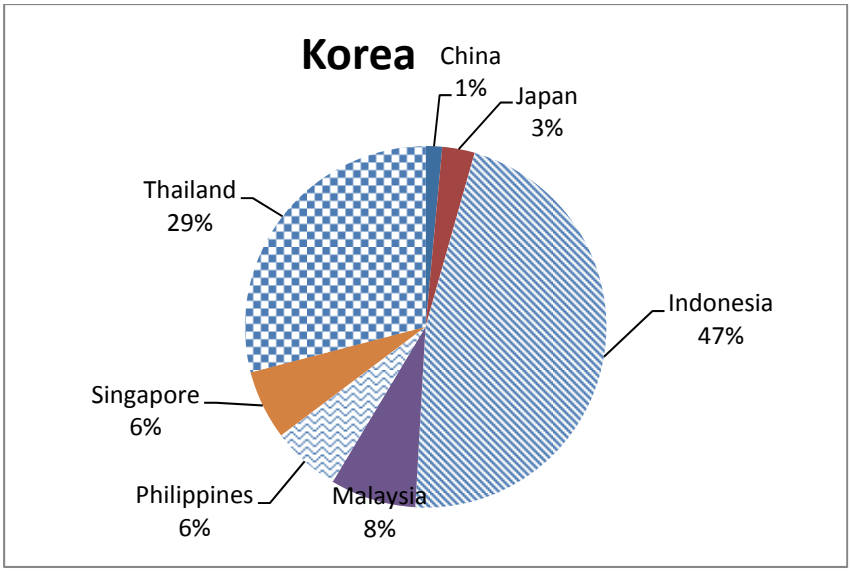

Figure 8: Korea's regional share of extensive margin of export
Source: Own calculation based on the data of ITC, Trade Map

Total Export Values by Sector

In this section, the HS-6 categories of 97 chapters has been converted to 21 sectors and then to fewer classifications of aggregated level for expositional simplicity as shown in Table 1. Figure 9, 10 and 11 represents the cases of China, Japan and Korea's sectoral share of the extensive margin of export in the regional trade. It is clear from the figures that export share is concentrated in some sectors for all three countries. This study calculates and finds that total

export shares for these countries are mostly concentrated on Machinery (84-92) and Minerals and Chemicals (25-38) sector (not presented in this paper). Similarly, extensive margin of export is concentrated on Machinery (84-92), Base metal & related products (72-83) and Minerals and Chemicals (25-38). Thus it reflects the intensity of the existing or intensive margin of export for the regional export share in China, Japan and Korea.

Table 1: Classification of aggregated level for expositional simplicity

Product Code (21 sector)	**Product Name**	**Classification for the study chart**
HS01-05	Live animals & products	Agriculture & Food (01-24)
HS06-14	Vegetable products	
HS15	Animal & vegetable oils	
HS16-24	Products of food industry	
HS25-27	Mineral products	Minerals & Chemicals (25-38)
HS28-38	Chemicals	
HS39-40	Plastic & plastic materials	Plastic, Skin, Wood & Paper (39-49)
HS41-43	Skin, raw material	
HS44-46	Wood & wood products	
HS47-49	Pulp & paper	
HS50-63	Textiles	Textiles (50-63)
HS64-67	Footwear, umbrellas	Other (64-70, 93-99)
HS68-70	Cement, ceramic, et al.	
HS71	Precious stones	Precious stones (71)
HS72-83	Base metal & products	Base metal & products (72-83)
HS84	General Machinery	Machinery (84-92)
HS85	Electric machinery	
HS86-89	Transport equipment	
HS90-92	Precision machinery	
HS94-96	Various manufactured goods	Other (64-70, 93-99)
Others	Others (HS93, HS97)	

Source: Author's arrangement based on HS data classification and from ITC, COMTRADE

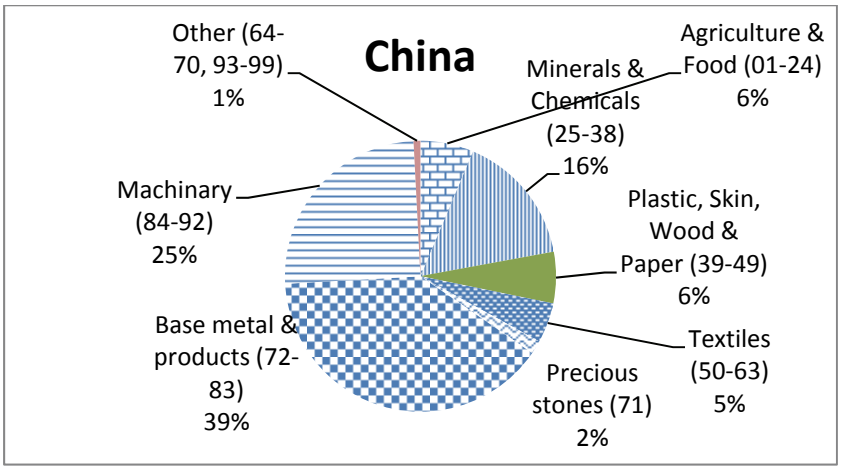

Figure 9: Sectoral share of China's extensive margin of export
Source: Own calculation based on the data of ITC, Trade Map

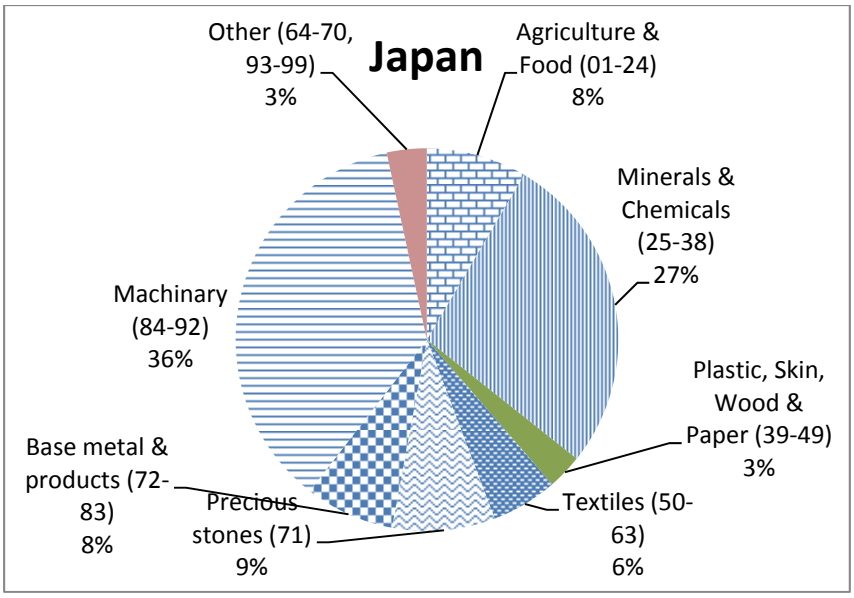

Figure 10: Sectoral share of Japan's extensive margin of export
Source: Own calculation based on the data of ITC, Trade Map

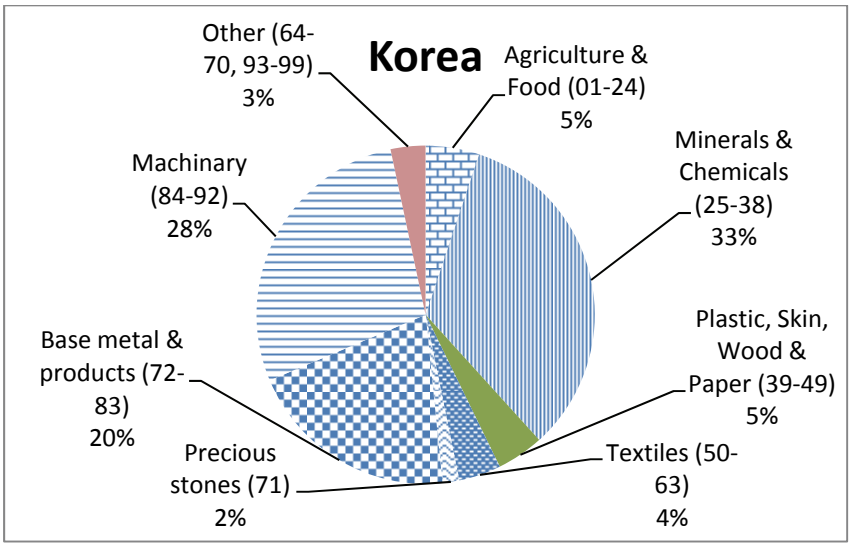

Figure 11: Sectoral share of Korea's extensive margin of export
Source: Own calculation based on the data of ITC, Trade Map

Analysis of the Findings

Trade in machinery includes parts and components and this is the important share of total and extensive margin of export, as found in the study. Therefore the study findings reflect the consequence of the fragmentation of production and its importance in the regional trade of China, Japan and Korea. Besides, the findings support the fact that only large firms export while small firms do not and also that firms try to have large enough sales to make it profitable to cover the sunk costs of entering the foreign markets (Amurgo-Pacheco, A. and M. D. Pierola 2008, 11). This explains the big share of intensive margin of export and the

concentration of limited sectors in the extensive margin. Detailed theoretical explanation is given in the theoretical section of this paper.

Previous studies find explanation of more FTA usage of the MNCs (Multi-National Corporations) and less FTA usage of the SMEs (Small and Medium Enterprises). Kawai, M., and G. Wignaraja (2011) identifies the East Asian FTA users by industry and reveals that a larger proportion of firms in the machinery and automotive industry use FTAs than firms in food, electronics or textile and garment industries. The pattern of FTA usage matches with the patterns of protection and margins of preference, i.e., more protected industries with higher margins of preference tend to use FTAs more than others. They also find that the most striking difference between users and non-users of FTAs is in firm size. The larger firms are better able than the small firms to muster the large fixed costs entailed to use FTAs. Ando, M., and S. Urata (2011) examines the impact of Japan-Mexico EPA on bilateral trade and EPA utilization rate. They find that EPA has contributed to the opening up of protected markets. Therefore this study assumes that usage of FTAs lowers trade costs bilaterally and thus expands the range of products traded between partners.

New Goods and FTAs

In this section the MFN (most favored nation) and FTA tariff rates of the importing countries are matched to see the real changes. It is found that there are gaps between applied MFN and FTA tariff rates (margin of preference) in these countries. The matching charts can qualitatively prove the hypothesis that FTAs reduce the trade cost and thus induces new categories of export. Also the study finds that the drop in zeros happened mostly in the sectors where the FTA has been most liberal. Based on the findings of regional and sectoral share, the importer's (Indonesia) tariff data is matched for the extensive export of Korea, which is presented in **Table 2.** The table shows few selected sample data that represent the sectors where highest extensive margins are found. It clearly shows the emergence of extensive export in response to the declined tariff rate due to FTA. This study checks and finds the similar changes for other countries and partners but not presented here.

Table 2: Korea's extensive margin of export and Indonesia's tariff rates

Country	**Product Code (HS6)**	**Export Value of Korea (thousand US$)**		**Tariff rates of Indonesia (2010)**	
		2001	**2010**	MFN (Applied)	FTA rate For Korea
Indonesia (Importer)	280700	0	1835	5.0	0.0
	340530	0	331	10.0	5.0
	722790	0	1116	5.0	0.0
	843710	0	1054	5.0	0.0
	890400	0	502	5.0	0.0

Source: Data based on: Tariff Analysis Online database from World Trade Organization and World Integrated Trade Solution data source from World Bank.

Theoretical Approach

Traditional trade theories do not provide any explanation of changes in the zero trade flows and thus fail to properly explain the changes or inclusion in the diversification pattern.

Therefor this study follows the recent trend of using the "new-new trade theory" that takes account of the fact that not all firms export. Particularly this study follows the simplified descriptions given in the articles of Baldwin, R., and V. Di Nino (2006) and Amurgo-Pacheco, A., and M. D. Pierola (2008). According to their explanations, the Melitz, M. J. (2003) model is basically a Helpman, E., and P. Krugman (1985) model with two key innovations: fixed cost of entering a new market and differences in firm's marginal production costs. Due to the market entry costs, only firms with low marginal cost find it profitable to export.

As BaldwinR., and M. D. Di Nino (2006) explained, the bilateral export from the origin (o) to destination (d) is determined by two conditions. The first or the domestic cut-off condition defines the highest marginal cost for active nation-o firms, which means that firms with marginal costs above this threshold will not produce even for the local market. Therefore the equilibrium in nation-o is characterized by one cut-off condition for every market, including the domestic one.

The second threshold implies the model's prediction in line with the common observation that big, efficient firms are more likely to export than small firms. Since the big firms are able to cover the fixed market entry costs while the small firms fully pass on the per-unit trade costs to export markets and thus the price of their good is higher in foreign markets. Moreover, the further away the market, the higher will be the price due to passed-on trade costs and so the lower will be the operating profit earned.

The total value of the per-firm bilateral exports measured in terms of numeraire is:

$$V_{od} = \begin{cases} \tau_{od}^{1-\sigma} B_d \left\{ n_o \int_0^{\overline{a_{od}}} a^{1-\sigma}\, dG(a|\overline{a_{oo}}) \right\} \left(1 - \frac{1}{\sigma}\right)^{\sigma-1}, & a \le \overline{a_{od}} \\ 0, \quad a > \overline{a_{od}} \end{cases} \qquad (1)$$

where V_{od} is the volume of bilateral exports between the origin and the destinations. $G(a|\overline{a_{oo}})$ is the conditional density function that describes the distribution of marginal costs in nation-o. It is conditioned on the domestic threshold marginal cost $\overline{a_{00}}$ since only firms that produce can export and firms with a's above $\overline{a_{00}}$ cannot produce in nation-o. Thus when the threshold marginal cost shifts to the right, smaller firms will be able to export their goods and so the range of exported goods will be widen.

The expression for the bilateral trade volume, equation (1) suggests a gravity-like estimation. Noting that B_d equals $E_d/p_d^{1-\sigma}$, therefore GDP of the importing country can be the proxy for E_d, and the GDP of the exporting country can be the proxy for n_o. While n_o is related to the endowment of exporting nation. The remaining expressions, including bilateral trade costs $\tau_{od}^{1-\sigma}$, and additional nation-o specific factors affecting n_o can be controlled for using time-invariant pair dummies, following previous researchers this study also uses distance between markets.

This framework is assumed to be linked to diversification to the extent that the range of exported goods is somehow linked to the export threshold. The idea is, as the fixed market entry costs have been falling over time for exporting firms, the number of zeros in export vectors should be falling. This study assumes in line with the previous research of Baldwin, R., and V. Di Nino (2006), Amurgo-Pacheco, A., and M. D. Pierola (2008) and others, that this drop in bilateral trade costs, or the fixed market entry costs, not only stimulating bilateral

exports, but also induce firms to start exporting new categories of goods that were previously not exported.

As Amurgo-Pacheco, A., and M. D. Pierola (2008) explains, signing FTAs and as a consequence the associated costs with exporting will be reduced. For example, higher transparency in the rules for exporting to FTA members lower information costs for exporters which translates into a fall in the fixed cost of entering the FTA. Therefore, the assumption is that the FTA lowers the fixed market entry costs for its members. As a result of that a wider range of firms will find it worthwhile to sell its goods in FTA. As a consequence, there will be increase in the number of goods exported to the FTA. Therefore, more goods will increase the trade volume as well.

Econometric Approach: Estimations and Results

Estimations Using Aggregate Level Data

Before proceeding to the estimation of disaggregated level export data this section deals with the aggregate data. In doing so, this section does panel data analysis by pooled OLS method for all three countries and follows the following estimation model 1 and model 2:

Model 1:

$$\text{Log(Num\_goods)} = \alpha + \beta_1 \log(\text{GDP\_o}_t) + \beta_2 \log(\text{GDP\_d}_t) + \beta_3 \log(\text{Dist}_{od}) + \beta_4 \text{FTA} + \varepsilon_t$$

Model 2:

$$\text{Log(T\_ex)} = \alpha + \beta_1 \log(\text{GDP\_o}_t) + \beta_2 \log(\text{GDP\_d}_t) + \beta_3 \log(\text{Dist}_{od}) + \beta_4 \text{FTA} + \varepsilon_t$$

Where the Num_goods is the total number of goods exported at HS 6-digit level and T_ex is the total value of export at the aggregate level. GDP_ot is GDP of the origin and GDP_dt is GDP of the destination country at constant 2000 bill US$, data taken from (World Development Indicators) WDI-World Bank. Distance (between origins to destination) data is taken from CEPII data source as represented by Dist_{od}. FTA dummy is created to take account the reduction of trade costs which is 1 if FTA exists between countries, otherwise 0. The study results are presented in Table 3 which shows that FTAs affect export diversification positively at the aggregate level, both in number of export and total value. It also confirms that destination country size and distance of the market are always important determinants for export diversification.

Table 3: Basic model (aggregate OLS estimation)

	GDP_o (+ve)	GDP_d (+ve)	DIST (-ve)	FTA (+ve)	R^2
Num_goods (obs. 210)	0.16*** (13.54)	0.081*** (7.37)	-0.12*** (-4.84)	0.045*** (2.012)	.67
T_ex (obs. 210)	0.59*** (15.15)	0.59*** (16.23)	-0.28*** (-3.47)	0.401*** (5.38)	.81

*** = significant at 1%, ** = significant at 5% and *= significant at 10%; t-values in parentheses

Estimation at the Disaggregated Level Data:

The disaggregated data set for this study consists of uni-directional product pairs among the three exporters and other corresponding ASEAN partners. Tthis paper estimates the following model with a single nation as the exporter and other seven nations as export partners. The econometric model for this study is as follows:

$$\text{Log}(V_{odit}) = \alpha + \beta_1 \log(GDP\_o_t) + \beta_2 \log(GDP\_d_t) + \beta_3 \log(Dist_{od}) + \beta_4 FTA + \beta_5 SD + \varepsilon_t$$

Where the variables are V_{odit} which is the dollar value of exports from country–o (origin) to country-d (destination), of product (i) for each 6-digit category in year t. Source of the export data is ITC, COMTRADE database. GDP_o_t is GDP of the origin in year t at constant 2000 bill US$ and GDP_d_t is GDP of the destination country in year t, taken from WDI (World Development Indicators), World Bank database. The distance and FTA dummy variables are similar as stated before. The new variable is the SD or sector dummy which is 1 for the machinery sectors and 0 for other sectors, to control sectoral differences.

Again, panel data analyses by pooled OLS method for all three countries are done separately for total export at every HS 6-digit category and also for extensive margin of export (own calculation) as dependent variable. The results of the disaggregated level estimation are presented in Table 4 and Table 5. Estimation signs of the variables are followed by the hypotheses and almost all variables are statistically significant. The results supports that larger the size of the market at destination and the closer the markets (lower trade costs), the larger the increase in the volume of exports both in total and extensive margin of export. The negative impact of Japan's GDP on export diversification follows the hump shaped pattern of export diversification explained by Imbs, J., and R. Wacziarg (2003), that diversification is followed by re-concentration for high income economies. The reducing number of exports for Japan is also reflected in the increase of number of zero exports in Figure 2. The sector dummy (SD) is positive and significant for all exporters. This proves that the machinery sector is becoming more important for expanding export varieties, i.e. trade in machinery helps the diversification process. This supports the pattern of sectoral distribution of total and extensive margin for each exporter presented in section three.

Table 4: Extensive margin of export (Total export value) (OLS estimation)

	Log(GDP_o) (+ve)	Log(GDP_d) (+ve)	Log(DIST) (-ve)	FTA (+ve)	SD (+ve)
CHN (obs.396130)	1.26*** (51.50)	0.512*** (93.58)	-0.23*** (-18.15)	0.075*** (4.34)	1.06*** (83.41)
JPN (obs.396900)	-0.49*** (-3.18)	0.63*** (88.99)	-0.29*** (-21.27)	0.029*** (2.14)	2.29*** (182.53)
KOR (obs.395500)	0.64*** (10.80)	0.40*** (60.06)	-0.45*** (-30.19)	-0.068*** (-4.31)	1.26*** (114.38)

*** = significant at 1%, ** = significant at 5% and *= significant at 10%; t-values in parentheses

Table 5: Extensive margin of export (Extensive export value) (OLS estimation)

	Log(GDP_o) (+ve)	Log(GDP_d) (+ve)	Log(DIST) (-ve)	FTA (+ve)	SD (+ve)
CHN (obs.	3.09*** (58.89)	0.063*** (4.89)	-0.21*** (-7.59)	0.38*** (10.96)	0.29*** (10.55)

45360)					
JPN (obs. 25610)	11.57*** (36.002)	0.17*** (12.09)	-0.029 (-1.01)	0.21*** (7.71)	0.25*** (8.00)
KOR (obs. 39620)	6.89*** (53.86)	0.03** (2.12)	-0.037 (-1.18)	-0.38*** (-11.58)	0.15*** (6.36)

*** = significant at 1%, ** = significant at 5% and *= significant at 10%; t-values in parentheses

Most importantly, the study confirms the hypothesis that FTAs affect export diversification positively for China and Japan but not for Korea. That approves the fact that usage of FTAs increases the probability of expanding new varieties of export to the trade list. Even though Table 2 shows that there are successful cases of FTA usage and emergence of many new goods, the negative impact of Korea's FTA on diversification can be explained with the limited use of FTAs in Korea, its late entry to FTAs and low margin of preference. These results do not offer exact estimation on the precise impact on the extensive margin of trade. But they provide an indication of how the diversity is affected and confirm the main finding about the impact of the gravity and trade costs variables in creating trade in new varieties. The study findings provide supportive though not conclusive evidence for the new goods hypothesis in these countries.

Conclusions

By looking at the extensive margin of export in the regional trade of China, Japan and Korea this study finds that there are changes in the export diversification pattern and it has increased in the regional markets for these economies. Size of the destination country and distance are always important determinants for export diversification as found in the study. It also finds supportive results with the thesis hypothesis that, FTAs affect export diversification positively. Therefore, this study argues the prospective of expanding the export variety by facilitating the FTAs between China, Japan and Korea to the regional markets.

This study used disaggregated (HS 6-digit) level trade data to explain the changes in the pattern of regional export diversification in China, Japan and Korea. It finds that all three countries have maximum extensive or new goods margin with regional FTA partner countries. At the same time, the extensive margin share is concentrated in some sectors like machinery, metal and related products, minerals and chemicals. Therefore, the share of existing product or intensive margin of export is major for the regional export in these countries. The study finds that FTAs help to lift diversification by reducing the trade costs and thus increasing the chances of exporting a wider variety of goods. The study analyzes the regional export scenario of China, Japan and Korea using highly disaggregated data which is a contribution to the literature in these issues.

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Trade Liberalization in Russia, China, and India during the 1990s

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Abstract: This paper compares the trade openness of Russia, China, and India in 2000 by employing the measure of openness that was based on an estimation of the modified Heckscher–Ohlin–Vanek model created by Leamer, E. E. (1984; 1988). The presented analysis suggests that the trade openness of China was the highest and that of Russia was the lowest of the three countries. The practical policy measures that greatly contributed to these differences included (i) the actively used import duty exemption scheme in China, (ii) the self-sufficiency policy in the agricultural sector in India, and (iii) the complicated customs procedures in Russia.

JEL Classification**:** F11; O24; P33

Keywords: Trade liberalization; Trade openness; Russia; China; India

Introduction

This paper compares the intensive periods of trade liberalization carried out by the governments of Russia, China, and India in the 1990s. It firstly describes the trade liberalization processes in these three countries during this decade. Secondly, it compares the trade openness of the three sample countries in 2000 by employing the outcome-based measure of trade policy created by Leamer, E. E. (1984; 1988). Thirdly, the results of this analysis are examined in detail by assessing the trade policies that drive them.

Trade Liberalization in Russia, China, and India: A Brief Summary

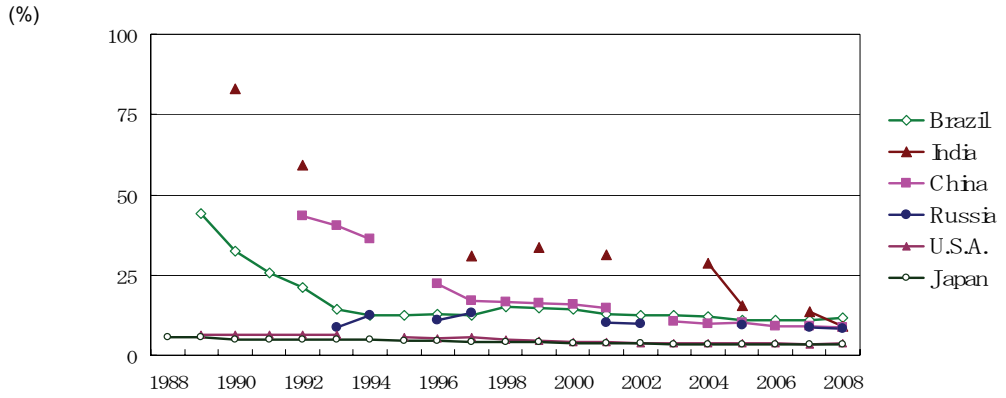
Trade liberalization in Russia, China, and India has followed a common pattern in that a broad trade policy reform was introduced in each country at the beginning of the 1990s. For example, China's market-oriented reforms accelerated from the 3rd General Assembly of the 14th Communist Party Convention in November 1993 (Sato, T. 2009). In India, a comprehensive reform for liberalizing the economy was initiated in June 1991 (Esho, H. 2008, 68-122), while in Russia, the presidential decree on November 15, 1991 stipulated the start of drastic import liberalization from the beginning of 1992 (Uegaki, A. 2005, 15-16).

The components of the trade policy reforms in these three countries were similar. The direct trade controls adopted by the government, including quotas, licensing, and trading rights, that were prevalent in each of these countries before the 1990s were dismantled during the reform period. As these direct controls were phased out, the three countries developed foreign trade systems that relied more heavily on indirect instruments, such as tariffs and non-

tariff measures, in order to regulate the flow of imports and exports.[4] They then reduced the level of tariffs and non-tariff barriers to trade over time.

However, despite these similarities in the policy measures introduced, the pace of trade liberalization in the three countries was heterogeneous; in particular, there were marked differences between Russia and the other two countries. In India, for example, the number of goods subject to import licensing has decreased since the beginning of the reform, but as of April 1997, approximately 32% of goods remained subject to licensing, mainly for balance of payments reasons (WTO 2002, 38). In China, at the time of its accession to the WTO (December 2001), both import quotas and licensing were applied to a number of products, including motor vehicles, petroleum products, natural rubber products, cameras, and watches (WTO 2006, 81). Regarding tariffs, the average import tariff rate applied to manufactured goods was 83% in India (1990) and 44% in China (1992) before the beginning of the intensive period of trade liberalization, and it took between 10 and 15 years for them to reduce the rate to approximately 10% (Figure 1). By contrast, Russia drastically removed most of its restrictions on foreign trade, especially on the importing side, during the first one or two years of the reform. Consequently, its average tariff rate was a mere 8.5% in 1993, which was only slightly higher than the level of the U.S. (6.5%) in that year.

Figure 1: Average applied import tariff rates



Note: Simple (unweighted) average of the most-favored nation rates applied to non-agricultural and non-fuel products.
Source: UNCTAD (2009).

These brief summaries imply that the openness of trade regimes as a whole were higher for Russia than they were for China and India at the beginning of the 2000s, the point at which the intensive periods of trade liberalization were completed in each country. This is also in line with the widely held recognition that Russia was a radical reformer and that China and India were gradual reformers.

However, as certain previous studies of international economics suggest, such incidence-based measures that aim to assess trade openness by the direct observation of policy instruments are generally atheoretical (Pritchett, L. 1996, 308-309). Certainly, tariff averages have often been used to measure the height of trade barriers (or the openness) of a country.

[4] Non-tariff measures include any kind of trade policy instrument except tariffs: these include not only direct controls (quotas and licensing), but also standards certification, sanitary and phytosanitary measures, and complicated customs procedures.

However, a large number of countries, especially emerging economies such as China and India, have frequently provided a wide range of tariff concessions or exemptions on import duty under a number of export promotion schemes and regional and bilateral agreements, and the complexity of these exemptions often makes it impossible to incorporate them into the average tariff rate. In addition, the existence of non-tariff barriers (e.g., quotas and licensing) makes tariff averages more questionable as an overall measure of openness for two reasons: (i) coverage ratios for non-tariff barriers do not necessarily suggest the severity of these barriers and (ii) it is unclear how tariff averages and non-tariff coverage ratios should be combined.

In addition to incidence-based measures, trade openness can be assessed using outcome-based measures, which calculate the deviation of the actual outcome from what the outcome would have been without the trade barriers. Outcome measures can be either price-based or trade flow-based. This study adopts the trade flow-based approach proposed by Leamer, E. E. (1984; 1988).

Trade Flow-based Openness Index for Russia, China, and India

Leamer, E. E. (1984; 1988) proposed a measure of openness that was based on an estimation of the modified Heckscher–Ohlin–Vanek (HOV) model of trade flows. Using data on 66 countries in 1982, Leamer's, E. E. (1984) model predicts the net exports for each country for a group of commodities as a function of the country's endowments of productive factors. The deviation of the actual values from the predicted level of net exports is taken as an indicator of the trade barriers for a commodity group in a country. The openness measure for total trade for a country (and thus the three aggregates of resources, agricultural goods, and manufactured goods) is then computed as the sum of these deviations across all commodities.

Methodology and Regression Results

The hypothesis of the modified HOV model proposed by Leamer, E. E. (1984) is that net exports are linear functions of productive factor endowments.[5] The present study estimates Leamer's, E. E. (1984) model with three additional variables using ordinary least squares (OLS) regression analysis. The regression equation is

$$N_{ij} = a + b_1(productive\ factors)_{im} + b_2(Cap\_Tech)_i + b_3(Ex\_cont\ dummy)_i + b_4(Peg\ dummy)_I \quad (1)$$

where the dependent variable N_{ij} represents the value of the net exports of commodity j by country i, while j represents the following 10 aggregate commodities for each country: petroleum (PETRO), raw materials (MAT), forest products (FOR), tropical agriculture

[5] In this model, trade barriers are implicitly assumed to be (i) the only important omitted explanatory variables and (ii) uncorrelated with the included variables, although both of these assumptions are doubtful (Leamer, E. E. 1988, 148). This model also assumes incomplete specialization and constant returns to scale (Leamer, E. E. 1988, 165).

(TROP), animal products (ANL), cereals (CER), labor-intensive goods (LAB), capital-intensive goods (CAP), machinery (MACH), and chemicals (CHEM).[6]

The explanatory variable $(productive\ factors)_{im}$ is the supplied factor of production *m* in country *i*. The factor of production *m* here comprises the types of resources in each country: three types of workers (*Labor 1*, *Labor 2*, *and Labor 3*), three types of land (*Land 1*, *Land 2*, *and Land 3*), and three types of natural resources (*Coal*, *Minerals*, and *Oil & Gas*).[7]

The explanatory variable (*Cap_Tech*) represents a composite of two indicators, namely capital stock and technology, the latter of which is one of the three new variables not used in the model presented by Leamer, E. E. (1984). Here, capital stock represents "capital + urban land" values (World Bank 2006), while the sum of patent applications by country of origin in 1995–2000 (WIPO 2011) is taken as the indicator of the abundance of technologies. Because a strong correlation is observed between these two indicators, this paper combines them into a single variable (*Cap_Tech*) using principal component analysis in order to avoid multicollinearity.[8]

The other two new variables not used by Leamer, E. E. (1984) are the foreign exchange control dummy (*Ex_cont dummy*) and currency peg dummy (*Peg dummy*). The *Ex_cont dummy* takes one if the country is under the IMF's Article VIII, meaning it is allowed to maintain restrictions on payments and transfers for current international transactions.[9] The *Peg dummy* takes one if the country's exchange rate system is categorized as "pegged" or "flexibility limited" according to the IMF's (1998) classification.[10]

Because of data availability, especially those on capital stock data that are comparable for many countries, the variables used herein are based on data from 2000.[11] There are 73 countries in the sample including Russia, China, and India. The definitions and sources of the variables used in the regression analysis are presented in Appendices 1–4.

The regression results are reported in Table 1. The goodness of fit of the model is generally high (adjusted R^2 is 0.529–0.907) and the regression results seem to be generally plausible. The natural resources of *Minerals* and *Oil & Gas* positively contribute to the net exports of PETRO and MAT, while *Labor 1* (professional/technical workers) negatively contributes to these net exports. *Land 1* (arable) and *Land 3* (forest) positively contribute to the net exports of CER and FOR, respectively.

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[6] The empirical analyses conducted by Leamer, E. E. (1984, 60-73) show that the products included in each of the 10 aggregate commodities tend to be exported by similar countries in terms of their endowments of different types of productive factors.

[7] Leamer, E. E. (1984) used 10 types of productive factors as explanatory variables in his model: the 9 types of productive factors listed here and capital stock, which is described below.

[8] The correlation coefficient between the two indicators is 0.903.

[9] The dummy takes zero if the country is under the IMF's Article XIV, which stipulates the avoidance of restrictions on current payments as one of the general obligations of members.

[10] The dummy takes zero if the country's exchange rate system is more flexible.

[11] As much of the literature indicates, the availability of appropriate capital stock data is poor for many countries. Further, please note that information on current payment restrictions and exchange rate systems are not as of 2000 but as of 1998, because the relevant back issue of the IMF's annual report was temporarily unavailable to the author.

Regarding manufactured goods, the most significant and positive determinants of the net exports of CAP, MACH, and CHEM are *Cap_Tech* and *Labor 1*.[12] The most significant positive contributor to LAB is *Labor 2* (non-professional literate workers). The *Ex_cont dummy* negatively contributes to the net exports of almost all goods. No statistically significant dependence of net exports on the *Peg dummy* was detected.

Table 1: Regression results

Dependent variables	PETRO	MAT	FOR	TROP	ANL	CER	LAB	CAP	MACH	CHEM
Independent variables										
Labor 1	—443.01	—691.23**	—585.78	—71.961	—167.52	—226.19	—330.63	799.54**	3174.6	877.06*
	(507.5)	(312.9)	(398.0)	(210.9)	(237.9)	(170.5)	(887.0)	(327.7)	(2456)	(465.0)
Labor 2	69.258	—3.4822	17.181	34.613**	—1.7969	—24.259*	317.40***	—13.116	—30.333	—116.87***
	(46.25)	(20.87)	(27.25)	(15.21)	(13.42)	(13.84)	(66.38)	(21.02)	(191.6)	(34.71)
Labor 3	550.73***	113.74*	—23.853	—114.17**	—37.41	—141.42**	177.10	218.95**	1290.4**	261.41***
	(187.4)	(64.52)	(59.44)	(44.79)	(41.54)	(58.00)	(210.2)	(97.41)	(555.1)	(97.12)
Land 1	—664.69***	—127.07*	—7.6750	130.98	47.616	178.55***	—372.40*	—208.67**	—1471.8***	—249.92**
	(183.2)	(66.57)	(59.13)	(49.90)	(45.01)	(63.13)	(214.6)	(95.94)	(551.1)	(98.45)
Land 2	75.449***	—4.4948	—43.465*	9.2118	—0.5469	0.9729	40.373	5.4169	37.910	—16.400
	(23.09)	(19.79)	(21.79)	(5.946)	(4.771)	(10.08)	(47.13)	(16.34)	(77.02)	(10.01)
Land 3	49.123**	26.994**	23.717**	—10.734*	—4.1679	—15.372	76.718*	36.800**	169.67**	20.300*
	(23.95)	(12.58)	(10.68)	(6.330)	(6.612)	(10.29)	(42.85)	(16.33)	(75.49)	(10.63)
Coal	—1.3670**	0.1759	0.2577	—0.7400***	0.2037	0.3244	—2.9266	—0.1664	—1.8949	1.1027**
	(0.683)	(0.348)	(0.266)	(0.254)	(0.210)	(0.299)	(1.082)	(0.459)	(2.188)	(0.433)
Minerals	—0.2444	1.2981**	0.9633	0.1681	0.2613*	0.0656	0.1304	—0.4517	—1.0943	—0.2367
	(0.289)	(0.509)	(0.856)	(0.102)	(0.152)	(0.137)	(0.763)	(0.285)	(0.761)	(0.175)
Oil & Gas	0.6039***	0.1750***	—0.0292	—0.0401	0.0043	—0.0226	—0.1196	—0.1441**	—0.4060	—0.0452
	(0.097)	(0.059)	(0.029)	(0.026)	(0.029)	(0.035)	(0.157)	(0.062)	(0.316)	(0.040)
Cap_Tech	—6624.4***	—3886.3***	—1005.3***	—1328.1***	—2542.2***	—592.50	—4269.2**	1053.4**	20102***	875.63***
	(1297)	(434.8)	(254.1)	(125.1)	(216.7)	(407.3)	(1873)	(443.8)	(2889)	(257.0)
Ex_cont dummy	—3701.8	—2020.1**	—892.30	360.30	—163.49	1055.8	—7539.4*	—2424.9**	—13085*	—1665.2*
	(2361)	(962.3)	(676.5)	(415.4)	(407.2)	(798.1)	(3851)	(1190)	(7040)	(871.0)
Peg dummy	—71.110	388.13	595.70	126.65	566.33	521.72	1435.6	193.45	—883.50	1173.3
	(1360)	(491.9)	(675.1)	(347.7)	(606.4)	(438.1)	(1688)	(834.4)	(3234)	(1205)

[12] It is noteworthy that the *Cap_Tech* variable negatively contributes to the net exports of all but CAP, MACH, and CHEM.

Const.	—2849.6***	—1393.5***	296.13	—361.79	—706.32*	—600.55*	—327.41	414.21	8840.1***	52.920
	(1045)	(418.0)	(411.7)	(226.6)	(313.9)	(339.2)	(1516)	(576.2)	(1979)	(469.4)
N	73	73	73	73	73	73	73	73	73	73
Adjusted R^2	0.907	0.885	0.575	0.791	0.737	0.759	0.868	0.673	0.829	0.529

Notes: The figures in parentheses report White's heteroskedasticity-consistent standard errors. ***: Significant at the 1% level; **: Significant at the 5% level; *: Significant at the 10% level.
Source: Author's estimation.

Trade openness in Russia, China, and India

The measure of trade openness used in this paper is the adjusted trade intensity ratio for each country. This index is calculated as the sum of the absolute value of actual net exports minus the sum of the absolute value of predicted net exports for each group of goods. The country-size effect is overcome by dividing by GDP (IMF 2011).

$$TIR^{A}_{i} = (\Sigma|N_{ij}| - \Sigma|N^{*}_{ij}|) / GDP_{i} \quad (2)$$

where N_{ij} is the actual net exports of commodity j by country i and N^{*}_{ij} is the predicted net exports calculated from the regression results above and the explanatory variables in each country.

Prior to the calculation of the index, however, we have to consider the significant shortcomings of Russia's foreign trade statistics. The source of Russia's trade statistics used herein is the UN Comtrade database, the original source of which is the Federal Customs Service of Russia (FTS). One of the most significant shortcomings of such data is that they do not include "shuttle trade" (i.e., informal trading activities by individuals who travel abroad on shopping trips and return to Russia to sell the acquired foreign goods), which has amounted to more than one quarter of Russia's imports in recent years.[13] Another significant shortcoming is that all of Russia's trade transactions with Belarus are classified into the group of "special transactions or not classified elsewhere," namely the SITC-93 group that forms a part of LAB. Taking these shortcomings into consideration, this paper thus revised the values of actual net exports for Russia (see Table 3).[14]

The trade openness indices for some countries, including Russia, China, and India, are provided in Table 2.[15] This table shows that the trade openness index of China is as high as those of developed countries such as the U.S. and Japan. Further, India's trade openness index is inferior to that of China to some extent (ranks 29 and 25 out of 73, respectively), while Russia has a lower index (rank 39) not only compared with China and India, but also

[13] In 2000, Russia's imports amounted to 33,880 million USD according to the FTS and UN Comtrade, but the balance of payment statistics published by the Central Bank of Russia (CBR) report the value to be 44,862 million USD, namely 24.5% of Russia's imports were not covered by the statistics derived from the FTS or UN Comtrade.
[14] The revision was carried out in the following simple way: firstly, the import values of each group of commodities were multiplied by the coefficient of 1.32 (= 1/(1–0.245)) and then all Russia's trade values with Belarus were subtracted from LAB.
[15] The full list of the openness indices for the 73 sample countries is reported in Appendix 5.

compared with several other emerging economies. This implies that Russia's trade regime was relatively closed compared with many other countries.

Table 2: Trade openness index

Rank	Country	Resources	Agricultural goods	Manufactured goods	Total
1	Ireland	0.01	0.01	0.24	0.26
5	Finland	0.01	0.08	▲ 0.02	0.07
9	Canada	0.01	0.03	0.01	0.05
12	Sweden	0.00	0.04	0.01	0.05
17	Germany	▲ 0.01	▲ 0.00	0.03	0.02
22	United States	0.00	0.00	0.01	0.01
24	Japan	▲ 0.00	0.00	0.00	0.00
25	China	▲ 0.00	▲ 0.00	0.00	0.00
27	France	▲ 0.00	0.00	▲ 0.01	▲ 0.01
29	India	▲ 0.01	▲ 0.00	▲ 0.02	▲ 0.03
32	Turkey	▲ 0.04	▲ 0.00	▲ 0.02	▲ 0.07
36	Egypt	▲ 0.04	▲ 0.01	▲ 0.05	▲ 0.10
39	Russian Federation	0.06	▲ 0.02	▲ 0.17	▲ 0.13
40	Brazil	▲ 0.02	▲ 0.00	▲ 0.11	▲ 0.13
48	Romania	▲ 0.17	▲ 0.03	▲ 0.20	▲ 0.40
51	South Africa	▲ 0.08	▲ 0.06	▲ 0.30	▲ 0.45
59	Georgia	▲ 0.15	▲ 0.44	▲ 0.97	▲ 1.55
64	Nepal	▲ 0.39	▲ 0.35	▲ 2.29	▲ 3.03
69	Suriname	▲ 1.38	▲ 2.08	▲ 5.84	▲ 9.29
73	Lesotho	▲ 6.60	▲ 3.64	▲ 25.94	▲ 36.18

Source: Author's estimation.

Policies Driving Trade Openness

This section of the paper examines in detail the results of the analysis presented previously in order to assess the policies that drive trade openness. Table 3 shows a breakdown of the openness index as well as the actual and predicted net exports of each group of commodities and their differences for Russia, China, and India.[16] These differences between the actual and

[16] Please note the following three presumptions made in calling the adjusted trade intensity ratio a measure of openness. These are (i) that the direction (positive or negative) of the predicted and actual net exports of a certain group of goods must stay the same, (ii) that most policies only deter trade, and (iii) that an export-deterring policy is always applied to net-exporting goods (i.e., goods whose predicted net exports are positive), whereas an import-

predicted net exports of each group of goods can be explained by the combination of the import-deterring and export-promoting measures adopted by the respective governments. For example, if the actual net exports of a certain group of goods are much larger than predicted, the government may be implementing policies that aim to reduce imports and/or promote exports.

Table 3: Actual and predicted net exports of Russia, China, and India (percentage of GDP)

	China				India				Russia			
	Openness	Actual	Predicted									
	$\|N_{ij}\| - \|N^*_{ij}\|$	N_{ij}	N^*_{ij}	$N_{ij} - N^*_{ij}$	$\|N_{ij}\| - \|N^*_{ij}\|$	N_{ij}	N^*_{ij}	$N_{ij} - N^*_{ij}$	$\|N_{ij}\| - \|N^*_{ij}\|$	N_{ij}	N^*_{ij}	$N_{ij} - N^*_{ij}$
PETRO	▲ 0.14	▲ 1.19	▲ 1.34	0.14	▲ 0.87	▲ 3.40	▲ 4.27	0.87	5.04	12.87	7.83	5.04
MAT	▲ 0.06	▲ 0.54	▲ 0.60	0.06	▲ 0.04	▲ 0.54	▲ 0.58	0.04	1.02	9.59	8.57	1.02
FOR	▲ 0.05	▲ 0.56	▲ 0.61	0.05	0.10	▲ 0.21	▲ 0.11	▲ 0.10	▲ 1.86	1.07	2.93	▲ 1.86
TROP	▲ 0.02	0.20	0.22	▲ 0.02	▲ 0.05	0.22	0.27	▲ 0.05	0.21	▲ 1.41	▲ 1.20	▲ 0.21
ANL	0.00	0.29	0.28	0.00	▲ 0.06	0.39	0.45	▲ 0.06	▲ 0.04	▲ 0.58	0.62	▲ 1.20
CER	0.01	▲ 0.34	▲ 0.33	▲ 0.01	▲ 0.10	▲ 0.04	0.14	▲ 0.17	▲ 0.16	▲ 1.14	1.30	▲ 2.45
LAB	0.24	6.26	6.02	0.24	0.47	1.98	1.50	0.47	▲ 4.43	1.55	▲ 5.98	7.53
CAP	▲ 0.00	0.50	0.50	▲ 0.00	0.39	1.49	1.10	0.39	0.85	1.77	▲ 0.91	2.68
MACH	▲ 0.00	▲ 1.06	▲ 1.06	0.00	▲ 2.29	▲ 1.13	▲ 3.42	2.29	▲ 13.36	▲ 2.06	▲ 15.42	13.36
CHEM	0.03	▲ 1.55	▲ 1.51	▲ 0.03	▲ 0.43	▲ 0.15	▲ 0.58	0.43	▲ 0.02	▲ 0.10	▲ 0.12	0.02
Total	0.02	2.01	1.59	0.42	▲ 2.88	▲ 1.39	▲ 5.49	4.11	▲ 12.74	21.54	▲ 2.40	23.94

Source: UN Comtrade, CBR, and the author's estimation from the regression results.

