DOKTORSKA DISERTACIJA

Testing the Procyclicality of Stock Market Indices in South-eastern European Countries in Transition, as Compared with World Stock Exchange Centres

mag. Anita Peša

Marec, 2011

UNIVERZA V MARIBORU
EKONOMSKO-POSLOVNA FAKULTETA

DOKTORSKA DISERTACIJA

Testing the Procyclicality of Stock Market Indices in South-eastern European Countries in Transition, as Compared with World Stock Exchange Centres

mag. Anita Peša
Mentorica: red. prof. dr. MEJRA FESTIĆ
Lektor: Michael Manske

Marec, 2011

UDK klasifikacija: 332

Table of contents:

TABLES:

GRAPHS:

Title: Testing the Procyclicality of Stock Market Indices in South-eastern European Countries in Transition, as Compared with World Stock Exchange Centres

Abstract: We tested the hypothesis of procyclicality for economic activity and the stock exchanges of southeastern European countries relative to the main world Stock Exchange Centers, with a particular emphasis on Croatia (as a country preparing for EU accession) in order to demonstrate the dependence of small financial markets on large ones and to investigate the spillover effect, i.e., the degree and pace of integration of 'new' financial markets into larger ones. Our estimates for the southeastern countries individually and together support the hypothesis of an increase in stock exchange indices in the period of transition, due to the opening of the market economy followed by large capital inflows. Our results for Croatia provided us with evidence that EU accession is a trigger for the better financial integration of a candidate country. The observed countries that are already in the EU wing (Bulgaria, Romania and Slovenia) or those in the process of joining (Croatia and Montenegro) were found to be more dependent on the global financial markets and more exposed to adverse co-movements than other transitional southeastern countries (e.g. Bosnia and Herzegovina and Serbia).

Naslov: Testiranje procikličnosti borznih indeksov v državah Jugovzhodne Evrope v tranziciji v primerjavi z World Stock Exchange centri

Povzetek: V preteklih nekaj letih se je ekonomska znanost intenzivno ukvarjala z integracijo finančnih trgov. Teorije o cikličnih gibanjih na finančnih trgih so se pojavile v devetdesetih letih zaradi okrepljenega postopka monetarne integracije v poenoteni evropski monetarni uniji. Glavna tema mnogih razprav je vse bolj temeljila na raziskavah prenosa finančnega momentuma z razvitih na nastajajoče (običajno manj razvite) trge. Razpravo so še spodbudile nedavne finančne krize, ki se vse bolj širijo in tako ustvarjajo »učinek okužbe«.

Finančna globalizacija se je začela v sredini osemdesetih let prejšnjega stoletja s porastom čezmejnih finančnih tokov pri industrijskih ekonomijah ter med industrijskimi ekonomijami in ekonomijami v razvoju, kar je vodilo k boljši globalni porazdelitvi kapitala, skupni monetarni politiki in ekonomski rasti z odstranitvijo trenj in preprek, medtem ko so se izboljševale mednarodne možnosti za delitev tveganj. Na drugi strani je prišlo tudi do nekaterih manj pozitivnih učinkov, kot je pretirana konsolidacija v tržnem segmentu, ki lahko ovira konkurenčnost.

Monetarna integracija v poenoteni Evropski uniji je predpogoj za proces ekonomske konvergence, finančni trg države članice, ki je dobro integriran v globalni finančni trg pa je v tem smislu glavna značilnost, saj povečuje stabilnost ter zmanjšuje ekonomsko in finančno ranljivost, hkrati pa povečuje gospodarsko rast, čemur sledijo močnejše tržne povezave z EU.

Evropski finančni trgi se soočajo s ključnimi strukturnimi in institucionalnimi prilagoditvami, katerih cilj je pospešitev finančne integracije na denarnih in kreditnih trgih ter trgih z obveznicami in delnicami, kar ustvarja boljše priložnosti za mednarodne vlagatelje, saj odpravlja tveganja, specifična za posamezne države, hkrati pa jim omogoča raznolikost portfeljev med različnimi državami. Poleg omejenega lokalnega financiranja je tako na voljo večja skupina sredstev za korporacije. Integrirane borze vrednostnih papirjev zmanjšujejo strošek kapitala. Zato narašča število produktivnih naložb, kar spodbuja gospodarsko rast. Poleg tega na neodvisne borze vrednostnih papirjev vplivajo povezovanja trgov (spillovers), ki so posledica padcev. Ocenjevanje dinamike integracije delniških trgov je zato pomembno za oblikovalce monetarne politike.

Po padcu komunističnih in socialističnih režimov v začetku devetdesetih let prejšnjega stoletja so številne srednjeevropske in južnoevropske ekonomije vzpostavile kapitalske trge kot del svojega tranzicijskega procesa sprejemanja mehanizmov tržne ekonomije. Po odstranitvi omejitev glede kapitalskih tokov, prihodu tujih vlagateljev, oblikovanju ustreznih korporativnih struktur upravljanja in vzpostavitvi lastniških pravic sta tako tržna kapitalizacija kot dnevni obseg trženja v državah Jugovzhodne Evrope v tranziciji skokovito narasla. Ker pa so delniški trgi v teh državah še vedno majhni v primerjavi z razvitimi državami, so običajno bolj nestabilni, verjetno zaradi občutljivosti na celo relativno majhne prilagoditve portfeljev.

Po letu 2000 je večina držav Jugovzhodne Evrope (približno 55 milijonov prebivalcev) zabeležila gospodarsko rast z nizko inflacijo in napredkom na področju tržnih reform. Še

vedno pa je BDP na prebivalca v državah jugovzhodne regije nižji v primerjavi z Zahodno Evropo, kar kaže, da je pred prvimi še dolga pot.

Borze vrednostnih papirjev v Bolgariji, Bosni in Hercegovini, na Hrvaškem, v Črni Gori, Srbiji, Sloveniji in Romuniji so v reprezentativni skupini držav Jugovzhodne Evrope, ki se integrirajo v Evropsko unijo. Bolgarija in Romunija, ki sta se EU pridružili januarja 2007, Slovenija, ki je postala članica EU leta 2004 in uvedla evro leta 2007, ter Hrvaška, ki je v postopku pristopnih pogajanj, so države, ki so v svojem razvoju dosegle bistveno več kot ostale države v regiji. Podpora pristopu EU je najboljša spodbuda, ki jo regija lahko dobi. Vlade in drugi državni organi držav v regiji Jugovzhodne Evrope so nedavno začeli izvajati zahtevne reforme.

Obstaja precej empirične literature glede procikličnosti borznega trga kot znaku finančne integracije, zlasti za države Srednje in Jugovzhodne Evrope, Azije ter Severne in Južne Amerike. Nas je zanimala zlasti integracija držav v tranziciji v EU. V zadnjem desetletju so se Bolgarija, Češka republika, Estonija, Madžarska, Latvija, Litva, Poljska, Romunija, Slovaška in Slovenija pridružile EU, nekatere od njih pa so tudi uvedle evro. Druge države v tranziciji, kot so Hrvaška, Bosna in Hercegovina, Črna Gora in Srbija, bolj ali manj uspešno sodelujejo v procesu integracije v EU.

Osredotočili smo se na finančno integracijo v EU, zlasti za države Jugovzhodne Evrope, ki so v tranziciji. Novejša literatura vključuje precej raziskav na področju borznih trgov tranzicijskih držav, ki so se že pridružile ali so v procesu pridružitve Evropski uniji. Pridružitev monetarni uniji je predpogoj za proces ekonomske konvergence; finančni trg države članice, ki je dobro integriran v globalni finančni trg, je v tem smislu ključna značilnost, saj povečuje stabilnost ter zmanjšuje ekonomsko in finančno ranljivost, hkrati pa povečuje gospodarsko rast. Tržne povezave z EU so vse močnejše in omogočajo nadaljnjo ekonomsko integracijo do uradne pridružitve držav Jugovzhodne Evrope EU.

Cilj te študije je raziskati borzne trge v Bolgariji, Bosni in Hercegovini, na Hrvaškem, v Črni Gori, Srbiji, Sloveniji in Romuniji kot reprezentativni skupini Jugovzhodne Evrope v primerjavi z borzami razvitih držav, ki jih predstavljajo Združeno kraljestvo in Združene države Amerike.

Cilj te disertacije je razdeljen na teoretični in empirični del. Cilji v teoretičnem delu vključujejo pregled relevantne literature na naslednjih področjih: evropska finančna integracija, trg in institucije ter borzna tehnologija in pregled teorij ciklov borznih trgov.

Pri empirični raziskavi so cilji naslednji: zbiranje podatkov, izbira podatkov, priprava izbranih podatkov za analizo ter prikaz medsebojne odvisnosti in usklajenosti gibanj borznih trgov v evropskih in svetovnih borznih centrih, s tem pa razvoj korelacijske analize in predstavitev teh rezultatov.

Disertacija izhaja iz treh hipotez:

Finančni sistemi držav Jugovzhodne Evrope v tranziciji (s poudarkom na Bolgariji, Bosni in Hercegovini, Hrvaški, Črni Gori, Romuniji, Srbiji in Sloveniji) so odvisni od evropskega in svetovnih finančnih sistemov; globalni finančni sistem je dovzeten za učinek „spillover" z večjih finančnih trgov na manjše, poslovni cikli pa se sčasoma pospešujejo zaradi globalizacije in informacijskih ekonomij.

Nadaljujemo iz predpostavke, da bo testiranje procikličnosti borznih indeksov v državah Jugovzhodne Evrope pokazalo, da so vse analizirane države v tranziciji, ne glede na njihov trenutni status (so članice EU ali ne), do določene mere že odvisne od finančnega trga EU ter da je učinek „spillover" z razvitejših finančnih trgov na manj razvite že opazen.

Predpostavljamo, da bo testiranje procikličnosti analiziranih borznih indeksov pokazalo, da se cikli sčasoma pospešujejo zaradi sodobnih informacijskih ekonomij ter civilizacijskega

in tehnološkega napredka, kar bo povzročilo posledično znanstveno raziskovanje procikličnosti in napovedi borznih indeksov.

Raziskali smo tudi procikličnost hrvaških borznih trgov s pomočjo zgodovinskih podatkov (tj. glavni ekonomski kazalniki in cene delnic indeksa CROBEX (ob koncu trgovanja) mesečno od januarja 2000 do decembra 2010) v luči pospešitve cikla borznih gibanj, da bi odkrili točko, na kateri se cikel začne pospeševati, s čimer bi dokazali predpostavko, da so pospešitve poslovnih ciklov posledica globalizacije (integracija v EU) in informacijske ekonomije.

Pri pripravi disertacije smo uporabili več metodologij. Makroekonomski pristop smo uporabili v teoretičnem delu, kjer smo preučili mednarodne in domače vire (tako znanstvene kot strokovne) s področja finančne integracije. Uporabili smo opisno metodo, da se predstavi teoretični okvir postopka in razvoj svetovnega finančnega sistema ter finančnih institucij, hkrati pa tudi oblika in stopnja finančne integracije v evroobmočju. Zgodovinsko metodo smo uporabili za preučitev ključnih zgodovinskih podatkov, da se ugotovi podlaga za razvoj globalnega finančnega sistema. S pomočjo metode zbiranja podatkov smo lahko povezali strokovno znanje, stališča in ugotovitve drugih avtorjev, ki so se ukvarjali s finančno integracijo v evroobmočju. Z analitično metodo smo preučili subjekte študije, s pomočjo sintetične metode pa smo oblikovali ugotovitve študije v dejstva, s katerimi smo dokazali zastavljene hipoteze.

V praktičnem delu smo uporabili več analitičnih metod. Problem smo razgradili na enostavnejše dele in vsakega od teh analizirali prek gibanj borz držav Jugovzhodne Evrope tako neodvisno od najpomembnejših evropskih in svetovnih borznih trgov kot tudi glede na njih. Preučili smo njihovo korelacijo in medsebojno odvisnost v teku analiziranega časovnega obdobja s pomočjo zgodovinskih podatkov (petletno obdobje je bilo mesečno analizirano) in podatkov za posamezni dan o analiziranih indeksih borznih trgov, da se ugotovi časovni zamik pri prenosu informacij za borze.

Primerjalno metodo smo uporabili za korelacijo gibanj za različne indekse borznih trgov držav Jugovzhodne Evrope, ki še niso v EU, in za tiste države, ki so se že pridružile EU, glede na pomembne svetovne in evropske borze. To se je izvedlo z namenom primerjave ravni in hitrosti finančne integracije v analiziranih subjektih. S sintezo dobljenih rezultatov korelacije smo svoje ugotovitve združili v sestavljen rezultat, katerega deli potrjujejo naše osnovne hipoteze. Ob upoštevanju očitnih podobnosti med analiziranimi ekonomijami držav Jugovzhodne Evrope v tranziciji in relativno kratkega časovnega obsega smo uporabili metodologijo panelne regresije, da bi pridobili več informacij o analiziranih parametrih. Več držav Jugovzhodne Evrope je združenih v eno skupino in primerjanih z glavnimi svetovnimi trgi (ZDA in ZK). Vse manjše borze držav v tranziciji so vključene v en niz, drugi niz pa vključuje en analizirani borzni center (Dow Jones ali FTSE) za primerjavo zgodovinskih podatkov nacionalnih borznih indeksov držav Jugovzhodne Evrope s svetovnimi borznimi centri, tako da je mogoče primerjati oba niza glede na čas (mesečni podatki) ter da je mogoče določiti stopnjo in hitrost finančne integracije držav v tranziciji z Evropsko unijo. Pri uporabljenem pristopu je omogočena tako heterogenost kot tudi specifičnost spremenljivk, kar omogoča bolj informativne podatke in širši okvir za analizo pridobljenih rezultatov. Z dobljenimi rezultati je mogoče preveriti veljavnost postavljenih hipotez.

Med raziskavo smo uporabljali druge metodologije za empirične dokaze razmerja med borznimi indeksi in glavnimi (makro) ekonomskimi kazalniki, kot so kointegracije, korelacije, meddržavne regresije in panelne regresije, in sicer tehniko Johansen-Juselius (1988), model GARCH (General Autoregressive Conditional Heteroscedasticity), model

OLS (Ordinary Least Squares) in model TSLS (Two-Stage Least Squares). V praksi so številne študije pokazale, da je specifikacija GARCH (1,1) najprimernejša za analizo finančnih časovnih nizov, kot so cene delnic, stopnje inflacije in menjalni tečaji. Za vsako državo se je uporabila tudi metoda TSLS, da bi preprečili problem endogenosti, ki bi se lahko pojavil pri oceni, kjer so pojasnjevalne spremenljivke povezane z motnjami. Takšne pojasnjevalne spremenljivke so se nadomestile z ustreznimi instrumentalnimi spremenljivkami. Uporabili smo tudi panelno oceno. Tako smo države Jugovzhodne Evrope združili v skupino, da pridobimo več informacij o analiziranih parametrih ter da preprečimo morebitni problem zaradi določenih podobnosti ekonomij posameznih držav in problem relativno kratkih časovnih nizov. Vsi izračuni temeljijo na programski opremi Enviews 7.0 in Stata.

Metoda predstavitve podatkov vključuje različne grafične predstavitve, tabele in statistiko v zvezi s finančno integracijo, ki podpirajo naše teoretične hipoteze. Literatura, ki smo jo uporabili pri disertaciji, sestoji zlasti iz znanstvenih in strokovnih publikacij, člankov, knjig in digitalnih virov, vključno s statistiko, ki je na voljo na uradnih spletnih straneh analiziranih držav.

Ugotovitve kažejo, da finančni sistemi analiziranih jugovzhodnih držav kažejo znake procikličnosti ter da so borzni indeksi držav Jugovzhodne Evrope povezani z evropskimi in svetovnimi finančnimi sistemi.

Ugotovili smo, da so obravnavane države, ki so že v EU (Bolgarija, Romunija in Slovenija) ali med pristopnimi pogajanji (Hrvaška in Črna Gora) bolj odvisne od globalnega finančnega trga in bolj izpostavljene negativnim skupnim gibanjem. Empirični dokazi druge skupine manj razvitih držav, kot sta Bosna in Hercegovina ter Srbija, kažejo manjšo odvisnost od globalnih finančnih trgov, kar je v skladu s pričakovanji.

Rezultati regresije posameznih držav in združene skupine držav Jugovzhodne Evrope kažejo, da so bile v zadnjem desetletju analizirane države Jugovzhodne Evrope v tranziciji izpostavljene obsežnim tujim neposrednim investicijam, spodbudili so jih postopki integracije EU in združevanje EU, hkrati pa so bile izpostavljene globalni finančni krizi, ki se je začela leta 2008. Prehod z načrtovanih na tržna gospodarstva je prispeval k hitremu finančnemu razvoju, ki ga je dodatno spodbudila še močna prisotnost tujih bank, kar potrjujejo rezultati visokih koeficientov obrestnih mer.

Procikličnost hrvaškega borznega trga od januarja 2000 do decembra 2010 dokazuje pospešitev poslovnih ciklov skozi čas. Potrdili smo, da je sporočilo o širitvi EU sprožilo dvig borznih indeksov v državah kandidatkah.

V tej doktorski disertaciji smo odgovorili na cilje raziskave glede testiranja procikličnosti borznih indeksov v državah Jugovzhodne Evrope in pokazali, da so vse analizirane države v tranziciji, ne glede na njihov trenutni status (članice EU ali ne), do določene mere že odvisne od finančnega trga EU, ter da je učinek „spillover" z razvitejših finančnih trgov na manj razvite že mogoče opaziti (H1+H2).

Empirična raziskava kaže, da gre odpiranje tranzicijskih ekonomij z roko v roki z obsežnimi tujimi neposrednimi investicijami, ki dvignejo borzne indekse, čemur sledi rast BDP ter povečanje industrijske pridelave in trženja. Rezultat tudi dokazuje, da so borzni indeksi v državah Jugovzhodne Evrope v tranziciji v negativni korelaciji z menjalnimi tečaji, obrestnimi merami, nezaposlenostjo in javnim dolgom.

Potrdili smo, da so finančni sistemi držav Jugovzhodne Evrope (Hrvaška, Bolgarija, Bosna in Hercegovina, Črna Gora, Romunija, Slovenija in Srbija) povezani z evropskim in svetovnimi finančnimi sistemi, kar kažejo glavni svetovni borzni indeksi (tj. ZK in USA). Potrdili smo tudi učinek „spillover", tj. odvisnost malih finančnih trgov od velikih.

Ugotovili smo, da so analizirane države, ki so že članice EU (Bolgarija, Romunija, Slovenija) ali so v postopku pristopnih pogajanj (Hrvaška in Črna Gora) bolj odvisne od globalnega trga in bolj izpostavljene negativnim skupnim gibanjem kot druge (Bosna in Hercegovina ter Srbija) (H1+H2).

Rezultati regresije posameznih držav in skupine držav Jugovzhodne Evrope kažejo, da so bile jugovzhodne države v preteklem desetletju izpostavljene obsežnim tujim neposrednim investicijam, ki so jih spodbudili integracijski postopki EU (hkrati pa so bile izpostavljene tudi globalni finančni krizi, ki se je začela leta 2008), kar se kaže v empiričnem dokazu procikličnosti javnih dolgov v skoraj vseh analiziranih državah, kar vključuje tudi razvite države, kot so ZK in USA. To dokazuje, da se nedavne krize širijo in ustvarjajo »učinek okužbe« ter s širitvijo EU prehajajo prek meja vse večjega kroga držav.

Na podlagi znatnega negativnega koeficienta javnih dolgov za vse države Jugovzhodne Evrope smo zaključili, da so v državah Jugovzhodne Evrope, ki se pridružujejo EU, nujne gospodarske in socialne reforme, ki se po pridružitvi EU ne smejo končati.

Rezultati merjenja procikličnosti hrvaškega borznega trga od januarja 2000 do decembra 2010 kažejo tudi, da je začetek hrvaških pogajanj za pridružitev EU oktobra 2005 povzročil dvig cen delnic in gospodarski preporod, kar tudi dokazujejo rast BNP, obsežne tuje neposredne investicije in sprostitev trga. Pokazalo se je, da se cikli sčasoma pospešujejo zaradi sodobnih informacijskih ekonomij in globalizacije (integracija EU (H3)).

Trdimo lahko tudi, da so realni menjalni tečaji za celotno skupino držav Jugovzhodne Evrope simptomatično prociklični zaradi različnih institucionalnih značilnosti in različnih vrednosti glede na evro – kot je bilo v primeru drugih držav v tranziciji. Potrdila se je tudi negativna korelacija za obrestne mere skupine držav Jugovzhodne Evrope zaradi velike prisotnosti tujih bank v državah Jugovzhodne Evrope v tranziciji in njihove uporabe različnih finančnih proizvodov in storitev celo v globalni recesiji (in kljub njej), ki se je začela leta 2008.

1 INTRODUCTION

1.1 Introduction

Over the past several years, economic science has intensively dealt with financial market integration. Theories of cyclical movements in financial markets resurfaced in the nineties, due to the intensified process of monetary integration in a unified European monetary union. The interest of many discussions has been increasingly based on the examinations of financial momentum transfer from developed markets to emerging (generally less developed) markets. The discussion has also been further fanned by recent financial crises that are overflowing, creating a 'contagion effect'.

There is a great deal of empirical literature on the procyclicality of the stock market as a sign of financial integration, especially for the countries of Central and Southeastern Europe, Asia and the Americas. Our interest is primarily on the EU integration of transitional countries. In the last decade, Bulgaria, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia and Slovenia joined the EU and some of them have also introduced the Euro. Other transitional countries such as Croatia, Bosnia and Herzegovina, Montenegro and Serbia are more or less on their way through EU integration processes.