China

It is striking that the differences between the actual and predicted levels of net exports in China are fairly small for every group of commodities, indicating that China's trade flows are basically founded on its factor endowments, which brings about the high openness index for the country. The largest deviation is observed for labor-intensive commodities, whose exports demonstrated spectacular growth in the 1990s. However, the actual net exports of labor-intensive goods exceed predicted net exports by only 0.24 percentage points of GDP.

These findings suggest that the import-deterring or export-promoting effects of China's foreign trade policies toward every group of commodities are generally at the level of the world average and that their distortion effect on its trade patterns is minimal. Practical policy measures that greatly contributed to this trend seem to be the import duty exemption scheme for the processing trade and other import tariff concessions. Indeed, the average import tariff rate on manufactured goods was relatively high (16.5%; see UNCTAD 2009), while the share

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deterring policy is always applied to net-importing goods (i.e., goods whose predicted net exports are negative). However, several cases actually refute these presumptions, and this can result in the overestimation (or underestimation) of the index as stated below.

of imports exploiting the duty exemption scheme for the processing trade amounted to 42% of total imports in 2001 (Li, G., and X. Ye 2011, 14).

India

The Indian analysis of the openness index and the differences between actual and predicted net exports suggested two main trends: (i) the openness index is low for almost all goods except LAB and CAP and (ii) the differences between the actual and predicted net exports are negative for all agricultural trade but positive for other groups of goods, especially manufactured products. India's traditional self-sufficiency agricultural policy may have played a large role in the low openness index in this sector. Although agricultural products have traditionally been an important contributor to the country's gross exports (14% in 2000/01), introduced export controls through tariff and non-tariff barriers have ensured that domestic demand is met largely by domestic supply (WTO 2002, 98).[17]

The finding that actual net exports are larger than those predicted for manufactured goods can be explained by the prevailing high barriers on imports. Notwithstanding the intensive period of trade liberalization in the 1990s in India, the overall simple average tariff for manufactured products was 32.5% in 2000/01. The textiles (CAP) and clothing (LAB) industries, important sources of foreign export earnings (almost 30% of total exports in 1999/2000), was also highly protected both by tariff and non-tariff barriers at the beginning of the 2000s (WTO 2002, 108-109).[18] Thus, high import barriers on manufactured goods seem to have contributed not only to the low openness index for MACH and CHEM, but also to the high openness index for LAB and CAP.[19]

Russia

In Russia, two main trends are suggested: (i) the openness index is low for almost all goods except resources and (ii) the differences between the actual and predicted net exports are negative for all agricultural trade but positive for all manufactured goods and resources. The latter trend is similar that found in India, but Russia's peculiarity lies in the fact that the differences between actual and predicted net exports are vast, especially for resources and manufactured goods.[20] Finding policy measures to explain such a large difference in the

[17] India's agricultural exports also face a lack of adequate post-harvest infrastructure such as refrigerated transport and storage as well as inadequate facilities at airports and seaports (WTO 2002, 103).

[18] The Indian government provided concessions or exemptions on import duty under a number of export promotion schemes such as those discussed for China. However, in marked contrast to China, no evidence has been found that these exemptions increased exports in the sectors they targeted. The data provided by the authorities show that the share of exports qualifying for these schemes as a share of total exports has risen steadily, while the share of India's exports to GDP has remained rather stable (WTO 2002, 55).

[19] If the practical policy measures that greatly contributed to the high openness index for India's LAB and CAP were high import barriers, the openness index for these goods are considered to be overestimated.

[20] Because of the vast differences between actual and predicted net exports, the direction (positive and negative) of the predicted and actual net exports is not the same in the case of Russia's LAB, CAP, ANL, and CER trade. This leads to the overestimation of the openness index for these products.

petroleum products industry is especially difficult, because the government's principal policy measures in oil and gas trade have been export duties since 1999, which should have theoretically had an export-deterring effect on this sector.

In manufacturing, the fact that actual net exports far exceed those predicted could be explained by two factors. Firstly, in spite of the relatively low import tariff rate,[21] it is widely known that Russia's customs practices and procedures are complicated, and this complexity may act as a serious non-tariff barrier to trade, especially to imports.[22] Secondly, special institutional relations with other CIS countries since the mid-1990s, such as bilateral free trade agreements stipulating a duty-free trade regime and similarities in the standards certification system (i.e., GOST), may also play an export-promoting role for Russia's manufactured goods.[23] Thus, seriously complicated customs procedures and/or special institutional relations with other CIS countries seem to bring about the low openness index for Russia's manufactured trade.

Conclusion

By comparing the intensive periods of trade liberalization carried out by the governments of Russia, China, and India in the 1990s, this paper can draw the following three main conclusions. First, the analysis of the average import tariff rate and coverage ratios for non-tariff barriers (i.e., quotas and licensing) seems to imply that the openness of the trade regime was higher in Russia than it was in China and India in 2000.

However, second, by adopting the trade flow-based openness index proposed by Leamer, E. E. (1988), this paper found that the trade openness of China was actually as high as that of developed countries at the end of the 1990s. Further, India's trade openness index was inferior to that of China to some extent, while Russia had a lower index not only compared with China and India, but also compared with several other emerging economies.

Finally, this paper showed that practical policy measures greatly contributed to such differences in trade openness. These measures included (i) the import duty exemption scheme for the processing trade in China, (ii) the self-sufficiency policy in the agricultural sector and prevailing high barriers to manufactured imports in India, and (iii) the complicated customs procedures and special institutional relations with other CIS countries in Russia.

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[21] Russia's average import tariff rate applied to manufactured goods was 10.2% in 2001 (UNCTAD 2009), which was much lower than those for China and India.

[22] According to World Bank (2007), Russia's ranking on ease of "Trading Across Borders," which is judged from the number of documents, time, and cost to trade, is 155th (out of 178 countries), while the rankings of China and India are 42nd and 79th, respectively.

[23] Several manufactured goods such as machines, electrical equipment, ships, and optical apparatus (these are the 84, 85, 89, and 90 groups, respectively, according to the two-digit harmonized system) were found to have comparative advantages in the CIS markets in 1994 and 2005 (Konno, Y. 2008).

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Appendix 1: Countries in the sample

1	Algeria	20	Ecuador	39	Japan	58	Saint Lucia
2	Antigua and Barbuda	21	Egypt	40	Korea, Republic of	59	Singapore
3	Argentina	22	El Salvador	41	Latvia	60	South Africa
4	Australia	23	Estonia	42	Lesotho	61	Spain
5	Austria	24	Ethiopia	43	Malaysia	62	Suriname
6	Bangladesh	25	Finland	44	Mauritius	63	Sweden
7	Belgium	26	France	45	Mexico	64	Switzerland
8	Bolivia	27	Georgia	46	Moldova, Republic of	65	Syrian Arab Republic
9	Botswana	28	Germany	47	Namibia	66	Thailand
10	Brazil	29	Greece	48	Nepal	67	Trinidad and Tobago
11	Bulgaria	30	Grenada	49	Netherlands	68	Turkey
12	Canada	31	Guyana	50	New Zealand	69	United Kingdom
13	Chile	32	Honduras	51	Norway	70	United States
14	China	33	Hungary	52	Pakistan	71	Uruguay
15	Colombia	34	India	53	Panama	72	Venezuela, Bolivarian Rep. of
16	Costa Rica	35	Indonesia	54	Peru	73	Zambia
17	Denmark	36	Ireland	55	Philippines		
18	Dominica	37	Israel	56	Romania		
19	Dominican Republic	38	Italy	57	Russian Federation		

Appendix 2: Description of the 10 aggregate commodities

	SITC	Description	SITC	Description
Petroleum (PETRO)	33	Petroleum and petroleum products		
Raw materials (MAT)	27	Crude fertilizers and crude minerals	34	Gas, natural and manufactured
	28	Metalliferous ores and metal scrap	35	Electric energy
	32	Coal, coke, and briquettes	68	Non-ferrous metals
Forest products (FOR)	24	Wood, lumber, and cork	63	Wood and cork products excluding furniture
	25	Pulp and paper	64	Paper, paperboard, and products thereof
Tropical agriculture (TROP)	5	Fruit and vegetables	11	Beverages
	6	Sugar, sugar preparations, and honey	23	Crude rubber including synthetic and reclaimed
	7	Coffee, tea, cocoa, spices, and products thereof		
Animal products (ANL)	0	Live animals	21	Hides, skins, and fur skins, undressed
	1	Meat and meat preparations	29	Crude animal and vegetable materials
	2	Dairy products and eggs	43	Animal and vegetable oils and fats, processed
	3	Fish and fish preparations	94	Animals, including zoo animals, dogs, and cats
Cereals (CER)	4	Cereals and cereal preparations	22	Oil seeds, oil nuts, and oil kernels
	8	Feed stuff for animals excl. unmilled cereals	26	Textile fibers, not manufactured, and waste
	9	Miscellaneous food preparations	41	Animal oils and fats
	12	Tobacco and tobacco products	42	Fixed vegetable oils and fats
Labor intensive (LAB)	66	Non-metallic mineral products	89	Miscellaneous manufactured articles
	82	Furniture	91	Postal packages not class. According to kind
	83	Travel goods, handbags, and similar articles	93	Special transact. not class. According to kind
	84	Clothing	96	Coins, other than gold coins, not legal tender
	85	Footwear		
Capital intensive (CAP)	61	Leather products and dressed fur skins	67	Iron and steel
	62	Rubber products	69	Products of metal
	65	Textile yarn, fabrics, made-up articles, etc.	81	Sanitary, plumbing, heating, and lighting fixtures
Machinery (MACH)	71	Machinery, other than electric	86	Scientific & control instrum, photogr gds, clocks
	72	Electrical machinery, apparatus, and appliances	95	Firearms of war and ammunition thereof
	73	Transport equipment		
Chemicals (CHEM)	51	Chemical elements and compounds	56	Fertilizers, manufactured
	52	Crude chemicals from coal, petroleum, and gas	57	Explosives and pyrotechnic products
	53	Dyeing, tanning, and coloring materials	58	Plastic materials, etc.
	54	Medicinal and pharmaceutical products	59	Chemical materials and products
	55	Perfume materials, toilet, and cleansing preparations		

Source: Leamer, E. E. (1984).

Appendix 3: Definitions and sources of variables used in the regression analysis

	Definition	Unit	Source
Net exports		Million USD	UN Comtrade
Labor 1 (professional/technical workers)	Number of professional/technical workers as a percentage × Economically active population	Million	ILO (2011)
Labor 2 (non-professional literate)	Economically active population - Labor 1 - Labor 3		ILO (2011), UNESCO (2011), Rapid Intelligence (2011)
Labor 3 (non-professional illiterate)	Illiteracy rate × Economically active population		
Land 1	Arable land	Million ha	FAO (2011)
Land 2	Permanent meadows and pastures		
Land 3	Forest area		
Minerals	Production of minerals (bauxite, copper, fluor, iron ore, lead, manganese, nickel, phosphate, potash, salt, tin, zinc)	Million USD	British Geological Survey (2006), USGS (2011)
Coal	Production of coal		British Geological Survey (2006), British Petroleum (2011)
Oil & Gas	Production of crude petroleum and natural gas		
Capital stock	"capital + urban land" values	Million USD	World Bank (2006)
Technology	Patent applications by country of origin in 1995–2000	Number of applications	WIPO (2011)
Ex_cont dummy	Presence of restrictions on current payments or not		IMF (1998)
Peg dummy	Presence of pegged exchange system or not		

Appendix 4: Descriptive statistics variables used in the regression analysis

Variable	Obs.	Mean	Std. Dev.	Min.	Max.
PETRO	73	−2834.9	17006.4	−113144.9	33679.3
MAT	73	−382.5	7948.8	−38376.0	25463.6
FOR	73	−76.3	4452.7	−13653.6	25401.8
TROP	73	−142.9	2907.4	−15052.2	5049.1
ANL	73	−56.6	3833.8	−25868.3	8943.2
CER	73	125.0	3752.4	−12024.7	25485.2
LAB	73	−883.4	22863.6	−169953.2	75022.3
CAP	73	81.8	5635.5	−31522.7	18937.6
MACH	73	1500.8	34670.9	−135492.6	231811.3
CHEM	73	−129.3	5155.1	−18527.8	23954.5
Labor 1	73	3.2	6.5	0.0	41.5
Labor 2	73	22.5	78.0	0.0	620.7
Labor 3	73	4.9	20.2	0.0	156.8
Land 1	73	14.4	34.2	0.0	175.4
Land 2	73	27.8	75.0	0.0	407.9
Land 3	73	44.1	123.3	0.0	809.3
Coal	73	1831.2	6041.9	0.0	35013.1
Minerals	73	1237.2	2882.2	0.0	14963.8
Oil & Gas	73	9489.7	24479.4	0.0	140140.5
Cap_Tech	73	0.0	1.4	−0.4	8.8
Ex_cont dummy	73	0.1	0.3	0	1
Peg dummy	73	0.4	0.5	0	1

Appendix 5: Full list of the openness indices for the 73 sample countries

		Resources	Agricultural goods	Manufactured goods	Total
1	Ireland	0.01	0.01	0.24	0.26
2	Singapore	0.06	0.01	0.11	0.18
3	New Zealand	0.02	0.11	0.04	0.17
4	Malaysia	▲ 0.05	0.03	0.1	0.08
5	Finland	0.01	0.08	▲ 0.02	0.07
6	Denmark	0.01	0.04	0.03	0.07
7	Korea, Republic of	0.04	▲ 0.00	0.03	0.06
8	Belgium	0.02	0.01	0.03	0.06
9	Canada	0.01	0.03	0.01	0.05
10	Spain	0	0.01	0.03	0.05
11	Pakistan	0.03	▲ 0.02	0.04	0.05
12	Sweden	0	0.04	0.01	0.05
13	Italy	0.01	0.01	0.03	0.05
14	Netherlands	0.01	0.03	0	0.04
15	Norway	0.06	0.01	▲ 0.03	0.03
16	Mexico	▲ 0.00	0.01	0.02	0.03
17	Germany	▲ 0.01	▲ 0.00	0.03	0.02
18	Switzerland	▲ 0.01	0.01	0.02	0.02
19	Philippines	0.01	▲ 0.00	0.01	0.02
20	United Kingdom	▲ 0.00	0	0.01	0.02
21	Israel	0.02	0	▲ 0.01	0.01
22	United States	0	0	0.01	0.01
23	Austria	0	0.01	▲ 0.01	0.01
24	Japan	▲ 0.00	0	0	0
25	China	▲ 0.00	▲ 0.00	0	0
26	Thailand	▲ 0.02	0.04	▲ 0.03	▲ 0.00
27	France	▲ 0.00	0	▲ 0.01	▲ 0.01
28	Greece	▲ 0.02	▲ 0.02	0.03	▲ 0.01
29	India	▲ 0.01	▲ 0.00	▲ 0.02	▲ 0.03
30	Colombia	0.01	0.02	▲ 0.07	▲ 0.04
31	Uruguay	0.02	0	▲ 0.06	▲ 0.04
32	Turkey	▲ 0.04	▲ 0.00	▲ 0.02	▲ 0.07
33	Dominican Republic	0.02	▲ 0.04	▲ 0.05	▲ 0.08
34	Algeria	0.14	0	▲ 0.22	▲ 0.08
35	Hungary	▲ 0.07	0	▲ 0.03	▲ 0.10
36	Egypt	▲ 0.04	▲ 0.01	▲ 0.05	▲ 0.10
37	Ecuador	▲ 0.03	0.04	▲ 0.11	▲ 0.10
38	Argentina	▲ 0.00	▲ 0.01	▲ 0.10	▲ 0.11
39	Russian Federation	0.06	▲ 0.02	▲ 0.17	▲ 0.13
40	Brazil	▲ 0.02	▲ 0.00	▲ 0.11	▲ 0.13
41	Australia	▲ 0.00	▲ 0.01	▲ 0.12	▲ 0.13
42	Costa Rica	0.02	0.01	▲ 0.17	▲ 0.14
43	Indonesia	▲ 0.03	0	▲ 0.11	▲ 0.14
44	Venezuela, Bolivarian Rep. of	▲ 0.04	▲ 0.02	▲ 0.09	▲ 0.15
45	El Salvador	0.01	▲ 0.06	▲ 0.16	▲ 0.21
46	Chile	▲ 0.05	▲ 0.11	▲ 0.06	▲ 0.22
47	Trinidad and Tobago	▲ 0.03	▲ 0.15	▲ 0.05	▲ 0.23
48	Romania	▲ 0.17	▲ 0.03	▲ 0.20	▲ 0.40
49	Panama	▲ 0.02	▲ 0.17	▲ 0.22	▲ 0.41
50	Mauritius	0	▲ 0.24	▲ 0.17	▲ 0.41
51	South Africa	▲ 0.08	▲ 0.06	▲ 0.30	▲ 0.45
52	Peru	▲ 0.07	▲ 0.09	▲ 0.29	▲ 0.45
53	Honduras	0	▲ 0.10	▲ 0.41	▲ 0.51
54	Latvia	▲ 0.10	▲ 0.23	▲ 0.37	▲ 0.70
55	Ethiopia	▲ 0.38	▲ 0.21	▲ 0.35	▲ 0.94
56	Estonia	▲ 0.16	▲ 0.36	▲ 0.52	▲ 1.04
57	Bangladesh	▲ 0.31	▲ 0.09	▲ 1.09	▲ 1.49
58	Syrian Arab Republic	0.02	▲ 0.16	▲ 1.41	▲ 1.55
59	Georgia	▲ 0.15	▲ 0.44	▲ 0.97	▲ 1.55
60	Botswana	▲ 0.51	▲ 0.31	▲ 1.01	▲ 1.82
61	Namibia	▲ 0.75	▲ 0.39	▲ 1.56	▲ 2.70
62	Bolivia	▲ 0.61	▲ 0.23	▲ 2.05	▲ 2.88
63	Bulgaria	▲ 0.66	▲ 0.28	▲ 1.98	▲ 2.92
64	Nepal	▲ 0.39	▲ 0.35	▲ 2.29	▲ 3.03
65	Zambia	▲ 0.23	▲ 0.13	▲ 3.07	▲ 3.44
66	Moldova, Republic of	▲ 1.04	▲ 0.97	▲ 2.00	▲ 4.02
67	Guyana	▲ 0.71	▲ 1.62	▲ 4.84	▲ 7.17
68	Antigua and Barbuda	▲ 0.92	▲ 3.21	▲ 4.96	▲ 9.09
69	Suriname	▲ 1.38	▲ 2.08	▲ 5.84	▲ 9.29
70	Saint Lucia	▲ 1.04	▲ 3.57	▲ 5.47	▲ 10.09
71	Grenada	▲ 1.48	▲ 5.05	▲ 7.77	▲ 14.31
72	Dominica	▲ 2.41	▲ 8.11	▲ 12.57	▲ 23.09
73	Lesotho	▲ 6.60	▲ 3.64	▲ 25.94	▲ 36.18

Source: Author's estimation.

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Let Them Float but Not Jump

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Abstract: The article proposes a "floating band" regime with a central parity of the band dependent on past values of the exchange rate. An example of such a regime is a setting with the central parity determined daily as moving average of previous values of exchange rate. Merits and disadvantages of this "floating band" regime are discussed as compared with a traditional target zone. The conclusion is that such a regime could be a viable alternative not only for some emerging economies but also for some industrial countries as it is more transparent than ad hoc exchange rate interventions.

JEL Classification: F31, F33

Keywords: foreign exchange rates, volatility, exchange rate regimes

Introduction

The debate on exchange rate regimes has been an unsettled one for decades and it continues to remain so even today. Since the outbreak of financial crisis in 2008, exchange rate movements have been in many countries so volatile or erratic and sometimes so blatantly misaligned that several industrial countries with free float retreated to ad hoc foreign exchange interventions (e.g. Japan) or modified significantly their exchange rate regimes (e.g. Switzerland). Wild movements of foreign exchange rates were observed also in economies in the Pacific Rim.

In this paper I examine more closely properties of an exchange rate regime, which I will call for brevity a "floating band". It is a modification of a traditional target zone. The modification is that the central parity is no longer constant but it changes continuously. This is also the case of the crawling bands, which usually derive the motion of their central parities from the difference (expected or actual) of inflation rates between the home and the foreign country. Instead, in a "floating band" the continual change of the central parity would be driven solely by past values of the exchange rate. In a classification of exchange rate regimes by Bubula, A., and I. Otker-Robe (2002) the regime of "floating band" would belong to backward looking crawling bands.

In the next section a short review of exchange rate volatility in the Pacific Rim follows. The third section deals with some elementary properties of a floating band with moving average as its central parity, the fourth section compares implications of different parameters of the floating band regime and the last section concludes.

Exchange Rate Volatility in the Pacific Rim

Countries in the Pacific Rim had different foreign exchange regimes ranging from free float (Australia) to pegs (Hong Kong, China) or crawling pegs (Costa Rica) in the first decade of this century. Some of the countries made changes to their foreign exchange regimes in this period, some realigned their pegs (China) and some resorted to ad hoc interventions in foreign exchange markets (Japan). Table 1 presents basic descriptive statistics for the period 2001 – 2011, which characterize volatility of exchange rates of currencies vis-à-vis the US dollar. Apart from usual standard deviation other indicators of volatility are also shown. Average daily change of the exchange rate in absolute value is closely connected to the standard deviation but can be more informative if there are big jumps of the exchange rate or realignments. Indicators showing average change of the exchange rate (in absolute values) in 250 and 500 business days show how far the exchange rate "travels" in approximately one and two years respectively. If the random walk hypothesis (RWH) was a good description of the exchange rate behavior, these indicators should be linked to the average of absolute value of daily change. A traditional result of the random walk hypothesis is that the mean distance moved is proportional to the size of the step times the square root of the number of steps (days in this case). Note that for most of the currencies the average change of the exchange rate in 250 and 500 days respectively were slightly higher than predicted by the RWH but detailed statistical tests would be necessary to make any conclusions on that.[24]

Table 1: Selected descriptive statistics of exchange rate movements in the Pacific Rim in 2001 – 2011

[24] Comparing predictions of the RWH and actual mean change in absolute value obviously makes sense only for countries with floating exchange rates.

	Average daily change (abs. values, in %)	Standard deviation of daily changes (in %)	(Max-Min)/Min (in %)	Average change in 250D (abs. values, in %)	Average change in 500D (abs. values, in %)
Australia	0.61	0.89	127.8	12.3	17.5
Canada	0.45	0.62	76.3	7.5	10.3
Colombia	0.4	0.64	79.7	10.6	14.3
Costa Rica	0.16	0.4	100.2	7.1	13.5
Hong Kong	0.02	0.03	1.6	0.2	0.3
Chile	0.48	0.93	76.4	10.1	13.6
China	0.03	0.08	31.8	2.1	4.1
Indonesia	0.4	0.79	51.9	8	9.6
Japan	0.46	0.65	77.6	7.4	11.9
Korea	0.38	0.66	74.4	9.4	14.5
Malaysia	0.14	0.28	29.3	3.4	4.4
Mexico	0.42	0.65	72.7	7.2	10.4
New Zealand	0.65	0.91	122.2	12.5	16.1
Philippines	0.25	0.42	41.7	6.6	9.2
Russia	0.25	0.45	57.3	7.2	11.2
Singapore	0.23	0.33	54.4	4.6	6.4
Taiwan	0.17	0.27	23.4	4.3	5
Thailand	0.2	0.31	55	5.7	7.6

Source: Database of Thomson Reuters and author's calculations.Note: The countries differed as to their foreign exchange regimes. China, Hong Kong, Costa Rica, Malaysia used currency pegs or crawling pegs for at least a part of the period.

The last indicator is a simple comparison of the maximum and the minimum value of the exchange rate in the period 2001 – 2011. It shows how much the maximum value was greater than the minimum value. The indicators show somewhat surprisingly that the biggest swings in the exchange rates were experienced by currencies of nations with similar state of development and similar inflation rates. The biggest swings of exchange rates were observed in Australia and New Zealand with differences between the maximum and the minimum value of more than 100 %. But also currencies of Canada, Japan or Korea experienced sizeable swings (more than 70 % difference between the maximum and the minimum value). It testifies to the stylized fact that the exchange rates (if they are allowed to float) tend to be rather volatile and this volatility is difficult to explain by traditional factors like differences inflation rates etc. A quest for a more stable regime than float is therefore understandable. The "floating band" examined here is a hybrid of a traditional target zone and float. It is similar to the target zone because it is a band with a given width. But it is more flexible and

discontinuous realignments of the parity could be avoided because the central parity of the band "floats", although in smaller steps.

The principle of the "floating band" is that its central parity depends on past values of the market exchange rate. The central bank could use many sophisticated methods for filtering the time series of past exchange rates. Using sophisticated methods for computing the central parity on daily basis may have better theoretical underpinnings but it has a disadvantage that it may be misunderstood by economic agents. Suppose the central bank would use a rather sophisticated model containing not only past exchange rates but also the central bank's idea on the equilibrium exchange rate etc.[25] Such a method could be made public and professional traders on foreign exchange market could work with it but it is unlikely that non-financial firms or households would be able to incorporate it in their expectations and individual plans. And one of the raisons d'être of setting up a target zone or a floating band is to reduce uncertainty of economic agents and make the exchange rate more predictable for them. But this cannot be achieved if the central parity is set by the central bank in a way, which seems arbitrary and ad hoc even though the central parity is not set arbitrarily in reality. From this point of view simple filtering methods are preferable to complex models for calculating the central parity.

Suppose that the central bank uses a simple moving average to calculate the central parity. There are two key parameters that have to be determined: the length of the period taken into account and the width of the band. The length of the period, θ, obviously has a strong impact on the character of the floating band. If the period taken into account is very long, then current fluctuations of the exchange rate have only marginal influence on the central parity. In the extreme, if $\theta \to \infty$ the regime collapses into a traditional target zone with a fixed central parity. If on the other hand $\theta \to 0$, today's fluctuation of the exchange rate is fully projected to the fluctuation of the central parity and the regime in fact collapses into a free float. The other parameter, i.e. the width of the band, $\overline{\delta}$, limits the size of the fluctuation of the exchange rate in short periods of time. Both the bandwidth and the length of the period will be treated in more detail.

Elementary Properties of the Floating Band

Let us have a look at some elementary properties of the proposed floating band regime. I assume a traditional notation: s_t stands for nominal exchange rate in period t expressed as number of units of domestic currency for one unit of foreign currency, c_t is the central parity, θ the length of the period, δ_t is deviation of current exchange rate from the central parity in t

[25] There is also one purely practical reason speaking against complex models for the determination of the central parity. If the central parity was calculated on a daily basis but data on some of the model's exogeneous variables were available only on monthly or quarterly basis (and furthermore such data would be prone to revisions) this could generate non-negligible discontinuities of the calculated central parity.

and let $\bar{\delta}$ be the maximum deviation from the central parity. All variables except the length of the period are in logs. Under the regime the exchange rate has to be within an interval of $(c_t - \bar{\delta}, c_t + \bar{\delta})$.[26] The following identity holds:

$$s_t = c_t + \delta_t \tag{1}$$

The central parity is by assumption determined as θ-day moving average. Treating the exchange rate in logs implies that the moving average is in fact a geometric mean not an arithmetic mean. But this does not change qualitative conclusions and makes the algebraic operations less clumsy. For the central parity it holds:

$$c_t = \frac{1}{\theta} \int_{t-\theta}^{t} (c_u + \delta_u)\, du \tag{2}$$

The central parity changes every day – current level of the exchange rate is added to the mean (2) while the exchange rate that prevailed θ days ago is subtracted. Therefore for the development of the central parity we have:

$$\dot{c}_t = \frac{1}{\theta}(s_t - s_{t-\theta}) = \frac{1}{\theta}(c_t - c_{t-\theta}) + \frac{1}{\theta}(\delta_t - \delta_{t-\theta}) \tag{3}$$

The fact that the central parity depends on past values of the exchange rate obviously makes the regime less rigid when compared to the traditional target zone. Not only is it less rigid, but the regime can be in theory reconciled with any daily change of the parity, no matter how large, and disregarding the width of the band and disregarding the length of the period for computing the moving average. Let us show why this is the case. Suppose that both the length of the period θ and the maximum deviation $\bar{\delta}$ are given. The question now is whether there is some limit for the daily change of the central parity $\dot{c}_t$. Suppose for simplicity that the last term in (3) is zero for any *t*. This would mean e.g. that the current exchange rate is exactly equal to the central parity or that the exchange rate deviates from the parity always by the same percentage. The formula (3) is then simplified to (4):

$$\dot{c}_t = \frac{1}{\theta}(c_t - c_{t-\theta}) \tag{4}$$

[26] I consider here only symmetrical band, asymmetrical band is discussed briefly below.

But the condition (4) is met always if c_t changes in some constant rate $\bar{g}$. Then it holds that $\dot{c}_t = \bar{g}$ and $(c_t - c_{t-\theta}) = \theta\bar{g}$. The relation (4) is then changed into a truism:

$$\dot{c}_t = \frac{1}{\theta}(c_t - c_{t-\theta}) = \frac{1}{\theta}\theta\bar{g} = \bar{g}$$

(5)

But this only means that the rate of growth of the central parity is not determined and any rate of growth is possible even if the width of the band is narrow and no matter what the length of the period is. This is easy to see when we consider a following rather extreme example. Suppose we have a currency, which strongly depreciates (in logs) by 1 % every day and suppose that the floating band is based on 100 day moving average with a band of e.g. +/- 3 %. Furthermore I suppose that the exchange rate is always close to the upper band (i.e. on the depreciation side of the band) and therefore the term $\frac{1}{\theta}(\delta_t - \delta_{t-\theta})$ in (3) is roughly zero. It is clear that in such a setting the central parity would depreciate also by 1 % a day – current exchange rate, which is added when calculating the moving average, is depreciated by 100 % in comparison to the exchange rate 100 days ago and therefore the moving average must rise by 1 %. This remains true even if the length of the period is shortened or extended arbitrarily. The point of this remark is that the central parity which is based on moving average can be in principle very flexible. Therefore even currencies with long-term depreciation or appreciation could function well within this regime. Also if uncovered interest rate parity (UIP) implies that the exchange rate is to depreciate or appreciate by certain amount it can be consistent with the floating band regime even if the difference between interest rates is high.

We may be also interested what maximum depreciation or appreciation of the currency would be possible in a given period in future, say in a year's time. The fact that under the floating band regime the parity can change makes it impossible to answer this question in general. Measuring time in years, we have the following identity for annual changes of the exchange rate:

$$s_t - s_{t-1} = (c_t - c_{t-1}) + (\delta_t - \delta_{t-1}) \leq (c_t - c_{t-1}) + 2\bar{\delta}$$

(6)

It is clear in (6) that the term containing the deviations of the exchange rate from central parities $(\delta_t - \delta_{t-1})$ must be smaller or equal to the width of the band, i.e. $2\bar{\delta}$. But year-to-year change of the central parities $(c_t - c_{t-1})$ is undetermined so there is no limit to the maximum depreciation or appreciation in general. But obviously if we know the past values of exchange rate and the past values of central parities, it is an easy exercise to compute the maximum possible depreciation or appreciation of the currency in future by assuming that the exchange rate would remain during the whole period under consideration at the upper (in case of depreciation) or the lower (in case of appreciation) bound of the band. But such maximum potential depreciations or appreciations would depend on past values of exchange rate – different past trajectories of the exchange rate, even if they generate the same central parity at

a given moment, can lead to different maximum potential depreciations and appreciations. However, it can be useful to solve the problem of the maximum depreciation (or appreciation) at least for one special trajectory of past exchange rate – a constant exchange rate. Solution of this special case gives at least a rough picture of implications of different combinations of θ's and $\bar{\delta}$'s.

Let us assume that the exchange rate has been kept constant for some time (for at least θ days) at a level of $\bar{c}$. Suppose that a floating band is set at time 0 with initial central parity of $\bar{c}$ and $\bar{\delta}$ as the maximum deviation from it. Now we want to determine what the maximum depreciation could be in days to come. For this reason we assume that immediately after the band is set, the current exchange rate depreciates to $\bar{c}+\bar{\delta}$. But this starts to change also the central parity, which depreciates slightly (depending on the size of θ) and therefore the upper bound of the band is pushed further the next day. This makes it possible for the current exchange rate to move further from its initial value of $\bar{c}$ and this in turn leads to further depreciation of the central parity etc. So the central parity at time θ will not be depreciated only to $\bar{c}+\bar{\delta}$ but more as $s_t^{\max} > \bar{c}+\bar{\delta}$ for any $t>0$ where we have denoted $s_t^{\max}$ the maximum exchange rate possible at time *t* given the regime. For the period between 0 and θ days after the band is set up we can use the relation (3) to find the motion of the central parity. Because we assumed that the exchange rate is constant up to $t=0$ it holds that $c_{t-\theta}=\bar{c}$ and $\left(\delta_t-\delta_{t-\theta}\right)=\bar{\delta}$ for $0<t<\theta$. Substituting this in (3) we get a modified expression for the change of the central parity (here $c_t^{\max}$ stands for the maximum central parity, which is possible at time *t*):

$$\dot{c}_t^{\max}=\frac{1}{\theta}\left(c_t^{\max}-\bar{c}\right)+\frac{1}{\theta}\,\bar{\delta}$$

(7)

This equation has the following solution for $0<t<\theta$:

$$c_t^{\max}=\bar{c}+\left(e^{t/\theta}-1\right)\bar{\delta}$$

(8)

After combining (7) and (8) we get a relation for the maximum daily change of the central parity in the period between the set up of the regime and θ days after it:

$$\dot{c}_t^{\max}=\frac{1}{\theta}\,e^{t/\theta}\bar{\delta}$$

(9)

It is clear that the rate of change of the central parity starts at $\bar{\delta}/\theta$ and gradually accelerates to $e\bar{\delta}/\theta$ on the day θ. After the day θ, the rate of change of the maximum central parity slows down from the peak of $e\bar{\delta}/\theta$. The reason for that is that past central parities which are subtracted from the moving average after this date are no longer constant $\bar{c}$

as was the case in (7). Instead they are themselves increased because they were valid as central parities after the regime was set up. This means that growth rate of the central parity after the day θ must be smaller than on the day θ. Therefore we have a conclusion that the maximum growth rate of the central parity is between $\bar{\delta}/\theta$ and $e\bar{\delta}/\theta$. Although the result was derived for a special case of formerly pegged currency, it gives at least a rough picture for other cases. If the band is too narrow and/or the length of the period θ is too long, the rate of change of the central parity is small. In this case the regime could be inconsistent with the uncovered interest rate parity condition (UIP). It makes sense to choose such a combination of $\bar{\delta}$ and θ that the central parity could change more than the UIP condition exacts. Otherwise the floating band regime could suffer from a weakness of a traditional target zone: when the market exchange rate is close to the bound and at the same time domestic and foreign interest rates are different, probability of speculative attacks is increased.

The width of the band

The question of the width of the band must be decided by central banks even in a more traditional exchange rate regime of the target zone. But as Svensson, L. E. O. (1994) noted, the determination of the bandwidth was an underexamined subject. Is there any theory on which we could base the decision about the size of the band? What factors should the decision maker consider when setting the band around the parity?

First, it is not a priori necessary that the band must be symmetrical vis-à-vis the "central" parity (though if it is asymmetrical then the parity is not, strictly speaking, central). It is conceivable that the central bank is more permissive to exchange rate fluctuations e.g. on the depreciation side of the band. Such a setting would obviously make a foundation for a bias because the expected change of the exchange rate, if it is currently in the asymmetrical "central" parity (and if there is no difference in interest rates so that the UIP does not interact), would be depreciation. This is easy to see: while some trajectories of the exchange rate hit (or nearly hit to be more precise, hitting is unlikely in a credible target zone) the lower appreciation bound, a depreciation of the same size is possible given the asymmetry of the band. However, the mean reverting property of the exchange rate should remain with the only difference that the asymmetrical "central" parity is no longer in the mean. So asymmetrical "central" parity becomes only formal and the *de facto* central parity is established in the mean of the band. Therefore in what follows only symmetrical bands will be considered.

Nevertheless, there is one interesting exception. In the extreme, a band could be in a way totally asymmetrical if it is only one-sided. If a central bank sets e.g. a minimum price for a unit of foreign currency to prevent its own currency from a too strong appreciation we can treat it as a kind of asymmetrical band with zero band on the appreciation side and "large" (but unspecified) band on the depreciation side. This regime has been in effect e.g. in Switzerland vis-à-vis euro since September 2011. In this setting, there is no center of the band and we would need some deeper theory to be able to say whether the exchange rate reverts to

some value and if so how this value is determined.[27] Of course, even this regime could be combined with a floating minimum exchange rate instead of a fixed one.

Let us get back to more traditional symmetrical bands. The width of the band can be treated in an atheoretical manner using historical volatilities. When deciding on the size of the band the central bank could use historical data on volatility of the exchange rate under a free float (if the domestic currency is allowed to float freely) and use them to compute probabilities of "hitting" the lower and upper bounds of the band in a given period of time (say e.g. in a year's time). These probabilities indicate the probability that the central bank would have to intervene either in favor or against the domestic currency in future. If this probability is judged by the central bank as too high, the central bank could reduce it by choosing a wider band and vice versa.

Apparently, there is a plethora of issues with this atheoretical approach. First, it is not possible to compute probability of a central bank's intervention even if it is assumed that the historical volatilities remain valid. This is due to what is sometimes described as a honeymoon effect in a target zone arrangement (see e.g. Svensson, L. E. O. 1992; MacDonald, R. 2007). If the regime is credible, there is no need for the central bank to intervene because the agents on the foreign exchange market will spontaneously keep the exchange rate within the band without any interventions by the central bank. So computing probabilities of hitting the lower or the upper bound of the band under a "naïve" interpretation (to use Krugman's words, see Krugman, P. 1991) can give reasonable results only in cases of zero credibility of the regime or in case of a bizarre target zone which is kept strictly secret by the central bank. If on the other hand the regime is totally credible, the inverse link between the width of the band and the probabilities of foreign exchange interventions is disrupted. Probability of an intervention should therefore be always smaller than the "naïve probabilities". Yet these "naïve probabilities" can serve as a quantitative measure for the central bank of influence it exerts on fluctuations of the exchange rate (albeit mostly not via its own proper interventions but by using its credibility to influence other market participants).

Another possible paradox of the atheoretical approach is that setting a band with a given width will alter the very volatilities on which the width of the band was based. But this is not a serious issue. Reduction of exchange rate volatility is after all the aim of setting up a target zone or a crawling band. The fact that the historical volatilities taken into account when the width of the band was established are not valid any more does not hinder the regime.

We could calculate "naïve" counterfactual volatilities by assuming that the movements of the exchange rate would have been the same as they actually were in history if they were within the band and that the exchange rate would have been equal to the upper or lower bound if the actual exchange rate was outside the band. Such counterfactual naïve volatilities would

[27] The practical experience from Switzerland has been rather short for any general conclusions. Furthermore, credibility of the regime was thwarted by a scandal which implied a resignation of the governor of the Swiss central bank in the beginning of 2012. This led to further appreciation tendencies with the exchange rate fluctuating in the first quarter of 2012 mostly only 0 – 1 % above the minimum exchange rate stipulated by the Swiss national bank.

be lower than actual volatilities if the band is narrow enough. However, using these counterfactual volatilities by a central bank as another quantitative indicator for the decision on the width of the band would be even more problematic than using the naïve probabilities of hitting the bounds. While in case of "naive probabilities" of hitting the bounds we know that these are biased upwards because the true probabilities of proper foreign exchange interventions are reduced by other agents on the market, in case of naïve counterfactual volatilities this is not clear. Suppose that the band is credible and that the central bank is successful in keeping the exchange rate within it. Obviously, if the band is rather narrow compared to actual historical volatility, the regime can prevent the exchange rate from large deviations from a mean or trend. On the other hand, the very existence of the band can change parameters of the foreign exchange market in a way that may impact on the volatility in the other direction. When the exchange rate approaches the lower or the upper bound of the band, more private agents enter in positions which they would not have entered had it not been for the (credible) bounds. This is the essence of the honeymoon effect mentioned above. Nevertheless, whether higher volume and/or higher number of agents on the market reduces or increases volatility of the price of an asset is an open question. The agents are heterogeneous (they may differ in their risk aversion, in their market strategies etc.) and shares of different types of agents probably change depending on the deviation of the exchange rate from its central parity.

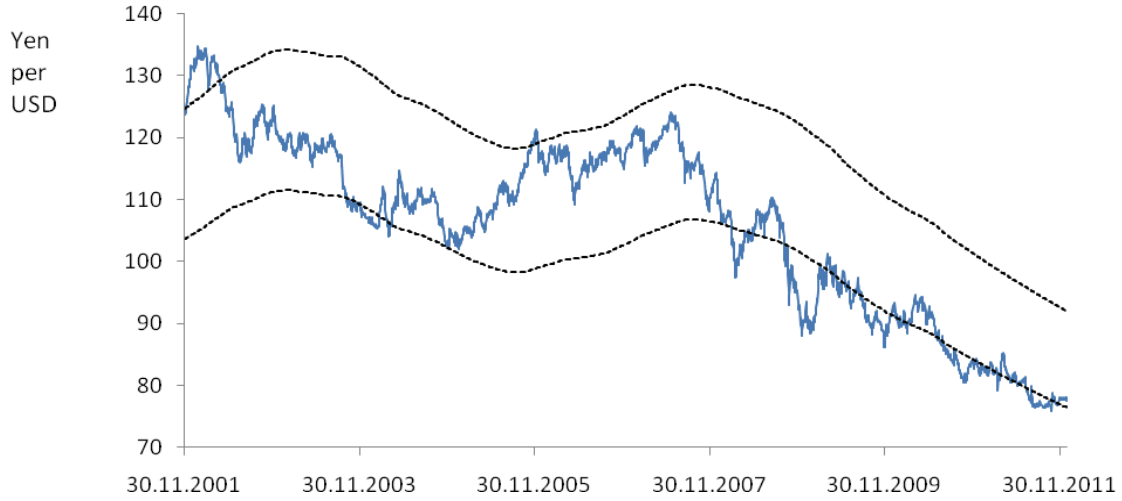
Let me make a following analogy. Let us imagine a ball, which rolls forward through a corridor. If it touches the wall of the corridor, it is bounced to the other side of the corridor while rolling forward, hitting the other wall and so on. The movement of the ball is further changed by frictions (especially when it hits the walls) and other forces. The narrower is the corridor the more often the ball hits the walls, more frictions exert influence on its movement etc. Although this analogy between a ball in a corridor and exchange rate within a band is only illustrative, it can give us an idea that the relation between the width of the corridor and volatility is a non-trivial one.

It is also possible that the band can have different implications for different measures of volatility. While it can reduce e.g. standard deviation of the exchange rate (because large deviations of the exchange rate from the mean value influence the standard deviation rather strongly but these deviations are prevented by the bounds of the band) it can at the same time increase volatility in terms of average absolute value of a daily change of the exchange rate.

In order to compare implications that different widths of the band could have on the exchange rate, it can be interesting to look at results of the following exercise. Let us assume that in a floating band regime the exchange rate would be the same as it actually was if it was within the band. And if the actual exchange rate was outside the band it will be assumed that under the regime it would be equal to either the upper or the lower bound. This way an artificial time series of the exchange rate can be produced. The lower and upper bounds of the band evolve together with the central parity. But the central parity is not always equal to the moving average of actual exchange rates but a moving average of past values of the artificial time series. Figure 1 is an example of a construction of such an artificial time series for Japan. Needless to say that this exercise is no postdiction of what the exchange rate could have been

in 2011 if a floating band regime had been in place since 2001. But the exercise can give a rough measure of "strictness" of the regime under different widths of the band and different lengths of the periods relevant for the moving average. And this measure or indicator can be defined e.g. as a share of business days in which the exchange rate would be equal to the upper or lower bound of the floating band. If this indicator was zero it would simply mean that the band is so wide or that the central parity is so varying that it has no influence on the exchange rate (and the regime is in fact redundant). The higher is the value of this indicator, the higher influence the regime exerts on actual exchange rates.

Figure 1: Floating band for the Japanese yen to US dollar exchange rate



Source: Database of Thomson Reuters and author's calculations.