We focused on financial integration in the EU, especially for transitional SEE countries. Resent literature includes a significant amount of research on the stock markets of transition countries that have already joined, or are in the process of joining, the European Union. Accession to a monetary union is a precondition for the process of economic convergence; the financial market of a member country that is well integrated into the global financial market, represents a key feature in this respect because it improves stability against economic and financial vulnerability and enhances economic growth. Trade links with the EU have become stronger, leading to further economic integration by the time of the formal accession of the SEEs to the EU.

After the collapse of communist and socialist regimes in the beginning of the 1990s, a number of Central and Eastern European (CEE) economies established capital markets as part of their transition process of adopting the mechanisms of a market economy. Following the removal of restrictions on capital flows, the arrival of foreign investors, the creation of appropriate corporate governance structures and the establishment of ownership rights, both market capitalization and daily trading volumes increased rapidly in the SEEs during their transition. However, since equity markets in these countries are still relatively small compared with developed ones, they tend to exhibit higher volatility, possibly because of their sensitivity to even relatively small portfolio adjustments (Kasch-Haroutounian and Price 2001, Égert and Kočenda, 2007).

The aim of this study is to research the stock markets of Bulgaria, Bosnia and Herzegovina, Croatia, Montenegro, Serbia, Slovenia and Romania[1] as a representative

---

[1] SEE countries such as Albania, Kosovo and the Republic of Macedonia could not be observed due to limitations on data availability. After European Union membership, the availability and reliability of the data, generally improves.

group of SEE countries, in comparison with the stock exchanges of developed countries, represented by the United Kingdom and the United States. Drawing upon the methods of authors who have dealt with the correlations of stock market indices, we researched and analyzed the correlations of stock market indices in transition countries. This includes countries of the European Union (Bulgaria, Romania and Slovenia,) EU candidate countries (Croatia and Montenegro) plus other transition countries in Southeastern Europe that are not yet candidates (Bosnia and Herzegovina and Serbia). These were contrasted with stock markets in Europe and worldwide, with a particular emphasis on Croatia (as the country preparing for EU accession) in order to demonstrate the dependence of small financial markets on large ones, but also to investigate the spillover effect, i.e., the degree and pace of integration of the 'new' financial market into larger markets, by using cointegration analysis, correlations, cross-country regressions and panel regressions.

We also examined the procyclicality of Croatian stock markets through historical data (i.e. the main economic indicators and CROBEX stock prices (at closing) from January 2000 to December 2010 on a monthly bases) in light of the acceleration of the cycle of stock market movements, in order to find the break-even point when the cycles start to accelerate, to prove the premise about the acceleration of business cycles as a result of the information economy.

In our research of intraday data aimed at proving a time delay between large stock exchanges and smaller 'dependent' stock exchanges in transition countries, we followed on the findings by Égert and Kočenda (2007) who confirmed that there is asymmetry in stock markets in transition countries vis-à-vis the G-7 countries, by using multivariable GARCH models. These offer an efficient tool for analyzing lock-step shifts and the volatility of spillover of financial factors.

The findings show that the financial systems of the observed Southeastern transition countries showed symptoms of procyclicality, and that SEE stock exchange indices are connected to European and world financial systems.

We found that the considered countries, which are already in the EU (Bulgaria, Romania and Slovenia) or are in the process of negotiation (Croatia and Montenegro) depend more on the global financial market and are more exposed to adverse comovements. The empirical evidence of another group of less developed countries such as Bosnia and Herzegovina and Serbia show less dependency on the global financial markets, as was expected.

The results of individual countries' regression and the pooled SEE group imply that, in the last decade, observed transition countries of SEE were exposed to large FDI inflows, boosted by EU integration processes and EU association, but were also exposed to the global financial crisis that started in 2008. The transition from planned to market economies led to rapid financial developments, which was additionally boosted by a strong foreign bank presence, which was confirmed in the results of the high coefficients of interest rates.

The procyclicality of the Croatian stock market from January 2000 to December 2010 provided evidence for the acceleration of business cycles over time. We confirmed evidence that the announcement of EU enlargement was a trigger for a rise in stock prices in candidate countries.

The first part is structured in the following way: In chapter 1.2, the objective and the method of research are presented. In chapter 1.3 the role of the financial market is explained.

The financial system is presented in chapter 2, from the development of the international financial system (2.1), liberal markets (2.1.1) and globalization (2.1.2), followed by the structure of financial markets (2.2), financial institutions and markets (2.2.1) with leading world financial institutions (2.2.1.1), financial institutions in the SEE countries (2.2.1.2), and types of financial markets (2.2.1.3). The historical development of stock exchanges are presented in chapter 2.2.2, followed by bear and bull markets (2.2.2.1), major world stock markets (2.2.2.2), stock exchange and news (2.2.2.3), the stock exchange index (2.2.2.4), mass psychology (2.2.2.5) and the stock exchange and new technologies (2.2.2.6).

World financial crises and their legacies are presented in chapter 2.3 and regulations are in chapter 2.4 with subchapters: regulatory approach (2.4.1), safety net (2.4.2), the supervision of banks and institutions (2.4.3) and Basel I, II and III (2.4.4)

The second part - empirical research includes introduction of the empirical analyzis (3.1), chapter 3.2 provides an overview of financial integration theories. In chapter 3.3 we synthesized a macro-economic environment and the stock exchange development in observed countries. In chapter 3.4 there is an empirical literature overview on assessing financial integration and testing the procyclicality of stock exchange indices (3.5). In chapter 3.6 the methodology and data of the empirical analysis is presented and in chapter 3.7 the results of empirical research are found. The conclusion and discussion is in chapter 4.

1.2 Objective and Method of Research

1.2.1 Objective of Research

The objective of this dissertation is divided into a theoretical part and a research part. In the theoretical part, the objectives include an overview of the relevant literature in the following fields: European financial integration, market and institutions and stock exchange technology and an overview of the theories of stock market cycles.

In the empirical research, the objectives are as follows: to collect data, select data, prepare the selected data for analysis, and to demonstrate the interdependence and synchronicity of SEE stock market movements on European and world stock market centers, thereby developing a correlation analysis and presenting these results.

The dissertation proceeds from three hypotheses:

H1   The financial systems of Southeastern European countries in transition (with an emphasis on Bulgaria, Bosnia and Herzegovina, Croatia, Montenegro, Romania, Serbia and Slovenia) are dependent on European and world financial systems.

H2   The global financial system is susceptible to the spillover effect from larger financial markets on smaller ones.

H3   Business cycles accelerate over time due to globalization and information economies.

We proceed from the premise that the testing of the procyclicality of stock exchange indices in Southeastern European countries will demonstrate that all the analyzed transition countries are, regardless of their current status (European Union members or otherwise), to a certain extent already dependent on the EU financial market and that the spillover effect from more developed financial markets to less developed ones can already be noted.

It is our premise that the testing of the procyclicality of analyzed stock exchange indices will demonstrate that cycles accelerate over time due to modern information economies and civilizational and technological advancements, which will engender subsequent scholarly research of procyclicality and stock exchange index predictions.

1. 2. 2 Method of Research

Various methodologies were used in the preparation of the dissertation. A macroeconomic approach was used in the theoretical part, where we studied international and domestic sources (both scholarly and professional) from the field of financial integration. A descriptive method was applied in order to lay down the theoretical framework of the process and development of the world financial system and financial institutions as well as the form and degree of financial integration into the euro zone. A historical method was used to research key historical data in order to set the foundations for the development of a global financial system. A data-compilation method enabled us to correlate the expertise, viewpoints and findings of other authors who have dealt with the field of financial

integration in the euro zone. The analytical method serves to examine the subjects of the study and the synthetic method helps us formulate the findings of the study in concrete terms, in order to prove the set premises.

In the practical part, various analytical methods were used. We broke the problem down into its simpler constituent parts and analyzed each of the parts through the movements of the stock exchanges of Southeastern countries, both individually and relative to the most significant European and world stock markets. We examined their correlation and interdependence in the course of the analyzed time period through historical data (a five-year period analyzed on a monthly basis) and intraday data of the analyzed stock market indices in order to establish the time delay in information transmission for stock exchanges.

A method of comparison was used for the correlation of movements for different SEE stock market indices which are not yet in the EU, and for those other countries that have already joined the EU, relative to prominent world and European stock exchanges. This was done in order to compare the degree and pace of financial integration in the analyzed subjects. A synthesis of the obtained correlation results enabled us to collate our findings into a compound product that would cumulatively support our fundamental hypotheses. In view of the evident similarities among the analyzed economies of Southeastern European transition countries, and the relatively short time series, we used the methodology of panel regression in order to obtain more information on the analyzed parameters. Different Southeastern European countries are unified in one group and contrasted with the main world markets (the US and UK). All the smaller stock exchanges of transition countries are encompassed in one series, and the other series include one analyzed stock market center (Dow Jones or FTSE) for the sake of comparing the historical data of national stock market indices of Southeastern European countries with world stock market centers, so that a comparison can be made of the two series both time-wise (monthly data) and so that we may determine the degree and pace of financial integration of the transition countries with the European Union. The applied approach is catered for heterogeneity as well as specificity of variables and will, as such, yield more informative data and a broader framework for an analysis of the obtained results. The results obtained will allow us to verify if the premised hypotheses stand.

In the course of our research, we used other methodologies for empirical evidence of the relationship between stock-exchange indices and main (macro) economic indicators such as cointegrations, correlations, cross-country regressions and panel regressions. Namely: the Johansen-Juselius technique (1988), the General Autoregressive Conditional Heteroscedasticity (GARCH), Ordinary Least Squares (OLS) and Two-Stage Least Squares (TSLS). In practice, numerous studies have shown that the GARCH (1,1) specification is most suited for analyzing financial time series such as stock prices, inflation rates and exchange rates (more details on the used methodology can be found in chapter 3.6.2).

All calculations will be based on Eviews 7.0 and Stata software.

The method of data presentation includes various graphical representations, tables and statistics relative to financial integration in support of our theoretical premises. The literature used for this dissertation consists primarily of scholarly and professional publications, articles, books and digital sources, including statistics available at the official websites of the analyzed countries.

1.3 Role of the financial market

The world is a global financial market and stakeholders with savings lend money with interest to other stakeholders with different business or personal needs. There is direct and indirect financing. Direct financing means a direct flow of funds from savers/creditors to debtors/consumers. Savers are households, legal entities, governments, i.e. states and foreign savers, while debtors are also households, companies, governments and foreign debtors. Direct financing largely means selling financial instruments such as securities, which represent claims on future income or assets, but are also an obligation for a company or person selling (issuing or emitting) them (Mishkin and Eakins 2005, 117).

In the modern globalized world, this »spillover« of financial funds from those who have extra funds towards those who lack them, has stimulated the growth of the global economy and led to states, governments, companies and individuals becoming highly networked and interdependent.

These financial market characteristics have both positive and negative aspects. The positive aspects are reflected in strong economic development based on the knowledge and willingness of stakeholders who are successful in multiplying borrowed funds and thus influencing overall economic development and progress. The negative aspects are reflected in the tangible risk that the borrowed funds may not be multiplied, and that a failure, especially when considering the high level of networking and interdependence of economic stakeholders, will »spill over« and spread through the financial system at great speed, thus causing an escalation of the financial crisis. The last financial crisis which started at the end of 2008 is a clear example of a globalized financial system in which the national and regional financial markets of states depend on the ups and downs of leading financial markets such as the USA. An overview of the global financial crisis will be presented in more detail in Chapter 2.3.