Note: The bounds are 9.2 % (i.e. 20 times the average daily change of the exchange rate) above and below the central parity, which is based on a 500-day moving average of past values of the exchange rate.

In the exercise below, three possible lengths of the period relevant for the moving average were compared: 120, 250 and 500 business days. The exercise was run for a group of the Pacific Rim countries, which did not have their currencies pegged (although some of them did not have pure float either). The shorter the period of the moving average, the more the central parity can move and it is less likely that, for a given width of the band, the actual exchange rate hits the bounds (see Table 2). Also three widths of the band were compared for each country. But as there were sizeable differences in long-term volatilities of the compared currencies, it is more informative to define the width as a multiple of average daily change of the exchange rate (in absolute values). I experimented with the maximum deviation from the central parity of 10, 20 and 30 times the average daily change in absolute value. Given the differences in daily average changes of the exchange rates this leads to the widths of the band of e.g. +/- 6.1 %, +/- 12.2 % and +/- 18.3 % in Australia but only +/- 2.3 %, +/- 4.6 % and +/- 6.9 % in Singapore. Again, the results are as expected: the narrower is the band the higher is the influence the exchange rate regime exerts. It may be surprising though that even if the

band is relatively wide (20 daily average changes of the exchange rate as the maximum deviation from the central parity) the actual exchange rate touches the bounds in more than 1/4 of days if the central parity is about two-year moving average for most countries in Table 2.

Table 2: Share of days in which the exchange rate would equal the upper or lower bound of the band

Maximum deviation from the parity as a multiple of average daily change							
	10	20	30		10	20	30
Australia				Mexico			
120D	0.25	0.05	0.02	120D	0.22	0.07	0.04
250D	0.55	0.13	0.05	250D	0.44	0.13	0.06
500D	0.89	0.4	0.12	500D	0.6	0.27	0.12
Canada				New Zealand			
120D	0.201	0.034	0.012	120D	0.25	0.04	0.01
250D	0.443	0.099	0.038	250D	0.53	0.09	0.04
500D	0.832	0.24	0.054	500D	0.89	0.34	0.1
Chile				Phillipines			
120D	0.35	0.06	0.02	120D	0.48	0.13	0.03
250D	0.61	0.16	0.06	250D	0.71	0.24	0.09
500D	0.81	0.33	0.08	500D	0.91	0.42	0.14
Colombia				Russia			
120D	0.45	0.14	0.05	120D	0.43	0.14	0.07
250D	0.72	0.27	0.14	250D	0.76	0.28	0.11
500D	0.84	0.52	0.27	500D	0.81	0.61	0.29
Indonesia				Singapore			
120D	0.34	0.17	0.13	120D	0.36	0.03	0
250D	0.53	0.2	0.14	250D	0.61	0.18	0.02
500D	0.56	0.28	0.17	500D	0.8	0.34	0.16
Japan				Taiwan			
120D	0.25	0.02	0	120D	0.46	0.18	0.02
250D	0.56	0.06	0	250D	0.59	0.32	0.12
500D	0.68	0.32	0.05	500D	0.58	0.32	0.23
Korea				Thailand			
120D	0.34	0.1	0.04	120D	0.65	0.16	0.02
250D	0.61	0.22	0.08	250D	0.79	0.4	0.09
500D	0.74	0.38	0.13	500D	0.87	0.65	0.32

Source: Database of Thomson Reuters and author's calculations.

Note: The shares were calculated for moving averages of 120, 250 and 500 days.

Simulation could be another way of assessing implications of the chosen parameters θ and $\bar{\delta}$. Instead of using historical data and volatilities in different countries, it is possible to run simulations of an artificial exchange rate with a given day-to-day volatility and assuming that

RWH holds. These artificial exchange rates can then be confined in bands of various widths and central parities can be computed for them in the same way as in the previous exercise. Such approach has the advantage that many simulations can be made but it rests on the assumption of random walk, which is itself a point of contention.

All the previous considerations about the width of the band were atheoretical in the sense that they say only how the exchange rate tends to "hit" the bounds when $\bar{\delta}$ and θ are of some size. But hitting the bounds is a simple consequence of the mechanical process of the walk (be it random or not) of the exchange rate and of the walk of the central parity. More theoretical considerations on the width of the band must be derived from the influence of the exchange rate fluctuations on the economy. The losses or damages caused by unsustainable exchange rate movements must be at the heart of any theory-based discussion about the width of the band. The question is, however, whether such an approach can give any practical result except that the costs would be smallest if the exchange rate was close enough (or equal at any time) to the "equilibrium" exchange rate, which in turn is unobservable.

Conclusions

The proposed "floating band" regime could be a viable alternative to current exchange rate regimes in many countries. Its aim is to tame wild and erratic fluctuations but at the same time it respects the market forces in the sense that if a currency systematically appreciates or depreciates in the long-term the trend prevails. In comparison to traditional crawling bands (or crawling pegs), the floating band is not based on any a priori conviction of the central bank what the equilibrium exchange rate is. Crawling bands, which are usually based on inflation differentials, in fact try to conserve real exchange rate at current level. The floating band on the other hand enables the central parity to move away from what the central bank believes (rightly or wrongly) the equilibrium real exchange rate is. In this sense the floating band respects market forces more than most other exchange rate regimes precisely because the band itself floats (albeit more slowly than the exchange rate).

Effects of the floating band critically depend on the choice of its parameters. In the simplest case with the central parity equal to a moving average, the parameters are the width of the band and the length of the period, which is relevant for the moving average. Size of the parameters is itself a subject to be explored. The parameters should be such that do not imply inconsistency with the uncovered interest rate parity and give a sufficient space for independent monetary policy. But these conditions are quite easy to meet for currencies with modest inflation rates and nominal interest rates. Using historical volatilities it is possible to assess implications of the choice of the parameters although the results must be taken only as indicative.

The floating band regime is a hybrid between a free float and a traditional target zone. If its parameters are set properly it could generate more stability than the free float while respecting the medium and long-term movements of the exchange rates. Such a system would be more transparent than ad hoc interventions, which are sometimes undertaken by central banks in

their efforts to correct exchange rates of their currencies that are drifted by supposedly random walk far away from what the central banks believe is equilibrium. Also the most debated exchange rate regime in the Pacific Rim, the Chinese yuan vis-à-vis the US dollar, could make use of it because by choosing the parameters of the regime, the authorities can choose level of flexibility of the central parity and the maximum year-on-year appreciation.

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The Rise of China

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Abstract: This paper examines the rise of China's hegemonic power in the political economy development of the Pacific Rim region. What is the better model to describe China's political development and economic growth within the Pacific Rim? Finally, after surpassing Japan as the world's number two biggest economy, will China use its hegemonic power and influences this region to challenge the other super power in the arena of the international political economy.

JEL Classification: D71, D74, 038, 053

Keywords: China, Conflicts, Security, Politics, Theories

Introduction

The growth of China is undoubtedly the greatest story of the Pacific Rim. China's strong economic growths combined with energetic diplomatic political strategies are already influencing this particular region, and future decades will see even greater increases in Chinese political power and economic influence. Assuming China's current status as a regional hegemonic power in the Pacific Rim, will China overthrow or upset the existing regional order or become a part of it? And what, if anything, can the United States of America and other countries in the Pacific Rim do to contain the situation as China rises?

While many observers believe that the American era is coming to an end, China will try to use its growing influence to alter the rules and institutions of the international system to better serve its interests, we should first examine China's relationship with its neighbors in the region. The result of these developments, they predict, will be tension, distrust, and conflict, the typical features of a power transition. In this view, the drama of China's rise will feature an increasingly powerful China and a declining relatively weak group of countries in the Pacific region. China will first lock in its status as the regional hegemonic power in an epic battle over the rules and leadership of the area. Therefore, we want to look at what ways the distribution of power is linked with the beginning of a regional conflict between China and the countries within the Pacific Rim. There are two popular models to describe and even to forecast the expansion of China in the near future: balance of power and collective security

The Balance of Power

The traditional political theory with its long development and history has provided many scholars and specialists of international politics for years; it's the so-called balance of power model. Now, what is "balance of power" exactly? It's about the equal distribution of power among great powerful nations or members of alliances, in order to ensure peace. In words, at any time the country with increasing power will use the opportunity to attack its weak

neighboring countries. There is a built-in assumption that each one's ultimate goal is maximization whenever possible. Alliance is only formed out of necessity for the purpose of security for a short term; there is no trust. A balance of power, therefore, is desirable because it (a) preserves the independence of countries and (b) creates an equilibrium that promotes order and peace. Therefore, the theory is based on beliefs that the equality of power will lead to peace, and vice versa.

As Kenneth Waltz wrote, "If there is any distinctively political theory of international politics, balance of power theory is it." (Waltz, K. 1979) Again, the powerful side is the mostly likely to become the aggressive one.

In this model, each actor/country will act naturally to arrange them self to produce a resultant balance of power; it also explains of the reasons why a similarly equal distribution of power is necessary in order to preserve the peace. Similarly all business models explain the behavior of business and people's behavior motivated by profits or greed, for the lack of a better word. Many international specialists who accepted the model of balance of power also accept the suggestion that the political motives of nations are motivated by their desires to maximize their influences over others. All nations can maximize their power and position by attacking and taking advantage of the weak, these weaker nations, in turn, will gain power by allying themselves with other countries in comparable positions. For example, in the case of the Pacific Rim, given Vietnam's historical conflict with China, Vietnam should align with Thailand or other countries from the region to avoid and to deter any potential conflict with China. China is currently viewed as the regional hegemon. Therefore, all nations, of course, can increase their strength by seeking new alliances, or even fighting to protect the distribution of power status quo. In the long run, it will preserve their well-being and their existence in the region.

One interesting feature of this balance of power model is the focus on the formation and break down of alliances. The definition of "balance" is strictly on the equal distribution of power among all nation actors; therefore, balance is the new equilibrium. However, there is one major contradiction of the first commandment of the system; all nation actors are trying to maximize their power (Morgenthau, H. J. 1985). Any increase of power by one nation will encounter resistance to power from its similar opponents.

Furthermore, the balance of power model is mostly stable without chaos. Since all nations are maximizing their own power positions, the balance and equal distribution of power tend to keep the system in equilibrium with stability, security, and predictability. Another question, which derives from the basic assumption of the balance of the power model, is whether all nations/actors really want to maximize their power over others? Looking back to the previous major wars, one cannot help noticing the variations. Now, Japan is a model of a business driven, peace-loving nation today, but it was once an omnipotent feared aggressor. Also, why didn't weaker nations within the region attack Japan right after the March 2011tsunami? According to the balance of the power model, any nation/actor should maximize their power; in this case, other nations should expand their power over Japan after the natural disaster weakened its status. This was the perfect timing. Instead, all neighboring countries assisted Japan with resources during the recovery period. These are further uncertainties on this and other points. The most important questions are those related to the validity of the model, and what must interest us most is whether or not the maximization of power does in fact, keep the peace.

Collective Security

Now for the second model, collective security, will this theory be able to describe the situation of a rising China in the Pacific Rim? Here, the so-called "collective security" model is based on the all against one order. The term, security is defined "as a high confidence of preserving, against external military attack, values presently held" (Snyder, G. H. 1997). In other words, this is the "one for all, all for one" justification model. Within this model, there are several assumptions. One interesting major assumption of the collective security model is that all nation actors will be equally interested in preventing aggression and conflicts, and thus can be expected to regulate their political and military power to that end; everyone has the same level of salience on the conflict. Therefore, if in the near future, there is increasing attention to the Taiwan Strait, the area between China and Taiwan, will the nations of Pacific Rim join the island to defend itself from military attack by China? Also, will that situation also induce the possibility of a clash between China and the United States of America over Taiwan? (Mearsheimer, J. 2001). Another assumption is that whenever a serious international dispute threatens an outbreak of hostilities, the identity of the aggressor, or public enemy will be obvious to all. However, this assumption seems very uncertain. There are many examples in history of one country's claims that another is the aggressor, while the truth later on reveals such accusations to be widely discredited.

Overall, the motives of stakeholders in maneuvering their nations away from or toward conflicts differ in each model. In the balance of power model, the leaders of a nation seek to maximize its power. Powerful nations try to expand their powers, while their potential victims, seeking to protect themselves from aggression, group together to augment their offensive and defensive capabilities. Decision-makers in the collective security system are moved by a rational, reasonable, and logical desire to prevent unnecessary conflicts. Another similar assumption of both models is that the conflicts leading to war or ending in the preservation of the system are in control; the decision-makers can and must manage, and that foreign policy elites are key actors in the play. Thus, the two models can be summarized into a burning desire to maximize power or a single-minded urge to guarantee security in the narrow sense that leads nations to start major wars. Therefore, within the Pacific Rim region, China and other major countries should be focusing pure-power maximizing actions or policies that lead to power maximizing under the balance of power model. Given China's emphasis on the idea of a peaceful rising development, the increase in Chinese military defense budget is causing alarm. Other weaker, smaller countries within the region will form strategic security alliances to prevent a rising China or any potential conflict with the Chinese government's influence over security issues.

Conclusion

From a wider theoretical perspective, one may question the analogy between the structural models and economics. Waltz, for example, wrote, "balance of power theory is micro theory precisely in the economist's sense. The system, like a market in economics, is made by the actions and interactions of its units, and the theory is based on assumptions about their behavior." However, the international system, as Waltz describes it, operates nothing like a competitive marketplace, and it is wrong to argue, as he does that the international system generates pressure on states in the same way that markets generate pressure on firms.

Why do relatively few nations disappear or "go out of business?" due to other's financial pressures? Further, the balance of power becomes active to maintain the system of states. It's

different in economics, where "creative destruction" is an endless process. Moreover, economic systems are regulated and controlled by states. Better yet, states can even rescue or reshape the economic systems, whereas the international system is in anarchy. Both models appear flawed in many important respects. As a result, the study of international relations and economics regarding China are now in something of a crisis state. The existing paradigm appears to be of limited value with extreme calculation on the both sides, characterized by either overly zealous and optimistic or disorderly and pessimistic views of China in the Pacific Rim. Clearly, we know that domestic economic issues matter, but we still do not know how to treat economics and politics together as a whole. We also know the rise of China is extremely important and significant to the development of the entire Pacific Rim region. It is thus not surprising that the field finds itself mired in debates that are taking an increasingly ideological tone: whether nation actors in the Pacific Rim should seek relative gains or absolute security, or whether nation actors adopt a realist, or alliance, perspective in their work.

Adopting extreme positions may be politically useful, but one wonders how helpful it is for the long-term development of the Pacific Rim as a whole?

In the near future, the research should continue to build on and refine its basic analysis of the relationship between system and unit. Most experts of politics probably accept that one of the defining features of their field of study is that the interactions of the units take place in an anarchic environment, an environment without any central, governing authority. Previously during the cold war era, a significant debate focused on the distribution of power in terms of the bipolar, unipolar, or multi-polar state of affairs. With the end of the cold war, the concept of polarity seemingly has become even more confused; scholars need to reexamine this concept and possibly redefine it. Several studies argued that economic cooperation among democracies is more likely to prevail when the distribution of power is asymmetric, or when one state is "hegemonic." Therefore, will we see a more democratic China in the near future? Or will we see a hegemonic state under a more restricted authoritative regime? The two models seem to provide us almost nothing about how states will behave in their international interactions. Therefore, the future explanations should begin within the nation-state in the Pacific Rim region.

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Day of The Week Anomaly During Financial Crisis: Portugal, Italy, Greece, Spain and Ireland

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Abstract: Portugal, Italy, Greece, Spain and Ireland are the European countries having similar economic environments. Since the European sovereign debt crisis, they are referred as a group of European economies facing particular financial crisis. In this paper we analyze the price dynamics of these stock markets during the global financial crisis and European sovereign debt crisis period. We focus on the presence of days of the week effect in daily price returns and volatilities. Results show that calendar anomalies still exist and the volatility pattern across days of the week is statistically different for all indexes.

JEL Classification**:** G11, G12, G15

Keywords: Days of the week, volatility, GARCH, EGARCH

Introduction

The presence of calendar anomalies has been documented extensively for many years in financial markets. Among these, the most common ones are the weekend effect and the days of the week effect. The days of the week effect implies that the stocks return is not independent of the days of the week in which they are generated. On the other hand, weekend effect is a phenomenon in financial markets in which stock returns on Mondays are often significantly lower than those of the immediately preceding Friday.

An investor is expected to check the return of the stock before buying it. Nonetheless, return of the stock is not the only condition to be aware of and there is another condition which should not be underestimated, namely the volatility of the stock price. Whether volatility level of stock

price is related with volatility level of a given day is quite important to know for the investors. Identifying a particular pattern for the days of the week would help the investors review their position in the stock market with a view to keep clear of high volatility in their portfolio.

Several researchers have argued that seasonalities in stock returns should diminish over time due to the improved market efficiency. Accordingly, our study investigates the days of the week effect on return and volatility for Portugal, Italy, Greece, Spain and Ireland stock markets with GARCH, EGARCH models from 2006 to 2011. The results show that calendar anomalies still exist, and the volatility pattern across the days of the week is statistically different for all indexes.

The remainder of this paper continues as follows. We discuss relevant literature in Section 1. Section 2 provides the data and Section 3 discusses methodological issues. We discuss our findings regarding days of the week for return and return volatilities. Finally, we finish by summarizing our main findings.

Literature

The days of the week effect as calendar anomaly has been widely studied in finance literature. Cross (1973), French (1980), Gibbons and Hess (1981), Lakonishok and Levi (1982), Keim and Stambaugh (1984), Rogalski (1984) and Balaban (1995) are researches who argue for the days of the week effect.

These studies were first carried out in U.S. Stock Market and later in other international financial markets. Researchers found interesting results for equity market for other countries. Among them are Theobald and Price (1984), Board and Sutchliffe (1988), Jaffe and Westerfield (1985), O'Hanlon et al (1987), Wong et al (1992), Chang et al (1993), Athanassakos and Robinson (1994), Dubois and Louvet (1996).

Hourvouliades N.L. and N. Kourkoumelis (2009) investigate the existence and nature of the days-of-the-week effect during the contemporary financial crisis for Turkey, Bulgaria, Romania, Ukraine, Cyprus, and Greece for the period between 2003 and 2009. They divide their study period in two parts: the first expands from January 2003 until November 2007, and the second from December 2007 until the end of January 2009. For Greece, they find evidence that the days-of-the-week effect in mean evaporates during the crisis days but the same does not happen in the series' variance.

Apolinaria, Santana, Sales Caro (2006), studies the existence of the days-of-the-week effect for Germany, Austria, Belgium, Denmark, Spain, France, The Netherlands, Italy, Portugal, The United Kingdom, The Czech Republic, Sweden and Switzerland starting from July 2, 1997 and ending on March 22, 2004. They find days of the week effect in all of the financial markets except Portugal and the Czech Republic for volatility.

Chukwuogor-Ndu (2006) studies fifteen European financial markets indexes from January 2nd, 1997 to December 31st 2004 in order to determine the daily returns, days-of-the-week effect and volatility of returns. The financial markets studied are: Austria, Belgium, Czech Republic, Denmark, Germany, France, Italy, Netherlands, Russia, Slovakia, Spain, Sweden, Turkey, Switzerland, and United Kingdom. The study finds evidence for the presence of the days of the week effect during the period 1997-2004. Seven of the European Financial markets experiences negative returns on Monday and seven others also experience negative returns on Wednesday. Additionally, the occurrence of the highest daily return is almost evenly spread across Monday, Thursday and Friday. The lowest return is generally experienced on Monday and Wednesday and the daily returns exhibit the greatest volatility on Monday for eleven of the markets.

Lucey (2000) studies the Iris stock market for the period 1973-1998. He couldn't find the evidence of a negative Monday or Tuesday effect for returns. By contrast, he finds some evidence of a persistent Wednesday effect.

Another study investigating the days of the week effect on return and volatility comes from Kenourgios and Samitas (2008) who concentrate on major Athens Stock Exchange (ASE) indexes. Using a conditional variance framework they observe that the days of the week effect in both the return and volatility equations is present over the period 1995-2000. However, this stock market anomaly seems to lose its strength and significance after the Greek entry into the Euro-Zone.

Data

The data used in this paper consists of daily data from the period 2006 to 2011. FTSEMIB Index for Italy, PSI20 Index for Portugal, FTASE Index for Greece, ISEQ20P Index for Ireland and IBEX Index for Spain were used as the blue chip stock market indexes for the analysis. Daily return is calculated as the percentage logarithmic change in the value of index compared to previous day's closing value as in the following:

$$Y_t = \ln (P_t / P_{t-1})$$

Skewness is a measure of asymmetry of the distribution of the series around its mean. The skewness of a symmetric distribution, such as the normal distribution, is zero. A positive (/negative) skewness suggests a higher (/lower) than normal distribution chance of higher (/lower) than mean return. Kurtosis measures the peakedness or flatness of the distribution of the return series. A normal distribution has a kurtosis value equal to three. If it exceeds three, the distribution is peaked relative to the normal; on the other hand, if it is less than three, the distribution is flat relative to the normal. Hence, it captures the excess probability of abnormal returns, regardless of the sign of the returns. Jarque-Bera is a statistic for testing whether the series are normally distributed and measures the difference of the skewness and kurtosis of the series with those from the normal distribution.

Table 1 gives the descriptive statistics for daily stock market returns for the entire period. In the appendix daily descriptive statistics for each index is given.

As it can be noticed from Table 1, the kurtosis for all indexes exceeds three. All series exhibit high Jarque-Bera test statistics which strongly suggests a rejection of normality. All the countries have negative returns. In addition, the volatility of the returns in terms of standard deviation is the highest for Greece and lowest for Portugal.

A visual perspective on the volatility of returns can be gained from the plots of daily returns for each series in Figure 1. All countries follow a similar pattern especially during the crisis periods (2008 and 2010). It should be noted that all returns are time varying with volatility clusters.

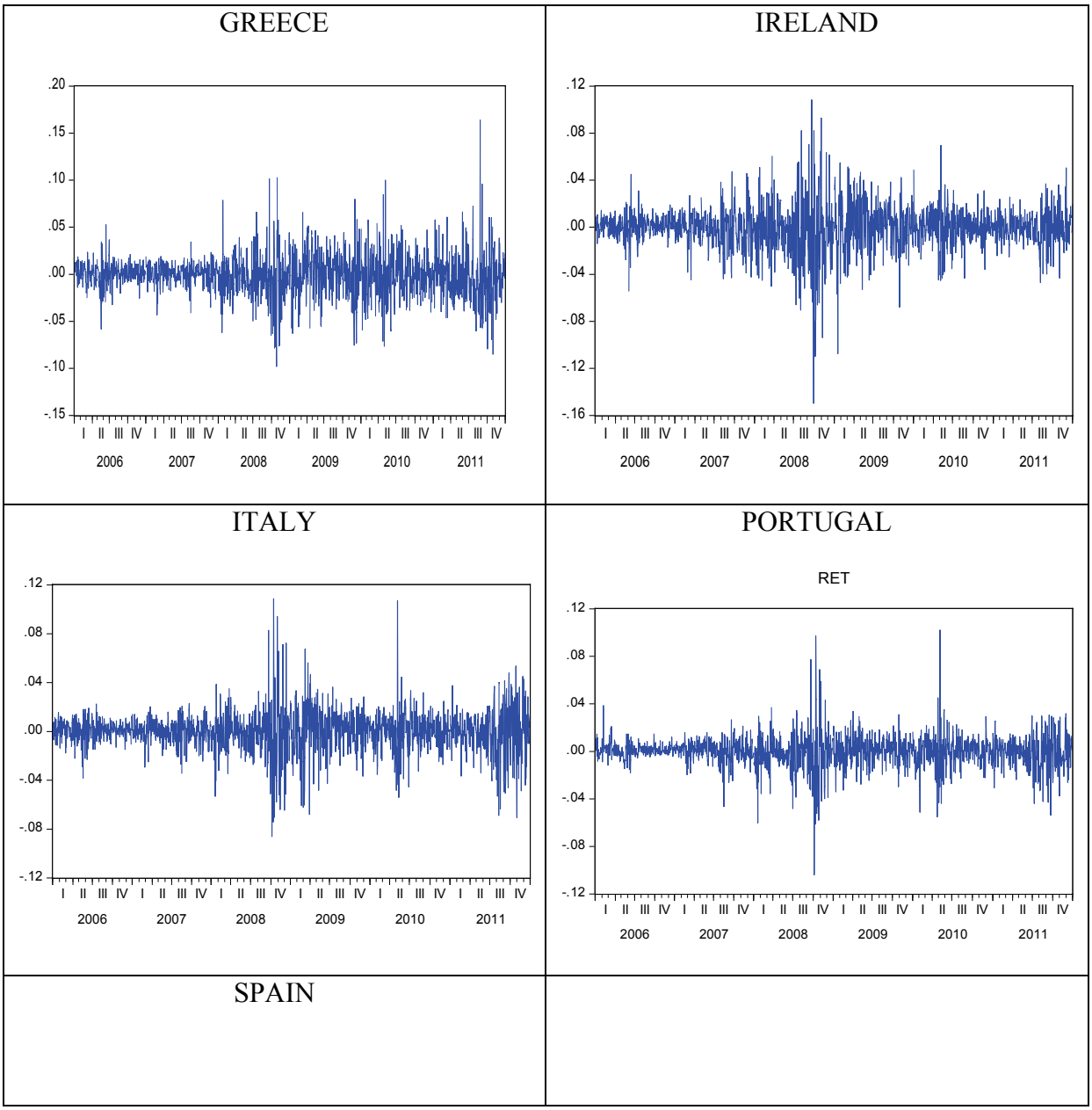
Table 1 . Summary statistics for index returns

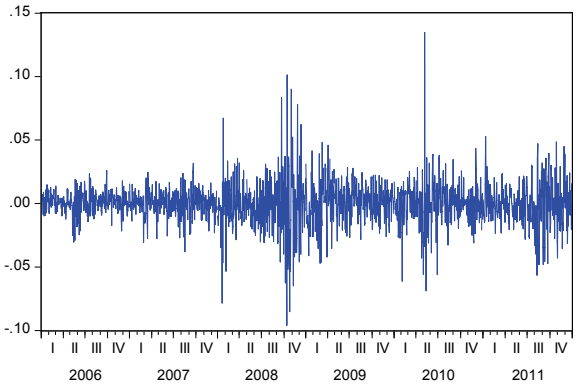
	Greece	Ireland	Italy	Portugal	Spain
Mean	-0.001354	-0.000597	-0.000570	-0.000292	-0.000151
Median	-0.000336	0.00461	0.000492	0.000267	0.000622
Maximum	0.163741	0.108228	0.108742	0.101959	0.134836
Minimum	-0.097963	-0.149554	-0.085591	-0.103792	-0.095859
Std. Dev.	0.022747	0.019428	0.017404	0.013617	0.016950
Skewness	0.268809	-0.464837	-0.027346	-0.061973	0.183622

Kurtosis	6.8231179	8.966916	8.004210	11.36915	9.576337
Jarque-Bera	931.6083	2311.184	1590.365	4483.712	2760.248
Probability	0.000000	0.000000	0.000000	0.000000	0.000000

Note:1.Jarque-Bera test statistics is based on Jarque and Bera (1987) and is a normal distribution test.

Figure 1. Time series plots of daily return





Methodology

In our study we apply generalized autoregressive conditional heteroscedasticity (GARCH) model proposed by Bollerslev (1986) which allows for the conditional variance to be linearly dependent on the past behavior of the squared residuals and a moving average of the past conditional variances. The lagged squared error terms imply that if past errors have been large in absolute value, they are likely to be large in the present, leading to volatility clustering. The model used here will follow the simple GARCH (1,1).

Following Berument and Kiymaz (2001), the GARCH model with dummy variables representing the days of the week is adopted:

(1a)

$$Y_t = \beta_0 + B_1 Y_{t-1} + m_1 d_{1,t} + m_2 D_{2,t} + m_3 D_{3,t} + m_4 D_{4,t} + m_5 D_{5,t} + \varepsilon_t$$

$$Y_t = \beta_0 + B_1 Y_{t-1} + m_1 d_{1,t} + m_2 D_{2,t} + m_3 D_{3,t} + m_4 D_{4,t} + m_5 D_{5,t} + \varepsilon_t$$

(1b)

$$\varepsilon_t \mid \Omega_{t-1} \sim N(0, h_t) \quad \varepsilon_t \mid \Omega_{t-1} \sim N(0, h_t) \quad \varepsilon_t \mid \Omega_{t-1} \sim N(0, h_t)$$

γ_t is the index return on day t. D_1, t through D_5, t are days of the week dummies that are either 0 or 1 (D_1 t =1 for Monday and 0 otherwise and so on). ε_t is the random error term for day t. If M_1 is positive and significant, this suggests that the average return on Monday is significantly higher than zero. Similar interpretation is applied to M_1, M_2, M_3, M_4, M_5.

We model the conditional variability of index returns by incorporating the days of the week effect into our volatility equation. The coefficients V_1 through V_5 represent the volatility on Monday to Friday. If V is positive and significant, this suggests that the volatility on Monday is significantly higher than zero.

(2)

$$h_t = \sum_{i=1}^{q} \alpha_i \, \varepsilon_{t-i}^2 + \sum_{j=i}^{p} \beta_j h_{t-j} + V_1 D_{1,t} + V_2 D_{2,t} + V_3 D_{3,t} + V_4 D_{4,t} + V_5 D_{5,t} + V_c$$

This specification requires $\alpha_i + \beta_j < 1$ in order to satisfy the non-explosiveness of the conditional variance. Each V_c, α_i, β_j has to be positive in order to satisfy the non-negativity of conditional variances for each given time t.

An important restriction of GARCH model is about the symmetric response of volatility to positive and negative shocks. However, it can be observed that "bad" news or a negative shock to financial time series has larger effects on volatility than "good" news or a positive shock does. The tendency of such a negative correlation between volatility and returns is often called the leverage effect. A model that allows this asymmetric effect of shocks is the exponential-GARCH (EGARCH) model. Nelson (1991) proposed a specification that does not require the non-negativity of model parameters which is another advantage over the standard GARCH model Enders (2004). The specification of the conditional variance equation can be expressed by

(3)

$$\log(\sigma_t^2) = \omega + \sum_{j=1}^{p}[\beta_j \log(\sigma_{t-j}^2)] + \sum_{i=1}^{q} \alpha_i \frac{|\varepsilon_{t-i}|}{\sqrt{\sigma_{t-i}^2}} + \sum_{i=1}^{q} \gamma_i \frac{\varepsilon_{t-i}}{\sqrt{\sigma_{t-i}^2}}$$

There are some important features of EGARCH model to be noticed:

Since the conditional variance equation is in log-linear form, regardless of the negativity of the model, parameters σ_t^2 can never be negative. Therefore, there is no need for any restrictions about the non-negativity of the estimated coefficients.

The asymmetries are allowed under the EGARCH specification. If γ_i is not equal to zero, then this means that there is an asymmetric effect on the log of the conditional variance. If there is a leverage effect, γ_i will be negative, which means the effect of a negative shock has greater effects on the log of the conditional variance than does a positive shock of the same magnitude.

The EGARCH model uses the standardized value of ε_{t-i} instead of using , ε_{t-i}^2 , which is argued by Nelson that this standardization allows for a better interpretation of the magnitude and persistence of shocks (Enders 2004).

To eliminate the possible multicollinearity problems we dropped one of the dummies in regression equations for days of the week.

Empirical Results

For GARCH (1,1) model, Vc must be positive and the sum of the coefficients in the conditional variance equation, (α + β), must be less than unity for the process to be stationary. This sum also indicates the level of persistence in the volatility shocks. A sum close to unity is favorable for providing evidence of a persistent volatility process (Bollerslev 1986). For Greece and Portugal α + β is greater than one, and for Ireland Vc is negative. Additionally, for Italy and Spain results are meaningful.

The results of GARCH (1,1) and modified GARCH (1,1) analyses are reported for Italy on Table 4. We dropped dummy for Wednesday in regression equation. All days are significant as well as negative. The returns on Friday are higher than the returns on Monday. When the modified GARCH (1,1) is estimated for Italy, all the coefficients for volatility equation are insignificant. The results of EGARCH (1,1) and modified EGARCH (1,1) analysis are reported for Italy on Table 4 and the results appear to be consistent with GARCH (1,1) results for Italy.

The results of GARCH (1,1) and modified GARCH (1,1) analyses are reported for Spain on Table 6. We dropped dummy for Wednesday in regression equation. Only Monday and

Tuesday are significant and negative. Although insignificant, the returns on Friday are higher than the returns on Monday. When the modified GARCH (1,1) is estimated for Spain, all the coefficients for volatility equation except Thursday are insignificant. The results of EGARCH (1,1) and modified EGARCH (1,1) analyses are reported for Spain in Table 6, as well. Results are consistent with GARCH (1,1) results for Spain.

The results of EGARCH (1,1) and modified EGARCH (1,1) analyses are reported for Greece in Table 2. We dropped dummy for Wednesday in regression equation. Only Monday and Tuesday are significant. For volatility equation all days are significant. The highest volatility is observed on Tuesday followed by Monday whereas the lowest volatility is observed on Friday.

The results of EGARCH (1,1) and modified EGARCH (1,1) analyses are reported for Ireland on Table 3. We dropped dummy for Wednesday in regression equation. The results indicate that only Tuesday is significant both for return and volatility.

Finally, the results of EGARCH (1,1) and modified EGARCH (1,1) analyses are reported for Portugal on Table 5. We dropped dummy for Wednesday in regression equation. While only Tuesday and Thursday are significant for return Monday stands out as significant for volatility.

Table 2. Regression results for GREECE

	GARCH(1,1)		Modified GARCH(1,1)			EGARCH(1,1)			Modified EGARCH(1,1)	
Return Equation	**Coefficient**	**p-value**	**Coefficient**	**p-value**	**Return Equation**	**Coefficient**	**p-value**	**Return Equation**	**Coefficient**	**p-value**
m_1	-0.0035	0.0051	-0.0035	0.0022	m_1	-0.0031	0.011		-0.0030	0.009
m_2	-0.0030	0.0066	-0.0028	0.0237	m_2	-0.0028	0.006		-0.0025	0.022
m_4	0.0036	0.9758	0.0002	0.8569	m_4	-0.0001	0.929		-0.0032	0.976
m_5	0.0002	0.8510	0.0001	0.9049	m_5	0.0004	0.716		0.0004	0.707
β_0	0.0019	0.0288	0.0001	0.0288	β_0	0.0010	0.243		0.0009	0.242
β_1	0.0351	0.1657	0.0369	0.1270	β_1	0.0435	0.094		0.0518	0.047
Variance Equation										
V_c	0.0002	0.018	-0.0043	0.007						
α	0.1078	0.000	0.1081	0.000						
β	0.8965	0.000	0.8957	0.000						
V_1			0.0041	0.073	**Variance Equation**			**Variance Equation**		
V_2			0.0095	0.000	V_c	-0.248	0.000	V_c	-0.524	0.000
V_4			0.0052	0.055	α	0.166	0.000	α	0.160	0.000
V_5			0.0039	0.094	β	0.985	0.000	β	0.984	0.000
					γ	-0.082	0.000			
									-0.086	0.000
								γ	0.317	0.010
								V_1		
								V_2	0.515	0.000
								V_4	0.299	0.032
								V_5	0.230	0.071

Table 3. Regression results for IRELAND

	GARCH(1,1)		Modified GARCH(1,1)			EGARCH(1,1)			Modified EGARCH(1,1)	
Return Equation	**Coefficient**	**p-value**	**Coefficient**	**p-value**	**Return Equation**	**Coefficient**	**p-value**	**Return Equation**	**Coefficient**	**p-value**
m_1	-0.0011	0.2893	-0.0012	0.1946	m_1	-0.0007	0.4839		-0.0009	0.3581
m_2	-0.0020	0.0217	-0.0021	0.0476	m_2	-0.0024	0.0061		-0.0024	0.0147
m_4	-0.0003	0.7348	-0.0002	0.7885	m_4	-0.0385	0.9680		0.0002	0.9979
m_5	0.0003	0.7169	0.0001	0.8817	m_5	0.0003	0.7323		0.0003	0.7164
β_0	0.0000	0.1732	0.0012	0.0778	β_0	0.0005	0.4196		0.0005	0.4763
β_1	0.0360	0.2026	0.0405	0.1511	β_1	0.0368	0.1793		0.0373	0.1710
Variance Equation										
V_c	0.0000	0.0038	-0.0133	0.3334						
α	0.1044	0.000	0.1077	0.000						
β	0.8942	0.000	0.8889	0.000						
V_1			0.0119	0.4843	**Variance Equation**			**Variance Equation**		
V_2			0.0571	0.0024	V_c	-0.2536	0.000	V_c	-0.3221	0.0006
V_4			0.0582	0.8159	α	0.1687	0.000	α	0.1663	0.0000
V_5			0.0549	0.7611	β	0.9853	0.000	β	0.9843	0.0000
					γ	-0.0807	0.000	γ	-0.0869	0.0000
								V_1	0.0674	0.5778
								V_2	0.3267	0.0319
								V_4	0.0027	0.9857
								V_5	-0.0879	0.4831

Table 4. Regression results for ITALY

	GARCH(1,1)		Modified GARCH(1,1)			EGARCH(1,1)			Modified EGARCH(1,1)	
Return Equation	**Coefficient**	**p-value**	**Coefficient**	**p-value**	**Return Equation**	**Coefficient**	**p-value**	**Return Equation**	**Coefficient**	**p-value**
m_1	-0.0030	0.0003	-0.0029	0.0029	m_1	-0.0027	0.0007		-0.0027	0.0044
m_2	-0.0025	0.0034	-0.0024	0.0095	m_2	-0.0025	0.0020		-0.0024	0.0036
m_4	-0.0021	0.0167	-0.0022	0.0149	m_4	-0.0022	0.0107		-0.0022	0.0124
m_5	-0.0019	0.0260	-0.0020	0.0293	m_5	-0.0018	0.0313		-0.0018	0.0256
β_0	0.0021	0.0006	0.0020	0.0016	β_0	0.0015	0.0092		0.0015	0.0144
β_1	-0.0377	0.1880	-0.0365	0.2059	β_1	-0.0213	0.4668		-0.0207	0.4804
Variance Equation										
V_c	0.00184	0.0037	0.0002	0.8404						
α	0.1124	0.0000	0.1153	0.0000						
β	0.8874	0.0000	0.8843	0.0000						
V_1			0.0009	0.4756	**Variance Equation**			**Variance Equation**		
V_2			-0.0002	0.8787	V_c	-0.2552	0.000	V_c	-0.2084	0.0420
V_4			-0.0109	0.5699	α	0.1391	0.000	α	0.1485	0.0000
V_5			0.0003	0.8205	β	0.9829	0.000	β	0.9817	0.0000
					γ	-0.1113	0.000	γ	-0.1156	0.0000
								V_1	0.1954	0.1497
								V_2	-0.2512	0.1276
								V_4	-0.0949	0.6120
								V_5	-0.1726	0.1846

Table 5. Regression results for PORTUGAL

	GARCH(1,1)		Modified GARCH(1,1)			EGARCH(1,1)			Modified EGARCH(1,1)	
Return Equation	**Coefficient**	**p-value**	**Coefficient**	**p-value**	**Return Equation**	**Coefficient**	**p-value**	**Return Equation**	**Coefficient**	**p-value**
m_1	-0.0005	0.3498	-0.0007	0.2946	m_1	-0.0005	0.3862		-0.0006	0.3059
m_2	-0.0016	0.0031	-0.0016	0.0087	m_2	-0.0017	0.0019		-0.0019	0.0016
m_4	-0.0009	0.0836	-0.0011	0.0530	m_4	-0.0012	0.0450		-0.0013	0.0385
m_5	-0.0005	0.3809	-0.0007	0.2420	m_5	-0.0003	0.5761		-0.0005	0.3524
β_0	0.0015	0.0002	0.0015	0.0008	β_0	0.0010	0.0108		0.0011	0.0077
β_1	0.0619	0.0171	0.0598	0.0249	β_1	0.0708	0.0070		0.0692	0.0097
Variance Equation										
V_c	0.00136	0.0001	0.0004	0.3640						
α	0.1679	0.0000	0.1684	0.000						
β	0.8422	0.0000	0.8412	0.000						
V_1			0.0005	0.4460	**Variance Equation**			**Variance Equation**		
V_2			-0.0003	0.6641	V_c	-0.4679	0.0000	V_c	-0.4426	0.0000
V_4			-0.0014	0.1248	α	0.2274	0.0000	α	0.2230	0.0000
V_5			-0.0003	0.5497	β	0.9680	0.0000	β	-0.9673	0.0000
					γ	-0.1315	0.0000	γ	-0.1312	0.0000
								V_1	0.3136	0.0099
								V_2	-0.1335	0.3574
								V_4	-0.1137	0.4878
								V_5	-0.2134	0.0852

Table 6. Regression results for SPAIN

	GARCH(1,1)		Modified GARCH(1,1)			EGARCH(1,1)			Modified EGARCH(1,1)	
Return Equation	**Coefficient**	**p-value**	**Coefficient**	**p-value**	**Return Equation**	**Coefficient**	**p-value**	**Return Equation**	**Coefficient**	**p-value**
m_1	-0.0022	0.0149	-0.0023	0.0168	m_1	-0.0015	0.0783		-0.0016	0.0735
m_2	-0.0021	0.0112	-0.0022	0.0206	m_2	-0.0018	0.0331		-0.0019	0.0397
m_4	-0.0014	0.1433	-0.0017	0.0614	m_4	-0.0009	0.2838		-0.0009	0.2887
m_5	-0.0010	0.2326	-0.0013	0.1800	m_5	-0.0006	0.4379		-0.0080	0.3757
β_0	0.0020	0.0007	0.0022	0.0014	β_0	0.0009	0.1003		0.0010	0.0966
β_1	-0.0019	0.9446	-0.0011	0.9665	β_1	0.0167	0.5354		0.0186	0.4980
Variance Equation					β_2	-0.0250	0.3639		-0.0256	0.3557
V_c	0.0004	0.0000	0.0014	0.2457						
α	0.1294	0.0000	0.1294	0.0000						
β	0.8627	0.0000	0.8641	0.0000						
V_1			-0.0013	0.3646	**Variance Equation**			**Variance Equation**		
V_2			-0.0000	0.9671	V_c	-0.3101	0.0000	V_c	-0.2904	0.0058
V_4			-0.0043	0.0469	α	0.1168	0.0000	α	0.1202	0.0000
V_5			0.0006	0.6660	β	0.9743	0.0000	β	0.9733	0.0000
					γ	-0.1413	0.0000	γ	-0.1443	0.0000
								V_1	0.0581	0.6557
								V_2	-0.0341	0.8296
								V_4	-0.0856	0.6104
								V_5	-0.0947	0.4626

Conclusion

This study examined the possible existence of days of the week effect on return and volatility. Regressions were run using dummy variables for days of the week. The empirical results provide evidence for the existence of the days of the week anomaly for all indexes.

Portfolio rebalancing, information processing, and lack of information seem to be effective on higher volatility and lower returns of Mondays. Days of the week anomaly in these countries is especially interesting as it could support the proposition that these anomalies are general, world-wide phenomena rather than the result of a special type of institutional arrangement in these countries and did not disappear during the financial crisis period.

In conclusion, the findings of these calendar anomalies in all indexes have important implications for practitioners and academics. For practitioners, it affects the asset allocation, hedging decisions and the timing of security issuances by firms. For academics, it has implications for asset pricing and performance evaluation.

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Short- and Long-Term Links among Turkish and European Stock Markets: Portugal, Italy, Greece, Spain and Ireland

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Abstract: Since the European sovereign debt crisis, Portugal, Italy, Greece, Spain and Ireland have been referred to as a group of European economies facing particular financial crisis. This study, first, tests the interdependence of these countries' stock markets and Turkey in a period covering both global financial crises and European sovereign debt crisis. Secondly, it examines the index return volatilities. Thirdly, it applies a gravity model to determine the effects of variables such as the distance between stock markets and the size of markets on the correlation coefficient between returns.

JEL Classification**:** G11, G12, G15

Keywords: Co-integration, correlation, volatility, gravity model

Introduction

There are multiple studies analyzing stock market integration around the world most of which analyze stock markets among developed markets and between developed markets and relatively well-established emerging markets in Latin America and Asia. Nevertheless, integration of the Turkish stock market with the European Union stock markets especially after the global financial crisis and European sovereign debt crisis has been rather understudied.

A variety of Western economies such as Greece, Ireland, Italy Spain and Portugal have been under the threat of a sovereign debt crisis which has been affecting the global economy by spreading rapidly across the Euro region. The current crisis has been the inevitable result of some European governments' incompetence in managing their debt whereas the 2008-09 global crises were due to the insolvency of US financial institutions. The excessive expenditure by the government in addition to low growth in Greece has yielded an unsustainable debt

burden which, in turn, created a potential domino effect threatening the whole Euro region and the global economy.

Turkish economy was affected by the global financial crisis as a result of the decay in financing conditions, waning foreign trade and unstable confidence which yielded shrinkage in economic activity and high unemployment in 2009. However, Turkey's recovery was boosted thanks to the improvements in financial sector and public debt dynamics completed after the 2001 crisis. In 2011, the strong economic recovery was achieved. Furthermore, international rating agencies upgraded the sovereign credit ratings during the period between December 2009 and February 2010.

The aim of this study is to examine whether the Turkish stock market is integrated with Portugal, Italy, Greece, Spain and Ireland stock markets. If Turkish stock market is not integrated with these countries' stock markets, we conclude that there is the potential for diversifying risk for the European Union investors in the Turkish stock market. The study contributes to the literature as it will have important implications for individual investors, portfolio managers, and financial managers of corporations willing to invest in the Turkish stock market.

Researchers in their works use various methodologies in analyzing integration of stock markets. In this study, we use Engle-Granger Co-integration Test, Granger Causality Test and Johansen Co-integration Test in order to examine integration between stock markets. We observe that there is no co-integration in these markets. The stock markets of these countries do not exhibit long-run co-movements which can allow the benefits of international diversification.

In this study, we also characterize the dynamics of stock returns and conditional volatility in stock exchanges. We examine whether stock returns volatility changes over time. The generalized autoregressive conditionally heteroskedastic (GARCH) and the exponential generalized autoregressive conditionally heteroskedastic (EGARCH) models are used to obtain appropriate series of conditional variances that can be used as expected volatility estimates. We find strong evidence of time-varying volatility. Additionally, we observe that volatility shows high persistence.

In addition to analyses mentioned above, we constructed a gravity model to estimate the effects of variables such as the distance between stock markets and the size of markets on the correlation coefficient between returns. Since we focused on the relationship between the Turkish stock market and the stock markets of Portugal, Italy, Ireland, Greece and Spain, we restricted our research and all other mutual relationships among countries were hence omitted. We applied a feasible Generalized Least Squares specification to estimate the gravity model. Our results suggest that the distance between countries and size of the markets have significant effects with expected signs on stock market correlations while neighborhood does not. In order to test the effect of crisis on correlation then we add a dummy variable which takes the value of one during 2007- 2011 period into the gravity model. The model results suggest that the crisis has a significant and positive effect on correlation.

The remainder of this paper continues as follows. First, we employ the most recent data, which will allow us to study the effects of global financial crisis and European sovereign debt crisis on the integration of stock markets of Portugal, Italy, Greece, Spain, Ireland and Turkey. In addition, we also examine the stock market volatilities. Second, we explore stock diversification opportunities in Turkey as an emerging market. Third, we employ a gravity model to explain the cross-sectional properties of stock market correlations of Turkey with the other countries under study. Section two presents a brief review of literature, whereas section three provides information about data, the methodologies we used and our results. Part four is the conclusion.

Literature

In Table 1, the stock markets of Portugal, Italy, Greece, Spain, Ireland and Turkey are compared under the headings; listed domestic companies, market capitalization of listed companies and stocks traded turnover ratio.

Table 1. Statistics for the Stock Exchanges

	Listed Domestic Companies, Total	Market Capitalization of listed Companies (current US$)	Stocks traded, Turnover ratio (%)
Portugal	46	61.68*	50.3
Italy	287	431.47*	236.8
Ireland	48	35.36*	45.3
Greece	275	33.64*	46.5
Spain	3241	1030.95*	128.9
Turkey	362	201.81*	162.7

*Billion

Source: The World Bank, http://data.worldbank.org/indicator, (05.12.2012)

Market capitalization is one of the most important indicators in conducting comparisons in inter-stock exchanges. As in Table 1, the stock exchange having the highest market capitalization out of six stock exchanges is Spain, which is followed by Italy and Turkey. In the literature, turnover ratio, measured by trading volume divided by market value of outstanding stocks, is used as an alternative measure of liquidity in the stock market. Table 1 displays that Italy has the highest turnover, followed by Turkey and Spain. One of the most important criteria indicating level of development of stock exchanges is the number of corporations quoted in the stock exchange. As can be observed on Table 1, total 3,241 corporations were quoted in Spain by the end of 2011, while 362 corporations were quoted in Turkey and 287 in Italy in the same year.

A literature review on possible relationships and interactions amongst integrated stock markets shows that the GARCH family models and VAR models are valid to identify this phenomenon. In addition to these models, Granger causality tests and Co-integration tests could be applied adequately to clarify the causal relations and co-movements both in short-run and long-run.

Worthington and Higgs (2004) examine the transmissions of equity market returns and volatility among nine major Asian markets during the period from 1988 to 2000. They also investigate the differences between the emerging markets and the developed ones. Hong Kong, Japan and Singapore are regarded as the developed markets whereas Indonesia, Korea, Malaysia, the Philippines, Taiwan and Thailand are regarded as the emerging markets in the analysis. A multivariate GARCH model is employed to determine the origin and magnitude of spillovers. It is concluded that even though the mean spillovers from developed to the emerging are not homogenous across the emerging markets, all Asian markets are highly integrated. However, the own-volatility spillovers are higher than cross-volatility spillovers for all markets, but more prominently emphasized for emerging markets. This finding implies that in regard to Asian markets the changes in volatility in emerging markets are relatively more significant than those in developed markets.

PIIGS is an acronym referring to the economies of Portugal, Italy, Greece and Spain and Ireland. Tamakoshi and Hamori (2011) investigated the causal relationships between the transmission of stock indexes among the PIIGS, Germany and UK before and during European sovereign debt crisis. In this paper, authors used the lag-augmented VAR (LA-VAR) methodology on two different data set consisting of daily returns of stock market indexes from

seven members of European Union. First data set includes a sample period from February 2007 to November 2009 referred to as the period before crisis, while the second includes from May 2009 to June 2011 referred to as the crisis period. Authors concluded that Portugal and Ireland Granger-caused multiple other countries, including Germany while Germany had a reverse causal effect only on Ireland. Although these causal relationships are valid before and during the sovereign debt crisis which has originated in Greece, they are mostly diminished during the crisis. Likewise, the co-movements among stock exchanges of PIIGS countries decreased gradually all along the crisis.

Kizys and Pierdzioch (2011) investigated potential causal linkages of the news to speculative bubbles in the Greek equity market and the equity markets of Portugal, Ireland, Italy and Spain by employing VAR model and Granger non-causality test for a sample period from January 1999 to April 2011. The authors defined speculative bubbles as the equity market prices stochastically deviating from their fundamentals-based values. The main finding of this research is that news to speculative bubbles in the Greek equity market caused movements in the equity markets of the other countries, but there is no strong evidence of a reversed causality.

Gklezakou and Mylonakis (2009) examined the correlation and causal relationship among the emerging stock markets of the South Eastern Europe before and during the current economic crisis. Romania, Bulgaria, Croatia, Slovenia and Turkey were included in the analysis as emerging markets. In regard to previous research which suggests that the interdependence is mainly originated from the dominant markets, authors also added Germany as the leading European stock market and Greece because of its dominant role in the area. The logarithmic daily closing prices of indexes of included stock markets were divided into two sub-periods extending from November 2000 to July 2007 and from July 2007 to February 2009. Based on the unidirectional influences from Germany to all of the other countries which are verified in their research, authors supported the extant literature that Germany is a leading stock market. Similarly, it is found that Greece has dominant influences on most of the developing markets. Although the causality among the emerging markets is low and indistinct, it can be argued that the Bulgarian and the Turkish markets are relatively stronger, since they are affected only by the Greek and the German markets. It is also concluded that the weak relations among the markets during normal economic activity are strengthened by conditions under the economic crisis.

Benli et al. (2012) investigated the existence of common stochastic trends between European Union member countries (Austria, Belgium, Denmark, England, Finland, France, Germany, Greece, Holland, Ireland, Italy, Portugal, Spain and Sweden) and Turkey by using the Johansen (1989) and Johansen and Juselius (1990) methodology. The sample set includes data from January 1988 to August 2008. In the analysis, these fourteen EU member countries were divided into four sub-groups and the relations of each group with Turkey in terms of stock price indexes were investigated separately. It is concluded that there is strong evidence for the existence of common stochastic trends except for a few cases.

Ergun and Nor (2009) examined external linkages of Turkish Stock Market with twenty-seven EU member countries, five non-EU member European countries, the US, and Japan by considering the role of EU accession period. Their research includes both the daily and monthly data from stock market indexes from 1988- 2008 period. They used the Johansen's multivariate co-integration test and the recursive co-integration approach of Hansen and Johansen (1992) to identify the interactions among the stock markets. The main finding of this paper is that there were significant linkages between Turkey and developing EU member countries that became member after 2004, but only until they joined EU. Moreover, the linkages between Turkey and the developed EU countries were found to be significant and influenced by the breakthrough points which indicate the unionization.

İbicioğlu and Kapusuzoğlu (2011) investigated the causal interactions and long-run relationships of Turkish stock market with the stock markets of EU member Mediterranean countries by using the Granger causality tests, Vector Error Correction Model (VECM), Johansen co-integration test and variance decomposition techniques. Their research includes daily data from Turkey and six EU member Mediterranean countries including France, Spain, Italy, Greece, Malta and Croatia for the period of July 2002- March 2010. Authors concluded that the stock markets of all included countries are related in the long- run. Besides, the stock market of France is found significantly dominant and Turkish stock market is not Granger-caused by any other market.

Gravity modeling approach has been frequently used to explain the trade patterns among countries. Recent studies also suggest that gravity models can be used to explain cross-country stock market correlations adequately.

Huang et al. (2006) used a gravity modeling approach to explain the stock market correlations in emerging markets for 20 countries. Their analysis includes the explanatory variables such as distance between countries, market size, legal system, language and border. It is found in this research that the physical distance, market size and legal system similarities have significant effects on stock market correlations.

Flavin et al. (2001) employed a gravity model by using 1999 national stock market data for 27 countries to explain stock market correlations. They found that geographical variables with overlapping opening hours and neighborhood have significant effects on stock market correlation. Even though the distance variable was found to be insignificant, the authors suggest that this result does not imply invalidity of the gravity model.

Methodology

The actual time period under study ranges from March 2005 to December 2011. FTSEMIB Index for Italy, PSI20 Index for Portugal, FTASE Index for Greece, XU030 for Turkey, ISEQ20P Index for Ireland and IBEX Index for Spain were used as the blue chip stock market indexes for the analysis.

This paper examines the interdependence of the stock markets among Portugal, Italy, Ireland, Greece, Spain and Turkey through a few different perspectives. First, we applied the granger causality test to determine the mutual causal relations in addition to Engle-Granger co-integration test and Johansen co-integration test in order to detect the co-movements in the long run. Second, GARCH (1,1) and EGARCH (1,1) models were used to examine whether stock returns volatility changes over time. Finally, we constructed a gravity model to estimate the effects of variables such as the distance between stock markets and the size of markets on the correlation coefficient between returns. Since we focused on the relationship between the Turkish stock market and the stock markets of Portugal, Italy, Ireland, Greece and Spain, we restricted our research and all other mutual relationships among countries were omitted.

Descriptive Statistics

Table 2 reports the descriptive statistics for the log of daily closing prices for the entire study period and clearly displays that distributions are not normal. Greece, Italy and Turkey have negative skewness, which means the left tail is longer, and the mass of the distribution is concentrated on the right of the figure. Additionally, they have relatively few low values. A high kurtosis portrays a chart with fat tails and a low, even distribution, whereas a low kurtosis portrays a chart with skinny tails and a distribution concentrated toward the mean. Moreover, the table also indicates that Italy and Ireland have low kurtosis values compared to others.

Table 2. Descriptive Statistics for Log of Daily Closing Prices

	Greece	Ireland	Italy	Portugal	Spain	Turkey
Mean	7.190	6.582	10.207	9.051	9.315	10.904
Median	7.404	6.528	10.257	8.990	9.293	10.930
Maximum	7.951	7.362	10.700	9.525	9.676	11.421
Minimum	5.508	5.658	9.443	8.553	8.827	10.205
Std. Dev.	0.598	0.500	0.327	0.230	0.181	0.283
Skewness	-0.793	0.051	-0.203	0.282	0.119	-0.371
Kurtosis	2.868	1.372	1.727	2.269	2.284	2.280
Jarque-Bera	187.947	197.257	132.338	63.328	42.205	79.397
Observations	1780	1780	1780	1780	1780	1780

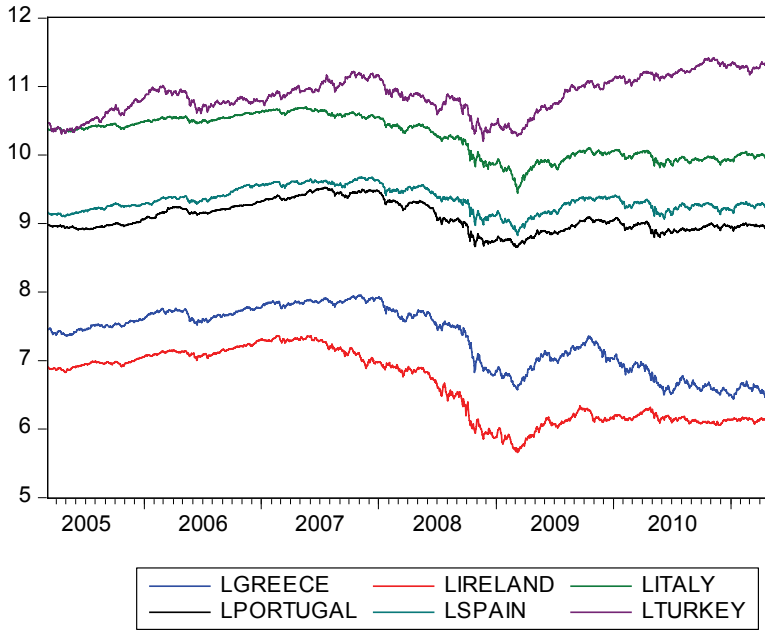

Figure 1. *Graphs for Log of Daily Closing Prices*

Augmented Dickey-Fuller (ADF) Test

Most of the financial time series are non- stationary. However, it is important to obtain stationarity to avoid the spurious regression problem. Moreover, transforming non-stationary time series to achieve the stationarity is a precondition for some time series analysis such as co-integration. Unit root tests such as ADF, PP and KPSS are used to detect the existence of unit roots (Gujarati 2003:820). The most commonly used test to examine the existence of a unit root is the Dickey-Fuller test. The Augmented Dickey-Fuller (ADF) test includes additional lagged difference terms to avoid the auto-correlated error term while the original series follows an AR(p) process.

We refer to the Augmented-Dickey Fuller (ADF) test to see whether or not the log of daily price series is stationary. Table 3 displays the ADF test results. First, we fail to reject the null hypothesis containing the unit root in each variable case. However, once we take the first difference, we reject the null hypothesis at one percent level and conclude that all the series are stationary and integrated in the same order, namely I (1).

Table 3. ADF Test Results

ADF (level)		**ADF (1st diff.)**	
t-Statistic	***Prob.***	***t-Statistic***	***Prob.***

Greece	1.629	(0.999)	-40.788	(0.000)***
Ireland	-0.654	(0.855)	-40.472	(0.000)***
Italy	-0.352	(0.914)	-42.039	(0.000)***
Portugal	-0.410	(0.905)	-40.142	(0.000)***
Spain	-1.660	(0.451)	-41.853	(0.000)***
Turkey	-1.836	(0.363)	-40.631	(0.000)***

Note: - Price series are in the log form. ADF is with intercept. ***, ** and * indicate the level of significance at the 1 percent, 5 percent and 10 percent level, respectively.

Engle-Granger Co-integration Test

Two variables will be co-integrated if they have a long-term, or equilibrium, relationship. Testing for co-integration is undertaken once it is found that each series contains one unit root. The concept of co-integration developed by Engle and Granger (1987) is that some linear combination of two or more series is stationary even when each of the series individually is non-stationary. The two time series are said to be co-integrated if they are integrated of the same order and the residuals from the ordinary least squares (OLS) regression are stationary in levels and integrated of the order zero, respectively.

Table 4. Results for Bivariate Co-integration

	Unit Root Tests in Regression Residuals	
	ADF	
	t-Statistic	***Prob.***
Greece/Turkey	0.483	(0.986)
Turkey/Greece	-1.982	(0.294)
Ireland/Turkey	-0.797	(0.819)
Turkey/Ireland	-1.882	(0.340)
Italy/Turkey	-0.607	(0.866)
Turkey/Italy	-1.926	(0.320)
Portugal/Turkey	-0.182	(0.938)
Turkey/Portugal	-1.718	(0.421)
Spain/Turkey	-1.393	(0.586)
Turkey/Spain	-1.547	(0.509)

Notes: Price series are in the log form. ADF is level with intercept. ***, ** and * indicate the level of significance at the 1 percent, 5 percent and 10 percent level, respectively.

Table 4 summarizes the unit root tests for the co-integrated Portugal, Italy, Greece, Spain and Ireland stock market indexes for Turkey. The null hypothesis of a unit root is not rejected by the ADF test. Turkey does not share a common stochastic trend with these countries and is said not to be co-integrated.

Granger Causality Test

The Granger (1969) approach questions whether X causes Y by regressing lagged values of X and Y on Y. If adding lagged values significantly improves the prediction of Y, then it can be said that X (Granger) causes Y. A similar definition applies if Y (Granger) causes X (Gujarati 2003: 697).

Table 5. Granger causality test results

Null Hypothesis	**F-statistic**	**Probability**

TURKEY does not Granger Cause GREECE	3.666	0.025**
GREECE does not Granger Cause TURKEY	0.231	0.793
TURKEY does not Granger Cause IRELAND	0.213	0.808
IRELAND does not Granger Cause TURKEY	0.514	0.597
TURKEY does not Granger Cause ITALY	0.897	0.407
ITALY does not Granger Cause TURKEY	1.869	0.154
TURKEY does not Granger Cause PORTUGAL	0.527	0.590
PORTUGAL does not Granger Cause TURKEY	0.159	0.852
TURKEY does not Granger Cause SPAIN	2.546	0.078*
SPAIN does not Granger Cause TURKEY	3.378	0.034**

Notes: - Price series are in the log form. ***, ** and * indicate the level of significance at the 1 percent, 5 percent and 10 percent level, respectively.

Table 5 indicates the results from pair wise Granger Causality Tests for the log of daily price series. We reject the null hypothesis of no Granger causality in 3 cases. We find unidirectional result from Turkey to Greece, where as there is a bidirectional (feedback) result between Turkey and Spain. Since there is Granger causality among stock market indices, there is a strong correlation between the current and the past values. Granger causality result supports the idea that knowing the current prices improves the forecast ability of stock prices.

Johansen Co-integration Test

Although extremely simple and appealing for empirical applications, bi-variate co-integration analysis suffers from several drawbacks, among which we may mention the impossibility of identifying more than one co-integrated variables among a k-dimensional set of variables with k>2. Our interest is to uncover the co-movement of six stock markets. For this reason, we follow the multivariate test for co-integration advocated by Johansen and Juselius (1990).

Table 6. Multivariate co-integration results (Johansen Test) between Turkey and Greece

Hypothesized No. of CE	Eigenvalue	Trace Statistics (λ)	Critical Value 0.05	Prob
None*	0.0080	14.889	12.320	0.0182
At most 1	0.0003	0.599	4.129	0.500

Notes: Price series are in the log form. * denotes rejection of the hypothesis of no co-integration at the 5% level. Trace test indicates no co-integration at the 0.05 level.

The results of the co-integration tests indicate that there is not long-run relationship between the stock markets. Moreover, they do not share the same stochastic trend, and a long run relationship does not exist. However, it should be noted that long-run relationship exists only between Turkey and Greece stock markets. Table 6 exhibits the results from Johansen co-integration test for long-run relationship between Turkey and Greece.

Volatility Index Measurement

In this study, we characterize the dynamics of stock returns and conditional volatility for stock markets of Portugal, Italy, Greece, Spain, Ireland and Turkey. We examine whether stock return volatility changes over time. The return is calculated as first differences in natural logarithms according to the following expression:

$$Rt = \ln\left(\frac{Pt}{Pt - 1}\right) \quad (1)$$

Table 7 gives the descriptive statistics for daily stock market returns for the entire period. As it can be noticed from Table 7, all series except Greece and Spain exhibit negative skewness, which indicates that the series have an asymmetric distribution with a longer left tail. Every variable has a relatively high kurtosis compared to the normal value, which is three and very

high Jarque-Bera test statistics which strongly suggests a rejection of normality. All the countries except Turkey have negative returns. Meanwhile, the volatility of the returns in terms of standard deviation is the highest for Greece and the lowest for Portugal.

Table 7. Descriptive Statistics of Daily Returns

	Greece	Ireland	Italy	Portugal	Spain	Turkey
Mean	-0.001055	-0.000425	-0.000427	-0.000207	-6.09E-05	0.000313
Median	0.000000	0.000000	0.000336	0.000120	0.000369	0.000000
Maximum	0.163741	0.108228	0.108742	0.101959	0.134836	0.127255
Minimum	-0.097963	-0.149554	-0.085991	-0.103792	-0.095859	-0.097398
Std. Dev.	0.021124	0.018120	0.016276	0.012783	0.015859	0.019898
Skewness	0.243612	-0.515446	-0.056279	-0.081800	0.175572	-0.060197
Kurtosis	7.734312	10.15654	8.979903	12.65846	10.73161	5.741694
Jarque-Bera	1679.013	3875.168	2651.593	6916.790	4440.169	558.2637
Observations	1779	1779	1779	1779	1779	1779

Table 8. Correlation of Daily Returns

	Greece	Ireland	Italy	Portugal	Spain	Turkey
Greece	1.00	0.51	0.57	0.57	0.57	0.47
Ireland	0.51	1.00	0.67	0.62	0.69	0.48
Italy	0.57	0.67	1.00	0.77	0.90	0.53
Portugal	0.57	0.62	0.77	1.00	0.79	0.51
Spain	0.57	0.69	0.90	0.79	1.00	0.54
Turkey	0.47	0.48	0.53	0.51	0.54	1.00

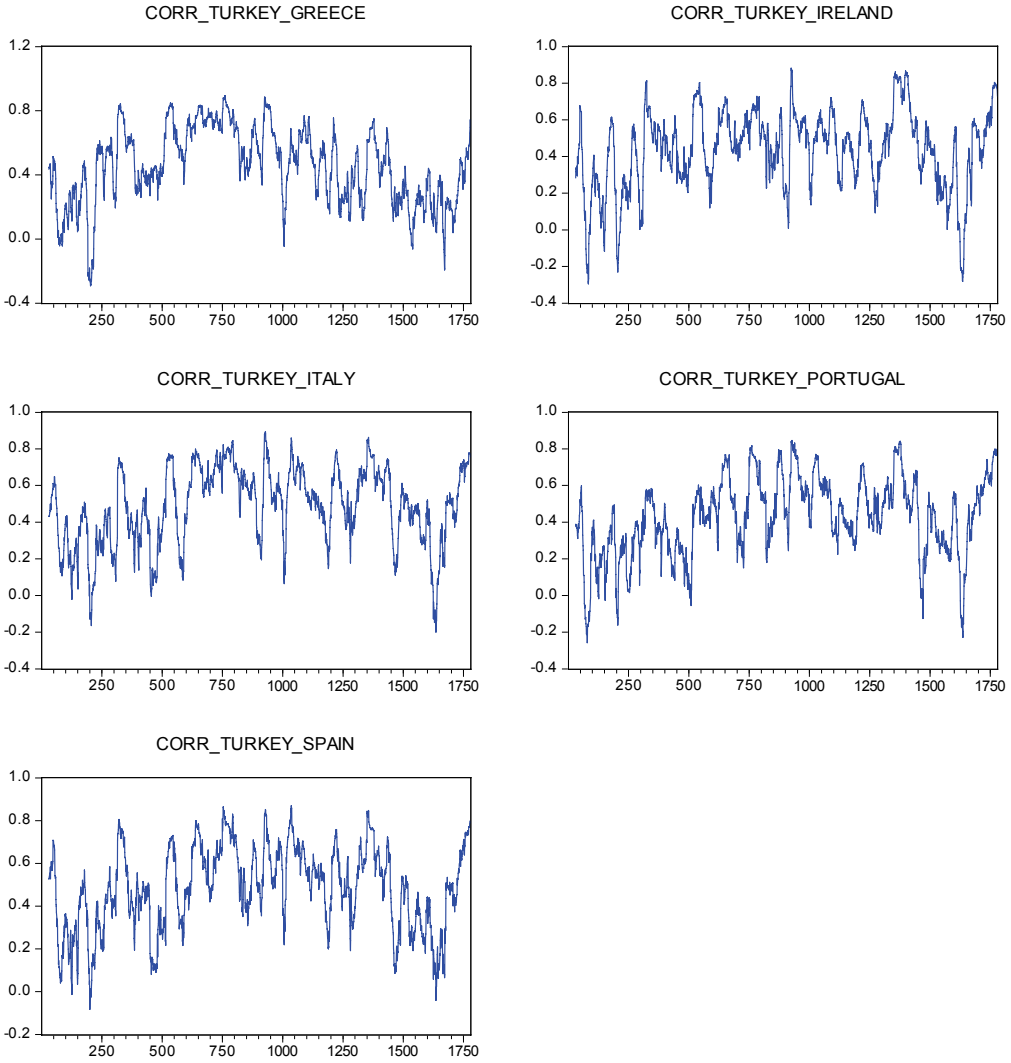

Figure 2. Rolling Correlations for Returns (30 days windows)

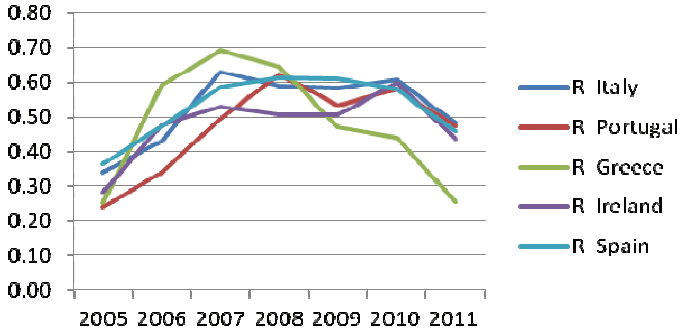

Figure 3. Time Varying Pair wise Correlations between Turkey and Selected Countries

The correlation coefficients for daily return series are displayed on Table 8. A low return correlation coefficient among markets is considered as a sign of potential diversification benefits, and an opportunity for portfolio risk reduction. When we look at the correlation results, we find that the highest dependencies exist between markets which are strongly connected both geographically and economically. Additionally, Turkey has lower coefficients compared to other countries.

Figure 3 shows that time varying pair-wise correlations between Turkey and selected countries have increased during global crisis period and decreased gradually after 2009. This decline is the highest for Greece.

The GARCH Model

GARCH model is expressed as the extended version of ARCH model and developed by Bollerslev (1986). In addition to the delayed values of the conditional variance of error term, it is the volatility model dependent on its own delayed values. This study, initially, investigated the ARCH effect for the index daily returns series for each of the countries. After testing the presence of ARCH effect, it modeled the index return volatilities by using GARCH (1, 1) model.

Table 9 contains parameter estimates for GARCH (1, 1) model. At first glance, the results are consistent with those of other empirical works on time-varying volatility. First, the GARCH parameterization is statistically significant. Second, most of the estimated β coefficients in the conditional variance equation are considerably larger than the α coefficients, which implies that large market surprises induce relatively small revisions in the future volatility. Finally, the persistence of the conditional variance process, measure by α + β, is high and often close to 1, which suggests that current information is also relevant in predicting future volatility at a long horizon. For Greece, Ireland and Portugal, estimated coefficients α + β are slightly greater than 1. This implies persistence in the forecast of the conditional variance over all future horizons and also suggests an infinite variance for the unconditional distribution.

Table 9. GARCH Models

Greece			**Ireland**		
Return Equation	Coefficient	p-value	Return Equation	Coefficient	p-value
μ	0.000735	0.0338**	μ	0.000577	0.0345**
AR(1)	0.048089	0.0387**	AR(1)	0.043089	0.0988*
Variance Equation			Variance Equation		
ω	1.60E-06	0.0062***	ω	1.35E-06	0.0049***

α	0.095591	0.0000***	α	0.101095	0.0000***
β	0.907330	0.0000***	β	0.900002	0.0000***
Italy			**Portugal**		
Return Equation	Coefficient	p-value	Return Equation	Coefficient	p-value
μ	0.000322	0.1913	μ	0.000803	0.0001***
			AR(1)	0.058699	0.0127**
AR(1)	-0.032950	0.2103	AR(13)	0.027969	0.2264
Variance Equation			Variance Equation		
ω	1.99E-06	0.0000***	ω	1.55E-06	0.0000***
α	0.115366	0.0000***	α	0.163185	0.0000***
β	0.881495	0.0000***	β	0.840885	0.0000***
Spain			**Turkey**		
Return Equation	Coefficient	p-value	Return Equation	Coefficient	p-value
μ	0.000690	0.0070***	μ	0.001177	0.0094***
AR(1)	-0.005984	0.8147	AR(1)	0.026528	0.2925
Variance Equation			Variance Equation		
ω	2.89E-06	0.0000***	ω	1.53E-05	0.0000***
α	0.128637	0.0000***	α	0.094598	0.0000***
β	0.865859	0.0000***	β	0.866388	0.0000***

Note: ***, ** and * indicate the level of significance at the 1 percent, 5 percent and 10 percent level, respectively.

The EGARCH Model

An important restriction of GARCH model is about the symmetric response of volatility to positive and negative shocks. However, it can be observed that "bad" news or a negative shock to financial time series has larger effects on volatility than "good" news or a positive shock does. The tendency of such a negative correlation between volatility and returns is often called the leverage effect. A model that allows for this asymmetric effect of shocks is the exponential-GARCH (EGARCH) model. Nelson (1991) proposed a specification that does not require the non-negativity of model parameters, which is another advantage over the standard GARCH model (Enders 2004:141-143, Brooks 2008:404-406).

Table 10. EGARCH Models

Greece			**Ireland**		
Return Equation	Coefficient	p-value	Return Equation	Coefficient	p-value
μ	0.000260	0.4531	μ	0.000276	0.3191
AR(1)	0.062711	0.0089***	AR(1)	0.043027	0.0892*
Variance Equation			Variance Equation		
ω	-0.214917	0.0000***	ω	-0.210199	0.0000***
α	0.151008	0.0000***	α	0.153211	0.0000***
β	0.987952	0.0000***	β	0.989298	0.0000***
γ	-0.075384	0.0000***	γ	-0.074765	0.0000***
Italy			**Portugal**		
Return Equation	Coefficient	p-value	Return Equation	Coefficient	p-value
μ	-0.000164	0.4985	μ	0.000468	0.0115**
AR(1)	-0.015558	0.5466	AR(1)	0.070106	0.0038***
Variance Equation			Variance Equation		
ω	-0.257667	0.0000***	ω	-0.458081	0.0000***
α	0.136730	0.0000***	α	0.234688	0.0000***
β	0.982613	0.0000***	β	0.970081	0.0000***

γ	-0.111077	0.0000***	γ	-0.113405	0.0000***
Spain			**Turkey**		
Return Equation	Coefficient	p-value	Return Equation	Coefficient	p-value
μ	6.88E-05	0.7914	μ	0.001013	0.0210**
AR(1)	0.016376	0.5142	AR(1)	0.040958	0.0919*
Variance Equation			Variance Equation		
ω	-0.279495	0.0000***	ω	-0.512377	0.0000***
α	0.123798	0.0000***	α	0.155240	0.0000***
β	0.978927	0.0000***	β	0.950897	0.0000***
γ	-0.135747	0.0000***	γ	-0.083086	0.0000***

Note: ***, ** and * indicate the level of significance at the 1 percent, 5 percent and 10 percent level, respectively.

We employ EGARCH model to estimate the return volatilities. The results of the EGARCH model are reported in Table 10. The leverage factor γ is negative for all index returns which means the effect of a negative shock has greater effects on the log of the conditional variance than does a positive shock of the same magnitude.

Gravity model

Gravity model approach can be used to explain the effects of cross-sectional properties on the stock market correlation among countries. For this purpose, we conducted a gravity model which consists of explanatory variables of the distance between countries, the economic size of both markets, and a dummy variable for common border while the dependent variable is the mutual correlation between Turkish stock market and the stock markets of other countries.

$$Corr_{ijt} = \beta_0 + \beta_1 (Distance)_{ij} + \beta_2 [(Size)_{it} * (Size)_{jt}] + \beta_3 (Border)_{ij} + \varepsilon_{ij} \quad (2)$$

where,

$Corr_{ijt}$ are mutual stock market return correlations between countries in year t. It is transformed into z'=[ln(1+r) - ln(1-r)], proposed by Fisher (1915) to overcome the non-normal distribution of Pearson's correlation.

$(Distance)_{ij}$ is the geographical distance between the cities where the stock market centers are located.

$[(Size)_{it} * (Size)_{jt}]$ is generated by multiplying the market capitalization of two countries and represents the market size between two countries.

$(Border)_{ij}$ is the dummy variable represents the neighborhood effect arising from sharing a common border. It takes the value of one if two countries have a common border.

ε_{ij} is a stochastic error term.

Considering the individual effects of included explanatory variables on stock market correlations, it is expected that market size and common border have positive effects which strengthen the correlation while distance has negative effects.

We employed the panel data which consist of five cross-section units and seven periods to estimate the gravity model. First, we estimated the unweighted model using Ordinary Least Squares (OLS) estimator and checked the assumptions for the validity of the model. Since we observed heteroscedastic and correlated errors, we applied a feasible Generalized Least Squares (GLS) specification correcting the heteroscedasticity and contemporaneous correlation by using cross-section SUR weights.

The estimated coefficients of the model were found statistically significant with expected signs except for the common border variable. The results are presented on Table 11.

Table 11. Model 1 results

	Weighted Model (feasible GLS)	
	Coefficient	***Prob.***
Constant	1.135349	0.0000***
Distance	-4.28E-05	0.0362**
Market Size	-5.97E-07	0.0006***
Border	-0.046789	0.7301
R-square	0.544506	
Adj. R-square	0.500426	
F-statistic	12.35266	0.000017***
Durbin-Watson statistic	2.111528	

Note: The parentheses are the p-values. *** and ** indicate the level of significance at the 1 percent and 5 percent level, respectively.

In order to detect the effect of the crisis then we add a dummy variable which takes the value of zero for the years 2005 and 2006 and, the value of one for the rest, into the model (Model 1). Our second model which includes the crisis variable is as follows:

$$Corr_{ijt} = \beta_0 + \beta_1(Distance)_{ij} + \beta_2[(Size)_{it} * (Size)_{jt}] + \beta_3(Border)_{ij} + \beta_3(Crisis)_{ij} + \varepsilon_{ij} \quad (3)$$

where,

$(Crisis)_{ij}$, is the dummy variable that represents the effect of crisis. It takes the value of one for period of 2007- 2011.

The results of Model 2 is presented at Table 12.

Table 12. Model 2 results

	Weighted Model (feasible GLS)	
	Coefficient	***Prob.***
Constant	0.871665	0.0000***
Distance	-5.08E-05	0.0162**
Market Size	4.74E-07	0.0028***
Border	-0.093738	0.4847
Crisis	0.449830	0.0000***
R-square	0.646679	
Adj. R-square	0.599569	
F-statistic	13.72713	0.000002***
Durbin-Watson statistic	2.179960	

Note: The parentheses are the p-values. *** and ** indicate the level of significance at the 1 percent and 5 percent level, respectively.

The coefficient of the crisis dummy variable is significant and positive. This result implies, during the crisis period the correlation with Turkey and the European countries tend to increase.

Conclusion

In this paper, we, initially, apply a correlation analysis. When we look at the correlation results, we observe that the highest dependencies exist between markets strongly connected both geographically and economically. Turkey has lower coefficients compared to other countries.

The individual stochastic structure of daily stock market indexes over the period of March 2005 - December 2011 is investigated. The individual stochastic investigation is conducted by means of the ADF test. Results from the tests indicate that all series are non-stationary in levels. Also, presence of a unit root implies that shocks to stock prices are permanent. Consequently, stock prices may not be predictable.

Tests are also conducted to examine the common stochastic trends in a system of these stock prices. The Johansen procedure of co-integration test is applied to test multivariate relationships among the stock prices, as a result of which no co-integration is detected in these markets. There is only one co-integrating vector which appears to explain the dependencies in prices between Greece and Turkey. Therefore, the stock markets of these countries do not exhibit long-run co-movements which can allow for the benefits of international diversification. Moreover, we find strong evidence of time-varying volatility. Furthermore, volatility shows high persistence.

In addition to analyses mentioned above, we constructed a gravity model to estimate the effects of variables such as the distance between stock markets and the size of markets on the correlation coefficient between returns. Since we focused on the relationship between the Turkish stock market and the stock markets of Portugal, Italy, Ireland, Greece and Spain, we restricted our research and all other mutual relationships among countries were excluded. We applied a feasible Generalized Least Squares specification to estimate the gravity model. As a conclusion, our results suggest that the distance between countries and size of the markets have significant effects with expected signs on stock market correlations while neighborhood does not. In order to test the effect of crisis on correlation a dummy variable which takes the value of one during 2007- 2011 period is added into the gravity model. The model results suggest that the crisis has a significant and positive effect on correlation.

The findings of this study have important implications for practitioners and academics. For practitioners, it affects designing trading strategies, drawing investment decisions, risk management. For academics, it has implications for asset pricing and performance evaluation.

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Crisis and International Economic Regulation: A World Agenda Development Through Minilateralism?

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Abstract: This chapter aims at evaluating the progress in creating global regulatory framework since the 2008 Washington summit of the G20, through reviewing shifts in political responses, changing agendas and the group's own development. Even though all efforts of the G20 to coordinate policies and agree on regulatory common denominators have made an impact, the present level of discrepancy among national/regional agendas is still too significant for the longer term, sustainable effects on the world economy to be foreseen. Nevertheless, the group's unique position and the evolution of its agenda might point to a new form of informal minilateralism emerging in international relations.

JEL Classification: F02, F42, F55

Key words: crisis, global economy, international cooperation, international regulation, G20

Introduction

The current crisis spill-over has clearly demonstrated a rising level of interdependence in the world economy. In spite of that, single state--level approach was, for a substantial time, firmly in place and mostly national packages were implemented to minimize the adverse crisis effects to the real (national/regional) economies. Since September 2008, actions have been implemented to support individual institutions (the so-called 'too--big--to--fail' institutions), capital injections have been made to enhance banks' capital, guarantees were extended, banks nationalized and reference rates cut. International financial institutions have also stepped in to provide additional lending at more favourable conditions, especially for developing countries (Panetta, F. 2009). In 2011, additional measures were introduced in a great number of economies, aiming at reducing of the government and private debt, raising new finance, cutting budgets, etc. The crisis development in 2009 and 2010 further highlighted numerous limitations in implementing national actions but at the same time one could witness plenty of intergovernmental organizations' declarations and plans to handle international finance in order to create conditions for strong, sustainable and balanced growth, with the the G20 leading this way.

At first glance, one might conclude that international community has taken a unified stand with respect to the crisis: the financial world needs to be stabilized and new mechanisms should/must be created to prevent future economic turbulence on the present scale. Nevertheless, declarations produced at intergovernmental fora did not in any way pointed out to regulatory/legal framework through which such global actions would or could be implemented.

This relatively unified stand and general course of action had been in place until the Greek crisis erupted in December 2011. The actors then suddenly shifted their focus away from the global cooperation in financial regulation. Since then, the global agenda seems to

break in several directions: the EU dealing with the Euro problems, the US coping with own President-Congress relations, budget cutting and elections, emerging new powers pressing for a new redistribution of voting powers in line with their growing economic powers, developing countries trying to manage their own economic hardship, etc.

The crisis has clearly underscored the need to devise a framework for global economic/financial policy or at least a mechanism for better coordination of national policies. Among numerous international fora and organizations, the work done by and within the Group of Twenty (the G20) since the onset of the crisis might shed more light onto the possibilities of having such a framework built in the foreseeable future.

International Regulatory Issues

The present crisis not only have seriously affected most of national economies but has also proved to be an opportunity for many actors to put forward their own agendas regarding a new economic order, as well as to question basic principles of the dominant neo--liberalism and even capitalism itself. Not so long ago, France was proposing a new model of capitalism, Germany was pressing for a world economic government under the UN auspices, China wanted a complete remake of international financial institutions and a new world currency to be introduced, etc. Apart from particular agendas, the issues of interdependence and global linkages have become the focus of vigorous political debates about the crisis, its causes and consequences. Regardless of different views and proposals resulting from this multi-layer process, the intensity of such a political interplay and widening of its scope might point out that a new global/transnational social space is coming into being. Such a supraterritorial social space seems not to be bound by territory, distance or legal systems, and structural change occurs independently of agency, frequently used by political leaders to justify their decisions as inevitable (Scholte, J. A. 2002).

Today, numerous and interlinked processes create global economic/social landscape: internationalization, transnationalisation, translocalisation, and so on. Furthermore, actors may choose between different, multiple equilibria and a number of potential outcomes because structural changes today allow actors' strategic and tactical choices to interact with such changes. Various domains cross-cut each other and issues are becoming increasingly overlapped. In addition, a multitude of actors emerge on the supranational scene which had previously been strictly reserved for governmental actors, what Cerny calls multinodal politics (Cerny, P. 2009) and Underhill and Zhang describe as a relative disarmament of public authorities (Underhill, G., and X. Zhang 2006). Cohen (Cohen, E. S. 2010) goes further and describes the structural changes as favorable conditions for the emergence of public-private hybrid regulatory regimes. Even though non-governmental actors have gained in importance, the extent and consequences of the current crisis have proved to be an excellent opportunity for the authorities to invest in regaining the strength of their 'arms'.

For some, the extent and depth of the current crisis indicate that an irreversible 'terminal' phase of the dominant neoliberal economic order has begun, and yet others think that today the level of world 'fluidness' requires its total remake (Ruggie, J. G. 1993, 2). What certainly is beyond doubt is the fact that global capital today presents one of the major areas of concern for the world economy as a whole and there is a pressing demand for new/updated regulatory arrangements to be made (Sorensen, G. 2006). However, as regulation has always been thought as belonging to the (national) state domain, the notion of regulation and its transformation in the present world deserve a brief explanation. In contrast

to a 'classical' understanding of regulation, being specific forms of governance with authoritative rules, monitoring and compliance enforcement, some authors (Jacint, J., and D. Levi-Faur, 2004) emphasize that today there is a growing use of the notion in its broadest sense - as all mechanisms of social control. From this aspect, contemporary regulation of global problems is characterized by partially voluntary agreements, lack of strong monitoring and enforcement rules and obvious disregard for the concept of national sovereignty. In today's world, actors stretch across fluid boundaries, adapt themselves and liaise with other actors in order to achieve their sets of goals, so 'patchwork' political structures emerge as the basis for new regulatory arrangements (Kobrin, S. J. 2002). The higher the interdependence, the larger the need to coordinate actions across states and regions and hence the larger the need for international regulation.

Despite all differences detectable in major actors' particular agendas, most of the world leaders / groups / organizations have been continuously underscoring that in the present world, cooperation and joint efforts are unavoidable if the global economy is to resume its 'normal' functioning.

And here comes the critical part – what should be normal functioning of the world economy or a condition for that? Is that a completely new world economic system, based on non-neoliberal principles (though proponents of these ideas do not offer alternative principles)? Should such a change necessarily involve a change of global leadership (though the proponents have not openly submitted their candidacy)? Should a new social order ('new' capitalism) be based on social welfare, strong state presence and ownership? Is that maybe going back to traditional (Protestant) ethics of honesty, hard work and responsible way of living? Or, is normal functioning of the world economy dependent on the development of public-private partnership and critical re-modeling of the governance concept? Can new regulatory arrangements for global financial flows be sufficient for the world economic growth to resume? None of these questions can be answered at the moment but the process of global political interplay might be useful in obtaining (at least partial) insights into a future framework of international economic regulation.

The G20 Agenda

Since 2008, international community has stepped up its efforts to design (and implement) a new global financial/economic order which should prevent future crisis of the scale we see today. The G20 has taken over the leadership in this respect, placing itself at the centre of world-wide debates and actions. According to Ocampo and Griffith-Jones (Ocampo, J. A., and S. Griffith-Jones 2010), the idea underneath the efforts has been that new arrangements should regulate all financial and capital markets world-wide, offer emergency financing, manage excessive indebtedness, guide national economic policies towards global stability, and guarantee a fair and effective international monetary system. The processes of global political deliberations were directed to several culminating points: the G20 summit meetings in Washington (2008), London and Pittsburgh (2009), Toronto and Seoul (2010) and Cannes (2011). What had been planned to be a show-room for a united and orchestrated action, actually resulted in a serious compromise between the different agendas of the Anglo-Saxon axe and the continental-European 'league', while only a few of the developing countries' proposals were adopted. Once again, their overlapping but different agendas have pointed out that contemporary politics is one of detachment (Kratochwil, F. 2007, 5), of 'cool loyalties' and 'thin' patterns of solidarity.