We will try to prove that less-developed financial markets depend on larger ones. It should also be mentioned that this dependence is present both in the transfer of positive business trends or in the spill-over of negative ones, as was the case with the latest world crisis, which started in the center of the most powerful financial market in the word.

The second hypothesis presupposes that business cycles accelerate over time due to globalization and the information economy, i.e. an economy based on the capability to effectively create a process and apply information based on knowledge (Castells 2000, 99). Due to the high level of networking between financial market stakeholders, financial markets respond to ups and downs in an economy much faster than before. We will attempt to prove this in the practical part of the paper.

The financial markets have different functions, one of which is the public savings function as a basis for investment. All economic development is based on citizens' savings, i.e. on the surplus of funds, as well as investments in new projects. The financial market also has a wealth function (financial instruments can serve the purpose of saving wealth) as well as a liquidity function, because wealth saved in the form of financial instruments can be transferred into cash with little loss. Finally, there is also a credit function, which finances spending and investments. Financial systems should have mechanisms for the payment of goods and services, and this function is realized through the sale of life insurance policies and property damage insurance. Another important function is the policy function since financial markets are the main channel for a state to implement its policy of economic

stabilization and avoid excessive inflation by adjusting interest rates and the availability of credit funds (Novak 2002, 10).

The financial market is interconnected, creating one financial system. The financial system is a set of markets, institutions, laws, regulations and techniques used to trade bonds, shares and other securities, define interest rates, produce and provide financial services (Rose 1989, 4). By making funds available for the granting and taking out of loans, the financial system enables economic growth, new employment opportunities and a better standard of living for its citizens. The task of the financial system is to ensure that the majority of funds left as savings are directed through financial markets to support the investments of individuals, companies or states. Investments are generally intended for the purchase of capital goods, such as buildings and equipment, and the purchase of raw materials and goods for sale. However, someone buying a security is also making an investment. Of course, the composition of the investment varies depending on the stakeholders who invest. We have to mention that by selling financial instruments (shares, bonds, etc.) on financial markets, companies or states can acquire substantial financial funds relatively quickly, and repay the obligation incurred from future income or public revenue. Buyers get promises that have to be sufficiently attractive financial instruments or services such as shares, bonds, deposits or insurance policies. Financial instruments promise future income through dividends, interest rates, capital gain or other types of income. There is no guarantee; risk is always present. There is a positive correlation between profits and the risk taken.

The factors that connect all financial markets are loans as a common good, i.e. goods that are traded, speculations and arbitration (trying to make a profit on the basis of small differences in prices or interest rates and affecting the supply and demand), as well as market perfectness and efficiency, meaning that all available information that influences the value of financial instruments is free and at the disposal of all those interested, the cost of realization is nothing, or next to nothing, and all market stakeholders accept the price. The prices of financial instruments precisely reflect their specific value and all available information, while any new pieces of information will be built into a new set of prices. In the case of an efficient market, prices fully reflect all the information available.[2]

This paper examines the stock exchange as a key factor of economic growth. In a way, the stock exchange announces future tendencies and movements of economic policies. The stock exchange is also a key factor for social growth because money, from cash funds to company securities, moves from inactive to active financial funds in order to be multiplied. This is the way of turning money into capital and this happens on stock exchanges in the most spectacular way (Bazdan, 2008, 42).

Institutional investors are one of the most important financial market factors, and are the most active on stock exchanges[3]. Their main collective function is financing economic development, while their individual useful function is to participate in the division of

---

[2] The characteristics of the world financial system are: rapid change, increasing competitiveness, the development of new technologies for providing financial services, the increase of the risk of companies that are in the business of financial services through the quick and increased growth of indebtedness, the merging of small companies into larger ones for risk reduction, growing awareness of alternative sources of financial services, and financial innovation through the development of financial companies for new services. It is quite clear that economic activity, national income and the income of corporations are factors that set prices, and also the rates of shares and other stock securities (Samuelson, 1953).

[3] They are insurance companies, pension funds, investment banks (stockholders), mortgage banks, united investment trusts (Unit Trust, Mutual Fund, Investment Trust), etc.

dividends and interest rates from the economy. Today, mutual funds and investment trusts are the organizations that collect financial assets from small savers and manage them for their benefit. They were established at the beginning of the 19th century, first in Belgium and later in Great Britain, Holland, Belgium and the USA. The rest of Europe followed in the beginning of the 20th century. With the help of important institutional investors, small savers' money is diversified and liquidity secured because an investor can easily regain the investment by selling stocks. If the fund is an open-end investment company, it has the obligation to take over the documents on share ownership following the principles of safety, profitability, liquidity and risk dispersion. It is a company with a board (fund managers) and a deposit bank. Such funds often buy the securities of other companies, which they also often manage if they have the controlling package and thus become holding companies.

If it is a close-ended investment fund, the stock company sells shares or certificates on the stock exchange (existence of a secondary market) and cannot buy investors' shares back, unlike in an open-ended investment fund.

There are equity funds that dispose of domestic and international shares, and sometimes also bonds; bond funds which dispose of private and public bonds, sometimes also shares; and money market funds, which are financially the strongest and whose assets are tied to investments in treasury bills, repo contracts, bank acceptances or commercial bills.

Individual investors and small shareholders of company shares, regardless of whether they work in that specific company or buy shares from another company, are an important segment of the stock exchange and of the financial market in general because without them the stock exchange could not exist, nor could companies be floated on a stock exchange.

Hundreds of millions of investors on stock exchanges around the world invest their money for many different reasons. It is important to point out that small investors or small shareholders (individuals) represent a huge mass of investors without whom there would be no stock exchange. They contribute to the development of the global financial system. However, through their activities, capital acquires a social quality because individual investors become company shareholders.

During an acquisition, a big company wants to buy 100% shares but if one of the small shareholders refuses to sell their part, the deal can fall through. This is another reason why small shareholders are an important factor in the development of the financial market. As a rule, an acquisition increases the value of both companies concerned, while profitability also increases. This finally leads to an increase in share prices for both companies. The basic precondition for the rational acquisition is that the value of the company after the acquisition is higher than the individual values of the two companies before the merger (Orsag 2008, 704).

The general public perceives such fusions as positive things because as capital increases, the quality of management often rises. Strengths and knowledge are combined, the research and development becomes more sophisticated, the quality of marketing is improved, sales increase and dividends grow. Such companies are managed by shareholders with a controlling, or majority package, who choose the Management Board and the Supervisory Board. However, capital is significantly fragmented (the company's capital is divided into thousands or even millions of parts, i.e. shares) because such companies are usually structured on the basis of the cash savings of millions of people, i.e. small shareholders. The Board of a company is motivated to buy off shares of the company it is managing in order to motivate itself to work, resulting in a much healthier economy in general, while executive managers often have millions of shares. Thus, by protecting company interests, they protect their own interests. Before the Annual General Meeting of Shareholders, small shareholders

often join forces to influence those with the controlling package in the company. Small shareholders are sometimes unsatisfied with the way majority shareholders manage the company, resulting in serious conflicts. If small shareholders do not join forces, majority shareholders usually impose their interests. Still, both small and majority shareholders know that conflicts at the annual general meeting should be avoided because it ruins company credibility and leads to a drop in share prices, which is in the interest of neither side. It is worth pointing out that shareholders have the right to remove the management of the company until they find people who care about the employees, because this ensures the highest productivity (modern economists have recognized identification as the last stage of a modern corporation). Shareholders are important because they decide on the increase of capital stock but also on the potential sale of the company. In many highly developed world economies, big stock companies include the shares of most of their citizens. Therefore, citizens indirectly influence the development of a company and economy in general, i.e. their own, and general, prosperity. A people's capital market is a synonym for a stock exchange. Although wealthy families still dominate in some stock companies, there is no longer an absolute rule by the capitalist elite as in the 19th century. Today, many citizens can participate in the ownership of a company and in its profits as well through the stock market, which is very important for the development of democracy in today's world.

Public companies are the most important segment for a healthy national economy because they represent the backbone of a market economy and promote economic democracy. They also represent the basis of political democracy and the backbone of the international economy in a globalized world. Public companies seek to raise the value of the capital invested solely on stock exchanges, unlike private companies. Once released on the stock exchange, securities start their own journey, and the shares of the biggest companies point the way in which the stock market will move.

Marx was the first to notice that joint stock companies and stock exchanges solved the issue of financing and developing big companies, but also enabled the participation of people in social ownership. Separating the function of ownership from the function of managing a joint stock company was a crucial point in history, Marx thought, when capitalism entered a new phase of transferring the private into the social, public good (Marx 1948, 496).

Indirect management is an act of management carried out once a year by the small shareholders of a joint stock company, and it became very popular in Europe after 1979, during the era of the British Prime Minister M. Thatcher, who followed the advice of the Austrian economist Friedrich August von Hayek and denationalized companies, stimulating the sale of state owned companies to the general public.

Direct management refers to shareholder-employees. The first such company in history was a German company Zeiss, whose employees got company shares for free. The most well known model of direct management, the Employee Stock Ownership Plan (ESOP), dates from 1950. This model, by Louis Kelso, meant involving workers in the working structure of the company through their participation in co-deciding.

In 1974, the US Congress adopted several acts stimulating small shareholders to unite financially and buy off shares of companies they work in, with the help of the state. Companies that supported such actions got tax relief and dividend taxes for small shareholders were suspended. Practical examples show that employees who are also shareholders manage their companies better. In the 1990s, 11 million employees owned so-called workers' shares, which contributed to the vivacity of the stock market. The ESOP model began being implemented all over the world. There were also cases of misuse when managers bought off workers' shares in order to gain a controlling package and then

boosted profits by stripping the company's assets and selling them off. This often resulted in companies being closed down (more in Bazdan, 2008). This practice is very familiar to us since similar scenarios have happened in Croatia and other transition countries.

2 THE FINANCIAL SYSTEM

The following chapters provide a description of the financial system by giving an overview of its development and describing the financial market structure, the world financial crises and financial regulations.

2.1 The Development of the International Financial System

The development of the international financial system will be presented through the doctrine of the liberal market and the notion of globalization, with a special emphasis on financial globalization. The financial system can be defined as a group of institutions, markets and regulations that enable the allocation of resources in time and space through five basic functions: mobilization of savings, allocation of resources, corporate control, risk management and the facilitation of the exchange of goods and services (Levine 1997, pp. 688 - 726).