A number of action plans, as well as numerous proposals and measures to counter the current crisis were adopted at the summits. The analysis that follows aims at presenting the evolution of the G20's agenda as the crisis effects widened in scope and depth. These changes have involved not only a change of the agenda issues (e.g. from private actors' risk taking to sovereign financing) or their ranking (e.g. top ranking of employment in 2011 versus the highest rank of financial regulation in 2008), but also changes related to the agenda comprehensiveness (from financial regulation in 2008 to monetary and fiscal coordination in 2011), its geographical focus (from the US in 2008 to Europe and the East in 2011) and modes of the group's functioning (from the top leaders to specific ministerial meetings).

2008/2009: Cooperation and Coordination in Financial Regulation

The 2008 Washington summit was the first in a series of such meetings and it was held at time when the current crisis was still developing its full force. During the previous months, numerous countries had started implementing urgent measures to stabilize their financial markets and institutions but it was soon realized that the challenges were too comprehensive for any kind of independent national actions. The final document of the summit[1] presented an Action Plan focused on several objectives, such as improving transparency and accountability, developing sound regulation, promoting financial markets' integrity, strengthening international cooperation and reforming international financial organizations. At the time, it was a general opinion that stronger support to market principles, open trade and investment regimes, and sound financial regulation would yield positive results in the global economy. Nevertheless, even at the debut summit, the leaders acknowledged that changes in the regulation to prevent excessive risk-taking, which had been the initial motive for the gathering, could not suffice and that '… major underlying factors to the current situation were, among others, inconsistent and insufficiently coordinated macroeconomic policies, inadequate structural reforms.'[2]

Following numerous formal and informal meetings within and outside the group, the G20 London summit in April 2009 resulted in three declarations on the recovery plan, the financial system and resources to implement the plan[3]. Global Plan for Recovery and Reform underscored that fairness/equality in enjoying indivisible growth and its sustainability were the leading values. In order to achieve them, two basic components were agreed: effectively regulated market economy and strong, supranational institutions. Promotion of global trade and rejection of protectionism fell well behind the goals to restore confidence, growth, employment and lending, but ahead of an inclusive, green and sustainable recovery. A commitment was made to implement a $1.1 trillion programme in support credit markets, growth and employment in the world economy.

It is of a particular importance to emphasize the first 'traces' of new regulatory arrangements for global finance. Four different levels of norms were planned to guide further actions: global standards (most binding ones, applicable to all countries – related to accounting standards and principles); internationally agreed norms (subject to separate agreements – financial system regulation); good practice (desirable, recommended – activities of credit rating agencies) and a consistent approach (most flexible – basic principles of national financial regulation, for example, the coverage, boundaries). The core part of the documents focuses strengthening of financial supervision and regulation. A new international

[1] Full text of the document available at http://www.g20.org/images/stories/docs/eng/washington.pdf
[2] http://www.nytimes.com/2008/11/16/washington/summit-text.html?pagewanted=all
[3] Official text of the documents available at http://www.number10.gov.uk/Page18914

body was established – Financial Stability Board, for achieving a greater consistency, systematic cooperation, wider membership and closer ties with the IMF to provide early warning of macroeconomic and financial risks.

The London G20 communiqué came out as a result of an ongoing political process, lasting for many months and encompassing a variety of issues, standing points, interlinked and conflicting values, as well as diverse proposals how to structure new (regulatory) arrangements.

The G20 Summit in Pittsburgh proved that leaders have decided to keep the spotlight on their actions, at least in the short term. Though not yielding many results in terms of structural transformations (output side) as the London Summit did, this event brought forward two major changes. First, the G20 took over from the G8 the role of being the centre forum for the creation of new international economic (and not only financial) architecture. Secondly, leading intergovernmental financial institutions were to be reformed to give more voting power to many emerging economies. In this way, there would be a higher probability of successful future implementation of globally agreed norms. Reaching a consensus on the incorporation of macro-prudential concerns about system wide risks into international regulation has been one of the most significant accomplishments.

2010: Steering Macroeconomics and Agenda Broadening

The Toronto summit in 2010 showed the first signs of a declining unity in dealing with the world economic problems. Sovereign debt crisis which had emerged in the European Union especially affected the EU-US stance regarding the need for further spending to spur growth. Not surprisingly, China and India supported the US in favour of larger spending while Europe presented its ideas on significant cuts of the deficits. Once again, the Anglo-Saxon ideas were confronted with those of the continental Europe, primarily of Germany and France.

For the first time, the summit agenda simultaneously focused on monetary and fiscal policy. Fiscal sustainability issues have been placed high on the agenda thus touching in the very heart of national/state financial sovereignty. Commitments to reduce medium-term fiscal deficits and debt reduction were highlighted as promising achievements of the summit, but have later proved to be unachievable and/or politically unsustainable. Reluctance of the main developed countries in the G20 to coordinate fiscal policies, regardless of significant economic potential of such a process, might define the final frontier in developing the group's joint policies. Still, common understanding was reached that financial supervision should improve its effectiveness, specific resolution mechanisms for financial institutions should be developed and particular attention should be paid to systemically important financial institutions (SIFIs). Much contested issue of a new, global bank tax (financial transaction tax) was 'removed' from the agenda but even before the summit, the UK, France and Germany had decided to introduce a sort of a bank tax. In order to support the financing needs of the members, resources of multilateral development banks should be enlarged and the World Bank's voting system should be reformed. The Toronto summit agenda also included deliberations and commitments on issues outside the financial domain, such as climate change, development and the elimination of subsidies for fossil fuels.

The fifth G20 summit in Seoul was the first summit to be held in Asia and hosted by a fast growing industrialized country. Global economic/financial climate at the time was very challenging: the recovery was uneven, Europe was facing the possibility of another financial crisis, currency management in major centers was starting to deviate from previously agreed principles, etc. It was not any more possible to 'mask' large debts held by several members of the Euro zone (Greece, Portugal and Ireland) so some other members have started preparing for severe austerity measures in order to calm the markets as much as possible.

The G20 agenda in Seoul included a number of developmental and growth revival issues, particularly emphasizing employment and social protection[4]. Rising inequalities and unbalanced growth pushed the need to accelerate growth in low income countries higher on the agenda. Surprisingly, the leaders committed themselves to developing a common view to global economic problems which is in stark contrast to the conclusions from the previous summits when they sought to develop particular norms/practical standards to handle the crisis. This new, common view should have macroeconomic policy as its centre, especially fiscal policy and debt reduction, as well as market-based currency policy. Although general conclusions were made that 'rescue' capital should be provided, it was not meant for the troubled Euro zone and the US and Canada clearly dismissed the calls for more resources to be allocated for this purpose. Such a development has later induced strong efforts by Germany and France towards building a European monetary fund and moving the European focus away from the G20 agenda.

The group's own institutional advancement was on the Seoul summit agenda and resulted in the creation of several institutions around the G20, such as regional consultative groups for its Financial Stability Board, in order to more comprehensively include the problems and issues of developing countries. In addition, one can detect certain signs of the inevitable strengthening of multinodal politics (Cerny, P. 2009) as the G20 promised that in the future more influence on its agenda would be allowed from other types of actors, such as corporate sector, civil society and academic world in general.

From a number of perspectives, the Seoul summit was assessed as a successful one due to its 'globally predominant, internally equalizing capabilities among members of the group' (Kirton, J. 2010, 7). This is particularly true if advancements in national financial regulation and safety nets are reviewed but much less true in the area of international financial organizations' reforms. So once again, the arguments of Higgot (Higgot, R. 2004) and Muller and Lederer (Muller, P. S., and M. Lederer 2003) that discursive organizations (and not decisional organizations) such as the G20 might be building a new road to multilateralism are supported.

2011: From Saving Banks to Saving States

The G20 summit in Cannes was held in murky economic and political weather and was definitely not favorable for further developing the group's 'premier economic forum' role: the recession of the EU economy was deepening, investors were loosing confidence and prospects of the Euro zone were shadowed by the Greek debt. At the same time, BRIC countries were unsuccessfully invited to finance Europe's recovery while the US was slowly detaching itself from bailing out the EU.

[4] Full text of the final document available at http://www.g20.org/images/stories/docs/eng/seoul.pdf

Despite such stormy weather, the leaders have nevertheless managed to form the agenda and discuss various issues. The final declaration of the Cannes Summit[5] reiterates members' growing concerns about the slow recovery, high unemployment and rising sovereign risks in the Euro area. Its focus on a 'renewed' collective action for the 'common future' might point to certain changes of the 2008 group's objectives: regulating finance and harmonizing rules might be critical for future crisis prevention but are far from being sufficient for the global economic revival in today's interdependent world. A G20 Task-Force on Employment has been set up and the group has invited other multilateral organizations (e.g. IMF, ILO, World Bank) to assess the group's impact on job creation. After the employment, the highest rank on the agenda was given to international monetary stability, particularly with regard to currency and (procyclical) capital flow management. Furthermore, excessive currency reserves in some members should be reduced because this issue has been identified as one of the causes of imbalanced global liquidity and capital flows volatility. Since the Washington summit in 2008, there have been no changes as to the purpose of new financial regulatory arrangements: to build an internationally-consistent and non-discriminatory regulation of all markets and participants. However, a new regulatory category of market participants has been introduced: global systemically important financial institutions (G-SIFIs) will have an additional safety net as of 2016. In this way, 'too-big-to-fail' principle has not been abandoned but furthermore its scope has been broadened across national boundaries and additional space for arbitrary decisions has been created.

The agenda also planned to have further deliberations on a controversial financial transaction tax in order to raise funds for the G20 objectives in the areas of development and environment protection. The latter became the major stumbling block as it was proposed by France and supported by Germany but strongly opposed by other developed countries, such as the US and the UK. Regarding the trade, the agenda turned to short term objectives of opening the developed countries' markets for the imports from the developing ones, as the summit recognized that actually the Doha Round 'would never be completed'. Further institutional development of the group itself was evident: first meetings of new bodies (Agricultural Ministerial and Development Ministerial) were held.

The Cannes final document features a striking difference in comparison to the G20's previous ones: a repetitive reference to a great number of international organizations, such as IMF, World Bank, ILO, OECD, IOSCO, BIS, etc. and their role in designing/implementing international regulation. One might understand this as a new 'reality-check' for the G20: although it has positioned itself as a global economic-policy centre and controls 90% of the world GDP, the issues might be outside the reach of such an 'informal, minilateral group' (Grevi, G. 2010, 3).

The World Agenda: Commitments and Compliance

Since the 2008 Washington summit, the G20 members have made numerous commitments in order to manage the crisis and restore 'normal' functioning of the world economy. After the joint pictures had been taken, the leaders dispersed to guide their own governments in implementation (with more or less enthusiasm) of the agreed measures. The progress in the commitments implementation might serve as a sound indicator how far the world economy is from having new regulatory arrangements in place. For that purpose, the G20 Research Group at the University of Toronto and the International Organizations

[5] Available at http://www.g20.org/images/stories/docs/eng/cannes.pdf

Research Institute of National Research University Higher School of Economics in Moscow have analyzed progress of each G20 member in implementing main commitments made at each G20 summit. Monitoring of each country's efforts is done on the basis of publicly available information and documents (Monpetit, K. et al, 2011).

The official G20 Seoul Summit Leaders' Declaration and the Seoul Summit Document contain more than 150 commitments. On that basis, 13 issue areas can be identified including macroeconomics, finance, development, trade, reform of international financial institutions, employment and growth, international cooperation, institutional development, etc. Most commitments belong to the area of macroeconomics (market-determined exchange rate systems and credible medium-term fiscal consolidation), finance (bank capital, risks, sound regulation, important financial institutions) and development (assistance to poorest countries and mobilization of domestic resources). Much less promises have been made regarding summit institutionalization, international cooperation and environment.

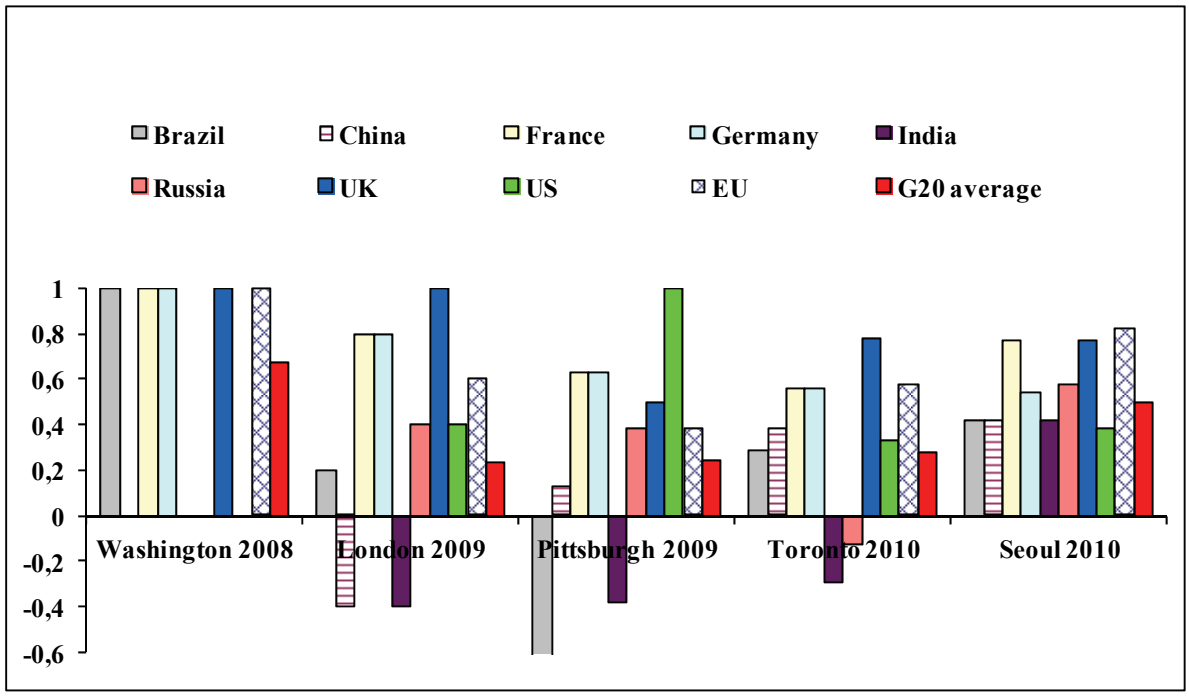
If the period between the Seoul and the Cannes summits is analyzed, the level of compliance varies considerably among the issues. It has been assessed that significant progress has been achieved (by advanced economies of the G20) regarding fiscal consolidation and improving infrastructure, while there has been much lees compliance related to the issues of international cooperation (partnership with international organizations) and trade (completion of the Doha round).

The report (Monpetit, K. et al, 2011) invests efforts to quantify deliverables against the G20 commitments (compliance-relevant actions) for issue-specific areas and for each member of the group. The methodology is based on a scale from -1 to +1 (+1 indicating full compliance with commitment, -1 shows a compliance failure or a counterproductive action taken, and 0 indicates partial compliance or work in progress). In this way, compliance progress of the members and in the issue areas can be compared. Also, different analyses can be made combining issue-specific and member-specific scores. For example, regarding the Seoul commitment to resort to market-driven exchange rate mechanism, some members have started to deliver (partial compliance), some have fully complied with the commitment while Japan, Mexico and Brazil have undertaken actions completely opposite to the commitment. Least data is available for another macroeconomic commitment – fiscal consolidation, but overall the compliance of those members who supplied information is very high (the G20 average of 0.89), except the US with the score 0. The G20 members almost completely failed at the Seoul commitment in the area of international cooperation. Australia has delivered against the majority of promises and has taken actions related to most of the Seoul commitments (a score of +0.85), followed by the EU. On the other hand, Turkey, Saudi Arabia and Argentina received the worst scores. The US has not made any counterproductive action regarding the Seoul commitments but has fully complied with only a few of the commitments (mainly related to finance). Trade is an area where actually retrogress has been recorded (score -0.05) due to counterproductive actions taken by Argentina, Brazil, Russia, China and South Africa.

If a general view of the five summits' commitments and compliance is taken (the G20 average), one can conclude that a very significant decline is evident after the 2008 Washington summit. That summit was later assessed as being the most successful one after which no counterproductive action was taken. It has to be mentioned though that the issues

deliberated on the Washington summit were almost all focusing on financial regulation and immediate measures to be implemented against the crisis.

Figure 1: G20 Compliance by Selected Members, 2008-2010 Summits



Note: score 1= full compliance, -1= failure, 0=partial compliance
Source: Monpetit, K. et al, 2010 Seoul G20 Summit Final Compliance Report, Table 6.

Other authors (Ocampo, J. A., and S. Griffith-Jones 2010) evaluate the effects of the G20 summits as very significant when specific issue-areas are analyzed. The most profound advances have been made in the areas of national financial regulation (bank supervision and capital base) and emergency financing (complement to central bank financing). Also, certain improvements have been made regarding coordination of national economic policies in terms of avoiding (as much as possible) policies with adverse and harmful effects on other countries. Still, this might be less attributable to a common view on the global economy being developed among the G20 members and more to serious economic consequences of deteriorating trade and capital flows. Substantial reforms of the existing monetary system and proposals for creating an international debt resolution mechanism have not received proper attention. The issue of coordinating the core of any macroeconomic policy on the global scale, i.e. its fiscal mechanism, saw significant resistance. The issue however was brought to the top of the EU agenda with the attempt to put in place a new fiscal agreement to be entered into by some EU member states later in 2012 (the agreement was in the meantime put on hold). But, most importantly, the issues of development and more appropriate inclusion of small and medium-sized developing countries are the areas where the least advancement occured. Recent G20 meetings have, nevertheless, widened the scope of deliberations by (only) emphasizing economic issues other than the financial ones, e.g. development, trade, environmental costs, employment, agriculture, etc.

Not surprisingly, those proposals were quite comprehensive and focused issues beyond 'classical' monetary /fiscal policy approach to macroeconomic stability. The comprehensiveness of the G20 proposals also derives from linking various issues, such as poverty reduction, social inclusion, emerging and low income countries, aid flows, climate

change and cooperation with private sector. The G20's current status as a discursive organization is in this way contrasted with the more strongly decisional types of other intergovernmental actors, such as the IMF (Higott, R. 2004) and might shed more light on the future of multilateralism. Following the arguments of Muller and Lederer (Muller, P. S. and M. Lederer 2003), the power and activities of the G20 might point to a new developing form of managing global affairs, with specific actors, instruments and practices. Hence, this organization might be the centre point from which new, soft-law instruments of international financial and economic regulation would appear.

Despite of its contentious policy effects, the G20 has made certain impact on improving global governance with regard to its own institutional development and larger involvement of some developing countries. At the Pittsburgh summit, the G20 unequivocally took a role of the premier forum for global economic cooperation. At the London summit, Special Drawing Rights (SDR) mechanism has been somewhat revived to draw on some developing countries' resources. New bodies (FSB) and new ways of operation (specific ministerial meetings) have been created.

Conclusion

The G20 summits from 2008 to 2011 clearly show significant efforts invested in creating, organizing and supervising international responses to the current crisis. The G20 agenda has been evolving to include more and more issues which seem relevant to the world economy and finance, or at least to the major actors in the group. Since 2008, the agenda has evolved from having only a limited set of particular issues directly related to global financial trends, to the broader one, encompassing a number of other issue areas: macroeconomics, development, finance, trade, energy, intergovernmental cooperation, the group institutionalization and cooperation with other international organizations, etc.

In 2008, all major actors gathered in Washington with their own agendas which they have been pushing forward since then. Not only that they had their own set of goals but those particular agendas have been changing and transforming since the first summit (Filipovic, M. 2011). For instance, the EU was pressing for building new rules for a new capitalism, which should create conditions for an increase of its endangered competitiveness. Four years after the first summit, the EU agenda has changed dramatically and includes contentious issues of the fiscal unity and states' bail-outs. The US was pushing forward for allocating more responsibility to other members of the group, which has finally got its explicit form after the Cannes summit: the US stated it had no intentions in providing financial assistance to the troubled Euro zone. BRIC countries have taken the G20 summit road with plans to press for numerous changes in the international monetary system and the world economy, giving more rights and chances to the developing world. At the end of 2011, although certain progress had been made in that respect, China and Brazil revoked their offers to provide additional resources to the EU. Other factors influencing changes of the global agenda or those of the major actors might be growing regionalism, shift of the US towards the East, economic turbulence in Europe, rising economic and financial strength of the BRIC countries, still unknown consequences of the 'Arab spring', etc.

Despite all the criticism, the G20 has managed to induce numerous and somewhat coordinated national policy responses to the crisis. There are many possible reasons for this. One of the reasons might be the severity and outreach of the crisis in today's world of rising interdependence. Another reason might be the institutional development of the group itself:

from a financial crisis management group (its primary role in 2008), the G20 has transformed into an 'embedded steering committee for the world' (Cooper, A. F. 2010), to propose design for new global economic order. This change has been clearly reflected in the agenda evolution. The current Greek/Euro crisis might nevertheless revert the group's role back to a crisis management group, as evident during and after the Cannes summit. Another reason might be that the G20 has adequately used the opportunities for collaboration, relying more on strengthened pressure and reputation of the actors. A relative success of the group's plans and commitments might also derive from a specific ideational component it was built upon, on the one hand and a new, balanced dynamic between major industrialized countries and emerging powers (Cooper, A. F. 2010). 'If the G20 can continue to improve its performance on delivering on its promises, it can validate its claim for legitimacy as a global governance institution' (Monpetit et al, 2011: 8). But, having in mind different 'scale' of readiness of individual governments to accept global standards, it is very much unclear how such an extension of supranational regulation will be designed and put in practice.

This paper presented an overview of the official G20 declarations at the beginning and during the crisis, as well as a brief review of the actions taken from the group's commitments. Future research related to the international financial and economic governance should focus on three major areas: political processes to allow a convergence of various agendas, implementation of the agreed norms and structures, and the developments in global economic flows. The G20 might have a unique opportunity to create conditions for a new global framework to emerge. It might become a new forum to discuss and handle complex issues of today's world economy – a remedy for the shortcomings of the Bretton-Woods institutions which have been too issue-oriented and specific in their operations (Freytag et al, 2011). Also, it might serve as an example of new forms of 'informal minilateralism' that could complement the larger multilateral system and enhances the effectiveness of its responses to an increasing global interdependence (Grevi, G. 2010, 3). As an order's legitimacy strongly depends on the body of shared beliefs, the future will show whether the group is capable of compromising, or even better harmonizing divergent and multiple agendas in particular issue-areas of today's global economy.

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Marketing of Mass Customization: Emerging Markets for Modern Customer

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Abstract:

Modern business environment is based on entirely new dimensions, where the spatial dimension is lost in importance and goes into the background. Mass customization enables companies from around the world via the Internet to participate in the competition and fight for every customer. The aim of this paper is to explore on-line shopping in Serbia, as well as the possibility that companies use mass customization. On the basis of these results the authors propose further steps for the implementation and development of this modern form of access to the consumer.

JEL: M21, M30, M31,M51

Key words: mass customization, marketing, on-line shopping

INTRODUCTION

Mass customization derived from the model of open innovation, and today is a new trend in production and especially in the way of distribution of products. This approach today is gaining popularity due to the growing number of variants producing and increased opportunities for e-commerce. Competitiveness in the global marketplace requires companies to change the existing approaches in the production, which relied on "view seller, the approaches that will be facing the customer and his wishes.

Mass customization is the result of open innovations model and presents today a new trend of production, which composes productus/services according to customer wishes. This approach in present times is more and more popular due to increase of product variants and increased possibilities for e–commerce. Global market compentence requires from companies to change their approaches to production, which leaned on „view seller“ into approaches which were conversed to the customer and its wishes. In order to retain its high competence at the market, companies make modeling of their products, which comprise individual customers wishes. This kind of business presents one of the most important industrial strategies today.

Traditional customization involves participation of consumers as co-designers in the process of creating products, not present new technologies. Tailor neck by the wishes of clients, or based

on their individual physical measures, the desired material, model, etc.. Development of IT sector has enabled the creation of such software, which support the process of creating products at the customer's wishes through the computer. With the module, customers can choose, these software composed the product the user intended. This form of mass customization called e-customization and implies that at least one of the three-dimension entities in the market, product and averages, is digital, Andreas M. Kaplan and (Micheal Haenlen 2006).

The most common examples of this approach could be seen in industry of shoes, clothes, watches, but also in industries of cars, bicycles, computers. In practice, the famous examples are companies of Dell, Nike, Adidas, Otabo Shoes, Vans Bivolino, U-Jeans, Land's End, Target, Tommy Hilfiger etc. As the best example of successful immplementation in practice, the company "Nike" could emphasised, which offers many options to customers as colour choice, personal marking, as well as various shoes designed for varius situations.

This workpaper aim is on-line purchase in Serbia development researching, emphasising customer interests to offer products designed by mass customization principle.

The research will be presented by a survey with the aim of quy factors identification considering customer motivation for on-line purchase of products designed according to customer wishes. All barriers which have to be avoided in order of new adequate conditions for this model of purchase popularization and way of retain the old and attract new customers, will be also the teme of this work. Besides, the survey contents questions important for customer preferences, i.e. selection between standard and adapted product, as well as correlation determination between customer choice of (standarized or customized) product/service and economical situation, age and education. In additon, the work determines group of products which are the most often adapted to individual specific needs and concludes the possible differences in customized groups of products/services risks considerig sex, economical situation and age.

E markets in Serbia – emerging markets for modern customer

According to Republic Statistic Insitute of Serbia research, 33,2% household possess Internet connections, which is increase of 6,9% in relation to the year of 2007 and 14,7% to 2006. [3]. Using of Internet connections is the most in Belgrade and amounts 45,5%. In Vojvodina it amounts 34%, and in Central Serbia 27,2%. The responders mostly used Internet for: sending and receiving e-mail messages (79,9%), searching for information referring to goods and services (60,4%), service using referring to travel and accomodation (28.3%), Internet banking (10.4%). According to that research 86,3% of Internet users have never purchased/ordered goods or services on that way. Attained data show that there is still a small number of Internet connections in Serbian houshods, but trend of increasing is obvious. Internet users in Korisnici in Serbia moustly search for the goods and services, but on the other hand only 13.7% of them have bought something via Internet. Considering above mentioned, it could be conclded that Serbian market possess great non used market abilities referring to e-commerce.

Considering domestic companies in Serbia, which are connected to Internet, 68.9% of them possess Website, while this share in 2007 was 61,8%, and 52,9% for 2006. godinu. The greatest companies share of 69.8% use Website as chance of a product/service presentation, then 60.4% provide information about product characteristics and prices to prospective customers, while

55.8% offers adjusted Website to the regular visitors. However, only 19.5% of companies offer on-line service of offering i.e. booking of products and services, which arises from the fact that only 10.7% of companies enables on-line payment. In addition, research results show that 17% of companies, which possess Internet connection, were receiving orders by Internet during 2007, which was the increase of 0,2% in relation to 2006, and 8,7% in relation to 2005. The research show low awareness about Internet use importance for company business, which could be confirmed by data that even 62% of companies don't understand the way on which Internet could help in profit increase, new products/services development or working process simplification.

From above data it could be concluded that e-commerce in Serbia is still insufficiently developed, which presents market chance of companies of higher profits realizing. The basic reason of these results is noninformity of companies about business via Internet.

Marketing of mass customization - hypotheses, results, research

Marketing of Mass customization involves complex economic exchange that is directly or indirectly, a partnership between companies, customers and non-profit organizations. In order to come to the realization of such a complex exchange, all three parties must recognize their advantage and add value to the exchange. That is achieve synergies and to make win-win situation for all participants and the exchange company. Objectives of research in this paper trying to determining the distribution of consumer choice (between standardized or individually customized) products / services and make sure there is a correlation between economic situation and age consumers with a choice between standard and customization products /services. Also, this paper identifying opportunities and threats for the development of mass market customization in Serbia.
Used instrument is the questionnaire-survey made for research and the sample includes 50 subjects from territory of capital city.

Hypothesis:

1. The most common group of products /services, which are subject to customization to furniture, clothes, shoes, accessories (sunglasses, jewelry, etc..), motor vehicles and tourist services.

2. Most consumers still preferred products /services tailored to specific individual needs. There is a correlation between the categories of the economic situation, education and age with the category of consumer choice between standard products /services and customization.

3. Odds are mass customization of products /services to specific individual needs of customers, building long-term partner-relationship with the company, overcoming places time and distance. While the threat of mass customization lack of habit for this kind of purchase, difficult and hampered electronic payment distribution.

According with hypothesis and after data processing we get following results.

If you are observing the results obtained on the basis of frequencies can be concluded that from a total of 50 respondents, the majority, or 34 respondents, or 68%, preferred products and services tailored to their specific requirements individual, while 32% or 16 respondents prefer to choose standardized products. The results variable consumer choice between standard and

customized products / services, or that the correlation was not significant at any level of significance (Table 1. and 2.). The obtained results confirmed the hypothesis is that the selected categories match. It is assumed that the information now available to absolutely everyone, as such a basis that age does not coincide with the choice of consumers. Presumption of irrelevance categories of the economic situation and consumer choice may be partly explain the custom products that do not have to be expensive, and there is the possibility of adapting products and services to different income generation opportunities.

The research results obtained frequency show that most respondents opted to be co-designer of the production of furniture, clothes and accessories. Of the total 34 respondents, who would rather prefer a custom product, i.e. 32. 94.1% have opted for customization furniture confirms hypothesis that today consumers often opt for customization product / service. Results may explain the assumption that today puts emphasis on consumers as individuals, which emphasizes individual specific needs, and therefore the demand for their satisfaction, and often confused with the product or service. Further, the results show that variables economic situation and age were not associated with the Wardrobe is the following product groups for which decide 30 respondents, or 88.2%. To create a custom fashion accessories (sunglasses, watches, jewelry, etc..) Choosing the 22 respondents, i.e. 64.7% (Table 1). Assumption is that this group of products provide the highest level of satisfaction of specific individual needs. Or to co-design furniture, clothes and accessories offers the strongest individual stamp through the choice of colors, shapes, materials, etc.. Tourist services in the following categories chosen by 19 respondents, i.e. 55.8%. For food products, designed to individual requirements, choosing the 47% or 16 respondents. 15 respondents, i.e. 44.1%, chose custom catering services. Customization sports equipment and cars, motor bike and chose the 13 respondents, i.e. 38.2%. The smallest group of 12 respondents, or 35.2%, for customization techniques to their needs. Assumption is that through the technique can hardly satisfy the "emotional needs, usually satisfy the" commercial "purposes, i.e. needs a job.

TABLE 1. DISTRIBUTION OF VARIABLES FREQUENTLY CUSTOMIZATION PRODUCTS AND SERVICES

	Frequency	Frequency [%]	Total	Total[%]
clothing	30	88.2	34	100
furniture	32	94.1	34	100
sport equipment	13	38.2	34	100
car, motorcycle, bicycle	13	38.2	34	100
tourist services	19	55.8	34	100
cetering services	15	44.1	34	100
techniques	12	35.2	34	100
food products	16	47.0	34	100
accessories	22	64.7	34	100

Goal 3: Identifying opportunities and threats for the development of mass market customization

The results show (Table 2) that the majority of respondents considered the main threat to market development of products adapted to individual needs of the absence of habit (54%) for this kind of purchase, difficult electronic pay in Serbia (50%), and often deceptive and unfair offers (48%) and hampered distribution of products (46%). A smaller number of respondents considered that the development of mass culture barriers customization, while insignificant number of possible violation of the policy stands (12%) and consumer "knows what he wants" (8%). Given the political, economic and social situation in our country the past twenty years, the

results obtained are expected. Assumption is that consumers in Serbia hardly change old habits, i.e. Government distrust new trends such as mass customization. Also, respondents believe that they met the basic requirements for this type of business, such as electronic payment and efficient distribution of products.

TABLE 2. THREATS BUYING PRODUCTS OF CUSTOM INDIVIDUAL NEEDS

	Frequency	Frequency [%]	Total	Total [%]
lack of habit	27	54	50	100
difficult electronic payment	25	50	50	100
difficult distribution	23	46	50	100
possible distrume private	6	12	50	100
unfair offers and deceptive	24	48	50	100
customer "dont know what he wonts "	4	8	50	100
culture	17	34	50	100

The results show (Table 3) that the majority of respondents (66%) to overcome territorial and see time distance as a major opportunity for market development customization products /services. Then, many believe that the possibility of comparing different model from products (54%) and to adapt to individual needs (52%) also significant advantages of this form of business. While a small number (24%) as an opportunity to build long-term partner-relationship with the company's assumption that respondents want to buy products / services in remote areas which would save time, money and energy, and get the product / service that no longer meets their preferences. Under the assumption that consumers are not sufficiently confidential to the company explains the fact that only 24% of respondents see the development of partner-long-term relationship as one of the opportunities for the development of mass market customization.

TABLE 3. CHANCE S FOR THR PURCHASE OF PRODUCTS CUSTOM INDIVIDUAL NEEDS

	Frequency	Frequency[%]	Total	Total [%]
possibility of cumpering different vesions of products	27	54	50	100
customiyation to individual needs	26	52	50	100
partner-ship building long-term relationship with enterprise	12	24	50	100
overcome territorial and temporal diatance	33	66	50	100

Emerging markets for modern customer – new knowledge

Results of research advantages and disadvantages of implementing the model of mass customization the domestic market primarily show that more consumers opt for custom products. Further results show that variable economic situation and age were not associated with variable consumer choice between standard and customized products / services. It is assumed that the information now available to absolutely everyone, as such a basis that age does not coincide with the choice of consumers. Custom products need not be expensive, and there is the possibility of

adapting products and services to different income generation opportunities. Further, most respondents opted to be co-designers in making furniture, clothes and accessories. Or that through the co-design of the product group provides the strongest individual stamp colors, shapes, materials, and so on. Also, most respondents considered the main threat to market development of products adapted to individual needs lack of habit for this kind of purchase, difficult electronic pay in Serbia, and often deceptive and unfair offers, and hampered distribution of products. Assumption is that consumers in Serbia hardly change old habits, i.e. distrust of the government to new trends such as mass customization. Also, respondents believe that they met the basic requirements for this type of business, such as electronic payment and efficient distribution of products. Finally, the results show that most respondents see overcome territorial and time distance as a major opportunity for market development customization products / services. Then, many believe that the possibility of comparing different variations products, and to adapt to individual needs, is also significant advantages of this form of business. It is considered that the respondents want to buy products / services in remote areas which would save time, money and energy, and get the product / service, which more than satisfies their preferences. Consumers are not sufficiently confidential to the companies, which explains the fact that only 24% of respondents see the development of partner-long-term relationship as one of the opportunities for the development of mass market customization.

The results show that one of the fundamental flaws of domestic companies poor communication with customers regarding the lack of long-term partner-relationships between companies and customers. Application of direct marketing, i.e. Marketing 1-1, could be one possible solution that would allow consumer confidence to companies on which to further build long-term-partnership, and loyalty. In order to increase market efficiency companies trying to create a unique relationship with every customer, which is possible with the application of marketing 1:1. Marketing orientation to individual buyers 1:1 in the modern business is becoming increasingly important. Development of information technology, especially computers and the Internet, enables manufacturers available with various information about customers. In this way, the manufacturer has significantly facilitated the creation of products, and the Internet has enabled the effective use of the business philosophy of individual marketing.

CONCLUSION

A customer today, as an individual, is a base of concurrent advantage, as well as way and degree of its specific needs and satisfactions. Such business requires a detailed recognition of the customer, which is only possible by the customer and company interaction and regular monitoring of their requirements. During the time, cooperation becomes stronger by loyal customers generating, who become the partners of the company at the same time. Mass customization implies that customers become partners of the companies, apropos co-designers of final product solutions, although a company with its possibilities limits the base product area. A new two-part model of business is creating; the first degree is company area, and the second customer area. Mass customization is headed by individual and in great part emotional requirements by which new values for the customer are created, actually emotional relationship of the customer and adjusted product and service. With such a business, a company decreases its business risk and makes satisfied customers, which is the source of concurrence and profit.

Researching referring to mass customization found its results in conclusions which were mostly expected. 68% of customers prefer adjusted product/service in relation to standardized. Attained results could be explained by superposition that today emphasis is put on the customer as individual. On that way individual specified need is propounded, as well as requirements for its satisfaction and often been identified with the product or service.
The adjusted products have not to be expensive for there is a possibility of products and services adjusting to the different income possibilities. Besides, most of the polled chose to be designers in furniture, wardrobe and fashion accessories production. Pursuant to that, co-designing of these product groups renders a possibility of the strongest individual stamp showing, considering colour, shape, material, etc.., and their assortment. Also, most of the polled believe that main threats for market development of the products adjusted to individual needs are: non existence of habits for such type of purchase, complicated electronic payment in Serbia, often frauds and non correct offers, as well as complicated product distribution. There is presupposition that customers in Serbia hardly change old habits and haven't trust into new trends as mass customization.

Besides, the pooled believe that base conditions for such way of business aren't accomplished, such as electronic payment and effective product distribution. Finally, research results show that the most polled see the overrun of territorial and time distances as the main chance of customized products/services market development. Then, a large number of them believe that possibilities of different variants of production comparison, as well as adjusting to individual needs, are also important advantages of this kind of business. It is evidently that pooled want to buy products/services from remote states in order to save time, money and energy and gain products/services which would better satisfy their preferences. The customers don't trust enough to the companies according to the data that only 24% of the pooled see foundation of long-term partnership relations as a chance for mass customization market development.

The results show that one of the base failures of the domestic companies is bad communication with the customers, i.e. long-term partnership relations non existence between a company and a customer. Direct marketing appliance, 1:1 marketing, could be one of the possible solutions which could enable the customer to build the trust towards companies which would be a base for further long term partnership relations foundation, as well as loyalty.

With the aim of marketing efficiency, the companies strive to create a unique relationship with each customer, which is possible through marketing 1:1 appliance. Marketing orientation towards individual customers 1:1 becomes one of the most important ways in the modern business. Information technology development, especially of computers and Internet, give possibility to producers to have access into information referring to customers. On that way, creating of products is much easier for producers. Likewise, Internet enables efficient usage of business philosophy of individual marketing.

By "one to one" marketing, instead of market participation struggle, a struggle of participation in each user budget particularly, is on.

Acknowledgment

Researching results of advantages and disadvantages of mass customization implementation on domestic market show first of all that customers choose more adapted products. Furthermore,

the most part of polees chose to be co-designers at furniture making, clothes and fashion accessories. Besides, through co-designing of these groups of products an opportunity is provided of the strongest individual stamping by colour, form and material selection. Also, the most of polees beleive that main threats for market development of products adapted to individual needs are lack of habits for this kind of purchase, difficult electronical payment in Serbia, then often fraud and non correct offers, as well as difficult product distribution. There is a presupposition that customers in Serbia hardly change their habits, i.e. they are untrustfull towards new trends as mass customization. Also, the polees beleive that base condition are not fullfilled for such kind of bussines, as electronical payment and efficient production distribution. The final, researching results show that majority of polees see overwhelming of territorial and time distances as an main opportunity for customized products/services market development. Then, a lot of them beleive that possibilities of compairing of different product variants, as well as adapting to individual needs are also important advantages of this kind of bussines. It is believed that polees want to purchase products/services from far away areas in order to save time, money and energy, and provide a product/service which satisfy their preferences more. The customers are not enough trustfull according to companies, which could be explained by data that only 24% polees see building of partnerships and long-term realtionships as one of opportunities for mass customization market development.

The results show that one of the basic faults of domestic companies is bad communication with customers, i.e. lack of long-terms partnerships between a company and a customer.
By marketing approach „one to one“ instead of the struggle for market participation, a struggle for participation in budget of each particular user happens. Let’s hope that in the future e-customization will overwhelm after all, providing its contribution to each citizen life quality improvement.

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Regionalism, Globalization and Economic Development in the World

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Abstract: This study assesses the effects of regionalism on economic development in the world based on 217 countries. Overall, regionalism pursued by countries via their respective regional organizations was found to have no significant independent effects on economic development. Regardless of regionalism, international economic variables such as globalization and terms of trade as well as domestic variables such as population growth, urbanization and ethnic composition were found to have significant impact on economic development. In affecting economic development, individual sovereign member states of the regional organization are independent of the collective institutional design of the regional organization they are affiliated with.

JEL Classification: F50, F59, O19

Key words: regionalism, regional intergovernmental organizations, globalization, suppressor variable, economic development

Introduction

The purpose of this paper is to analyze the effectiveness of regionalism by regional organizations in the world in affecting economic development. Not only regional intergovernmental organizations (RIGOs) such as European Union (EU), African Union (AU) and Association of Southeast Asian Nations (ASEAN), but also regional free trade agreements (RFTAs) such as North American Free Trade Agreement (NAFTA) are the driving forces of regionalism. The task of empirically assessing the effects of regionalism on economic development has been a critical challenge not only in developing but also in developed countries. There are many other international as well as domestic variables that could also affect economic development. The effect study of the regionalism should also cover 'all' regions in the world and this study is based on major regionalisms, aiming to cover all regions/subregions in the world: Europe, Africa, Southeast Asia, South Asia, Pacific Rim, Central Asia, North and South America, and Middle East.

Many Views of the Regionalism

Regionalism is based on the following three ingredients: identifiable geographical region, geographical proximity and an organization with a common sense of identity and purpose (economic, political, security/military, etc.) among the member states. There are many views of the whys and wherefores of the joining the regional organizations. One of them is the efficiency of collective activities (Abbott, K., and D. Snidal 1998; Karns, M. P., and K. A. Mingst 2010, 6). Economic integration via regional organizations generates economies of scale. The regionalism by RIGOs is also viewed from the perspectives of global and/or regional governance as well.

Rosenau, J. N. (1995) has used the "governance" to denote the regulation of interdependent relations in the absence of an overarching political authority such as in international system. Najam, A. (2003) has also defined global governance as the management of global processes in the absence of global government. According to Weiss, T. G. (2000), global governance refers to concrete cooperative problem-solving arrangements. The governance undertaken by international organizations (IOs), global or regional, over the member states is to deal with many global and regional issues, which are related to economic development, among others. If the member states wish to benefit from regionalism, they must align with the principles, norms, and rules of the IOs. According to the constructivism, IOs serve as agents of social construction and they can construct a social world in which international cooperation and interaction take place. That is, global governance is possible via international cooperation and interaction, which shape identities and interests of member states as argued by the constructivism (Finnemore, M., and K. Sikkink 2001).

International Economic Variables and Economic Development

Regionalism is not the only determinant of economic development. Many other international economic variables could also affect economic development. Globalization is one of them[28]. There have been pros and cons of the role of globalization in enhancing economic growth and/or quality of life. Stiglitz, J. (2003) was critical of globalization, as it has deepened global inequality between the haves and have-nots, particularly in the less developed countries. Goklany, I. M. (2007) argued for a positive effect of economic globalization based on free trade, and demonstrated that the free trade helped to enhance the human well-being. Foreign direct investment (FDI), a cross-border investment, is undeniably an important ingredient of economic globalization. Multinational corporations (MNCs) are international 'carriers' of the FDI. The roles of MNCs in economic development in host countries, developing or developed, have nevertheless been controversial (Nunnenkamp, P., and J. Spatz 2003).

Terms of trade, favorable or unfavorable, could affect economic development. It is not necessarily the 'quantity' but the 'quality' ('terms') of trade that affects economic development. Unfavorable terms of trade will result in a negative or low economic growth particularly in developing countries, as they rely on the export of a single or a few primary commodities (Chow, P. C. Y. 1987; Appleyard, D. R., A. J. Field, Jr., and S. L. Cobb 2008, 214-215 and 416-417). External (foreign) debt sustainability, strong or weak, is assumed to affect economic development as well. The debt sustainability is an essential condition for economic development (Loser, C. M. 2004).

Domestic Variables and Economic Development: Politics, Defense Spending, Ethnic-Demographic Conditions

Russet, B. (2005) found democracies are considered efficient in generating wealth and economic growth, which also lessen the frequency of internal conflict. Authoritarian political systems turn out to be more conflict-ridden than democratic counterparts and they lower the quality of life. Authoritarian political systems are unable to effectively manage external debt

[28] The globalization based on the KOF globalization index was used in this analysis. The KOF Index of Globalization was introduced in 2002. The KOF Index of Globalization measures the three main dimensions of globalization: economic, social and political. KOF index of globalization is released annually by the KOF Swiss Economic Institute (Zurich, Switzerland).

and foreign assistance as well. Many developing countries have implemented liberal economic reforms in recent decades. They have been successful in economic growth (e.g. Chile, Brazil, etc.), yet there are still many other developing countries that remain poor and have not experienced significant economic growth. While political liberalizations and reforms, with minimal corruption, are required for sustainable economic growth, China and Singapore, for example, with their respective 'authoritarian capitalism' have documented rapid economic growth without undertaking significant political liberalization. South Korea was able to rapidly develop during the 1970s and 80s while its political system was still authoritarian.

When inequality of income distribution is related to ethnicity, gender, or geographic region, Clemens, M. A. (2007) argues that a stronger role for the state (that is, authoritarian political system) is advantageous for equal distribution of income, and the most vulnerable members of societies can be safeguarded by the role of stronger authoritarian government. Stiglitz, J. (2003) argues that policies emanating from the Washington Consensus produce disappointing result as they are anchored in a free-market dogma, which ignores the unique socio-cultural contexts of countries where they are applied. The G20 group of governments agreed in 2010 on a 'new' Seoul Development Consensus. In contrast with the 'older' Washington Consensus, the Seoul Consensus allows a larger role for state intervention. Rather than seeking to impose a uniform top -down solution, the Seoul Consensus postulates that solutions should be tailored to the requirements of individual developing countries[29].

A huge military spending disproportionate to economic capacity is siphoning off the resources, which otherwise could have been used for economic growth and quality of life (Sivard, R. L. 1991). Some found the trade-off between the defense spending and economic growth. Benoit, E. (1978), based on the 44 developing countries, argued that there is a positive correlation between military expenditures and economic growth over the period 1950-65. Klare, M. T. (1987) demonstrates that every additional dollar spent on defense in developing countries reduce domestic investment by 25 cents and agricultural output by 20 cents. Their findings supporting the trade-offs were based on the Cold War period. Defense spending was found to still have a significant effect on the level of quality of life during the post-Cold war era. Countries with greater defense burden retain a lower quality of life regardless of population growth, urbanization and ethnic diversity (Kim, H. S. 1996). Ethnic heterogeneity has been impeding enhancement of quality of life (Collier, P. 1999; Collier, P. 2007). Empirical evidences have shown that demographic variables such as ethnic composition (Alesina, A., A. Devleeschauwer, W. Easterly, S. Kurlat, and R. Wacziarg 2003), urbanization (Todaro, M., C. S. Stephen 2012, 312-318) and population growth (McNicoll, G. 1995) have significant effects on quality of life. What affects economic development is not only domestic but also international. This study will employ 'multiple' variables, domestic and international, including the regionalism. In order to identify an independent (that is, a

[29] The term Washington Consensus (1989) refers to market-friendly policies, which were generally advised and implemented both for advanced and emerging economies. It is also used to refer to economic reforms that were prescribed just for developing countries. In November 2010 the G20 group of governments agreed on a 'new' Seoul Development Consensus. The Seoul Development Consensus for Shared Growth is a set of principles and guidelines set up to assist the G20 nations and other global actors in working collaboratively with less developed countries in order to boost their economic growth and to achieve the UN's Millennium Development Goals (MDGs).

'pure') effect of the regionalism on economic development, all other international and domestic variables assumed to affect economic development as well will be controlled.

Methodology

Dependent variable: Economic Development

Economic development was treated as dependent variable. Economic development was based on the per capita GDP PPP (Purchasing Power Parity), which indicates gross domestic product (GDP) at purchasing power parity (PPP) per capita. When comparing cross-national differences in the development, including economic development, a PPP basis is arguably accurate and useful.

Independent variable: Regionalism

The regionalism is based on the membership of each country with a regional intergovernmental organization or regional free trade agreements. The regionalism is measured by the affiliation of countries with each of the 14 regional intergovernmental organizations (RIGOs) or regional free trade agreements (RFTAs) selected. Those countries affiliated are coded as 1, while others (non-affiliated) as 0. The regionalism is treated as a dummy variable. The major RIGOs and RFTAs, along with their respective regions, are as follows.

- ANDEAN (Andean Community of Nations: 4 countries) / South American region.
- APEC (Asia-Pacific Economic Co-operation: 21 countries) / Asia-Pacific region.
- ASEAN (Association of Southeast Asian Nations: 10 countries) / Southeast Asian Region.
- AU (African Union: 54 countries) / African region. (note: South Sudan becomes African Union's 54th Member, 28 July 2011 and the new country's data was not included in this analysis.)
- CARICOM (Caribbean Community: 15 countries and dependencies).
- ECOWAS (Economic Community of West African States: 5 countries).
- EU (European Union: 27 countries) / European region.
- LAS (League of Arab States: 22 countries) /Arab region (Middle East).
- MERCOSUR (Common Southern Market: 4 countries).
- NAFTA (North America Free Trade Agreement: 3 countries) / North American region.
- OAS (Organization of American States: 35 countries).
- PC (The Secretariat of the Pacific Community or Pacific Community: 22 countries and territories).
- SAARC (The South Asian Association for Regional Cooperation: 8 countries) / South Asian region.
- SCO (Shanghai Cooperation Organization: 6 countries) / Central Asian region.

Control variables

Both international economic variables and domestic variables were treated as control variables: globalization, terms of trade and external (foreign) debt sustainability are selected

as international economic variables, while ethnic homogeneity, population growth, urbanization, types of political system, and military expenditure as domestic variables. Each of the eight control variables is also operationalized (measured) as follows:

- Globalization: it is based on the KOF Index of Globalization, which measures the three ('plural') dimensions of globalization: economic, social, and political. (See Note 1 for the detailed measures of globalization.).
- Terms of trade: the measure is based on the index of the price of a country's exports (benefits) in terms of its imports (costs).
- Debt sustainability: it is measured by per capita amount of external (foreign) debt divided by per capita amount of export. The large ratio means a weak sustainability, while the low ratio means a strong sustainability.
- Ethnic homogeneity: it is measured by percentage of the dominant ethnic-racial groups within each nation.
- Urbanization: the measure is based on urban-rural dichotomy; "urban" refers to a group of allegedly nonagricultural pursuits while "rural" to agriculturally oriented employment.
- Population growth: the natural increase per 1,000 of the population, based on the difference between birth and death rates of given population.
- Types of political system: countries are classified as "not free," "partly free," and "free" in terms of the degree of political freedom represented by both political rights and civil liberties. Countries with "not free" were coded as 1 (highly authoritarian), "partly free" as 2 (authoritarian), and "free" as 3 (democratic).
- Military expenditure: the measure is based on military expenditure as a percentage of GDP.

Two hundred and seventeen (217) countries are used in this analysis. The data cover the 2005-2011 period depending on their availability for each and every of the countries. This study, for that matter, is not amenable to a time-series analysis but to a cross-national comparative analysis. A multiple regression analysis is used. The multiple regression will test whether the regionalism affects economic development regardless of other international economic and domestic variables.

Results

Table 1 presents regression analysis, which assesses the effect of regionalism on economic development. The table (Regionalism ALONE) aims to assess how regionalism 'alone' affects economic development. The finding demonstrates different kinds of the effect of regionalism on economic development: positive, negative and no effects. Out of the 14 regionalisms, the six (6) regionalisms such as EU, NAFTA, AU, APEC, SAARC and ECOWAS were found to have significant effects, positive or negative, on economic development: EU, NAFTA and APEC were found to have positive effects on economic development, while AU, SAARC and ECOWAS were found to have negative effects. But the remaining eight (8) regionalisms such as SCO, LAS, ANDEAN, ASEAN, MERCOSUR, OAS, CARICOM and PC were found to have no significant effects on economic development.

Table 1: Multiple Regression: Regionalism ALONE and Economic Development (Per Capita GDP PPP)

	EU	AU	NAFTA	APEC	SAARC	SCO	LAS	ANDEAN	ASEAN	ECOWAS
Economic Development	0.366	-0.549	0.122	0.181	-0.135	-0.058	-0.003	-0.005	-0.041	-0.343

	MERCOSUR	ANDEAN	OAS	CARICOM	PC
Economic Development	0.021	-0.005	0.094	0.068	-0.087

Note: Standardized regression coefficients (beta) are presented and the underlined ones are significant at .05 level. All variables are log-transformed.

Source: Data from CIA, *World Factbook* (2007, 2008, 2009, 2010, 2011); Encyclopedia Britannica, Inc. 2007-2011. *The Nations of the World/ Britannica Book of the Year*; KOF Index of Globalization. http://*globalization.kof.ethz.ch<Globalizaion Index 2011>*; *http:// en.wikipedia.org/wiki/Quality-of-life_index<The Economist Unit's quality-of-life Index 2005>*.

Table 2: Multiple Regression / Regionalism CONTROLLED: Regionalism and Economic Development Controlling International Economic and Domestic Variables

	AU	EU	ASEAN	NAFTA	APEC	CARICOM	OAS
Regionalism	-0.166	0.063	-0.008	0.089	-0.008	0.159	0.101
Globalization	0.196	0.212	0.223	0.220	0.222	0.231	0.223
Terms of trade	0.178	0.177	0.183	0.182	0.184	0.203	0.196
Debt Sustainability	-0.046	-0.070	-0.053	-0.061	-0.053	-0.004	0.052
Urbanization	0.343	0.373	0.373	0.362	0.375	0.399	0.346
Ethnic homogeneity	0.073	0.150	0.152	0.155	0.153	0.150	0.136
Population growth	-0.215	-0.176	-0.212	-0.214	-0.212	-0.216	-0.246
Political system	0.101	0.111	0.114	0.108	0.116	0.084	0.101
Military expenditure	0.022	0.027	0.030	0.031	0.030	0.062	0.060
R square (%)	(76.3)	(75.0)	(74.8)	(75.6)	(74.9)	(77.0)	(75.6)

(continued)

	SAARC	SCO	ANDEAN	LAS	ECOWAS	MERCOSUR	PC
Regionalism	0.079	-0.011	-0.025	0.051	-0.136	-0.033	-0.127
Globalization	0.238	0.222	0.219	0.211	0.216	0.214	0.214
Terms of trade	0.177	0.183	0.186	0.180	0.164	0.181	0.182
Debt Sustainability	-0.059	-0.052	-0.050	-0.048	-0.038	-0.050	-0.080
Urbanization	0.396	0.376	0.378	0.369	0.374	0.384	0.381
Ethnic homogeneity	0.139	0.153	0.152	0.145	0.110	0.158	0.163
Population growth	-0.214	-0.213	-0.209	-0.229	-0.196	-0.211	-0.193
Political system	0.103	0.111	0.118	0.127	0.134	0.115	0.124
Military expenditure	0.021	0.028	0.032	0.013	0.032	0.025	0.015
R square (%)	(75.4)	(74.9)	(74.9)	(75.0)	(76.3)	(74.9)	(76.3)

Note: Standardized regression coefficients (beta) are presented and the underlined ones are significant at .05 level. All variables are log-transformed.

Source: Data from CIA, *World Factbook* (2007, 2008, 2009, 2010, 2011); Encyclopedia Britannica, Inc. 2007-2011. *The Nations of the World/ Britannica Book of the Year*; KOF Index of Globalization. http://*globalization.kof.ethz.ch<Globalizaion Index 2011>*; *http:// en.wikipedia.org/wiki/Quality-of-life_index<The Economist Unit's quality-of-life Index 2005>*.

Multiple regression in Table 2 (Regionalism CONTROLLED) assesses whether the regionalism in Table 2 has significant 'independent' effect on economic development regardless of international economic and domestic variables, which are also assumed to affect economic development. Table 2 shows a 'pure' effect of regionalism on economic development when controlling the effects of international economic and domestic variables. The findings based on both Tables 1 and 2 indicate the following four different patterns of effect of regionalism (See Figure 1 below) on economic development. The figure shows how the effect of regionalism on economic development changes between the 'regionalism alone' and the 'regionalism controlled.'

Figure 1: Different Patterns of Regionalism

PATTERNS	Regionalism ALONE			Regionalism CONTROLLED
I. Spurious Regionalism	Significant		TO	Insignificant
	EU / APEC	(+)		(0)
	SAARC	(-)		(0)
II. Suppressed/Hidden Regionalism	Insignificant		TO	Significant
	CARICOM	(0)		(+)
	PC	(0)		(-)
III. Affective Regionalism	Significant		TO	Significant
	AU / ECOWAS	(-)		(-)
	NAFTA	(+)		(+)
IV. Non-Affective Regionalism	Insignificant		TO	Insignificant
	SCO, OAS, LAS, MERCOSUR, ANDEAN and ASEAN			

Note: (+) positive significant; (-) negative significant; (0) insignificant.

Each of the four different patterns is discussed as follows.

Pattern I

Some regionalisms, previously (see Table 1) found significant, were found to have no significant 'independent' effects on economic development. That is, once the effects of international economic and domestic variables are controlled, all of those significant effects of the regionalisms on economic development disappear. They are EU, APEC and SAARC. Both EU and APEC were previously found to have significant positive effects on economic development, while SAARC negative effect. It was found that the original positive effects of the EU and APEC on economic development were a product of the effects of high globalization and favorable terms of trade as well as the effects of low population growth, high urbanization and ethnic homogeneity of individual member states. The positive effects were not a function of the collective institutional capacity of each of the two respective regional organizations. The original negative relationship between the SAARC and economic development was also a product of international economic variables featuring with low globalization and unfavorable terms of trade as well as domestic conditions of low urbanization, high population growth and heterogeneous ethnic composition of the individual member states. The SAARC was found to have no independent effect on economic development. In these three regionalisms, international economic and domestic variables of 'individual' member states make it difficult for the 'collective' regional organization to significantly affect economic development. The ability of the collective regional organization is constrained by the individual member states. The original significant, positive or negative, effects of the regionalism were found spurious. This pattern of regionalism is labeled as 'spurious regionalism.'

Pattern II

Some regionalisms were found to have no significant effects on economic development. But once the effects of international economic variables as well as domestic variables of the member states are controlled, the effect of the regionalism on economic development emerges

significant, whether positive or negative. CARICOM was found to have positive effect on economic development, while PC negative (see also Table 1 and 2). The change from insignificant to significant effects indicates that the original effects of the regionalism on economic development were suppressed (hidden): That is, international economic variables such as economic globalization and terms of trade as well as domestic variables such as population growth, urbanization and ethnic composition were found to hide/conceal the 'true' relationship between the regionalism and economic development. These are suppressor variables, concealing the true relationship between the regionalism and economic development. This pattern of regionalism is labeled as 'suppressed/hidden regionalism.'

Pattern III

There are regionalisms whose effects on economic development remain unchanged regardless of international economic and domestic variables of the member states. They are AU, ECOWAS and NAFTA. The AU and ECOWAS were previously found to have negative effects on economic development, while NAFTA positive. The significant negative effects of the two regional organizations in Africa, AU and ECOWAS, on economic development remain unchanged regardless of international economic and domestic variables of the member states. Regardless of low globalization and unfavorable terms of trade as well as low urbanization, high population growth, and heterogeneous ethnic composition of the member states associated with each of the two regional organizations, institutional design of these two respective organizations was still found to have significant independent and negative effects on economic development. NAFTA was found to have positive, although weak, effect on economic development and the effect remains unchanged regardless of international economic and domestic variables of the member states. This pattern of regionalism is labeled as 'affective regionalism.'

Pattern IV

There are regionalisms whose effects on economic development remain solidly unchanged with their respective insignificant effects on economic development regardless of international economic and domestic variables of individual member states: they are SCO, OAS, LAS, MERCOSUR, ANDEAN and ASEAN (see also Table 1 and 2). These regional organizations were found incapable of affecting economic development, whether positive or negative, under any international economic and domestic conditions of the member states. They are simply insignificant. This pattern of regionalism is labeled as 'non-affective regionalism.'

The Effects of International Economic and Domestic Variables

Table 2 shows that regardless of any 'patterns' of regionalism discussed above, globalization was found to have strong and positive effects on economic development across all fourteen regionalisms. Regardless of regionalism, favorable terms of trade by the member states were also found able to enhance economic development. External (foreign) debt sustainability, however, was found to have no significant effect on economic development, indicating that external debt, whether sustainable or unsustainable, is neither necessarily negative nor positive in affecting economic development. The effect of political system, democratic or authoritarian, on economic development is mixed. In AU, EU, ASEAN, NAFTA, APEC, CARICOM, OAS, SAARC and SCO, the political system was found to have no significant effects on economic development, while ANDEAN, LAS, ECOWAS,

MERCOSUR and PC show that the more democratic political system, the higher economic development, yet the positive effect of political system on economic development was found relatively weak. Military expenditure was found to have no significant independent effect on economic development. The finding does question a long-held view of the trade-offs, positive or negative, between the defense spending and economic development. Urbanization, ethnic homogeneity, and population growth were found to have significant independent effects on economic development. Regardless of regionalism, the more urban, ethnically homogeneous countries, which are also associated with a lower population growth, are likely to maintain a higher level of economic development than the rural, ethnically heterogeneous countries which also experience with a high population growth. AU and ECOWAS in Africa, however, are exceptional in that ethnic composition, heterogeneous or homogeneous, was found to have no significant effects on economic development regardless of their respective regionalisms.

Conclusion

Regionalism realized by the collective institutional design via regional organizations was found not to be free from the conditions and constrains of individual sovereign member states. Collective regional/global governance as well as institutional capacity of the regional organizations was found not to be independent of the individual member states when affecting economic development. The effects of regionalism on economic development were varied. Some regionalisms were found spurious or suppressed by the effects of conditions and constraints of the member states. Some regionalisms were found affective, indicating they are significant, positive or negative, in affecting economic development. But still many other regionalisms were found non-affective, indicating that they are simply insignificant in affecting economic development regardless of international economic and domestic variables of the member states.

Regardless of regionalism, both globalization and favorable terms of trade of individual member state were found to have strong positive effects respectively on economic development. Rapid population growth and heterogeneous ethnic composition have negative effect on economic development, while urbanization has positive effect. In some regionalisms, political democracy was found to have positive effect on economic development, while many other regionalisms show that political democracy is not necessarily significant determinant of economic development. Debt sustainability/unsustainability, as well as defense spending, was found to have no significant effect on economic development regardless of regionalism.

When/if regionalism via regional organization aims to enhance economic development, institutional capacity of the regional organization based on the rules, norms and principles should be able to increase globalization as well as to produce favorable terms of trade for the member states. This is regardless of domestic socioeconomic, demographic and political conditions of the member states. Unless regional organizations are institutionally capable of making their respective regionalism globalized beyond their internal integration and global/regional governance they aim to pursue, the ‘collective’ regionalism alone is not likely to have positive determining impact on economic development that ‘individual’ sovereign member states pursue.

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Measuring Sovereign Credit Risk Using Barrier Option Approach

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Abstract: We construct a barrier option pricing model to investigate a country's credit risk. The transformed-data maximum likelihood estimation is adopted to estimate the parameters. The derived probabilities of the defaults over time for 15 sample countries were found to match most of the economic and financial events that occurred during the sample period. The regression analysis illustrates that the barrier model gives highly significant explanations of the default probabilities induced by the premiums of the sovereign credit default swaps. We then illustrate how the structural model can be used to monitor the credit risk of a sovereign nation.

JEL Classification: G01, G13, G32, G33
Key words: sovereign credit risk, structural model, default probability, barrier option

I. Introduction

The ability of a sovereign country to repay its foreign debt has long been an important issue. After the banking crisis of 2008, there were concerns about the countries defaulting because of over-stretched bailout attempts and other aggressive fiscal policies. For instance, the International Monetary Fund (IMF) warned that the debts these countries were accruing could risk global financial stability and prolong the weakness in the credit markets. If a borrowing country does not have enough foreign exchange (FX) reserves to make its payments on time, a financial crisis will occur. To survive the resulting turmoil, the government has to obtain a loan from another country or from an international financial institution such as the IMF.

It is natural that sovereign credit risk was studied extensively in the literature. Kalotychou and Staikouras (2006) and Fuertes and Kalotychou (2006) demonstrated that sovereign credit risk has a high correlation with external debt, gross domestic product (GDP), inflation, and FX reserves. Chesney and Morisset (1992), Claessens and Pennacchi (1996), Karmann and Maltritz (2003), Oshiro and Saruwatari (2005), Huschens et al. (2007), and Gray et al. (2007) used a structural model to predict when a default event will occur. Duffie et al. (2003) applied a reduced-form approach to measure Russia's default risk during the Asian Financial Crisis of the 1990s.

In this paper, we describe a modification of the sovereign balance sheet framework

proposed by Gray et al. (2007) and apply barrier option pricing model (barrier model), based on Brockman and Turtle (2003), to deduce the value of a country's assets and construct the relationship between the sovereign balance sheet and the default risk. All the unknown variables and parameters in our model are estimated by the transformed-data maximum likelihood estimation (MLE) method proposed by Duan (1994), Duan (2000), Duan et al. (2003), and Duan et al. (2004). We also estimate the probability of default (PD) implied by the market prices of the credit default swaps (CDS), and compare the results to those from our structural model.

The rest of the paper is organized as follows. In Section 2, the relevant literature is reviewed. The development of the sovereign balance sheet, the setup of the barrier model, and the quantitative methods are described in Section 3. Section 4 presents our data sources. The empirical results are reported in Section 5, and in Section 6 we offer concluding remarks.

II. Literature Review

The PD of a corporate bond can be calculated using the Black-Scholes-Merton framework (BSM), which is referred to as the structural model in literature (Black and Scholes (1973), Merton (1974)). Later researchers have tried to modify and relax the assumptions. For example, Black and Cox (1976) presented an explicit equilibrium model which assumes that a bond may default at any time before maturity if the asset price reaches an exogenous threshold. Following Vasicek's (1977) model, Longstaff and Schwartz (1995) imported the stochastic riskless interest rate and its correlation with the asset price. Briys and de Varenne (1997) considered some specific bankruptcy thresholds. Zhou (2001) further proposed that the asset value follows the normal jump diffusion process. Hui et al. (2003) extended the results of Longstaff and Schwartz (1995) and Briys and de Varenne (1997) by taking account of economic deterioration. Brockman and Turtle (2003) proposed a barrier-option framework for valuating corporate securities.

Focusing on the credit risk at the national level, Chesney and Morisset (1992) considered a country's willingness-to-pay for its external debt to be a random variable following a stochastic process. The default event occurs if the willingness-to-pay is less than the face value of the external debt at maturity. Claessens and Pennacchi (1996) assumed that a country's default risk indicator follows a stochastic process. A default is defined as the value of its indicator falling below zero. Their empirical study demonstrates that the model can predict a credit event in a sovereign country with high accuracy.

In recent years, the issue of sovereign credit risk has gained increasing attention from financial economists. Duffie et al. (2003) studied the yield spread of Russia's dollar-denominated debt during the Asian Financial Crisis using a reduced-form model. They found that the yield spread varied significantly over time. In addition, it was negatively correlated with Russia's foreign currency reserves and the oil prices. Karmann and Maltritz (2003) characterized the stochastic process of ability-to-pay, defined as the country's FX reserves plus its potential capital imports. A default event is defined as occurring if the ability-to-pay is less than the total amount of the (net) repayment obligations at the maturity date. Oshiro and Saruwatari (2005) developed a model based on the BSM framework to quantify a country's credit risk and deduced the sovereign asset value by sovereign bond price and Morgan Stanley Capital International (MSCI) equity index.

Fuertes and Kalotychou (2006) used an early warning indicator to predict a sovereign

default, which occurs when the jump-in arrears exceeds a specific portion of the total external debt, or when the rescheduled debt exceeds the decrease in total arrears. In their empirical study, they found that while complex models are better at describing the data, simple models outperform complex models in terms of forecasting accuracy. Huschens et al. (2007) construct a model based on BSM to study the forecasting ability of a sovereign default event. They selected 19 countries in emerging markets to validate their model and obtained statistically significant results.

Gray et al. (2007) proposed a framework for the sovereign balance sheet. The assets include FX reserves, net fiscal assets, and other public assets. The liabilities consist of guarantees, foreign-currency debt, local-currency debt, and base money. The foreign-currency debt can be considered as the senior claim and the local-currency debt plus the base money as the junior claim. The FX spot rate was used to translate the market value of the local-currency liabilities.

In addition to the bond price and the sovereign balance sheet, the CDS price has also been found to be useful for estimating the default risk. Blanco and Marsh (2004) and Hull et al. (2004) analyzed a large panel of corporate issuers from the United States and Europe and found that CDS prices can predict credit events. Chan-Lau and Kim (2004) tested the equilibrium relationships among CDS, bond, and equity prices in eight emerging countries. They found that the CDS and bond spreads were highly correlated, whereas the equity prices were not correlated with either variable. Carr and Wu (2007) construct a joint valuation framework consisting of the bivariate diffusion of the currency return variance and sovereign default intensity. They show that the sovereign CDS spread has a strong positive contemporaneous correlation with the implied volatility of currency options.

An important issue in the BSM framework is how to estimate the asset value and its volatility, because it cannot be observed directly in the market. There are three approaches (Duan et al., 2004). Jones et al. (1984) and Ronn and Verma (1986) applied Itô's lemma to form simultaneous equations and solved for these two variables. Eom et al. (2004) used the market value of equity and total debt to imply the asset value. Duan (1994) and Duan (2000) derived the transformed-data MLE to estimate the unknown variables and parameters.

Although all three approaches were widely used, Duan (1994), Duan (2000), and Bruche (2007) argued that constant volatility in equity as assumed in the first approach is not reasonable, especially if the asset value changes significantly during the estimation period. Wang and Li (2004) showed that the approach of Eom et al. (2004) is theoretically inconsistent with the boundary conditions of the option pricing model. Their Monte Carlo simulations also showed that this approach may lead to biased predictions.

Bruche (2007), Wang and Li (2004), Wang and Li (2008), and Duan et al. (2004) demonstrated by simulation methods that the transformed-data approach is the best way to estimate unknown variables and parameters, especially when using the barrier model framework. Duan et al. (2004) showed that the method of Vassalou and Xing (2004), which applied an iteration method to estimate the unknown variables and parameters, is an expectation maximization (EM) algorithm that provides a maximum likelihood estimator in an incomplete market. Duan and Fulop (2009) also proved by particle filter method that equity prices were contaminated by trading noise.

III. Model Setup and Methodology

Sovereign Balance Sheet

We first discuss the items in the balance sheet of a sovereign country by applying an argument similar to that of Grey et al. (2007). The assets include FX reserves, net fiscal assets and other public assets, whereas the liabilities include external debt, internal debt, guarantees and base money.

External debt is senior to other liabilities because it requires the FX reserve to repay the debt. If the FX reserve is insufficient, the country has no choice but to default. In contrast, internal debt can always be repaid by issuing more currency when cash is in need.

We consider the domestic currency of a country as a "soft" currency. The total amount of the external debts needs to be repaid by an acceptable foreign currency. From the foreign creditor's point of view, the total value of sovereign assets or liabilities is actually determined by the FX rate. Therefore, the foreign currency is used as a *numéraire* for the market price of all the items on the country's balance sheet.

A Barrier Model for Sovereign Credit Risk

Let $\mathrm{V(t)}$ denote the value of the country's total assets in the domestic currency at time t, and $\mathrm{Q(t)}$ denote the exchange rate between the domestic currency and the foreign currency under consideration. We assume that a representative country issues a single foreign-currency zero-coupon bond with a promised payoff K at maturity date T. Hence, the payoff of the external debt at time T is:

$$\mathrm{F(T)} = \min\left(\frac{\mathrm{V(T)}}{\mathrm{Q(T)}}, \mathrm{K}\right) = \frac{\mathrm{V(T)}}{\mathrm{Q(T)}} - \left(\frac{\mathrm{V(T)}}{\mathrm{Q(T)}} - \mathrm{K}\right)^{+},$$

and the value of the junior claim at time T is:

$$\mathrm{E(T)} = \mathrm{V(T)} - \mathrm{F(T)Q(T)} = \mathrm{Q(T)}\left(\frac{\mathrm{V(T)}}{\mathrm{Q(T)}} - \mathrm{K}\right)^{+}.$$

In other words, from a foreign creditor's point of view, the payoff of the junior claim is a call option on the value of the country's assets. We set

$$\mathrm{X(t)} = \frac{\mathrm{V(t)}}{\mathrm{Q(t)}} \text{ and } \mathrm{Y(t)} = \frac{\mathrm{E(t)}}{\mathrm{Q(t)}}.$$

If the value of the assets in foreign currency is higher than K at maturity, i.e., $\mathrm{X(T)} \geq \mathrm{K}$, the senior claim holders receive K and the junior claim holders receive $\mathrm{X(T)} - \mathrm{K}$. The value of the junior claim increases with $\mathrm{X(T)}$ if $\mathrm{X(T)} > K$. The appreciation of the domestic currency increases the value of the country's assets. We then follow the framework of Merton (1974) and Shreve (2004) to construct the model for measuring the sovereign risk.

Let $\mathrm{W(t)} = \left(\mathrm{W_1(t)}, \mathrm{W_2(t)}\right)$ be a two-dimensional Brownian motion on a given space $(\Omega, \mathcal{F}(t), P)$. We assume that the process of the asset value, $\mathrm{V(t)}$, in the domestic currency satisfies:

$$\mathrm{dV(t)} = \alpha \mathrm{V(t)dt} + \sigma_1 \mathrm{V(t)dW_1(t)},$$

where α and $\sigma_1 > 0$ are respectively the instantaneous expected return and the standard deviation of the asset value. The process of the exchange rate, $Q(t)$, satisfies:

$$dQ(t) = \gamma Q(t)dt + \sigma_2 Q(t)\left[\rho dW_1(t) + \sqrt{1-\rho^2}dW_2(t)\right],$$

where $\gamma \in R$, $\sigma_2 > 0$, and $\rho \in (-1,1)$ are constants. We define:

$$W_3(t) = \int_0^t \rho dW_1(u) + \int_0^t \sqrt{1-\rho^2}dW_2(u).$$

By Lévy Characterization Theorem, $W_3(t)$ follows Brownian motion under the probability measure P. Hence:

$$dQ(t) = \gamma Q(t)dt + \sigma_2 Q(t)dW_3(t).$$

Using the dynamic setup for $V(t)$ and $Q(t)$, we can find the value (in a foreign currency) of the country's junior claim at time t, as well as its probability of default, under the option framework.

Proposition 1. *Assume that a representative country issues a single foreign-currency zero-coupon bond with a promised payoff K at maturity date T. Let r and r^f be the domestic and foreign constant riskless interest rates, respectively, and $X(t) = x$. The value of the junior claim in foreign currency at time t, $Y(t) = y$, is:*

$$y = xN\big(d_1(t)\big) - Ke^{-r^f(T-t)}N\big(d_2(t)\big),$$

where $N(\cdot)$ is the standard normal cumulative distribution function,

$$\sigma_4 = \sqrt{\sigma_1^2 - 2\rho\sigma_1\sigma_2 + \sigma_2^2},$$

$$d_1(t) = \frac{ln\frac{x}{K} + \left(r^f + \frac{1}{2}\sigma_4^2\right)(T-t)}{\sigma_4\sqrt{T-t}},$$

$$d_2(t) = d_1(t) - \sigma_4\sqrt{T-t}.$$

And the probability of default at time T is:

$$\pi_{Euro} = N\left(-\hat{d}_2(t)\right), \text{ where}$$

$$\hat{d}_2(t) = \frac{ln\frac{x}{K} + \left(\mu - \frac{1}{2}\sigma_4^2\right)(T-t)}{\sigma_4\sqrt{T-t}}.$$

Let H be a continuous barrier from time t to time T. To avoid a financial crisis, the government has to refinance when the asset value X(t) is lower than H for all t that $0 \le t \le T$. Therefore, from the foreign creditor's viewpoint, the payoff of a junior claim is a down-and-out barrier call option on the total assets of the country. The value of the junior claim at time t for a sovereign and its default probability in the barrier option framework are expressed in Proposition 2.

Proposition 2. *With the same assumptions as in Proposition 1, the value of the junior claim in foreign currency at time t, $Y(t) = y$, in the barrier option framework is:*

$$y = xN\big(a(t)\big) - Ke^{-r^f(T-t)}N\big(a(t) - \sigma_4\sqrt{T-t}\big) - x(H/x)^{2\eta}N\big(b(t)\big) \quad (1)$$
$$+ Ke^{-r^f(T-t)}(H/x)^{2\eta-2}N\big(b(t) - \sigma_4\sqrt{T-t}\big),$$

where $N(\cdot)$ is the standard normal cumulative distribution function,

$$a(t) = \begin{cases} \dfrac{ln(x/H) + (r^f + 0.5\sigma_4^2)(T-t)}{\sigma_4\sqrt{T-t}}, & K \geq H \\ \dfrac{ln(x/H) + (r^f + 0.5\sigma_4^2)(T-t)}{\sigma_4\sqrt{T-t}}, & K < H \end{cases},$$

$$b(t) = \begin{cases} \dfrac{ln(H^2/(xK)) + (r^f + 0.5\sigma_4^2)(T-t)}{\sigma_4\sqrt{T-t}}, & K \geq H \\ \dfrac{ln(H/x) + (r^f + 0.5\sigma_4^2)(T-t)}{\sigma_4\sqrt{T-t}}, & K < H \end{cases},$$

and

$$\eta = \frac{r^f}{\sigma_4^2} + \frac{1}{2}.$$

Furthermore, the default probability between time t *and time* T *is*

$$\pi_{Barrier} = N\left(-\frac{ln\frac{x}{max(H,K)} + \left(\mu - \frac{1}{2}\sigma_4^2\right)(T-t)}{\sigma_4\sqrt{T-t}} \right) + \left(\frac{x}{H}\right)^{-\frac{2}{\sigma_4^2}\left(\mu - \frac{1}{2}\sigma_4^2\right)} N\left(\frac{ln\frac{H^2}{x\, max(H,K)} + \left(\mu - \frac{1}{2}\sigma_4^2\right)(T-t)}{\sigma_4\sqrt{T-t}} \right)$$

The value of the external debt at time t is $F(t) = (x - y)Q(t)$.

Transformed-data MLE Method

We follow the procedure of Duan et al. (2003), Duan et al. (2004), and Wang and Choi (2009) to estimate all the unknown parameters and variables in our barrier model. We assume that there is no trading noise between the unobservable asset value and its contingent claim.

Consider the values of the junior claims and FX rates observed at each time point of n equal intervals during a year. In other words, the value of $Y(t)$ is observable at time $t \in \{0, h, 2h, \ldots, nh\}$, with $h = 1/n$ year. In this case, $X(0) = x$ and $Y(0) = y$. Under the barrier model framework, the log-likelihood function of the junior claims is found to be:

$$\begin{aligned} &L_{Barrier}\left(\mu, \sigma_4, H; Y(0), Y(h), Y(2h), \cdots, Y(nh)\right) \\ &= L^X\left(\mu, \sigma_4, H; \widehat{X}(0), \widehat{X}(h), \widehat{X}(2h), \cdots, \widehat{X}(nh)\right) \\ &+ \sum_{j=1}^{n} \ln\left(1 - \exp\left(-\frac{2}{\sigma_4^2 h}\ln\frac{\widehat{X}\left((j-1)h\right)}{H}\ln\frac{\widehat{X}(jh)}{H}\right)\right) - \sum_{j=1}^{n}\ln\left|\frac{\partial Y(jh)}{\partial X(jh)}\right| \qquad (2) \\ &- \ln\left[N\left(\frac{\ln\frac{\widehat{X}(0)}{H} + \left(\mu - \frac{\sigma_4^2}{2}\right)nh}{\sigma_4\sqrt{nh}}\right) + \left(\frac{\widehat{X}(0)}{H}\right)^{-\frac{2}{\sigma_4^2}} N\left(\frac{-\ln\frac{\widehat{X}(0)}{H} + \left(\mu - \frac{\sigma_4^2}{2}\right)nh}{\sigma_4\sqrt{nh}}\right)\right], \end{aligned}$$

where

$$L^X\left(\mu, \sigma_4, H; \hat{X}(0), \hat{X}(h), \hat{X}(2h), \cdots, \hat{X}(nh)\right)$$
$$= -\frac{n}{2}\ln(2\pi\sigma_4^2 h) - \frac{1}{2}\sum_{k=1}^{n}\frac{\left(\ln\frac{X(kh)}{X((k-1)h)} + \left(\mu - \frac{\sigma_4^2}{2}\right)h\right)^2}{\sigma_4^2 h} - \sum_{k=1}^{n}\ln X(kh).$$

We use the iteration method from Equations (1) and (2) to estimate all the unknown variables and parameters.[1]

Testing the Barrier Model Using CDS Spread

Following the assumptions in Bharath and Shumway (2008), we derived the PD from the CDS spreads. The PD was then regressed with $\pi_{Barrier}$ to determine whether the results from our barrier model are consistent with the market-based information.

Assume that the default occurs only at the end of the first half year. Let s be the CDS spread, which is the percentage of the notional amount to be paid each year. The risk-free rate is r, the recovery rate is δ, and the time to maturity is T. Also, assume the notional principal to be \$1. The total expected payment then becomes:

$$\sum_{t=1}^{T}(1-\pi_{CDS})^t e^{-rt}s + (1-\pi_{CDS})^{t-1}\pi_{CDS}e^{-r(t-0.5)}0.5s.$$

The first term is the expected discount payment if there is no default event before maturity, whereas the second term represents the discount payment if the default event happens. Similarly, the expected present value of recovery from the credit buyer is:

$$\sum_{t=1}^{T}(1-\pi_{CDS})^{t-1}\pi_{CDS}(1-\delta)e^{-r(t-0.5)}.$$

As in Bharath and Shumway (2008), we assume $\delta = 75\%$ to derive the implied PD, π_{CDS}.

IV. Data

Our sample comprises 15 countries: Argentina, Brazil, Canada, Egypt, Hungary, Iceland, Indonesia, Korea, Mexico, Poland, Russia, South Africa, Thailand, Turkey, and the United Kingdom (UK). The data we used include long-term and short-term external debt, internal debt, base money, M1, currency in circulation, risk-free interest rates, FX rates, and CDS prices.

Information about external debt was taken primarily from the Joint External Debt Hub

[1] We recognize that it is very difficult to pin down the default barrier H when the barrier is low relative to the asset value, that is, the default probability is low (Lee, Lee and Chen, 2009). This is due to the fact that when the default probability is low, the low barrier estimate can vary for a wide range since it does not affect the likelihood function and equity pricing results. Fortunately, as indicated by Lee, Lee and Chen (2009), the bias of low barrier cases could hardly affect the default probabilities of sample countries, which is the main focus of our study.

(JEDH) on the IMF website, then checked or supplemented by data from the Central Bank's website of each sampled country. M1, base money, currency in circulation and internal debt for all 15 countries were obtained from Datastream, and FX rates (units of domestic currency per unit of hard currency) were downloaded from Bloomberg. The 1-year CDS spreads for 14 of the countries were also obtained from Datastream (CDS prices for Canada were not available). The sample period was from 11/13/2007 to 12/31/2009 for the UK, and from 10/25/2006 to 12/31/2009 for all the other countries.

We used the 1-year constant maturity treasury (CMT) rate, obtained from the US Board of Governors of the Federal Reserve System, as the US dollar (USD) risk-free rate. The 1-year interest rate in Germany was used as the Euro dollar (Euro) risk-free interest rate. Two different interest rates were used for the *numéraire* tests and π_{CDS} estimations because the principal of the sovereign CDS may be in either USDs or Euros. In addition to using the USD as a *numéraire*, we also tested whether the Euro was the hard currency for Hungary, Poland, Iceland, Turkey, and South Africa.

We followed Vassalou and Xing (2004) and Bharath and Shumway (2008) in which the strike price of the sovereign debt equals the short-term debt plus one-half of the long-term debt. The linear interpolation method was used to convert the quarterly external debt and monthly junior claim amounts to daily amounts. We assumed 252 trading days per year. The estimation periods for the 15 countries, varied by data availability, are given in Table 1.

Table 1: Estimation periods for the sampled countries

Country	Estimation Period	Country	Estimation Period
Argentina	2004/10/4 – 2009/12/31	Mexico	2003/4/1 –2009/12/31
Brazil	2004/10/4 –2009/12/31	Poland	2000/3/30 –2009/12/31
Canada	2004/1/5 –2009/12/31	Russia	2004/4/1 –2009/12/31
Egypt	2005/7/1 –2009/12/31	South Africa	2004/1/5 – 2009/9/30
Hungary	2005/1/4 –2009/12/31	Thailand	2000/3/31 –2009/12/31
Iceland	2005/1/4 –2009/12/31	Turkey	1991/1/11 –2009/12/31
Indonesia	2005/1/4 –2009/12/31	UK	2004/4/1 –2009/12/31
Korea	2001/10/4 –2009/12/31		

V. Empirical Results

Financial and Economic Events during the Sample Period

According to Bartram et al. (2007), important financial and economic events that occurred after 1994 may have affected the sovereign credit ratings and the related CDS spreads As depicted in Table 2, we considered five regional financial crises (Mexican, Asian, Russian, Brazilian, Argentine), two global recessions, and the collapse of long-term capital management (LTCM) as these events. We will discuss the impacts of these events in two parts, the period before 2000 and the period after 2000.

Table 2: Important financial and economic events

Event	Time Period
Mexican Financial Crisis	1994
Asian Financial Crisis	1997 – 1998
Collapse of LTCM	1998
Russian Financial Crisis	1998
Brazilian Financial Crisis	1999

Argentine Financial Crisis	1999 – 2002
Global Recession	2001 – 2002
Global Financial Crisis and Recession	2007 – 2010

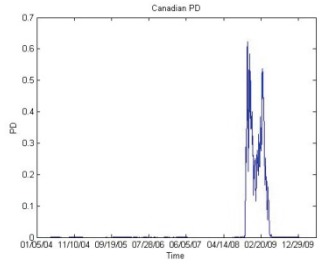
Prior to year 2000, the effects of these events were usually local, even though they occurred during very similar time periods. The LTCM collapse was related to both the Asian and the Russian financial crises. After that came the Latin American (Brazilian and Argentine) economic crises. The effects of these two crises lasted from 1999 to 2002, and they were particularly strong during 2001, when Argentina stopped repaying its external debt. As a result, the Argentine peso depreciated substantially in 2002, and the economies in all other Latin American countries were also affected.

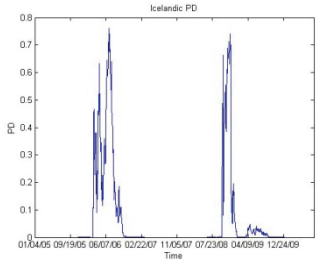
There were two global recessions after 2000 under our consideration. The first one, occurred in 2001 and 2002, was due to the dot-com bubble burst and the 911 attack on the US. The other began in 2007 and was the result of the sub-prime mortgage crisis. During these recessions, all the stock markets fell, and the USD became the strongest currency. To avoid exchange losses, international capital flowed from the emerging markets to the US.

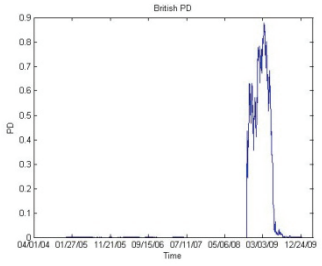
The events described in Table 2 and the variations of FX rates appear to be highly correlated. Almost all the countries in our sample suffered through two periods of depreciation. The first occurred sometime before 1998 and the second occurred either in 2001 or 2002, depending on the country. All currencies from the sampled Asian countries, namely the Indonesian Rupiah (IDR), the Korean Won (KRW), and the Thai Baht (THB), depreciated with respect to the USD. The Russian Ruble (RUB) depreciated after the Russian financial crisis. The currencies of the other sampled countries depreciated in 2001 and 2002, following the Argentine crisis and the global recession of 2001. The second period of FX-rate depreciation was late 2008. During this period, almost all the countries were in recession as a result of the global financial crisis.

Estimates Using US Dollar as Numéraire

In Figure 1, we show the estimates of the unknown parameters and the PD's for the three developed countries in our sample (Canada, Iceland, and the UK). Prior to October 2008, only Iceland's government encountered a credit problem. The figure for Iceland shows high PD's from March 2006 to September 2006 because of the withdrawal of foreign capital. The Icelandic stock market experienced a small jump during this period, which is consistent with the estimation results, including high PD's, high barriers, and low asset prices. During the financial crisis that occurred after October 2008, all three countries had high PD's, negative μ's, and high barrier values. These results imply that the value of each country's assets was decreasing and that it was easy to reach the barrier.