2.1.1 Liberal Market

The precondition for the liberal market is the free movement of goods and services with minimal state interference. It is based on the personal interest in prosperity and profit. The basis of this trend was set by Adam Smith in 1776 (*An Inquiry into the Nature and Cause of the Wealth of Nations*) who believed that: households and companies which interact on markets act as if an "invisible hand" is helping them and leading them towards desirable results on the market. Following their own interest, individuals unconsciously also influence the prosperity of society as a whole by increasing general prosperity. The functional framework of earning is based on an internal natural order. By participating in the process of social reproduction, individuals organize interpersonal relations thanks to economic freedoms and the market as a basic mechanism of organizing and directing reproduction flows. The first mathematical proof of the suboptimal activity of the market mechanism, of the conditions under which Adam Smith's idea of the perfect functioning of the "invisible hand", and on the automatic balancing and obtaining of an optimal effect and functions, was presented by Kenneth and Debreu (1954, pp 265 - 290).

The functional determinant of liberalism is best described by the principle of "free production – free trade". The liberalist concept has a restrictive attitude towards state participation in reproduction flows, both regarding the regulative function and operative involvement. The market mechanism represents a sufficient framework for organizing and directing income flows, so that the economic role of the state is reduced to a function of the "natural order". Communist governments did just the opposite during the 20th century when prices were not defined on the free market but were dictated by a centralized policy. Today, most centralized economies have abandoned this system and are trying to develop a market economy. This happened in Southeastern European countries, where the process has not finished yet, and especially in the East European countries that have not joined the EU, such as Croatia.

The Washington Consensus was initially coined in 1989 by John Williamson[4] to describe a set of ten specific economic policy prescriptions that he believed should constitute the "standard" reform package promoted for crisis-wracked developing countries by Washington, DC-based institutions such as the International Monetary Fund (IMF), World Bank, and the US Treasury Department. The Consensus was implemented during the 1980s and 1990s and included a rigorous fiscal policy, privatization, liberalization and deregulation. It was created as a reaction to the fiscal and economic crisis in Latin America in 1970s.

The second boost of the Washington Consensus happened during the fall of the USSR. Today it is severely criticized because it does not take into consideration the specific characteristics of individual states although leading world financial institutions still adhere to it when intervening in transition countries.

The liberal *laissez-faire* policy was popular from 1846 until the 1930s, but was questioned after the 1930s crisis. A period of state interventions followed and lasted until the 1980s. When discussing the weaknesses of the market mechanism, Thurrow (1996) points out that a human being is often irrational, which is at odds with the basic presumption of the classic economic doctrine. O'Donoghue and Rabin (1999) attack the classic economic doctrine with the "time inconsistent preferences" theory stating that a person values their present pleasure far more than their future one. Stiglitz[5] presented the "information asymmetry" theory on the inequality of partners in market transactions (the seller is much better informed about the product than a buyer and thus has the advantage).

The global trend of the 80s and 90s was to copy the US model (since the US was the most successful example of the liberal model of economy) and to push liberalization and globalization to the limit against regulatory barriers. The Gramm-Leach-Bliley Modernization Act in 1999 removed distinctions among financial institutions and allowed banks to group various services under the same institutional roof: retail and wholesale banking, investment banking and other intermediary financial services. With this act, other financial institutions started offering diversified financial services on a global scale. It was a stage of growth for the financial industry through the many financial innovations and products (especially derivative products), and through the increased securitization of the financial industry, global consolidation of banks and revolution of information and communication. Rajan (2005) and Sakbani (2008) points out that in the late 1980s, the innovations also reached mortgage loans and they were transformed from personalized assets with non-predictable flows into derivative papers based on the statistical properties of a large number of samples. These papers were sold to financial buyers (regulated banks but also non bank institutions without proper supervision) all over the world and nobody could access their differentiated risks because they were in pools (i.e. the loans were mixed).

Risk segmentation would have limited their quantum and reduced their circulation in the global financial markets. In September 2008, Morgan Stanley and Goldman-Sachs, the two last independent investment banks, announced that they were applying to the Federal Reserve to operate under its umbrella. It was the end of investment banking known in Wall Street. Underwriting securities, arranging mergers and acquisitions, extending financial

---

[4] The Washington Concensus is available at:
http://www.petersoninstitute.org/staff/author_bio.cfm?author_id=15 [17.09.2009]

[5] In 2001, the Nobel Prize in Economics was awarded to George Akerlof, Michael Spence, and Joseph E. Stiglitz for their analyses of markets with asymmetric information.

services, advice and financing big projects would be performed by institutions (banks) but not Investment Banks.

The current financial crisis is the result of a combination of several factors (Sakbani 2008): an extraordinary boom in the housing market, especially in the United States, which had a large number of mortgages at attractive rates; historically low interest rates by the Central Bank; financial innovations in the context of rampant deregulation; and the virtual disappearance of inflationary fears among Central Banks.

Banks and other financial institutions grew accustomed to operating under less and less regulation and increasing global liberalization, despite the risk that eventually led to the financial crisis. Stiglitz (cited in Mesarić 2002, pp. 1152–1182) predicted a new economic order based on a gradualistic model, which presumed gradual and careful interventions into transitioning and developing countries with respect of their individual specificities. World organizations such as the IMF and World Bank should change their goals from the current one of meeting the interests of the world's financial potentates to one in which better attention is paid to all segments of society, and particularly the most vulnerable. In short, "yes" to a liberal market, but with some state control and not at any cost.

2.1.2 Globalization

Financial globalization got started in the mid of 1980s with rising cross-border financial flows among industrial economies and between industrial and developing economies. The liberalization of capital controls in many countries led to the better global allocation of capital and improved international risk-sharing possibilities (Siegel 2005). But the crises in the late 1980s and 1990s showed that developing countries have been more vulnerable than big industrial ones and has led to a debate on the costs and benefits of financial globalization.

Some economists view increasing capital account liberalization and unfettered capital flows as a serious impediment to global financial stability (Rodrik 1998, pp. 997-1032; Bhagwati 1998, pp. 539-555; Stiglitz 2002 cited in Mesarić 2002, pp. 1152–1182) leading to the necessity for capital controls and the imposition of restrictions. Others (Fischer, 1998; Summers 1998, pp. 1-10) argue that increased openness to capital flows has proven essential for countries striving to upgrade from lower to middle-income status, while significantly enhancing stability among industrialized ones.

(Kose et al. 2006, p. 7) agreed about the positive role of financial globalization, but they pointed out that there are many unanswered questions about how a country should organize and pace its growth. Kenen (2007, p. 179) states that it is almost impossible to conceive of a world without a global financial system. We are aware that large numbers of low-income developing countries have little access to that system but most middle-income developing countries are increasingly integrated into a global system and all of the major developed countries are fully integrated. In earlier periods (Kenen 2007, p. 179), countries specialized in products, while today countries increasingly specialize in processes thanks to the revolution in communications and transportation. But the specialization in processes is also partly responsible for these two revolutions (the use of aircraft facilitates the movement of high-value parts from continent to continent). Kose et al. (2006, p. 7) suggested that the main gains from integration do not derive directly from the transfer of capital from rich to poor countries; they derive from 'potential collateral benefits' - the contribution of financial

integration to the quality of institutions in the capital-importing countries, including improvements in corporate governance, the quality of banking supervision, and the deepening of financial markets. The conclusion is that the countries that would benefit the most from the indirect effects of financial integration may not be able to attract much foreign capital precisely because their institutions are far too weak to attract foreign investors.

The risks of financial globalization are more likely to be home-grown, not imported from international markets, but several emerging-market countries are in far better shape today than they were a decade ago. The monetary operations are conducted by the national central banks and other agencies that are directly responsible for bank supervision. Some emerging-market countries have adopted more flexible exchange rates and many have accumulated far greater reserves than they held a decade ago: the same have also reduced their government's foreign-currency debts and their banks are far less heavily reliant on short-term foreign currency borrowing to fund domestic lending (Kenen 2007, p. 179). However, financial integration has produced a new form of vulnerability – the foreign purchases of equities and domestic-currency debt have grown rapidly in the last few years, and foreign portfolio investments exceed direct investments in some emerging-market countries. Any loss of confidence by holders of these claims could lead to mass selling. The effect of an exodus of foreign investors could lead to a fall in the domestic-currency prices of the country's stocks and bonds, and depreciation of the country's currency, which could, in turn, reduce the country's reserves.

Kenen (2007, p. 179) also pointed out that the Unites States has exploited financial globalization to finance its current-account deficit and, indirectly, its budget deficit, which could lead it to pay a high price for that privilege. The global financial system is a source of strength but simultaneously a source of risk, and thus calls for close cooperation among the world's major countries through the International Monetary Fund.

The most developed countries are also the most responsible for the international financial system.

Kose et al. (2006, p. 7) researched how financial globalization should affect growth, volatility and the comovements of output and consumption.

The most simple benchmark one-sector neoclassical framework suggests that financial globalization should lead to flows of capital from capital-rich economies into capital-poor ones since, in the latter, the returns on capital should be higher. In fact, the actual volume of such flows do not come anywhere near those predicted by neoclassical growth models (puzzle by Lucas 1990, pp. 92-96) These flows should complement limited domestic savings in capital-poor economies and, by reducing the cost of capital, allow for increased investments. A certain type of financial flow could also generate technology spillovers and serve as a conduit for absorbing managerial, and other forms of organizational expertise, from more advanced economies. Kose et al. (2006, p. 7) also mention a number of indirect channels through which financial globalization could enhance growth. It could help promote specialization by allowing for the sharing of income risk, which could in turn increase productivity and growth as well. Among developed countries and across regions within developed countries, better risk sharing appears to be associated with greater specialization (Obstefeld 1994, Acemoglu and Zilibotti 1997, Kalemi-Oczan 2001, Sorensen and Yosha 2001). Financial flows could foster the development of the domestic financial sector and, by imposing discipline on macroeconomic policies, lead to more stable policies.

With regard to volatility: financial integration allows capital-poor countries to diversify away from their narrow production bases that are often agriculture or natural-resource

dependent, which could reduce macroeconomic volatility. At a more advanced stage of development, trade and financial integration could simultaneously allow for enhanced specialization based on comparative advantage considerations, which could make countries more vulnerable to industry-specific shocks.

In theory, the effect of increased financial integration in cross-country correlations of output growth is uncertain, since it depends on the nature of shocks and specialization patterns. Financial integration should, in theory, help countries diversify away country-specific risks and should result in stronger comovements of consumption growth across countries, but there is no evidence for correlations in output or income.

In the context of our topic, it is important to mention that stock exchanges play an important role in the globalization process. Capital moves in all directions, breaking all prejudices. During the cold war, many stock exchanges in eastern countries were forbidden, but with the fall of the Berlin Wall in 1989 and the collapse of the Eastern Block, they came back to life in both the East and West. The world changed quickly and this development was followed by the foundation of many international economic organizations as well as transnational corporations whose securities can be found on numerous world stock exchanges.

An important characteristic of the stock exchange that has to be mentioned in the context of globalization is that the "business" successfully moves through the stock exchange market, which is open non-stop, 24/7. The London Stock Exchange market is of central importance because it is right at the crossroads of other financial markets: between Tokyo and New York. Because of the different time zones, the moment the Tokyo Stock Exchange opens at 9:00 a.m., it is night-time in Europe, and the American Stock Exchange is near closing time. When the Tokyo Stock Exchange closes, the London Stock Exchange opens and its employees know everything that has been happening in Tokyo. Before the London Stock Exchange closes, the Wall Street, Montreal and Toronto markets open, the business moves towards Chicago, and then later to Los Angeles and San Francisco. Subsequently, business moves to Southeast Asia, to the Shanghai and Tokyo markets, and then back to London once again (Bazdan, 2008).