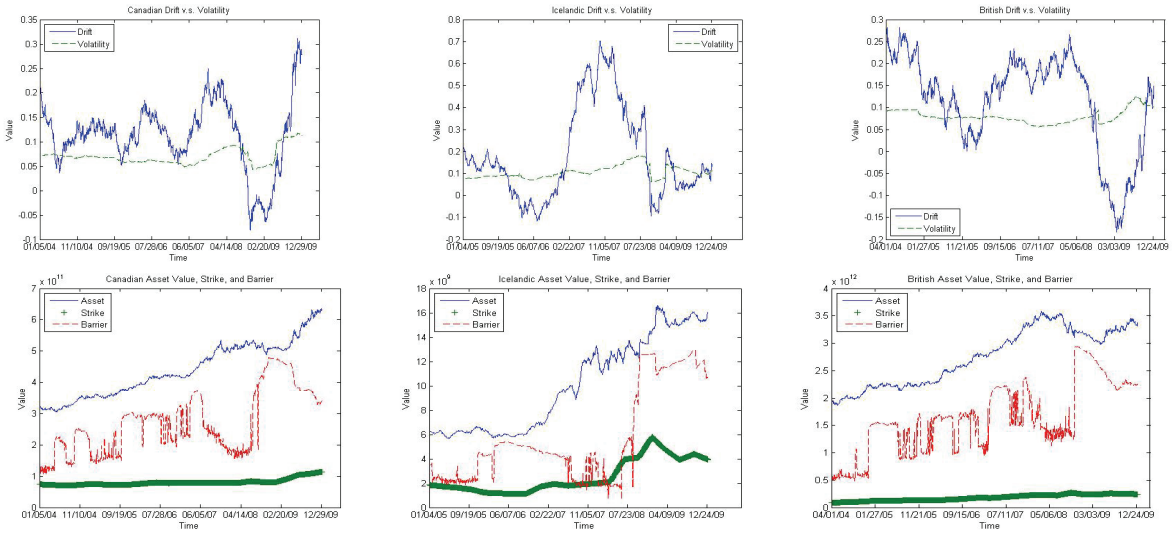


Figure 1: Estimates of PD, drift, volatility, asset value, strike and barrier for Canada, Iceland, and UK.

Estimates of all the unknown parameters and PD's for the Latin American countries in our sample (Argentina, Brazil, and Mexico) are shown in Figure 2. In Argentina, the strike prices and asset values underwent sharp declines after May 2005. At the same time, the PD's were close to one. The values of μ from May 2005 to June 2006 (see middle panel in Figure 5) are mostly negative. Although Argentina was successful in restructuring its debt during this period, which postponed the maturity date and reduced the face value of some of its debt, the country was still in default with respect to its external debt.

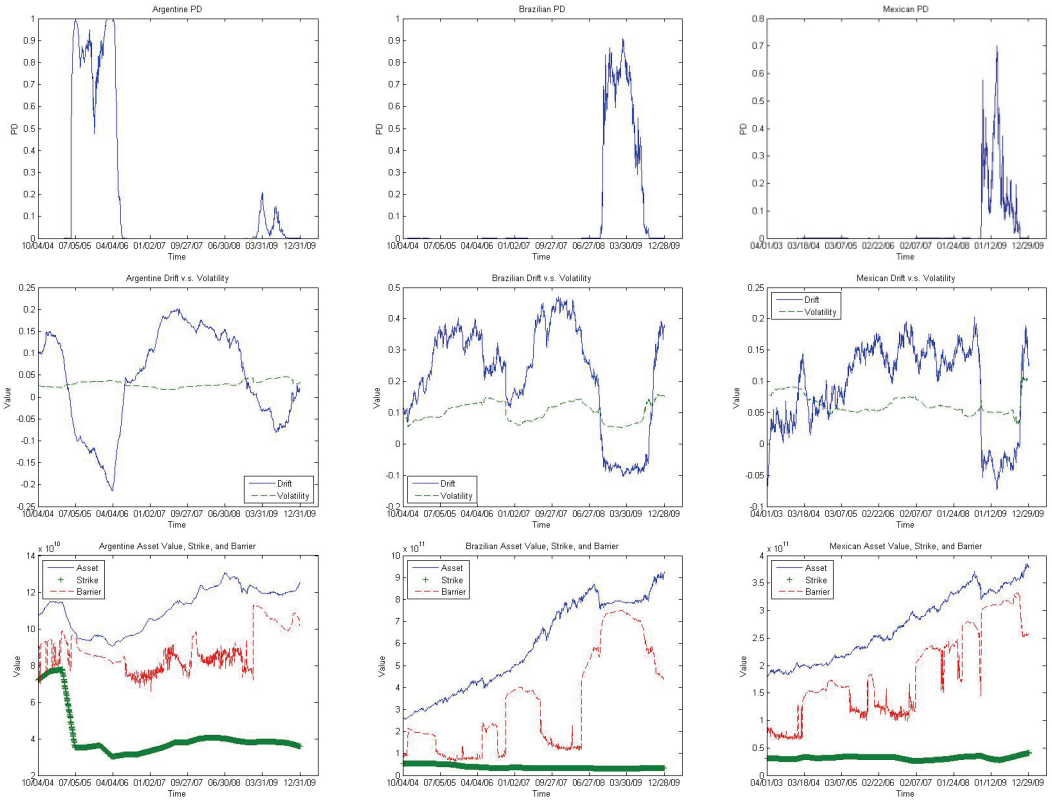


Figure 2: Estimates of PD, drift, volatility, asset value, strike and barrier for Argentina, Brazil, and Mexico.

π_{Barrier} is more consistent with π_{CDS} for Mexico and Brazil than for Argentina. The

former two countries had high PD's, high barriers, and low drifts of μ after the fourth quarter of 2008. The patterns of stock market prices and the currency exchange rates of these two countries are consistent with our results.

Figure 3 illustrates all the estimates of parameters and variables for the Asian countries in our sample (Korea, Indonesia, and Thailand). In the case of Thailand, our model gives high PD values for 2001, reflecting the global economic recession. However, during the global credit crisis of 2008 these PD's were very small due to the low external debt and the stable USD-THB exchange rates. This result is inconsistent with the PD's derived from CDS market. However, the stable FX rates show that Thailand's economy was under control in 2008.

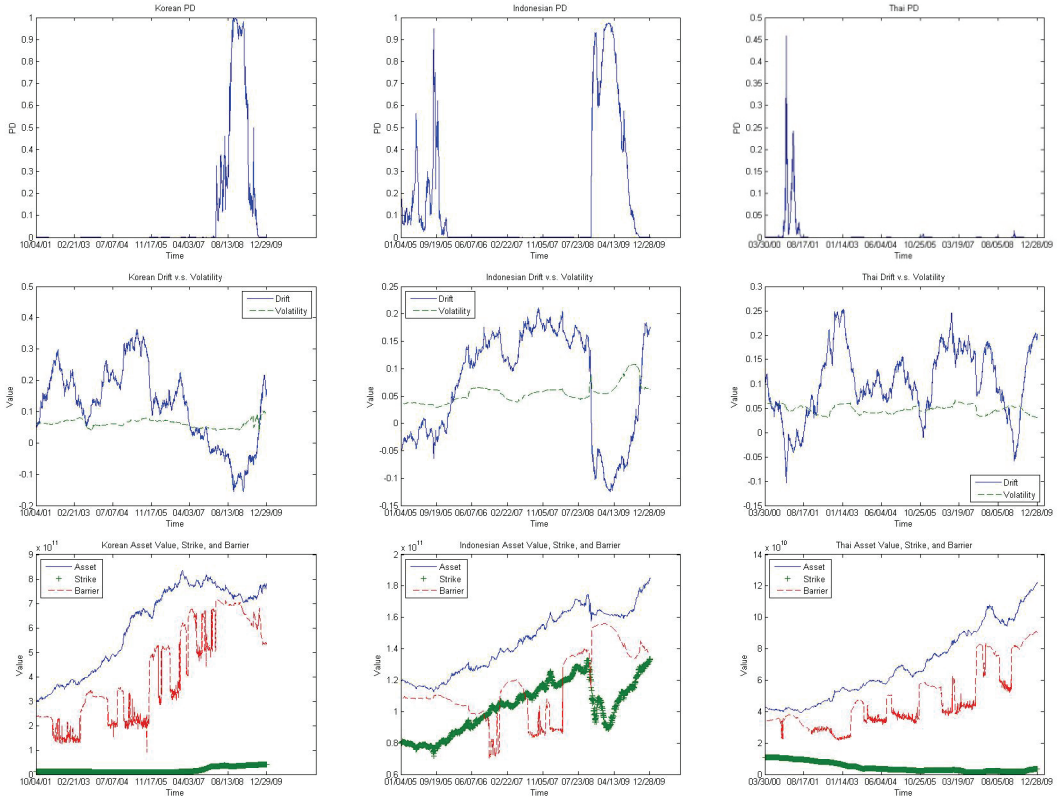


Figure 3: Estimates of PD, drift, volatility, asset value, strike and barrier for Korea, Indonesia, and Thailand.

Korea and Indonesia both had high PD's during the credit crisis of 2008. The PD's of Indonesia experienced another peak during the second half of 2005 because of inflation. The Indonesian stock market and the IDR were both down substantially.

Figure 4 gives the estimates for Hungary, Poland, and Russia. Poland's high PD's and low drift in 2000 reveal that the economy was in a recession. All three countries had high PD's after the fourth quarter of 2008 because of the global financial crisis.

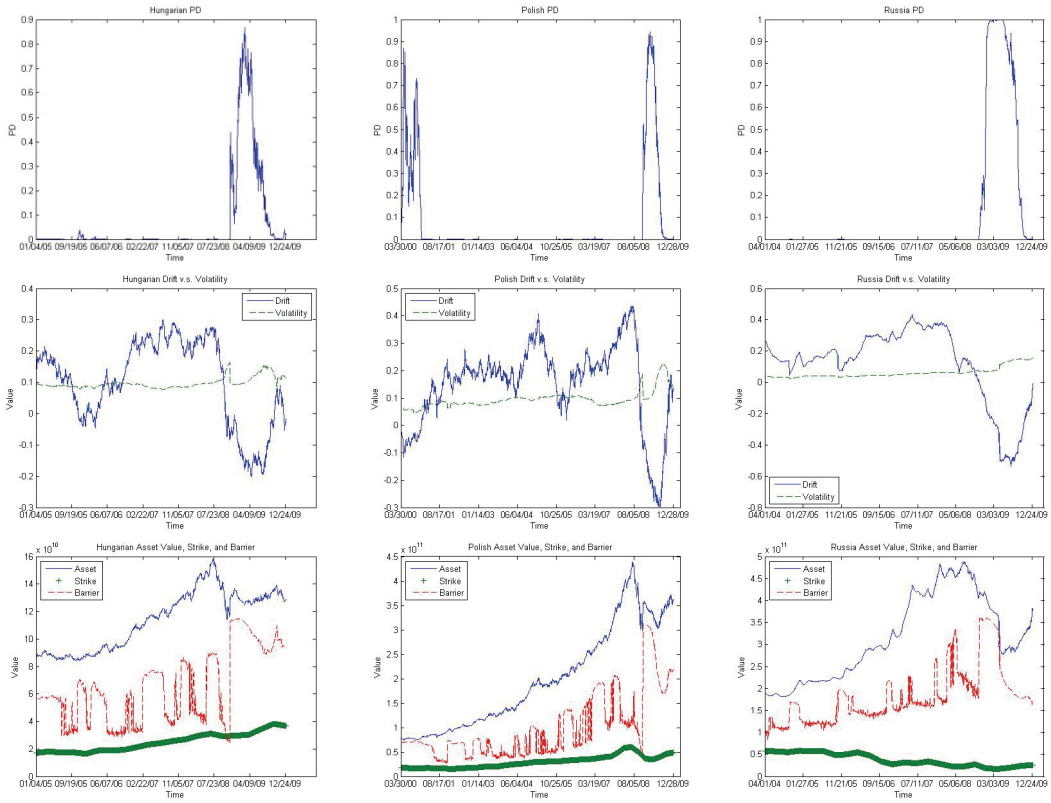
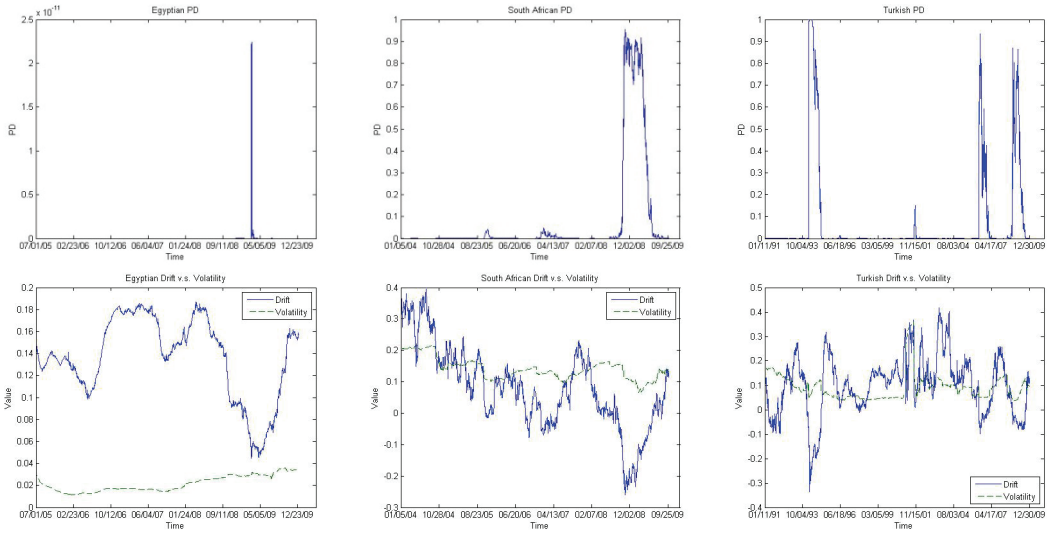


Figure 4: Estimatess of PD, drift, volatility, asset value, strike and barrier for Hungary, Poland, and Russia.

The estimates for South Africa, shown in Figure 5, are similar to those for the other countries in the sample in that the PD's were high after the credit market crisis. However, the Egyptian Pound (EGP) was devalued only slightly with respect to the USD. The PD's for Egypt were very stable and almost zero. The total value of Egypt's assets was still growing, due to government's sound financial policies. The trend of the PD's for Egypt is also different from that derived from the spreads in the CDS market.



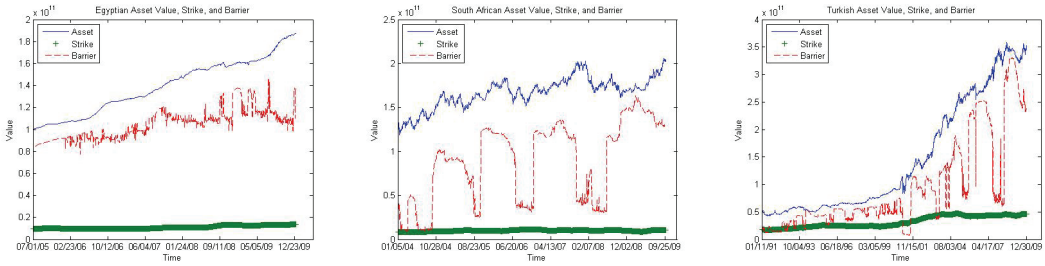


Figure 5: Estimates of PD, drift, volatility, asset value, strike and barrier for Egypt, South Africa, and Turkey.

The data collection period for Turkey is the longest in our sample. However, from the pattern of exchange rates between the USD and Turkish Lira (TRY) as well as the Istanbul stock prices, the major events in the Turkish economy before 2002 were inflation and the local financial crisis. That is why we observed high PD's and high volatilities in both 1994 and 2001. After 2001, there were two PD peaks. The first, in 2006, was caused by inflation. The second, in the fourth quarter of 2008, was caused by the global credit crisis. These results are very similar to those for Iceland.

Correlation and Regression Tests

In this subsection, we provide results from correlation and regression analyses for PD with three variables (drift, volatility, and barrier) across 14 of the 15 sampled countries. The testing period for most countries was from 10/25/2006 to 12/31/2009, except for the UK, where it was from 11/13/2007 to 9/30/2009, and for South Africa, where it was from 10/25/2006 to 9/30/2009. We excluded Canada because its CDS prices were not available. All the π_{Barrier}'s were calculated using the USD as the *numéraire*.

We performed a regression analysis to test the ability of π_{Barrier} to explain the market-derived π_{CDS}. The model is:

$$\pi_{\text{CDS,it}} = \beta_{i0} + \beta_{i1}\pi_{\text{Barrier,it}} + \varepsilon_{it},$$

where i and t represent country i and time t, respectively. The results are shown in Table 3. β_{i0} and β_{i1} for all countries except Egypt and Thailand are significant at the 1% level with high R-squares. This result suggests that our barrier model captures the default information embedded in the sovereign CDS spreads.

Table 3: Regression results

Country (i)	β_{i0}	β_{i1}	R^2
Argentina	0.1048***	2.3376***	0.2597
	(0.0054)	(0.1413)	
Brazil	0.0053***	0.0326***	0.8191
	(0.0002)	(0.0005)	
Egypt	0.0215***	3.01E+09***	0.0202
	(0.0008)	(7.49E+08)	
Hungary	0.0080***	0.0942***	0.7970
	(0.0004)	(0.0017)	
Iceland	0.0421***	0.1732***	0.1836

	(0.0017)	(0.0131)	
Indonesia	0.0115***	0.0646***	0.8033
	(0.0004)	(0.0011)	
Korea	0.0039***	0.0403***	0.7666
	(0.0003)	(0.0008)	
Mexico	0.0055***	0.0852***	0.8483
	(0.0002)	(0.0013)	
Poland	0.0038***	0.0371***	0.7968
	(0.0002)	(0.0007)	
Russia	0.0129***	0.0919***	0.5523
	(0.0010)	(0.0030)	
South Africa	0.0062***	0.0542***	0.8665
	(0.0003)	(0.0008)	
Thailand	0.0087***	2.8607***	0.0973
	(0.0003)	(0.3120)	
Turkey	0.0085***	0.0703***	0.8357
	(0.0003)	(0.0011)	
UK	0.0026***	0.0123***	0.6795
	(0.0001)	(0.0004)	

Note: Standard errors are shown in parentheses. *** represents significance at the 1% level.

VI. Conclusion

In this study, we applied the sovereign balance sheet structure and developed a barrier option model to measure sovereign credit risk. The transformed-data MLE approach was used to calibrate all the unknown parameters and variables. The derived default probabilities over time for our sample countries seem to match most of the important financial or economic events that occurred during the test periods. The regression analysis further illustrates that the PD's derived from the CDS spreads in the credit markets can be explained by the PD's calculated from our barrier option model. In conclusion, the barrier model successfully captures the pattern and the information of the sovereign credit risk implied by the CDS prices.

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The Political Economy of South America Integration after the World Economic Crisis

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The paper focus on the hurdles to a deeper economic cooperation in South America, stressing three main aspects: 1) the structure of intra-regional trade, related to the uneven distribution of productive activities across different countries; 2) the main objectives of the three different kinds of States (developmental, resource nationalist, and neoliberal); 3) the new context of international competition brought by the world crisis, given the peculiar mode of operation of foreign affiliates at the manufacture sector in the region, and the Chinese export thrust on local markets. The main conclusion is that there are reasons to expect a deepening of economic rivalries and protectionism which may aggravate uneven development in the region, unless the focus on regional cooperation is (unlikely) enlarged to include productive complementarities in the form of direct allocation of investments, and regional (or at least sub-regional) negotiation with foreign affiliates.

JEL F15; F59; O19

INTRODUCTION

In the past decade, the deepening of economic integration in South America has become a priority objective of many governments in the region, particularly after the failure of negotiations of the Free Trade Area of the Americas (FTAA) in 2005. The financial and exchange crises at the turn of the millennium had created tensions between partners from different trade agreements within the Latin American Integration Association (LAIA), as protectionist initiatives were taken in the face of balance of payments problems and reduced growth rates. However, at the same time that economic pressures increased, several governments committed to the liberalization agenda of the Washington Consensus were replaced by others who rejected explicitly the neoliberal program and the FTAA, understood as obstacles to development and trade policies more managed by sovereign states (NATANSON, 2008). Simultaneously, initiatives in the political, cultural and defense realms introduced forcefully, in some cases in terms of the rhetoric of good intentions rather than actual practice, new spheres of cooperation in a region where, from the Latin American Free-Trade Association (LAFTA) in the 1960s, to open regionalism in the 1990s, integration initiatives always favored economic issues and, above all, commercial ones.

The rejection of the principles of free competition of the FTAA, on behalf of a more coordinated regional integration by the States, brought together some of the governments of the region and resulted in effective and relevant cooperative initiatives, particularly in terms of transport and energy integration. Paradoxically, the enhancement of the coordinating role of the States, and its cooperation to reduce the infrastructure gap between South American countries, does not seem to have been accompanied by collective action (in addition to several statements of good intentions) to tackle trade imbalances and asymmetries in terms of production. In recent years, there was a deepening of trade liberalization in South America, as participants from different subregional treaties (within the regulatory environment of the LAIA) exchanged mutual concessions, which facilitated that large part of import demand generated by the resumption of growth in national domestic markets, since 2003, was

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captured by the intra-regional trade. The region's commercial integration seems to serve a broader geopolitical goal, to increase South-South cooperation for mutual strengthening in the face of international agendas controlled by developed countries (led by the United States) and perceived as threats to political autonomy and economic development. The goal of trade liberalization is also important in the Union of South American Nations (UNASUR), which in addition to various economic and noneconomic objectives, aims to integrate and harmonize various subregional trade agreements, towards a single free trade area (not a customs union).

On the other hand, no mechanism of effective control or reversal of trade imbalances was created in UNASUR, related or not to a planning of investments to complement supply chains on a regional scale. In this sense, the news about the emergence of a post-liberal model of regional integration seem exaggerated, if we look at trade relations in a context of strong asymmetry of competitiveness, and lack of focus on mechanisms that can contribute effectively to take care of the problem . The non-agenda of a political institution is sometimes as important as its agenda, to characterize it.[2]

The deepening of free trade agreements (without collective mechanisms for effective management of imbalances) in a region where several countries are ruled by governments to the left of the political center is somewhat surprising, especially given that the anti-liberal rhetoric was widely used to fight the FTAA, and that political and financial cooperation has, in fact, advanced to mitigate the heterogeneity of the infrastructure in South America. It is true that cooperation against disparities in infrastructure seems to be politically more consensual than mitigating uneven development and trade imbalances. After all, the financing of public works by the Brazilian state bank in charge for infrastructure projects in South America, the National Bank for Economic and Social Development (BNDES), passes through the financing of exports of Brazilian goods and services, so that there is an apparent harmony of strategic and business interests. On the order hand, the tolerance of Brazilian authorities in the face of Argentine protectionism, the nationalization of assets of Petrobrás (the Brazilian state oil giant) by Bolivia, Paraguayan request for revision of compensation for energy from Itaipu Binational (the joint venture in a big hydroelectric plant), or the Uruguayan regime to attracting automotive affiliates, is strongly rejected by the Brazilian business community.

Despite the resistance of the Brazilian business community, it is important to note that trade imbalances in South America are not easily reversible, even if there was political consensus to reverse them, as they stem from structural productive asymmetries, i.e., the huge disparity of scale, productivity and diversification of economic sectors (industry, agriculture, services, and in some cases, mineral extraction) in Brazil vis-à-vis its regional partners (Panariello, 2007). In turn, Brazilian foreign direct investment (FDI) in other countries of South America sought natural resources, or followed exports in search of markets, being much larger than in the opposite direction - creating an increasing future flow of profits and dividends that will increase the Brazilian surplus in the region (HIRATUKA & SARTI, 2011). Despite higher rates of economic growth, Brazil´s regional partners have not been converging to the degree of development of the Brazilian industrial structure.

They do not have sought that, anyway. In fact, several South American countries are integrated into the global economy through commodity exports and imports of manufactured goods, and have not been taking initiatives to restructure the specialization of their economic systems. For countries that adopted a neoliberal model at least since the 1990s, the problem didn´t even arise: uneven development is regarded as comparative advantage. In fact, countries (Chile, Peru and Colombia) that have negotiated bilateral agreements with the

[2] For the concept of post-liberal regionalism, see Veiga, Pedro M. & RIOS, Sandra P. (2007). For the concept of non-agenda, see Bachrach & Baratz (1962).

United States gave more emphasis to preferential access to U.S. market than the preservation of policy space for developmental goals.

If there are countries that adhered to neoliberalism in the 1990s, but executed a reversal to developmental policies with varying degrees of depth and scope in the next decade, these are Brazil and Argentina. They became very active in the World Trade Organization (WTO), and it was they who led the rejection of WTO-plus provisions (in the rules for government procurement, intellectual property, investment incentives, regulation of foreign capital, among others) that were required by the U.S. in the FTAA, while participating actively in the Doha Round of the WTO. A basic argument for rejecting the round of WTO-plus liberalization was the need to protect the policy space to enable the developing economies to aim a more diversified production structure, less vulnerable to the instability of commodity prices and external financing. In addition to meeting political pressures in search of better income distribution and growth of jobs and wages, the governing coalitions of these developmental states had the goal of expanding and diversifying industrial systems that have undergone a profound disruption during the implementation of neoliberal policies. The same cannot be said, however, of most of the countries that turned to the left in South America, adherents of resource nationalism, especially mineral resources. For these countries chaired also by nationalist leaders, the policy space seems to have more the meaning of protecting the sovereign capacity to negotiate the terms of association and conflict with foreign capital (including Brazilian), loaned or invested in areas of infrastructure, basic supplies and services.

Given the difference between the three basic models of economic projects of the states in the region (neoliberal, developmentalist, resource nationalist), the advancement of State intervention to reverse productive asymmetries and trade imbalances in the region is not consensual (unless perhaps in the Bolivarian Alternative for the Americas, ALBA). In fact, since 2003, economic expansion in the region reinforced its traditional trade specialization. That expansion was closely linked to a pattern of world economic growth that lasted until the outbreak of the financial crisis of 2007-8 and that, according to Silva (2008) and Carneiro (2009), created a new international division of labor which strengthened the role of several South American economies as exporters of a small set of commodities. I think it is possible to stylize the pattern of global growth through a succession of linkages between regions: while the synergy between the United States, Europe and South / East Asia was established by deficits in foreign trade of manufactured goods, the rapid growth in Asia has changed the conditions of profitability and stimulate growth of commodity exporting economies. At the same time that the urban and industrial growth accelerated in Asia increased the imports quantum, the financialization of the futures markets in developed economies reinforced the upward movement of prices that benefited exporters of basic goods.[3]

Within South America, in turn, another division of labor was consolidated (Bastos, 2010): the growth of the internal market of the countries exporting basic commodities increased demand for manufactured goods, benefiting Brazil, which increased its industrial trade surplus in the region. It is clear that growth in South America did not depend only on the boom in commodity exports, being encouraged by economic policies aimed at expanding domestic markets, often in conjunction with programs to redistribute income to disadvantaged social groups. Anyway, we can say that there was a pattern of inter-sectoral trade specialization, with two faces: South America as a whole depends on commodity exports to finance intra-regional imports, while the Brazil significantly increased its intra-regional exports of manufactured goods. On the one hand, the whole of South America reversed in the last decade the large trade deficits with the rest of the world characteristic of the 1990s. On the other hand, Brazil has built up large trade surpluses with other countries in the region,

[3] About the financialization of commodity futures markets, see MAYER, J. (2010).

which are much more dependent on intra-regional imports than itself. That is, Brazil is not the central engine of regional growth, but takes advantage of the stimuli from the industrial centers of Asia, directly (through their own commodity exports) and indirectly (through its exports of manufactured goods to exporting countries commodities, with rapid growth of domestic markets).

Since intra-regional trade in South America has expanded in a very much integrated way with the growth pattern of the world economy before the crisis of 2007-8, the crisis of global expansion is putting strains on its reproduction. Although the domestic markets and exports of commodities in the region have recovered quickly from the second half of 2009, the manufacturing intraregional trade seems to be losing force under the threat of currency appreciation and increased competition from imports, given the low growth in developed countries. In this scenario, flows of intra-regional exports have been displaced by exports derived particularly from Asia (and especially China), but also from North America and Europe. Moreover, as the international crisis deepens, especially in Europe, the probability, not negligible, of a significant reduction of prices and quantities of commodity exports can go back to hurt economic growth and balance of payments of some economies the region, with deleterious effects on trade and intra-regional investment. A new round of crisis of commodity exports could generate the resurgence of protectionism and trade wars, without coordination of national responses? There will be political consensus for making cooperative initiatives to ensure the expansion of intra-regional market amid the global crisis? There will be a regional leader able to drive the definition of what these initiatives?

THE PECULIARITIES OF SOUTH AMERICA INTEGRATION IN THE 1990´S

According to Medeiros (2008), three pairs of concepts can be used to understand the specificity and compare different regional integration processes: 1) regionalism or regionalization, 2) free trade or strategic trade, 3) formal macroeconomic convergence or substantive existence of "locomotives" of regional growth. Regarding the first pair, regionalism would be an integration process led by government and managed by institutions (normally associated with the European Union and Mercosur), while regionalization, typically associated with the South / East Asia, would be a process led by the markets. The second pair, in turn, distinguishes integration processes that emphasize trade liberalization and leveling the playing field, and processes that rely more on the intervention of states to manage trade flows, and even influence the allocation of investments in the region, leveling off the playing field to mitigate asymmetries. The third pair differentiates formal schemes of macroeconomic convergence among states vis-à-vis regional circuits of expenditure that effectively integrate the functioning of economies, by the existence of productive chains and regional "locomotives".

So stylized, Asian integration would be a case of regionalization with free trade, without rules of macroeconomic convergence, driven by the creation of regional production chains and foreign direct investment (FDI), strongly oriented towards extra-regional exports. The European Union had initially been driven by the creation of regional linkages guided by managed trade (for example, to the branches of coal, iron, steel and agriculture, in addition to allocating funds of convergence), with gradual trade liberalization and, decades later, rules for macroeconomic convergence. In Latin America, the kind of regionalism proposed by the states, since LAFTA in the 1960s till open regionalism in the 1990s, has always favored economic issues and, above all, trade liberalization goals.

In fact, the project of economic integration between Argentina and Brazil began in the mid-1980s under the aegis of developmentalist ideology, but continued and deepened under the influence of neoliberalism, with the victory of Carlos Saul Menem and Fernando Collor de

Melo in elections in 1989. In both countries, as well as in all others in Latin America, the liberal reforms of the Washington Consensus began to guide the development strategy in the 1990s, with retraction of state intervention, whether in the regulation of private competition, whether in business ownership. Under impulse of neoliberal doctrine, in July 1990, the deadline for completion of a free trade zone between Brazil and Argentina was shortened from ten to five years, and became a simple scheme of liberalization without mechanisms for management of aggregate sectoral trade balances. With the incorporation ofUruguay and Paraguay in 1991, the free trade zone came to be known as MERCOSUR and its liberal contents deepened. According to Sarti (2001), the ideal of open regionalism synthesized the new regional liberalization program, whose goal was no longer to deepen import substitution, but increase the efficiency of resource allocation through the competitive pressure of imports, which would presumably make the production system better able to capture export opportunities in the global economy. Therefore, liberalization within the block should be accompanied by rapid liberalization outwards, in order to reduce the margin of preference of the agreement, and reduce trade diversion that would limit the desired competitive pressure. Under open regionalism, Mercosur has become a customs union whose Common External Tariff (CET) would be much lower than the national rates previously practiced, especially in the Brazilian case (SARTI, 2001, pp. 43. Ff).

Unlike the more optimistic assumptions of neoliberalism, the positive effects expected by open regionalism would take longer to emerge, as the countries would gradually take advantage of the gains from specialization and scale inside the regional block, before radically reducing the common external tariff in face of the rest of the world. In practice, the positive effects began to take much longer than expected, since several countries in the region, especially the members of Mercosur, experienced a worsening trade balance, particularly with the United States, as they performed a quick trade liberalization accompanied, in many cases, by currency appreciation (MEDEIROS, 1997; BANDEIRA, 2003, ch. XXII, PALMA, 2004). The liberal project was not only interested in trade flows, however, but also investment flows, which would have a new relationship with the opening of trade. According to Bastos (2003), a novelty of neoliberalism in relation to traditional liberal arguments, at least in Brazil, is the argument that trade liberalization was a necessity posed by the new form of internationalization of industrial corporations, which would form transnational production chains, ie with levels vertical integration in each country, much smaller than in the "era of protected national markets." It was argued that high levels of protection of the domestic market could, in these new circumstances, prevent investment from these "network companies", while trade liberalization, on the contrary, would attract investment to cover current deficits temporarily brought by increased imports, and increase the overall productivity of the system, together with the competitive pressure from imports. Over time, the efficiency gains of local entrepreneurs, and investment subsidiaries, which would take advantage of technologies and marketing channels of global corporations, would lead to a reduction of current deficits (FRITSCH & FRANCO, 1989; FRANCO, 1996; BARROS & GOLDSTEIN, 1997).

The hope was frustrated in the Brazilian case, since the increase in FDI haven´t brought a reversal of the trade deficit recorded in 1995, even though companies have been forced by competitive pressures to "slim down" bureaucratic organizational charts, import technology and automate production lines. Trade liberalization led, on a global scale, to an increase in manufacturing export-oriented FDI in developing countries, but the concentration of FDI for such purposes, and the resulting increase in exports, was limited to a very small number of countries, clearly concentrated in Asia (PALMA, 2004).

Table 1 – Ratio FDI (inward)/exports in %

	1990-92	1993-95	1996-98	1999-01	2002-05
Developing economies	47	81	112	123	80
Latin America	84	124	240	274	150
Developing Asia	41	74	84	88	64

SOURCE: UNCTAD, FDI on line, *apud* Carneiro (2008).

In general, according to Carneiro (2008), South America have joined the globalization in the 1990s, much more through the importation of capital than by increasing the flow of exports of goods. This type of insertion, said "finance-led", was different from the "productivist" profile characteristic of developing Asia. In Asia, foreign affiliates developed regional production chains seeking efficiency gains, and wage/exchange ratio differentials, activating the intra-regional trade of manufactured goods from the external demand for manufactured goods and the growth of domestic markets to the region. In Latin America as a whole, the finance-led profile might be differentiated further by the fact that, in Mexico and some Central American countries, foreign affiliates were interested in platforms for assembly and export of manufactured goods with low added value and local inputs. However, according to Palma (2004), these exports had insignificant linkage effects both for the internal market of the host countries of FDI, and to trade with other Latin American countries. In developing Asia, by contrast, assemblers subsidiaries and its subcontractors created more linkage effects by the demand for inputs, both in the recipient country of FDI, as in intra-industry trade with suppliers in the region. Although the formation of companies with large regional networks begun with Japanese branches in search of a better wage/exchange ratio even in the 1970s, the expansion of FDI and "new forms of investment" without direct control, or the licensing of technology and brands, started to count with the increasingly outsourcing by South Korean and Taiwanese companies.[4]

According to Carneiro (2008), the share of FDI directed to mergers and acquisitions, as opposed to investment in production plants (greenfield), was also much higher in South America than in developing Asia, following the de-nationalization of private enterprises and the process of privatization of state-owned enterprises, in non-tradable or resource-intensive branches. In general, studies of ECLAC (2005, 2007) have indicated that the FDI in South America, originated in the region or not, was more oriented towards the search for domestic markets or natural resources, with negligible importance in the demand for strategic assets for global competition or efficiency gains, with the internationalization of production chains.[5]

Table 2 – China: Trade balance according to country and region

Mean - 2003-2005 (US$ million, at current prices)			
	Exports	Imports	Balance
ASEAN+ 3	143.037	251.755	(108.718)
ASEAN	43.064	61.763	(18.699)
China (a)	—	39.637	(39.637)
Japan	72.301	89.628	(17.326)
South Corea	27.671	60.728	(33.056)
United States	126.985	42.478	84.507
Canada	8.482	6.413	2.069
European Union (27)	111.103	66.475	44.628
Latin America and Caribbean (33)	17.596	21.061	(3.465)
India	6.071	7.232	(1.161)
Australia + New Zealand	9.799	12.936	(3.137)
Other	174.762	136.298	38.464
World	597.836	544.647	53.188

[4] The first modern formulation of the model of the "flying geese" to explain the regional creation of trade by Japanese FDI was, probably, KOJIMA, Kiyoshi (1973). The original study of "new forms of investment" is perhaps that of OMAN, Charles (1984).

[5] The same finding is, in general, in recent study of the internationalization of Brazilian companies by HIRATUKA, Celio & SARTI, Fernando (2011).

SOURCE: ECLAC, based on COMTRADE, *apud* Carneiro (2008).
a: Trade between Guangdong and Hong Kong SAR.

Thus, trade liberalization in the 1990s put in competition different models of regional integration, with obvious disadvantages to South America. Increased competition can be explained by the overall reduction of tariffs, transport, telecommunications and information processing costs, and changes in the competitive strategies of large transnational corporations. Although they preserve production units close to major consumer markets, corporations began to streamline operations in transnational networks of their own manufacturing plants, suppliers and subcontractors, generally with less vertical integration into national markets than before, focusing on technology assets, design of products and processes, and financial, logistics and marketing management of its production and distribution networks, with links scattered in space, but under regional or global command.[6]

In this new scenario of competition, a new international division of labor was formed on the periphery of capitalism. According Akyus (2005) and Hiratuka & Sarti (2010), the contours of the new division resulted mainly from the tense interaction between corporations with command centers based in the Triad, and strategies of national states. While the United States, Japan and the European Union concentrated command centers, funding, research and development, as well as productive activities more technology intensive, more labor intensive activities, especially, were transferred to regional networks in the periphery (Mexico and Central America, Eastern Europe, Southeast Asia). Some Asian countries such as South Korea and Taiwan, could be inserted at the top of the industrial value chains under the command of domestic enterprises strongly supported by the states, or even as a seat of control centers of regional subsidiaries (Singapore), while others received outsourced labor intensive activities, to become export platforms with little added value. China, in turn, seemed to combine the three strategies in Asia, starting with labor intensive activities, but gradually moving toward higher value-added activities, in part due to constraints imposed by the State to the operation of subsidiaries (requirements of local suppliers, technology transfers, and formation of joint ventures), and in part through financial incentives for public and private national companies. Furthermore, China was essential as an axis of "Asia Factory", running deficits with countries of developing Asia (due to import of capital goods and specialized inputs) and surpluses with developed countries (ECLAC, 2008; CARNEIRO, 2008).

Table 3 - China: Composition of Trade Balance, by technological intensity of products (2008-2010)

						Manufactured goods		
	Exports	Imports	Balance	Primary goods	Natural resources	Low technology	Medium technology	High technology
Latin America and Caribbean	218 493	(226 031)	(7 538)	(143 011)	(24 874)	57 817	58 264	43 916
South America	128 829	(200 255)	(71 426)	(138 111)	(34 843)	33 488	35 159	32 658
Mexico and Central America	77 488	(22 761)	54 727	(3 232)	9 207	21 310	17 074	10 254
Caribbean	12 176	(3 015)	9 161	(1 667)	763	3 019	6 031	1 004
Asia and Pacific	967 876	(1 335 148)	(367 271)	(138 827)	(83 385)	185 833	(113 497)	(215 622)
ASEAN	358 866	(378 248)	(19 381)	(45 251)	(22 016)	69 029	54 582	(76 370)
Australia and New Zealand	77 481	(145 521)	(68 039)	(121 432)	(8 236)	28 537	15 636	18 007
South Corea	196 389	(353 106)	(156 717)	11 887	(29 754)	20 747	(54 857)	(103 086)
Japan	335 140	(458 274)	(123 134)	15 970	(23 379)	67 519	(128 858)	(54 173)

[6] Michalet, C-A. (1976, 1985), Porter, Michael (1986) and Dunning, John (1988) publicized the emergence of the enterprise capable of integrate global or regional operations. See also CHESNAIS, François (1994), UNCTAD (1995), and Bouba-Olga, Olivier (2006). On competition between various regional blocs and the attraction of FDI, see OMAN, Charles (1994), and FISCHER, Bernhard (1998). About the regionalized profile of productive operation of the 'global' corporations, see Rugman, Alan (2005).

United States	757 961	(262 045)	495 916	(40 808)	5 905	260 531	63 871	205 331
European Union	841 291	(428 948)	412 343	5 218	(9 837)	238 968	(40 423)	217 448

Source: Eclac, 2011.

Although isn´t incorrect to characterize the global insertion of the Brazilian economy as finance-led, in line with the rest of South America in the 1990s, I believe it is necessary to further differentiate the Brazilian case. It is true that dependence of external finance increased, and the microeconomic restructuring induced by trade liberalization and exchange rate policy was accompanied by deterioration in the trade balance, since the defense of portions of the domestic market against imports of finished goods was made in parallel with the increase in imports of capital goods and inputs to increase the efficiency of production plants (Bielchowsky, 1993, Miranda, 2001). According Laplane & Sarti (2002), foreign affiliates, in particular, haven´t contributed to the increase in net exports, but to the deterioration of the balance, because the form of linkage with the global value chains occurred especially through outsourcing machinery, equipment, parts and components to defend portions of the internal market. Industrial restructuring has brought, therefore, loss of density of internal supply chains, increasing import coefficient, and trade deficits in the 1990s.[7]

If it is undeniable that, as elsewhere in South America in the process of globalization of competition, the Brazilian industrial structure has lost major internal threads for imports coming mainly from other regions. But the inclusion of Brazil in the regional division of labor differentiated the country as headquarter of subsidiaries involved in South America market as a whole. According Laplane & Sarti (2002), the industrial foreign affiliates oriented towards the Brazilian market, outside the non-tradable and natural resources intensive sectors, seem to receive "a mandate to produce for the domestic market, in some cases extended to include the Mercosur (and eventually the countries of the LAIA), making use of privileged access established in trade agreements. The analysis of the coefficients of trade and strategies shows that, after the opening of the economy, most affiliates increased the import content of its local production much more intense than its exports ... As a result, foreign firms in the sample had significant trade deficits with the markets in which its headquarters were located, and a surplus with MERCOSUR and the LAIA "(pp. 43-4).

Table 4 - Foreign Affiliates: Trade by regions – 1997

	Exports		Imports		Balance
	US$ Million	%	US$ Million	%	US$ Million
Mercosur	2.988,0	28,3	1.521,8	12,7	1.466,2
NAFTA	1.755,3	16,6	3.329,0	27,7	(1.573,7)
LAIA	1.241,5	11,7	149,4	1,2	1.092,1
European Union	1.961,2	18,5	4.328,3	36,0	(2.367,2)
Asia	1.299,8	12,3	1.748,2	14,6	(448,4)
Rest of the world	1.329,2	12,6	936,9	7,8	392,3
Total for Subsidiaries	10.575,0	100,0	12.013,6	100,0	(1.438,7)
Total for Brazil	52.985,8		61.528,1		(8.542,3)

Source: NEIT/IE/Unicamp from data of Secex, *apud* Sarti & Laplane (2002).

In other words, from the viewpoint of the industrial trade, one of the impacts of trade liberalization on regional integration was to strengthen the orientation of foreign affiliates operating in Brazil for exports into the South American market, especially in technology and scale intensive branches. According to Camargo (2007), Brazilian imports of products

[7] See also COUTINHO, 1997; LAPLANE & SARTI, 1997; SARTI & LAPLANE, 2002; SAMPAIO & NARETTO, 2000; CARNEIRO, 2002. On regional trade of the big national companies see SILVA, Maria Lussieu (2003).

originating in the manufacturing industry in South America did not grow in the same proportion of exports (except for a time, with Argentina), so the Brazil's industrial trade balance with its regional partners has increased significantly in the first half of the 1990´s, falling in the second half, and increased again, even harder in the next decade. On the other hand, what increased sharply in the 1990´s (and sharper still in the next decade, especially in its second half) was industrial imports coming from the regional blocs (EU, NAFTA and Asia) that concentrate the headquarters of global corporations or subsidiaries with mandate to extra-regional exports on a large scale.

The study Hiratuka & Negri (2003) presented detailed data on the geographic orientation of trade from foreign companies, and 80 national firms among the 500 largest national firms in the country. As it can be seen in Table 5, domestic firms did not allocate a significant portion of exports to Mercosur, but the subsidiaries owned by parent companies from NAFTA and the EU started to do it on a large scale in the 1990s. These companies, in turn, oriented their imports especially for the regions of origin of the parent companies. Asian firms aimed most of its exports and especially imports into the region of origin of capital. The econometric exercise also points to the fact that the subsidiaries favour the internal market and, then, the regional market: the trade channels with parent companies didn´t give them the role as suppliers to developed regions, rather than being supplied by them, particularly in the high-technology products.

Table 5 - Proportion of Total Trade of Selected Domestic and Foreign Companies, by Region of Origin or Destination (1989, 1997 e 2000)

Nationality	Year	Exports						Imports					
		Merc.	Nafta	Laia	E.U.	Asia	ROW	Merc.	Nafta	Laia	E.U.	Asia	ROW
Brazilian	1989	3%	21%	1%	29%	33%	13%	8%	38%	13%	21%	9%	11%
	1997	9%	19%	3%	25%	26%	16%	7%	33%	12%	21%	15%	12%
	2000	6%	30%	2%	30%	17%	14%	9%	40%	11%	23%	9%	8%
Nafta	1989	4%	39%	8%	25%	14%	10%	4%	66%	2%	16%	11%	1%
	1997	32%	23%	12%	15%	8%	9%	6%	47%	1%	26%	11%	9%
	2000	25%	21%	13%	23%	8%	11%	21%	49%	1%	19%	6%	4%
E.U.	1989	5%	28%	8%	47%	4%	8%	11%	17%	3%	66%	2%	2%
	1997	32%	14%	14%	22%	8%	10%	20%	11%	2%	49%	7%	11%
	2000	19%	31%	10%	28%	4%	9%	15%	19%	0%	54%	10%	2%
Asia	1989	1%	11%	3%	15%	66%	4%	3%	17%	0%	8%	72%	0%
	1997	10%	11%	9%	15%	54%	1%	2%	22%	0%	3%	72%	2%
	2000	5%	21%	3%	20%	50%	1%	3%	19%	0%	6%	70%	1%
Rest of the world (ROW)	1989	8%	4%	1%	66%	10%	11%	0%	59%	2%	7%	1%	32%
	1997	18%	7%	1%	30%	14%	30%	0%	66%	6%	14%	0%	13%
	2000	11%	4%	4%	28%	27%	26%	2%	74%	1%	17%	1%	5%

SOURCE: NEIT/IE/Unicamp from data of Secex, *apud* Hiratuka & Negri (2003).