In a world that is a global village (McLuhan 1996), the international financial market has a leading role. This benefits companies looking for capital because they can place their securities on all four sides of the world when it suits them.

In a time of globalization, the bond market (domestic, foreign and euro bonds) is becoming more and more important due to the securitization trend as the process of emitting and placing shares in bonds.

The two most important prices in the world economy are the price of petroleum and the price of money. If interest rates, as the price of money, are very low, which is reflected in the bond yield, there is an increase in the global demand for petroleum. Peter Lynch says that bonds were, and still are, an important factor in forming long-term interest rates and as such are the key to monetary policy stability (Lynch 1994, p. 18).

2.2 The Structure of Financial Markets

We describe the structure of financial markets through financial institutions and markets and examination of stock exchange through the history of development, bear and bull markets, major world stock markets, the stock exchange in relation to information, stock exchange indices, mass psychology and stock exchange and new technologies.

2.2.1 Financial Institutions and Markets

Financial institutions and markets encompass leading world financial institutions such as the World Bank and International Monetary Fond, just as leading financial institutions in Croatia and Slovenia. We also describe all types of financial markets.

2.2.1.1 Leading World Financial Institutions

The leading world financial institutions are: the International Monetary Fund, the World Bank and European Central Bank.

These organizations cover 95% of the world's countries and rely on the globalist idea of the world as a big market. The term "world bank" was used in the 19th century in the "History of Economic Analysis" within the context of a liberal market and the need to open borders (Backhouse 1997).

Before World War I, the world economy was based on the so-called gold standard[6] – currencies were linked to gold, which resulted in fixed foreign currency exchange rates and encouraged world trade through the elimination of uncertainty in currency rate fluctuations. This meant that monetary policy in the world depended on the discovery and production of gold. But the First World War brought this production to a halt. The countries could not ensure the convertibility of currencies into gold, which resulted in the collapse of the gold standard.

In 1944, the Allies introduced the Breton-Wood system, a regime of fixed foreign currency exchange rates which declared that central banks would buy and sell their currencies in order to keep the exchange rate fixed at a certain level. At the same time, the International Monetary Fund[7] was founded in Washington with 30 original members, and the task of promoting world trade growth by setting the rules for keeping foreign currency exchange rates fixed and providing credit to countries with payment problems. Their job was to gather and standardize international economic data.

The IMF was established under the strong influence of John Maynard Keynes and his beliefs that markets are not always successful, which leads to economic imbalances that can lead to crisis. Thus, countries hit by a crisis should receive external help (financial injections

---

[6] Currencies of many states were directly convertible into gold (see Mishkin and Eakins 2005, p. 278).

[7] More about the International Monetary Fund (IMF) is available at: [http://www.imf.org/external/index.htm] (4.10.2009)

and expansive economic and development policies) in order to re-establish their economic balance and full employment.

The World Bank[8] and the International Bank for Reconstruction and Development[9] were also established to grant long-term loans for developing countries in order to improve their economic growth.

The World Bank is actually an umbrella term covering the following institutions: The International Development Association (IDA)[10], International Finance Corporation (IFC)[11], The Multilateral Investment Guarantee Agency (MIGA)[12] and The International Center for the Settlement of Investment Disputes (ICSID)[13].

The USA was the world's strongest power, so the Breton-Wood system was based on the convertibility of the American dollar into gold (35 dollars for an ounce of gold). The US dollar was therefore called the reserve currency, a position that it still holds today, as the currency used for the majority of international financial transactions. However, after the introduction of Euro, as a unique European currency, the dollar had to face the challenge of maintaining its position as the key reserve currency.

The Breton-Wood system collapsed in 1971 because the IMF did not have the means of forcing surplus countries to change the currency rate, i.e. to lead a more expansive monetary policy. The USA, as the home country of the reserve currency, could not devaluate its own currency, although the dollar was overvalued. In the 1960s, the USA tried to resolve the unemployment problem by using inflationary monetary policy, but there was an imbalance because the dollar was overvalued and the surplus countries refused to revise and raise the value of their currencies.

In 1971, the Smithsonian Agreement introduced the floating exchange rate. This allowed exchange rates to respond to market flows daily, and central banks kept the right to intervene on the foreign currency market. Today, the international financial system presents a hybrid of fixed and floating exchange rate systems. Many countries today still try to maintain the value of their own currency as fixed in comparison to other currencies. Deficit

---

[8] The World Bank's details are available at: [http://www.worldbank.org/] (5.10. 2009)

[9] The International Bank for Reconstruction and Development (IBRD) is available at:
[http://web.worldbank.org/WBSITE/EXTERNAL/EXTABOUTUS/EXTIBRD/0,,menuPK:3046081~pagePK:64168427~piPK:64168435~theSitePK:3046012,00.html] (5.10. 2009)

[10] The International Development Association (IDA) is available at:
[http://web.worldbank.org/WBSITE/EXTERNAL/EXTABOUTUS/IDA/0,,contentMDK:21206704~pagePK:51236175~piPK:437394~theSitePK:73154,00.html] (5.10. 2009)

[11] International Financial Corporation (IFC). Available at:
[http://www.ifc.org/ifcext/about.nsf/Content/Mission] (5.10. 2009)

[12] As a member of the World Bank Group, MIGA's mission is to promote foreign direct investment (FDI) into developing countries to help support economic growth, reduce poverty, and improve people's lives. Available at *: [*http://www.miga.org/]* (5.10. 2009)

[13] International Centre for Settlement of Investment Disputes (ICSID) is available at: [http://icsid.worldbank.org/ICSID/Index.jsp] (5.10. 2009)

countries often buy their own currency on the foreign currency market in order to maintain the value of the domestic currency at a high level, thus decreasing international reserves.

Since 1970, the IMF has been issuing paper replacements for gold: the SDR (special drawing rights), which now function as international reserves. In 1975, the IMF canceled the official price of gold, so the US Treasury and the IMF sold gold in order to demonetize it. Today the price of gold is determined on the free market. In March 1979, eight EU member states established the European Monetary System, fixing their currency exchange rates against each other, and respecting mutual flotation towards the US dollar.

Some economists promote capital control in countries with developing markets since the outflow of capital can cause financial instability in the market. The withdrawal of foreign capital from the country creates pressure on the country to devaluate the currency. But controlling capital outflow is not simple because the private sector will find ways of avoiding controls. Also, the increase of capital control lowers general trust in the government, further stimulating the outflow of capital. The control of capital outflow can lead to corruption because civil servants are paid to look the other way. Some economists also promote the control of capital inflow because an increased inflow can lead to a credit boom and an increased risk for banks, which helps speed up the financial crisis. This control has a very negative characteristic – blocking investments and causing corruption, plus it is hard to implement in a time of an open market economy where the "invisible capital flows" always find their way.

The global financial and economic crisis that started in the USA in 2007, later spread to other countries of the world, which has lead economists to believe in the need for tighter bank regulations (we will describe this in Chapter 2.4).

International events have a significant influence on the way the monetary policy of a country is led. The foreign currency market directly affects the offer of money, care for the balance of payments and the exchange rate. [14]

Of particular interest to this paper is European financial integration, due to the geographical and political positions of the Southeastern European countries of our research.

The European Central Bank is the leading European financial institution, and has overseen the unification of 16 European Union countries with a single currency since 1999. The tasks of the ESCB and of the Eurosystem are laid down in the Treaty establishing the European Community. They are specified in the Statute of the European System of Central Banks (ESCB) and of the European Central Bank (ECB). The Statute is a protocol attached to the Treaty. The Treaty text refers to the 'ESCB' rather than to the 'Eurosystem'. It was drawn up on the premise that eventually all EU Member States would adopt the euro. Until then, the Eurosystem will carry out its tasks. According to the Treaty establishing the European Community (Article 105.2), the basic tasks are: the definition and implementation of monetary policy for the euro area; the conduct of foreign exchange operations; the holding and management of the official foreign reserves of the euro area countries (portfolio management), the promotion of the smooth operation of payment systems. The ECB has the exclusive right to authorize the issuance of banknotes within the euro area. The key tasks of the ECB are to define and implement monetary policy for the Eurozone. When the ECB was created, the Eurozone had eleven members. Since then, it has expanded: Greece joined in

---

[14]"Since the US currency played the role of a reserve world currency after the Second World War, changes on foreign currency markets and the balance of payments had less influence on US monetary policy than was the case in other countries." (Mishkin and Eakins 2005, p. 366).

January 2001, Slovenia in January 2007, Cyprus and Malta in January 2008, and Slovakia in January 2009, enlarging the bank's scope and the membership of its Governing Council. The ECB also maintains working relations with relevant institutions, both within the EU and internationally with respect to the tasks entrusted to the Eurosystem[15]

2.2.1.2 Financial Institutions in the SEE countries

The central banks of SEE countries are the leading financial institutions in every individual country, and their main task is to maintain monetary stability by issuing domestic currency and to coordinate the activities of the banking's agencies, which are in charge of bank licensing and supervision. Security commissions in all SEE countries regulates the issue and trade of securities, authorities and responsibilities of capital markets participants, and the protection of investors' interests on the securities market. Some of the countries are members of the European System of Central Banks and joined the euro zone (Slovenia from 2007 onwards) while other have not (Bulgaria, Romania, Croatia, Bosnia and Herzegovina, Serbia and Montenegro). The financial systems of Southeastern European countries have been developing during recent years through processes such as privatization in the banking sector, a drop in interest rates, the inflow of deposits during 2000 and 2001 (which peaked prior to the introduction of the Euro) and a general increase of competitiveness in the banking industry. The establishment of institutional investors was followed by the creation of the second pillar of a pension insurance scheme and the creation of investment funds. However, capital market activities are still relatively low. The transition process in SEE countries also includes financial development through the reconstruction of existing banking intermediaries in line with the needs of the market economy. This includes the development of those parts of the financial system that did not exist before, and of some banking intermediaries. The financial system in more advanced transition countries, including Croatia, is extremely bank-centric, meaning that banks are dominant, unlike the market-centric systems dominated by the capital market (Dalić 2002, pp. 27-28). Croatian baking sector has been practically completely privatized by banks from EU member countries, predominantely Italy and Austria (Žiković, 2010).

EU member states that have introduced the euro, such as Slovenia, have transferred the authority to conduct monetary policy to a new institution. A principle of centralized decision-making and decentralized implementation via national central banks applies to defining and implementing single monetary policy.

As not all EU Member States have adopted the euro, the ECB and national central banks of those EU Member States that have adopted the euro are referred to as the Eurosystem. Since January 1, 1999 the Eurosystem has been responsible for defining and implementing the euro area's single monetary policy. The Bank of Slovenia became a part of the Eurosystem on the day the euro was introduced as the currency of the Republic of Slovenia (January 1, 2007).

---

[15] More about the European Central bank available at: [http://www.ecb.int/ecb/html/index.en.html, 2010] (20. 09. 2009)

The Securities Market Agency in Slovenia is a legal entity under public law in charge of supervising the market in financial instruments. It was founded on March 13, 1994. Its tasks and competencies are defined by the Market in Financial Instruments Act (ZTFI). The Agency is independent in implementing its tasks and responsibilities. It is financed from taxes and fees paid by the participants in the market of financial instruments. Slovenia is a member of all major international financial institutions—the International Monetary Fund, the World Bank Group, and the European Bank for Reconstruction and Development—as well as 40 other international organizations, including the World Trade Organization.

The Central Bank of Bosnia and Herzegovina was established in accordance with the Law adopted by the Parliament of Bosnia and Herzegovina on June 20, 1997. The Central Bank started its operations on August 11, 1997. The main goals and tasks of the Central Bank are defined by the law and in accordance with the General Peace Agreement in Bosnia and Herzegovina. The Central Bank of Bosnia and Herzegovina maintains monetary stability by issuing domestic currency according to the Currency Board arrangement (1 KM: 0.51129 EURO) with full coverage in freely convertible foreign exchange funds under the fixed exchange rate 1 KM: 0.51129 EURO. The Central Bank defines and controls the implementation of monetary policy of Bosnia and Herzegovina. The Central Bank supports and maintains an appropriate payment and settlement systems. It also co-ordinates the activities of the BH Entity Banking Agencies which are in charge of bank licensing and supervision.[16]

The Central Bank of the Republic of Bulgaria has been established and operates under the Law on the Bulgarian National Bank. The BNB's major objective is to maintain price stability by ensuring the stability of the national currency. The Bank supports the creation and functioning of efficient payment systems and exerts oversight over these. It is the only issuing institution in Bulgaria, and maintains the cash cycle. The BNB regulates and supervises other banks' activities in the country for the purpose of ensuring the stability of the banking system and protecting the interests of depositors. The Bank carries out research work, compiles, aggregates and analyzes statistical data. Since January 1, 2007 (with Bulgaria's accession to the EU) the Bank is a member of the European System of Central Banks and Bulgaria is in the preparation phase of introducing the euro[17].

The Croatian National Bank (CNB) regulates and supervises all financial institutions in the country. All domestic and cross-border cashless payment transactions of natural and legal persons are conducted through the banks and interbank cashless payment transactions are conducted through the CNB. Through the banks, the CNB can influence the amount of currency in circulation and it is the institution responsible for the regulation and supervision of the domestic payment system. The Croatian *dinar*, introduced on December 23, 1991 as a transitional, interim currency of the independent Croatian state became the sole legal tender of the Republic of Croatia on January 1, 1992. It was replaced by the *kuna* on May 30 1994, it was introduced as the permanent official legal tender of the Republic of

---

[16]Available at: [http://www.cbbh.ba/] (03.07.2010)

[17]Available at: [http://www.bnb.bg/] (03.07.2010)

Croatia. The main objective of the Croatian National Bank is to maintain price stability and to support the economic policy of the Republic of Croatia, while acting in accordance with the principles of an open market economy with free competition[18].

The Central Bank of Montenegro (Montenegrin: *Centralna Banka Crne Gore*) is the central bank of Montenegro. The mission of the central bank is to establish and maintain a sound banking system and monetary policy. The Central Bank of Montenegro was established on the basis of the Law on the Central Bank of Montenegro, passed by the Parliament of the Republic of Montenegro in November 2000. With its establishment, the Republic of Montenegro obtained an independent authority responsible for monetary policy, and the establishment and maintenance of a sound banking system and efficient payment system operations. The Central Bank started to operate on March 15, 2001, when the Montenegrin Parliament adopted its Decision on the Appointment of Members of the Council of the Central Bank of Montenegro. Montenegro unilaterally adopted the euro, and as such is the third country that does not participate in the European System of Central Banks or ECB meetings. The bank just tracks ECB policy, making the latter the *de facto* central bank of Montenegro for all economic and monetary purposes[19].

The National Bank of Romania is the central bank of Romania and an independent public institution, with its headquarters in Bucharest. Its primary objective is to ensure and maintain price stability. The National Bank of Romania supports the general economic policy of the Government without prejudice to its primary objective (Law No.312/2004). The domestic currency is the *leu*, with its fractional coin, the *ban*. Starting with January 1, 2007, when Romania joined the European Union, the NBR became part of the European System of Central Banks (ESCB), and the NBR's Governor, a member of General Council of the European Central Bank (ECB). Romania is in the preparation phase of introducing the euro[20].

The National Bank of Serbia is independent and autonomous in fulfilling its functions as stipulated by the Law on the National Bank of Serbia and other legislation, and is accountable for its work to the National Assembly of the Republic of Serbia. The status, organization, mandate and functions of the National Bank of Serbia, as well as the relationship between the National Bank of Serbia and other bodies of the Republic of Serbia and international organizations and institutions are regulated by the Law on the National Bank of Serbia ("RS Official Gazette," Nos. 72/2003, 55/2004 and 44/2010). The primary objective of the National Bank of Serbia is to achieve and maintain price stability. Without prejudice to its primary objective, the National Bank of Serbia also contributes to the safeguarding and strengthening of the stability of the financial system[21].

---

[18]Available at: [http://www.hnb.hr/] (03.07.2010)

[19] Available at: [http://www.cb-mn.org/] (03.07.2010)

[20] Available at: [http://www.bnro.ro/] (03.07.2010)

[21]Available at: [http://www.nbs.rs/internet/english/] (03.07.2010)

The Bank of Slovenia is the central bank of the Republic of Slovenia. It was established on June 25, 1991 with the adoption of the Bank of Slovenia Act (BoSA). It is a legal entity governed by public law. It is autonomous in the disposal of its own assets. The Bank of Slovenia and members of its decision-making bodies are independent and, pursuant to the BoSA, not bound to any decisions, positions or instructions of state agencies or any other bodies, nor do they seek their instructions or guidelines. Since the introduction of the Euro on January 1, 2007 the Bank of Slovenia, in carrying out its tasks, has fully abided by the provisions of the ESCB and ECB Statutes. As a member of the ESCB, in line with the Treaty establishing the European Community and the two statutes just mentioned, the Bank of Slovenia carries out the following tasks: implements common monetary policy, co-manages the official foreign reserves of the Member States in accordance with the Treaty on establishing the European Community, and promotes the smooth operation of payment systems.

The Bank of Slovenia also carries out all other tasks pursuant to the BoSA. The increasing importance of financial stability led to the Bank of Slovenia creating the Financial Stability Department in 2004. The department systematically collects information affecting financial stability, processes it, analyzes it, and presents its findings to the senior management of the Bank of Slovenia and to the public at large. The Financial Stability Department's analytical work focuses on banks, non-banking financial institutions (insurers, investment funds, pension funds, leasing companies), and financial infrastructure. In contrast to the supervisors monitoring individual institutions, the Financial Stability Department analyzes the risk exposure of groups of similar financial institutions, the transfer of risk between these groups, and the transfer of risk to other sectors of the national economy (households, corporate sector).

At the same time, it also uses stress testing to determine the extent to which the Slovenian financial system is resistant to low-probability shocks to which it could be exposed. With the increasing importance of financial stability and the Bank of Slovenia's incorporation into the Eurosystem, international cooperation has developed[22].

2.2.1.3 Types of Financial Market

The core of the financial markets are total financial funds comprising cash, currencies and capital. The purpose of the money market is giving short-term loans, i.e. trading in short-term securities. Securities and loans have a maturity date of less than one year – they are considered money market instruments.

The main lenders are commercial banks. Currencies are the right to demand short-term capital and/or debts in foreign payment instruments.

The capital market was created to finance long-term investments by business companies, states and households. For financial instruments on the capital market, the maturity date is longer than one year. The main lenders and borrowers on the capital market are diverse –

---

[22] Available at: [http://www.bsi.si/] (03.07.2010)

individuals, families, states, local governments, companies issuing long-term securities, banks, insurance companies and pension funds.

There is permanent capital (common stock or equity capital), meaning shares, preferential capital as part of permanent capital, which provides certain preferences when compared to shares, and borrowed capital, i.e. bonds which include debentures and unsecured loans through shares.

The money and capital market is divided into smaller markets. Within the money market there is the treasury bills market (short-term securities issued by the state), the certificate of deposit market, and the commercial bills market (commercial bills are issued by big corporations). Within the capital market there are mortgage loans and the shares market.

When talking about financial instruments, underlying assets (documents proving ownership over financial assets), there are primary and secondary instruments. Primary instruments are traded for cash; they are regular shares, bonds, goods, currencies and interest rates. The securities market (shares and bonds) comprises two basic categories: savings and speculation. Investors, in charge of savings, can be moderate and extreme. Moderate investors invest mostly into stable companies, on a long-term basis, without risk, especially when talking about bonds. On the other hand, extreme investors choose less secure investments. Speculators can also be moderate and extreme. The moderate ones are typical investors placing their money in first-rate state and municipal bonds of stable companies which regularly pay out dividends through a longer time period, while extreme speculators take more risk hoping for a bigger profit in less time. They are very important because they increase the general liquidity, but very often harm themselves.

At this point it is important to explain the position of big traders, or institutional investors, who have capital and whose moves are seen as indications for the entire stock exchange. Others often follow them and the larger the percentage of shares controlled by institutional investors, the more reason to invest in that particular company. Institutional investors are insurance companies, pension funds, investment banks, financial associations, etc.

Secondary financial instruments encompass complex financial instruments that are not owned, but their value is derived from the value represented by ownership, i.e. assets, which is to say derivatives such as term contracts, emission rights, warrants, options, swaps (swapping financial assets) and indices. Derivatives started being used in the 12th century. At that time, French feudal lords started selling the rights to the future crops of their serfs, to speculators and wealthy people in order to cover their expenses (Bazdan 2008, p. 17).

Today, transactions in derivatives on certain stock exchanges comprise half of the total trade. Speculators active in the options market are open to the largest losses, since more than 80% of options are never realized.

Term contracts are sales contracts on goods, financial instruments or other assets, with delivery at a precisely determined future moment, and are mostly traded on commodities exchanges. Term contracts can be forward contracts and futures contracts. A forward contract is an agreement between two parties on a financial transaction at a certain future point in time. Prices of future delivery are at present defined "over the counter". An interest rate forward contract includes the future sale of a debt instrument (Mishkin and Eakins 2005, p. 618).

A futures contract, like an interest rate forward contract, states that one party must give the other party some financial instrument at a certain date in the future. Future delivery prices depend on stock exchange price fluctuations. These contracts have a well developed secondary market. Some of the problems typical for the forward contracts market, such as the non-fulfillment of contractual obligations and liquidity, have been resolved. The futures

contract market was created for trade in contracts that demand a future delivery of financial instruments or goods, and they were conceived to lower the risk because the price is settled today for something that will happen later. Swap transactions are connected with currencies. The sale, but also the buy-out of the same currency, is defined for a precise time in the future.