In this sense, trade liberalization in the 1990s seems to have had at least two structural effects, difficult to reverse, in the industry trade in South America: 1) increased technological dependence on the countries where the headquarters of global corporations are located, or on subsidiaries with a mandate to the world market - dependence that can be estimated by the import of capital goods and industrial inputs-intensive technology; 2) increasing regional polarization in the distribution of industrial activities, measured by bilateral industrial trade surpluses for Brazil and, to a lesser extent, Argentina with their regional partners. The concentration of the largest industrial national companies and subsidiaries which export final goods to the regional market, but import specialized inputs from outside the region, tends logically to limit the replacement of an inter-sector regional trade pattern by an intra-sector one within the region, unlike intended by Raul Prebisch (1959; 1964). And make the flows of intra-regional trade dependent, as we shall see, of the capacity to generate foreign exchange through exports of primary products towards other regions, and of the variation (historically unstable) of prices of exported commodities.

THE CYCLE OF WORLD ECONOMY AND ITS IMPACT ON THE PATTERN OF ECONOMIC INTEGRATION IN SOUTH AMERICA

With few exceptions, the liberalization programs followed in South America in the 1990s ended in severe economic crisis, which strengthened the political reaction against the prevailing coalition governments. According to Cintra & Farhi (2003), the financial and currency crises of the late twentieth century were associated with the cyclical downturn of international capital flows to developing countries, reducing the possibility of financing the large current account deficits that have formed during the former boom in capital inflows, during the period of implementation of liberalizing reforms. Amid the cyclical reversion, sharp currency depreciations in peripheral countries with floating exchange rate regimes, and successful speculative attacks against fixed exchange rates provoked sharp imbalances in the balance sheets of both states and companies indebted in foreign currency. In South America, the currency crisis also changed the relative prices between regional partners, as well as detonated financial crises resolved with recourse to IMF´s recessive programs or, in the case of Argentina and Uruguay, the restructuring of external debt. According to Natanson (2009), the economic crisis in several countries had a devastating impact on the political support of liberalization programs, and helped to prevent the conclusion of negotiations of the Free Trade Area of the Americas -FTAA.

In 2003, a coalition of countries led by Brazil, the G-20 trade, managed to block the conclusion of an agreement favorable to developed countries in the WTO, and refocus the agenda for priority issues for developing countries, although the Doha Round has not been completed (Blustein, 2009). The alliance between Brazil, Argentina and Venezuela also blocked the FTAA treaty. Unlike the threatening prediction of President George W. Bush, countries which have negotiated bilateral agreements with the United States have not refused to extend also agreements with Mercosur, within the LAIA framework, toward the formation of a free trade zone (and not a customs union, given the divergence of external tariff levels) in the area of the South American Community of Nations, the forerunner of UNASUR.

Table 6 - Participation in the South-South trade: 1990-1991 and 2005-2006 (Percentages)

1990 - 1991	Latin America and Caribbean	COE	Africa	Middle East	Developing Asia	South-South
Latin America and Caribbean	14,6	4,0	1,2	1,4	3,5	24,7
Central-Oriental Europe (COE)	3,2	36,0	2,0	1,8	6,0	49,1
Africa	5,1	2,9	6,7	2,2	4,0	20,8
Middle East	4,5	2,6	2,3	6,9	17,9	34,1
Developing Asia	2,9	2,1	2,3	2,9	27,5	39,3
South-South Trade	5,2	7,7	2,5	2,8	23,9	36,0
2005 - 2006	**Latin America and Caribbean**	**COE**	**Africa**	**Middle East**	**Developing Asia**	**South-South**
Latin America and Caribbean	17,5	0,8	1,4	1,0	5,9	26,6
Central and Oriental Europe	0,6	21,0	1,3	2,7	1,8	27,5
Africa	1,3	1,3	17,8	2,1	9,7	32,2
Middle East	0,5	0,8	3,0	9,3	22,0	35,6
Developing Asia	2,5	1,9	1,9	2,9	40,5	49,8
South-South Trade	4,6	4,1	2,3	3,2	26,7	40,9

Source: Eclac, 2008.

Two processes have contributed to deepening the regional integration process independently of the United States. From the political standpoint, the project was facilitated by the proliferation of governments that reacted aggressively in the new century, to the neoliberal 1990s. In fact, the so-called Onda Rosa ("Pink Wave") was a reaction to social and political impacts of neoliberalism and its financial and currency crisis in the late 1990s, with explicit questioning of the ideologies of trade and financial liberalization associated with the

Washington Consensus: reduction of state intervention and reliance on surges of imports and external debt.[8] Societies revolted against free markets, requiring new methods of regulation of economies and new forms of international insertion that might give account of the political emergence of masses, hitherto socially excluded or at risk of exclusion. Therefore, the recovery of the State intervention involved the increase in public spending, and redistributive social policy in particular, funded in part by the capture of tax revenues from rising prices of exports, either through tax mechanisms - such as Retenciones (Argentina) - or by state control for exporters of minerals and energy.[9] The rejection of the tutelage of the IMF was an indispensable part of this process, in the midst of a realignment that dramatically reduced political and ideological influence of the United States in the region.

Table 7 - Latin America and the Caribbean: Trade by regions

		2006	2007	2008	2009	2010	Annual Rate (2006-2010)
Exports	World	6.711	7.582	8.790	6.792	8.632	65
	United States	3.354	3.502	3.807	2.818	3.541	14
	European Union	952	1.134	1.332	947	1.127	43
	Asia and Pacific	654	870	1.069	1.030	1.434	217
	China	226	355	434	482	718	335
	Other Asian	428	515	635	548	716	137
	Latin America and Caribbean	1.154	1.381	1.722	1.282	1.629	90
	Rest of the world	597	695	860	715	902	109
Imports	World	5.836	6.982	8.530	6.387	8.321	93
	United States	2.039	2.283	2.659	2.013	2.565	59
	European Union	835	1.022	1.256	962	1.188	92
	Asia and Pacific	1.286	1.612	1.990	1.576	2.239	149
	China	491	674	892	755	1.111	227
	Other Asian	795	938	1.098	822	1.128	91
	Latin America and Caribbean	1.199	1.433	1.809	1.325	1.641	82
	Rest of the world	478	633	816	511	688	96

Source: Eclac, 2011.

[8] The following countries have elected governments to the left of center politics: Venezuela (1998), Brazil (2002), Argentina (2003), Uruguay (2004), Bolivia (2005), Honduras (2005), Chile (2006), Costa Rica (2006), Ecuador (2006), Nicaragua (2006), Paraguay (2008) and Peru (2011). The one known exception is Colombia, and Chile was again ruled by groups to the right of political center in 2010.

[9] The best known case of direct control of the proceeds on exports of minerals, petroleum or energy inputs (a form of the fiscal chain effect of exports, in terms of Albert Hirschman, 1977) is the CODELCO in Chile, but as widely reported in the international press, the Venezuelan government increased control over PDVSA's revenues; in 2008 Ecuador adopted the Ley de Fondos Petroleros, which consolidated the migration of oil resources for the central government; Bolivia nationalized and increased the price of gas exports, and Paraguay assured the revision of the Treaty defining the compensation for the transferred energy from Itaipu to Brazil.

From an economic standpoint, both the typical economic policies of Onda Rosa governments as the effort of regional integration were favored by the strong recovery in world economic growth. The economic crisis had heightened trade tensions in Mercosur, which, added to economic and political tensions between Venezuela and the other members of the Andean Pact, created serious uncertainties about integration, but the context of renewed economic growth, from 2003, helped to relax them. Paradoxically, the large foreign economic extroversion of the United States, used as an argument for "selling" the FTAA, strengthened the South American political groups oppose it. Characterized by financialization, the U.S. economy has accumulated huge current account deficits as the expansion of credit for consumption and investment was bolstered by another cycle of financial assets, driven by speculation until the crisis of 2007.[10]

Table 8 - China and India: Share of world consumption of agricultural commodities (2000-2007)

	2000	2007	Variation	Participation In total variation (%)	Participation in world comsuption 2000	2007
Wheat, million of tonnes						
China	110,3	104,0	-5,69	-17,4	18,9	16,8
India	66,8	75,9	13,51	25,0	11,5	12,2
World	583,6	619,7	6,19	100,0		
Corn, million of tonnes						
China	120,2	149,0	23,92	17,2	19,8	19,2
India	12,0	16,5	38,08	2,7	2,0	2,1
World	608,3	775,1	27,43	100,0		
Rice, million of tonnes						
China	134,3	127,3	-5,18	-23,7	34,1	30,1
India	76,0	91,6	20,60	53,2	19,3	21,7
World	393,3	422,7	7,48	100,0		
Soy, million of tonnes						
China	26,7	48,1	79,98	34,5	15,6	20,6
India	5,3	9,2	74,80	6,4	3,1	3,9
World	171,6	233,5	36,12	100,0		
Soy oil, million of tonnes						
China	3,5	9,8	176,40	53,4	13,4	25,7
India	2,0	2,5	24,75	4,3	7,7	6,6
World	26,4	38,1	44,41	100,0		
Sugar, million of tonnes						
China	8,5	13,0	53,37	19,5	6,6	8,6
India	17,3	22,1	27,85	20,7	13,6	14,7
World	127,6	150,9	18,21	100,0		

Source: Eclac, 2008

Table 9 - China and India: Share of world consumption of oil and metals (2000-2007)

	2000	2007	Variation	Participation in total variation (%)	Participation in World Consumption 2000	2007
Oil						
China	4,8	7,9	64,6	34,7	6,3	9,2
India	2,3	2,7	21,9	5,6	3,0	3,2
World	76,3	85,2	11,6	100,0		
Steel – finished products						
China	124,28	408,30	228,5	63,4	16,3	33,8
India	26,30	50,80	93,2	5,5	3,5	4,2
World	760,72	1208,50	58,9	100,0		
Refined Aluminum						
China	3,50	12,35	252,9	73,5	14,0	33,3
India	0,60	1,02	69,3	3,5	2,4	2,7

[10] On the concept of financialization, see Braga (1997) and Carneiro (2010a). About the imbalances of the United States and its global impact, see Silva (2006).

World		25,06	37,10	48,0	100,0
Refined Copper					
China		1,93	4,86	152,1	102,9
12,7	26,9				
India		0,24	0,44	83,8	7,1
1,6	2,4				
World		15,19	18,04	18,8	100,0
Refined Zinc					
China		1,96	3,59	83,2	74,8
21,6	31,9				
India		0,18	0,48	172,1	13,9
1,9	4,3				
World		9,06	11,24	24,0	100,0

Source: Eclac, 2008.

The external deficit of the United States supported the increase in prices of commodities exported by South America, either directly through primary imports, or indirectly through the speculative demand for commodities, or by demand for commodities by major exporters of manufactured goods in Europe and Asia (especially Germany, Japan and China). China, in particular, has increased its demand for commodities by expanding its domestic market driven by large investments, and consolidate herself, over the decade, as the central axis of the regional division of labor in Asia, and thence an export platform to Europe and the United States (Medeiros, 2010). The country has greatly increased its share in world demand for various commodities in a few years and, together with Asia (particularly India), contributed positively to increase their prices.

Table 10 - China: Participation in global consumption of basic products between 2002 and 2007

Basic product	Participation on world consumption		Price increase
	2002	2007	2002-2007
Oil	6,9	9,3	185,1
Minerals and Metals			
Iron ore	22,3	43,9	184,7
Copper	18,2	27,1	356,5
Aluminum	21,1	33,2	95,4
Zinc	22,4	32,4	316,4
Oil seeds			
Soy	18,4	20,9	80,6
Soy Oil	21,2	25,9	85,1
Fish flour	23,0	27,5	83,6
Tropical foods and beverages			
Coffee	0,3	0,4	125,6
Sugar	7,9	9,3	46,4
	8,8	9,4	28,6
Meet			
Cattle Beef	10,6	12,3	22,6
Birds	16,8	17,2	23,9
Forest products			
Sawnwood	4,0	8,6	63,6
Chemical Pulp	5,7	7,8	55,5

Source: Jenkins, R. (2011)

Thus, directly or indirectly, the Asian demand for commodities related to the dynamic growth of the United States and China, transmitting dynamic effects and allowing the countries of South America, participants or not of Onda Rosa, to diversify the destination of their exports, increase tax revenues, accumulate foreign exchange reserves and reduce its net external liabilities, with the IMF and private sources. In addition to the diversification of export markets, the countries of South America experienced a significant expansion of the

internal market, in some cases related to the improvement of income distribution, but in all cases with the credit expansion facilitated by falling interest rates.

According to Carneiro (2010), the Brazilian economy was also led by the expansion of the internal market, especially after the recovery of imports eventually led to a negative contribution of net exports to growth, in the mid-decade. Indeed, the openness of the Brazilian economy to the outside world, by the side of imports, increased structurally since the 1990s, contracting during the crisis and currency devaluation (1999-2003), and recovering with the resumption of economic growth. Thus, the weight of Brazilian imports in total imports from South America reached its highest values in the last decade.

Table 11 - Brazilian imports / total imports of South America: 1992-2010 (US$ million)

YEAR	BRAZIL	SOUTH AMERICA (EXCLUDING BRAZIL)	RATIO
1992	20.554.091	68.534.739	29,99%
1993	25.256.000	75.708.338	33,36%
1994	33.078.690	54.325.490	60,89%
1995	49.971.896	85.513.439	58,44%
1996	53.345.767	91.293.116	58,43%
1997	59.747.227	111.931.754	53,38%
1998	57.763.475	111.543.875	51,79%
1999	49.301.557	87.590.034	56,29%
2000	55.850.663	90.125.105	61,97%
2001	55.601.758	89.226.872	62,32%
2002	47.242.654	70.861.492	66,67%
2003	48.325.566	79.620.632	60,69%
2004	62.835.615	108.459.533	57,93%
2005	73.600.375	137.976.651	53,34%
2006	91.350.840	171.036.463	53,41%
2007	120.617.446	217.886.922	55,36%
2008	172.984.767	281.164.153	61,52%
2009	127.722.342	211.968.790	60,26%
2010	181.648.675	275.433.003	65,95%

Source: UNCTADstat, BID, MDIC.

Despite the structural increase of the import coefficient in Brazil, and the political and institutional efforts to integrate regional trade, South America did not increase her significance as origin of Brazilian imports. We have seen how, in the midst of trade liberalization in the 1990s, the Brazilian industrial imports originating from South America (except Argentina) did not grow in the same proportion as exports, partly because of productive asymmetries in the region, partly because of the geographical pattern of foreign trade subsidiaries, located primarily in Brazil. According to Camargo (2007), the pattern was reinforced in the next decade, when the increase in Brazilian imports oriented itself even more for extra-regional markets.

Table 12 - Weight of extra-regional imports in Brazilian import bill: 1992-2010 (US$)

Year	Extra-regional Imports	Total Imports	Ratio
1989	15.094.718.661	18.263.432.738	82,65%
1990	17.277.062.328	20.661.362.039	83,62%
1991	17.575.230.372	21.040.470.792	83,53%
1992	17.181.632.724	20.554.091.051	83,59%
1993	20.769.699.263	25.256.000.927	82,24%
1994	27.055.350.162	33.078.690.132	81,79%

1995	40.790.136.694	49.971.896.207	81,63%
1996	42.649.369.918	53.345.767.156	79,95%
1997	47.897.602.533	59.747.227.088	80,17%
1998	46.395.781.796	57.763.475.974	80,32%
1999	40.464.493.187	49.301.557.692	82,08%
2000	44.973.055.254	55.850.663.138	80,52%
2001	46.307.845.399	55.601.758.416	83,28%
2002	39.612.091.021	47.242.654.199	83,85%
2003	40.670.125.147	48.325.566.630	84,16%
2004	53.557.147.572	62.835.615.629	85,23%
2005	62.866.692.286	73.600.375.672	85,42%
2006	76.387.561.199	91.350.840.805	83,62%
2007	102.101.144.884	120.617.446.250	84,65%
2008	148.845.074.895	172.984.767.614	86,05%
2009	108.606.903.226	127.722.342.988	85,03%
2010	155.765.208.516	181.648.675.604	85,75%

Source: MDIC.

Since the creation of LAFTA to open regionalism in the 1990s, the regional integration initiatives always favored economic issues and, above all, commercial ones. As stated by Raul Prebisch (1959; 1964), the emphasis on free trade would create trade imbalances associated with the polarization of industrial development in the larger countries, limiting the replacement of a of inter-sector trade pattern by an intra-sector one. For various reasons, Brazil was, undeniably, the country of the region where industrial development has deepened further, partly because the capability of state intervention (including companies and state banks) advanced to the point of getting to coordinate public and private investments, inclusively foreign affiliates that have dominated key industrial sectors in the country (Tavares, 1974; Evans, 1979), as in all advanced economies in Latin America (Fajnzylber, 1983). Since there is, according Paranariello (2007), great disproportion of scale, productivity and diversification into other economic sectors (agriculture, services, and in some cases, mineral extraction) of Brazil vis-à-vis its regional partners, the country has never worked as a locomotive absorbing regional exports in a big scale. Historically, the model of regional integration was characterized, from the perspective of Brazilian foreign trade, by the fact that Brazil has a limited capacity to enhance growth of its regional partners, by the side of intra-regional imports. This potential, in turn, fell in the last expansionary cycle in relation to the 1990s, particularly for partners where he was relatively large (Mercosur), while rising to Bolivia (where it is important, thanks to exports of gas) and Colombia (which is negligible).

For its part, other countries in the region are much more dependent on intra-regional imports than Brazil. Brazil was much benefited by this asymmetrical pattern, as the growth of commodity exports and internal market at domestic neighbors increased the demand for manufactured goods imported from Brazil. On the one hand, the whole of South America reversed in the last decade large trade deficits with the rest of the world characteristic of the 1990s. On the other hand, Brazil has built up large trade surpluses with South America. The trade surplus of South America (excluding Brazil) with the rest of the world thus helped to finance her trade deficit with Brazil.

If Brazil is not the central engine of regional growth, its industrial exports were favored by growth of internal market of the commodity-exporting countries in the region. It seems set up a pattern of inter-sectoral trade specialization, with two faces: South America as a whole depends on commodity exports to finance manufacturing imports (within and outside

the region), while Brazil significantly increased its intra-regional exports of manufactured goods. Thus, the importance of South America in Brazil's industrial exports has increased, approaching the peak reached in the period of exchange appreciation of the 1990s.

Table 15 - Export of Manufactured goods by Brazil: South America Participation

Year	To South America	Total Exports	Ratio
1992	5.926	20.754	28,6%
1993	7.435	23.437	31,7%
1994	7.941	24.959	31,8%
1995	8.610	25.565	33,7%
1996	9.330	26.413	35,3%
1997	11.688	29.194	40,0%
1998	11.230	29.387	38,2%
1999	8.563	27.329	31,3%
2000	10.168	32.528	31,3%
2001	9.199	32.901	28,0%
2002	6.576	33.001	19,9%
2003	8.887	39.654	22,4%
2004	13.860	52.948	26,2%
2005	18.853	65.144	28,9%
2006	23.037	75.018	30,7%
2007	27.631	83.943	32,9%
2008	32.539	92.682	35,1%
2009	23.460	67.349	34,8%
2010	31.187	79.563	39,2%
2011 (till june)	17.065	43.384	39,3%

Source: MDIC. US$ million

Although data on foreign trade of national enterprises and foreign subsidiaries are no longer available as in the 1990s (for considerations of tax secrecy), it is likely that these results are linked to strategies to meet regional market by foreign affiliates located in Brazil. After all, while the subsidiaries have been using Brazil as a base of operations in the regional market, the big national companies allocated, historically, a proportionately lower value of its total exports to the regional market. Moreover, the recent increase in FDI of national companies in the region, when driven by the search for markets and not for the supply of natural resources, may be replacing, at least in part, exports of these companies (although it may induce other export flows because of the multiplier effect of FDI on income of the recipient country).

Regardless of the origin of the capital of the exporting firms, Brazilian exports to the region recovered quickly, in absolute terms, after the 2008 crisis. So far, the financial crisis didn´t reverse intra-regional trade as in the 1980s and late 1990s. The accumulation of foreign reserves and reduction in net external indebtedness, occurred during the expansion, improved international liquidity and solvency of the countries of South America, making the region's economies less vulnerable to abrupt contraction of capital flows and deflation of commodities than in other financial crises. Amid the financial crisis of 2008, accumulated foreign exchange reserves provide a liquidity cushion in the face of reduced financial inflows and falling export income, limiting the exchange rate depreciation and its detrimental effects on states, companies and consumers, generally less indebted in foreign currency than in other cycles. And thanks to the accumulation of reserves and the reduction in net external indebtedness, several countries of the continent have won an unprecedented space for implementing counter-cyclical macroeconomic policies during the global financial crisis, increasing the share of public spending in GDP and reducing interest rates, without experiencing uncontrollable crises as in previous junctures (ECLAC, 2009 and 2010a). Thus, the region's economies, with rare exceptions, rebounded strongly in 2010, while the intra-regional trade quickly recovered (ECLAC, 2010b).

SOME CHALLENGES TO THE ECONOMIC INTEGRATION PATTERN IN SOUTH AMERICAN IN POST-CRISIS WORLD

In the process of resolving the crisis, the countercyclical policies were reinforced by the contribution of commodity exports to China to mitigate the impact of the downturn in international demand. In fact, exports to China were the only ones that continued to grow in 2009 (reaching the rate of 8% for the whole of Latin America and the Caribbean), and those that mostly grew in 2010. This behavior shows that the synergy between the growth in China and South American economies that export commodities is still performing (ECLAC, 2010b and 2010c; TE, 2010b), although China has come to depend even more on the growth of its domestic market rather than her manufacturing exports, compared to pre-crisis period (Medeiros, 2010; EIU, 2010).

Table 16 - Growth Rate of Latin American exports by destination, 1990-2009 (% yearly)

Destination of exports	1990-2009 %y.r.	1990-2000 %y.r.	2000-2008 %y.r.	2008-2009 %y.r.
Latin America	14,0	19,0	14,3	(26,6)
LAIA	14,7	20,0	14,9	(28,1)
Argentina	16,1	23,8	13,6	(27,4)
Brazil	15,7	24,0	12,2	(25,8)
Chile	14,4	20,3	15,5	(35,7)
Uruguay	12,9	18,1	11,0	(17,5)
China	**26,8**	**22,8**	**34,0**	**12,5**
México	12,5	18,1	12,7	(31,9)
United States	10,2	17,9	7,0	(28,6)
UE-25	7,5	6,9	14,4	(30,3)
Other	12,2	8,5	19,5	(5,4)
World	**11,2**	**14,4**	**12,0**	**(21,5)**

Source: Comtrade, *Apud* Hiratuka et ali (2011).

The fact that China has come to depend more on its domestic market does not mean, of course, that she has been disregarding the exports of coastal regions. In fact, the installed capacity for exports cannot be occupied at least the medium term by the growth of domestic demand, so that the pressure to search for external markets to offset the slowdown in developed countries tends to increase, driving up increasingly towards markets in other developing countries (CARNEIRO, 2010b). The same behavior can be expected from other traditional export economies (like Germany, Japan, Mexico, and several Asian economies), but also with a difficult change of direction, the United States (NOLAN & ZHANG, 2010). In fact, as to aggravate the global rivalry, the leader of the main deficit economy, Barack Obama, has already announced the plan, apparently impossible, to double exports in five years, with unusual bipartisan consensus (TE, 2010a). Not surprisingly, Treasury Secretary Timothy Geithner has coined the term "competitive nonappreciation" to criticize countries that seek protection from competitive depreciation of the dollar, operated by the Federal Reserve (Hudson, 2010).

Given the long period of low growth forecast for the Triad US-EU-Japan (IMF, 2011), low interest rates that will be verified in global financial centers will encourage short-term arbitrage transactions toward developing countries unable to pursue "non-competitive exchange rate appreciation." The intensity of the currency appreciation pressure on the Brazilian economy will depend on the effectiveness of capital controls imposed from the

second half of 2011 (taxation of transactions in the futures market exchange, and borrowing of different time frames), and the depth of the crisis of the European Union and its impact on global financial system. Anyway, economies to be most damaged by the movement to redefine the exchange rate and trade balance in manufacturing industry are those: 1) whose industry is oriented to the domestic market, 2) whose market is growing at higher rates than the world economy, 3) whose exchange rate is historically determined, 4) whose interest rate is much higher than the world average, 5) which are strongly export of primary commodities, especially energy. Besides Brazil, few economies in the world, if any, meet all the requirements above.

To remain these international trends, Brazilian companies may continue to lose industrial markets at home and in South America, as has been lost elsewhere. The substitution of imports for local production, absolute in some branches, that is, not only in the distribution of marginal growth of the market, is well portrayed in the rapidly expanding trade deficit in manufactured goods in 2010 and 2011 (IEDI, 2010 and 2011b). The loss of share of Brazilian exports in Latin American markets is also well documented.

Table 17 - Total losses and gains of Argentina, Brazil, México and Uruguay in LAIA´s markets , 2002-2009. US$ mil

	Market-share in LA*			2002-2005		2005-2009	
	2002	2005	2009	Losses	Gains	Losses	Gains
Argentina	0,9%	0,8%	0,8%	(4.986.740)	3.002.875	(5.658.266)	4.884.196
Brazil	3,3%	6,1%	5,3%	(1.281.846)	11.049.414	(10.779.189)	5.469.076
México	0,9%	1,2%	1,9%	(1.129.933)	1.998.613	(1.565.862)	5.005.458
Uruguay	0,3%	0,4%	0,4%	(322.347)	733.372	(1.307.812)	940.750

Nota: * Weight of each country in total imports of LAIA.
Source: Comtrade, *Apud* Hiratuka et ali (2011).

Table 18 - Gains and Losses of Argentina, Brazil, México and Uruguay in LAIA´s markets, against main trade partners of the region, 2002-2009 (in % of the total of Losses and Gains for each exporting country)

	Gains				Losses			
Brazil								
	China	EU	USA	Other LAIA	China	EU	USA	Other LAIA
2002-2005	0,5	17,9	48,2	14,1	13,2	15,8	23,2	24,7
2005-2009	1,8	14,4	43,3	15,4	24,6	8,7	13,2	27,9
Argentina								
	China	EU	USA	Other LAIA	China	EU	USA	Other LAIA
2002-2005	0,8	17,6	51,4	17,8	3,0	6,7	16,5	29,4
2005-2009	0,4	13,6	36,8	31,2	12,9	12,9	18,6	29,3
México								
	China	EU	USA	Other LAIA	China	EU	USA	Other LAIA
2002-2005	0,9	9,9	66,7	3,2	31,6	14,6	17,3	15,3
2005-2009	0,9	18,3	40,4	31,8	56,0	9,1	14,9	6,6
Uruguay								
	China	EU	USA	Other LAIA	China	EU	USA	Other LAIA
2002-2005	0,8	17,2	50,2	11,5	8,0	9,7	17,7	49,8
2005-2009	1,6	16,3	41,9	23,5	20,3	30,7	14,7	17,1

Source: Comtrade, *Apud* Hiratuka et ali (2011).

Despite the loss of Brazilian participation in the Latin American market for manufactured goods, the importance of Brazilian surplus with South America in Brazil total trade surplus has risen since 2003, during the expansion phase of the global economy. It

increased again in 2010 despite the recovery in prices of basic goods characteristic of extra-regional exports from Brazil, but seems to shrink in 2011.

Table 19 - Trade Balance of Brazil: Participation of South America (US$)

Year	Trade Balance	Surplus with South America	Participation
1992	15.238.894.793	3.126.718.862	20,5%
1993	13.298.768.120	3.676.344.455	27,6%
1994	10.466.458.730	2.697.187.206	25,8%
1995	-3.465.613.793	331.771.370	-9,6%
1996	-5.599.038.998	-419.115.676	7,5%
1997	-6.764.501.259	949.978.390	-14,0%
1998	-6.623.614.429	977.170.312	-14,8%
1999	-1.288.767.745	603.923.665	-46,9%
2000	-731.743.273	245.356.882	-33,5%
2001	2.684.834.605	990.145.614	36,9%
2002	13.195.998.836	-136.893.491	-1,0%
2003	24.877.655.445	2.516.210.873	10,1%
2004	33.841.883.137	6.444.312.388	19,0%
2005	44.928.809.227	10.503.945.507	23,4%
2006	46.456.628.726	11.787.766.982	25,4%
2007	40.031.626.580	13.388.320.006	33,4%
2008	24.957.675.295	14.224.766.601	57,0%
2009	25.272.399.817	7.893.105.448	31,2%
2010	20.154.548.049	11.263.577.015	55,9%
2011 (till nov.)	25.974.093.832	12.918.356.765	49,7%

Source: MDIC.

Table 20 – Growth rate of imports Latin American by origin, 1990-2009 (em % y.r.)

Origin of imports	1990-2009	1990-2000	2000-2008	2008-2009
	%y.r.	%y.r.	%y.r.	%y.r.
Latin Am.	15,0	20,4	14,5	(25,1)
LAIA	14,8	20,2	14,7	(26,9)
Argentina	12,3	16,8	10,9	(16,1)
Brazil	17,3	24,4	16,4	(30,8)
Chile	14,7	19,9	15,5	(30,9)
Uruguay	7,7	7,6	9,2	(2,3)
China	**30,6**	**32,2**	**35,4**	**(14,4)**
México	19,8	27,9	16,9	(23,6)
United States	10,8	19,9	5,2	(23,6)
EU25	10,3	13,5	11,2	(22,0)
Others	12,1	14,1	16,1	(29,3)
World	**12,5**	**17,9**	**11,6**	**(24,3)**

Source: Comtrade, *Apud* Hiratuka et ali (2011).

The participation of South America in Brazilian manufactured exports also increases, and the more the higher the technological intensity of goods (FEDERASUR, 2011). Together with the rise in imports in the Brazilian market, the increased importance of South America in Brazilian trade surplus and exports is similar to processes characteristic of the 1990s. In that decade, as we have seen, the continent inserted itself passively in the changing geography of intra-firm trade, led by the decision centers of transnational groups, and affected by exchange rate and industrial policies performed by States strongly oriented towards international competitiveness. In this context, two structural processes, difficult to reverse, were consolidated, and strengthened today: the increasing technology dependence, reflected in the import of capital goods and technology-intensive inputs; and increasing regional polarization in the distribution of industrial activities, of which approximate measure is the existence of

bilateral trade surpluses, especially in industrial trade, of Brazil, the main base of operations of subsidiaries in search of the regional market. In both cases, the importance of affiliates in trade flows has been well documented.

The current unavailability of annual data on foreign trade of national companies and foreign affiliates removes the certainty of the claim, but the probability is high that trade between blocs, such as ten years ago, is still strongly influenced by the decisions of transnational corporations. And it is clear that these decisions tend to limit the replacement of an inter-sectoral trade pattern for an intra-sector one within the region, in a context of trade liberalization. In the case of automobiles and auto parts trade between Brazil and Argentina, the threat to the main regional integrated supply chain is not negligible (LEO, 2010b). Not surprisingly, the year of 2011 has witnessed an increase of trade conflicts having as object the automobile trade in Mercosur, in circumstances in which the partners are fighting to defend portions of the regional market - which has affiliates at the top of the production chain – facing an accelerated increase of imports (cars, capital goods, parts and components) from outside the region, despite the growing economies of scale of the automobile industry in the region (Lemos & Azevedo, 2011).

Table 21 - **Brazil: trade with regions and selected countries** (US$ million)

	1990			1995			2000			2007			2008			2009		
	Export.	Import.	Balance	Export.	Import.	Balance	Export.	Import.	Balance	Export.	Import.	Balance	Export.	Import.	Balance	Export.	Import.	Balance
LAC[a]	3647	3969	-322	10566	11137	-571	13671	11881	1790	40818	21038	19780	49977	28409	21568	34354	22635	11719
USA	7733	4505	3228	8799	12752	-3953	13390	1337	12053	25336	18890	6446	27735	25850	1885	15745	20214	-4469
EU[b]	10164	4883	5281	12912	14981	-2069	14848	1478	13370	38922	25808	13114	44707	34486	10221	32712	28179	4533
Asia 12[c]	5244	2391	2853	7887	7443	444	6254	8491	-2237	24069	29032	-4963	36534	44298	-7764	35153	34373	780
China	382	203	179	1204	418	786	1085	1222	-137	10749	12618	-1869	16403	20040	-3637	20191	15911	4280
Japan	2348	1612	736	3102	2726	376	2474	2961	-487	4321	4610	-289	6115	6807	-692	4270	5368	-1098
Rest	4623	6711	-2088	6341	7421	-1080	6957	8362	-1405	31504	25854	5650	38990	40154	-1164	35031	22246	12785
Total	31411	22459	8952	46505	53734	-7229	55119	55851	-732	160649	120621	40028	197942	173197	24745	152995	127647	25348

Source: ECLAC (www.eclac.org/comercio), based on UN Comtrade.
Notas: a: Latin America and Caribbean; b: European Union; c: Asia: Australia, China, Hong Kong-China, Indonésia, Japan, Sputh Corea, Malasia, New Zealand, Philipines, Cingapore, Tailande and other of Asia n.e.s. (Non English Speaking).

In addition to the challenges posed by capital inflows that induce exchange rate appreciation, by increasing competition for foreign markets to offset the slowdown in developed countries, and by the geographical pattern of intra-firm trade, a key problem posed for the preservation of the pattern of intra-regional trade characteristic of South America is the increasing penetration of Chinese exports on South American markets, driving out local competitors in the manufacturing industry.[11]

Table 22 - South America: Ranking of China in Trade (in value, 2000 e 2009)

	Exports		Imports	
	2000	2009	2000	2009
Argentina	6	4	4	3
Bolívia	18	11	7	4
Brazil	12	1	11	2
Chile	5	1	4	2
Colombia	36	6	9	2
Equator	18	16	10	3
Paraguay	15	15	3	1

[11] See especially GALLAGHER & PORZECANSKI, 2010; LÉLIS, CUNHA & LIMA, 2010; JENKINS, 2010 e 2011; HIRATUKA et al., 2011; BARBOSA, 2011; ACCIOLY et al., 2011.

Peru	4	2	9	2
Uruguay	4	4	7	3
Venezuela	35	2	18	3

Source: Eclac, 2011.

Table 23 – Participation of China in South-American imports

YEAR	Argentina	Venezuela	Bolivia	Ecuador	Chile	Uruguay	Paraguay	Peru	Colombia
1989	0,36%	0,00%	0,43%	0,02%	0,74%	0,23%	0,00%	0,97%	0,02%
1990	0,78%	0,00%	0,58%	0,04%	0,81%	0,42%	0,00%	0,72%	0,03%
1991	0,67%	0,01%	0,42%	0,07%	1,28%	0,45%	0,00%	0,63%	0,18%
1992	1,15%	0,05%	0,67%	0,11%	1,55%	0,49%	0,00%	0,55%	0,40%
1993	1,28%	0,03%	0,34%	0,35%	2,02%	0,67%	0,00%	2,14%	0,55%
1994	1,01%	0,08%	0,84%	0,07%	2,52%	1,04%	0,00%	1,95%	0,76%
1995	3,02%	0,00%	1,04%	0,63%	2,62%	1,21%	0,00%	3,19%	0,86%
1996	2,94%	0,00%	0,76%	0,02%	3,06%	1,46%	0,00%	2,39%	0,94%
1997	3,30%	0,00%	0,49%	1,06%	3,64%	1,72%	0,00%	2,53%	1,20%
1998	3,72%	0,19%	0,61%	1,18%	4,41%	2,07%	0,00%	2,59%	1,54%
1999	3,89%	0,54%	1,45%	1,65%	4,74%	2,65%	0,00%	3,34%	2,13%
2000	4,58%	1,27%	3,13%	3,07%	5,71%	3,24%	11,44%	3,90%	3,03%
2001	5,25%	2,04%	5,06%	4,16%	6,28%	3,97%	11,62%	4,84%	3,71%
2002	3,67%	1,93%	5,24%	5,25%	7,16%	3,83%	12,64%	6,19%	4,20%
2003	5,20%	2,11%	5,14%	7,37%	7,42%	3,93%	12,38%	7,61%	4,94%
2004	6,25%	2,89%	5,77%	9,19%	8,25%	5,54%	15,61%	7,58%	6,29%
2005	7,81%	4,77%	5,81%	9,59%	8,51%	6,25%	19,14%	8,46%	7,62%
2006	9,14%	7,22%	6,80%	9,57%	10,03%	7,35%	25,62%	10,35%	8,47%
2007	11,39%	9,59%	7,73%	11,66%	11,42%	9,60%	n.d.	12,11%	10,02%
2008	12,37%	9,46%	8,31%	12,48%	12,01%	10,17%	n.d.	13,60%	11,43%

Source: ECLAC - Banco de Datos Estadísticos de Comercio Exterior (Badecel)

The Chinese economy has been considered the center of the joint Asian production and exports network, and its competitiveness reflect, in a way, the synergies generated by the production networks of the region as a whole (Medeiros, 2010; Baumann, 2011, Leão,2011). From the standpoint of foreign trade, the country is abandoning the traditional role as a center of low value added operations led by foreign companies (with their own or associated operations), to transform itself into an economy with a large number of patents and technological innovations (not just marginal), thus increasing its technological profile (and added value of exports), either with locally owned businesses or affiliates (Zou & Stembridge, 2010; IEDI, 2011th). Unless I am mistaken, there are few studies to identify the ownership of capital of companies exporting to South America, but it is likely to be occurring an expansion of trade both between subsidiaries (from China to South America) and in exports of Chinese firms, many of which are owned by the State (in whole or in part), associated or not to foreign capital. In this case, the threat of displacement of regional production and trade can involve many different branches of manufacturing industry.

In the case of exports by subsidiaries, there can be a direct threat to trade controlled by foreign affiliates located in South America, involving at least some production chain, based on internal decisions to the corporation, I mean, based on transfer prices. This would reinforce the asymmetry of prices of industrial exports from the Chinese economy and South America, already sizable for several reasons. Given the importance of exports of foreign affiliates to industrial and intra-sectoral trade between South America countries, the threat of veto to any deepening of the complementary production in South America should not be underestimated, adding to the risk of expansion of exports from parent companies themselves. Regardless of ownership of exporting companies, Chinese exports are growing faster than the average for

the Brazilian and regional markets. As shown by Hiratuka et ali (2011, p. 42), although China has gained space in world trade, it "is 'over-represented' in imports ... and ´underrepresented´ in Latin American exports... In other words, China is a relatively more important supplier of imports for Latin America than for the world and, on the other hand, is a relatively less important client for the region's exports than the whole world", although it is growing rapidly in this regard.

Table 24 - World and Latin America Trade: Ranking of China as exporter and importer

	Ramking of China:				GOI*	
	world exports	world imports	Latin American exports	Latin America imports	Exp.	Imp.
1992-1995	3%	3%	1%	1%	0,29	0,27
1996-2000	4%	3%	1%	2%	0,30	0,64
2001-2005	6%	5%	3%	5%	0,42	1,01
2006-2008	9%	6%	4%	10%	0,48	1,55
2009	11%	8%	7%	13%	0,65	1,64

Note: * The Geographical orientation index (GOI) is the ratio between China´s participation in Latin American exports (imports) and China´s participation in world exports (imports)
Source: Comtrade, *Apud* Hiratuka et ali (2011).

Another reason that makes China a key to future economic integration in South America is Chinese demand for commodities, essential to sustain both the dollar revenue that Brazil uses to finance its overall trade deficit in industrial goods, as those that UNASUR partners use to finance their trade deficit in industrial goods within the region (and beyond). No doubt that both the macroeconomic behavior of the Chinese economy, and trends in commodity prices, are subject to profound uncertainty, which make frivolous any speculation about it. However, there is some probability that the deepening of the European crisis, especially if accompanied by a strong deceleration of the Chinese economy, may cause significant reduction of prices and quantities of commodity exports, hurting economic growth and balance of payments of some economies of South America, with deleterious effects on trade and intra-regional investment. In this case, balance of payments problems, combined with recession or slowing of the growth of domestic markets and increased international competition for foreign markets, could bring the resurgence of protectionism and bitter trade wars in South America.

Table 25 – Loss, against China competitors, of exports towards United States (as % of each country´s exports to USA)

	Argentina	Brazil	Costa Rica	Domenican Republic	El Salvador	Guatemala	Honduras	Mexico	Paraguay	Uruguay	Total for 18 Latin American countries
1996-2001	-1.8%	-4.1%	-1.3%	-2.4%	6.5%	6.2%	3.8%	-1.1%	-6.9%	-5.8%	-1.0%
2001-2006	-5.1%	-7.7%	-7.8%	-13.0%	-12.3%	-10.5%	-7.7%	-11.4%	-5.7%	-9.3%	-9.3%

Source: Jenkins, R. (2009).

This paper doesn´t intend to draw alternative scenarios, perhaps frivolous in the face of current international uncertainty. It´s important to emphasize, though, the vulnerabilities that the model of economic integration in South America structurally preserves. The structural sources of vulnerability have been identified by Raul Prebisch (1959; 1964): the possibility of an abrupt fall of basic commodities prices, hurting the capacity to import of countries specialized in primary exports (be them neoliberal or resource nationalist); the productive asymmetries and trade imbalances of a regional integration which lacks mechanisms of

collective management of trade, and policies for the complementation of productive structures, oriented towards mutual industrial diversification on an increasing scale. The facts that South American countries are in unequal stages of economic development, and have different economic strategies (maybe even more complex than the developmental, resource nationalist, and neoliberal classification), don´t bodes well for future economic integration.

Prebisch also listed out a set of proposals to overcome these vulnerabilities in a profoundly different historical context. It is not the purpose of this article to repeat or update the proposals of the old program of developmental regionalism. Of course, one might think, in theory, in a set of proposals (some already rooted in the contemporary rhetoric of integration, although maybe not in its practice) that can take the current integration project in directions less dependent on the pace of Asian demand for commodities or the distribution of tasks between subsidiaries of large transnational groups (with headquarters in developed countries in crisis). These proposals would consist, probably, in joint efforts not only in terms of infrastructure integration or sharing foreign reserves, but the regional collective defense against exports based on transfer prices (not to mention a common external tariff among the partners of the defense); in FDI attraction and its regional allocation, prompting the international distribution of productive operations that would include a selected set of supply chains; in the definition of goals of reduction of regional trade imbalances; in the field of a regional policy on government procurement, particularly when they involve bilateral public funding; in collective efforts to develop new industries that use natural resources shared regionally (eg, biotechnology, aiming the sustainable use of biodiversity of regional ecosystems); perhaps even in regional Sovereign Wealth Funds that prevent the exchange rate appreciation, and finance regional projects, to mitigate asymmetries and induce productive complementarities, at subsidized interest rates (though higher than the negative real interest rates expected to apply on the U.S. Treasury Bonds). To do these proposals without researching their conditions of viability, however, would be frivolous.

Rather than repeat Prebisch proposals or update them, we would better recognize the difficulty of performing them, considering that 1) developmental, neoliberal and resource nationalists governments don´t even agree on the basic objectives of regional integration, and 2) production asymmetries and trade imbalances are already big, and might increase in a region that depends on decisions of foreign subsidiaries which can, in a way, "divide and rule" over governments that are anxious to attract them. For instance, it is not a good sign for regional cooperation, in a likely scenario of a longer world crisis, the fact that Argentina is deliberately and publicly inducing foreign direct investment of Brazilian companies in its territory by placing arbitrary regulatory barriers to their exports from Brazil. On the other hand, the increasing dependence on the South American market of Brazilian industrial exports may increase the political resistance, in Brazil, against proposals for regulation of regional trade and inducements of productive complementation. Under pressure, the expected Brazilian reaction to Argentine protectionism is retaliation rather than compromise, when Argentina unilaterally seeks to create a substitute for the lack of regional cooperation mechanisms for productive complementation. The fact that Brazil, correctly, is also raising trade barriers to stimulate FDI from Asian electronics firms, or from automobile corporations, indicates that the two countries know how to defend their interests, although not necessarily in a cooperative and consensual way, or oriented to complement regional production chains. What could do the smaller countries of South America in an unregulated competition designed to attract affiliates that tend to choose the largest markets, negotiating with governments that prefer them in their own territory that in their neighbors?

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