A second important derivative is an option – a contract that gives the buyer a right or an option to buy or sell a financial instrument the contract refers to at a specific price called the exercise price in a certain period (until expiry). The buyer does not have to exercise the option, which means that he has the right to exercise the contract but not the obligation to do it. The options market is trading in selected stocks and bonds i.e. contracts which give an investor the right to buy or sell a certain security to the writer of the option at a guaranteed price at any time within the period of the validity of the contract. Today, options on futures contracts (or futures options) are the most traded options because futures contracts are very well conceived, so their markets are often much more liquid than the markets of the other debt instruments they are based on. There are also corporate options, emitted by boards of joint stock companies for their treasury shares, and options emitted by individual investors. Corporate options are warrants and manager options.

There is also the spot market – where securities or financial services are traded with prompt delivery (within one or two working days). The market can be also divided into: an open market – if shares and bonds are sold and bought countless times before they are due and payable; and a contracts market - securities and bonds are sold to one or several buyers through a private contract and stay with the buyer until the final payment.

The market can also be divided into: a primary market, for trade in new emissions of securities (first buy out), and is mostly done "over the counter"; and a secondary market, trading in securities issued earlier, also known as the organized securities market (stock market). The scope of trade is much bigger than on the primary market, however the secondary market does not support new investments but rather exists to resell them for a higher profit, because of the need for cash assets and exchange for other, more profitable, securities.

The two markets are very much connected and there are frequent fluctuations from one to the other. Brokerage firms are active on the primary market, they are the so-called investment bankers that buy out the initial offering and look for a buyer with a commission (underwriting spread). This phase is called the initial public offering (IPO). By buying securities, money becomes investment capital. The International Primary Market Association (IMPA) protects the interests of stakeholders on the primary market.

World stock exchange centers have both primary and secondary markets at their disposal. An important characteristic is the sale of securities in public. Furthermore, companies can also choose not to sell securities publicly, but such a sale cannot be carried out through the stock exchange because of transparency issues.

The primary markets in different states have different levels of overall financial development, as seen through the development of financial mechanisms, the influence of the state apparatus, citizens' savings, the supply and demand of cash assets, ways of providing securities and the relationship with the bilateral credit market, which is a banking market as an alternative to the emissions market.

The market must also be seen as a space for the sale of financial instruments that can be short-term (money market) and long-term (capital market). There is an important interbank market where the most liquid bank reserves are sold directly on the market or indirectly (through a special intermediary). The euro market is important.

An important part of the financial markets are mutual funds, and especially money market funds, because investments are done only in state-owned and corporate short-term securities and they are an important alternative to regular savings in banks because the profit is usually higher than those from bank savings. This is why world stock exchanges today offer more and more shares of insurance companies, pension funds, etc. It has been estimated that so-called individual investors will be completely gone by 2020 and that all shares will be in the hands of intermediary investors in the form of different mutual funds.

When a company needs financial assets, it can apply for a loan from a bank or emit securities. The optimal solution for a company is to eliminate intermediaries (disintermediation) and issue securities itself. This trend is called securitization. The issuing costs are constantly lowered because everything is done electronically (there are no costs for printing paper securities).

A company also has assets it can invest on a long-term basis. The securities market, through equity markets and long-term bonds, is the foundation of today's global economy (more in Bazdan, 2008).

For our topic, it is important to mention one more relevant market division: the buyer's market and the seller's market, and the two-way relationship between them. The advantage of the buyer's market is that there is a surplus of securities, so that the supply is larger than demand, and therefore security prices are low. Such a market is also called the narrow market. On the seller's market, the seller is the one with the advantage. There are a shortage of securities, the demand is larger than the supply, and the security prices are high.

2.2.2 Historical Development of Stock Exchanges

Throughout the history of civilization, the exchange of goods has been a basic activity for people to get the supplies they have needed.

Chinese historians believe that first stock exchanges appeared in China as early as 2,000 BC. In Europe, they appeared during ancients time with the establishment of Phoenician colonies around 800 AD. The Carthaginians were the first to use money made of leather. The first stock exchange trade was for agricultural products, it is said that they are the mother of every stock exchange trade (Bazdan 2008, p. 11).

The trade was usually conducted on town squares, often with an oral guarantee (the promise of delivery of a certain good within a certain period) and with a deposit (usually 1/3 of the value). During the Middle Ages, the production of goods became more complex, so stock exchanges were created as places where trade was conducted during fairs, under the protection of the sovereign and the Church. The first mention of people exchanging money was in the 10th century in Palermo, while cities like Venice, Genoa and Florence minted their own coins. The first shares occurred around 1000 AD in the Italian town of Amalfi, in the form of the division of shares of an important harbor.

The first European stock exchange was founded in 1141 when Louis VII named Grand-Pont (Pont-au-Change) the bridge of trade. The first bills of exchange, and the first securities were introduced by Genoa, Pisa, Venice and Florence, as the germ of capitalism started at the Italian Peninsula and then spread to the entire world. People who exchanged money in these Italian towns were organized into associations. They had their benches on squares in

front of churches, and during the 12th and 13th centuries, trade was mobile. Drafts[23] significantly accelerated the growth of trade because they solved the problem of the shortage of monetary goods. At the same time, brokerage institutions were established as the forerunners of today's brokerage companies. In 1275, the first Brokerage Status was adopted, marking the start of the first branch of economic law – the brokerage law, codified by brokerage statutes of leading trade centers (in 1275 in Piacenza and Barcelona). The town of Bruges in Belgium was an important brokerage center, where the first regulatory meeting of traders in goods and securities took place in 1409 in the house of the aristocrat Van der Burse. In the 14th century, family companies ran the trade, with the wealthiest families, especially from the Italian Peninsula, lending money to the Vatican and various European heads of states with the support of letters of credit. Florence was the financial center, and in 1328 the first bond was written. In the 15th century, in Lyon, France, the precursor of the modern stock exchange was established under the name *Sange*, where silk traders and silk factory owners met. In harbors, the informal trade in money and bills of exchange grew significantly, and securities were used more and more.

In the 15th century there was a systematic trade in goods in the main towns; goods were also sold for future delivery. Drafts were used more and more frequently, so that laws on bills of exchange were developed, as the second branch of economic law. Bank notes were also widely used[24] with signed receipts, which started being circulated as money, as an equivalent to something that would be developed in the 17th century in England under the name of British Goldsmith Notes. They were the basis of English banking in the form of the Bank of England.

The first institutional European stock exchange was founded in 1521 in Antwerp, the main trading center and one of the richest towns in the world at that time, under the name of the Stock Exchange Palace for trade in English cloths and wool, but also for other types of international trade. The Stock Exchange was expanded in 1531 and renamed the New Stock Exchange. The futures trade started and the profession of speculator appeared (Kunov 1959, p. 252). Stock exchanges in Toulouse (1549), Hamburg (1558) and Rouen (1566) were established on the same model and with the support of sovereigns.

The first London Stock Exchange was founded in 1568 by the banker Thomas Gresham (1519–1579), the financial adviser to Elisabeth I, offering prompt trades and futures trade, in cash, securities and metal. Later the name was changed to the Royal Exchange.

The Amsterdam Stock Exchange (Amsterdam Bourse) was founded in 1602 with a strict formal organization. The trade in stocks of the United East India Company (*Vereenigde Oostindiche Compagnie*) marked the first time in the world that both stocks and bonds were put into circulation. The Dutch West India Company, for the exploitation of the Western hemisphere, released its famous bonds on November 7, 1623. It was this company that transported the first Dutch immigrants to Manhattan in 1624. They founded Fort Amsterdam, which become New Amsterdam (*Niue Amsterdam*) – the original name for New York. In 1670, the Merchants' Exchange was established as a centralized place of trade where Dutch and English traders and craftsmen met at sessions on a bridge on Fridays that connected the canal in Brugh Street. The sessions were organized by the English colonel Sir Francis Lovelace (1621–1675), who took over the command of New Amsterdam

---

[23]The drawer issues an order to another person, the drawee, to pay a certain amount of money unconditionally and within a specified period to the creditor, the payee.

[24]Bank notes -depositing one's own money in the hands of the rich as protection from theft.

and renamed it New York. This was followed by a wave of new stock exchanges opening in Europe: in Paris (1702), Berlin (1739), Vienna (1771) – still the state stock exchanges today.

The Japanese Dojima Rice Market (Edo Era Rice Market) in Osaka is considered to be the oldest institutionalized futures exchange. It started working in 1730 (Edo Era 1600–1868), and was a place for the exclusive trade of rice, which was conducted in two ways: promptly with cash and through a forward contract. The basis of the futures trade thus started with a futures trade in rice.

The first shares listed at the London Stock Exchange were the East India Company and Hudson's Bay Company shares. Then, the USA came onto the scene with 24 stockbrokers originally from England and the Netherlands. The New York Stock Exchange in Manhattan, on Wall Street, and the forerunner to today's leader in global financial activities, was founded in 1702 by the Buttonwood Agreement. It was moved a year later to the Trontine Coffee House. While New York was being "conquered", its first trades were in various securities in coffee houses.

The first Minister of Finance, Alexander Hamilton, introduced share quotations to the media. The first shares to be traded were those of the Bank of New York. During the 18th and the 19th centuries, all the larger cities of Great Britain and the USA had their own stock exchanges. In 1849, the second stock exchange was founded in New York: the New York Curb Market.

The first exchange that introduced an electronic trade was the New Haven Exchange, USA, founded in 1878 by a stock exchange broker George W. Coy and twenty other traders. The exchange functioned via telephone, with investors ordering over the phone and operators writing their orders with chalk on the Big Board (Bazdan 2008, p. 67).

In 1973, the trade in convertible currencies, interest rates and indices started at world exchanges, but diversification and innovations were also introduced. Friedman (1912-2006), founded the International Monetary Market in 1972 and introduced derivatives at the Chicago Mercantile Exchange. The derivatives trade spread to numerous world exchanges. The Chicago Exchanges are famous for a world trade in currencies and financial instruments, but also major agricultural products. The Chicago Mercantile Exchange introduced the first type of financial term contracts in 1972, which was a revolution in the world at the time.[25]

It is important to note that today all world prices are formed on the world exchange market. Through stock exchanges, companies gain a very important reputation and goodwill, because trade in their securities means that there is a demand that will probably exist in the future, and this is proven by the constant division of ever-growing dividends. International exchanges are important for the entire world. Investors from all over the world invest money in securities traded on world exchanges. The record for daily trading volume – almost EUR 40 million – was reached on November 20, 2007. With the development of exchanges, the need for a professional organization arose, prompting the International Chamber of Commerce, with its headquarters in Paris, to found the International Stock Exchange Office shortly after the First World War. In 1961, the International Federation of Stock Exchanges was founded in London, which changed its name to the World Federation of Exchanges (WFE) in 2001. Today the organization has 58 members and covers 97% of the world exchange industry (more in Bazdan, 2008).

---

[25] The first term contracts were traded in seven world currencies.

2.2.2.1 Bear and Bull Markets

In the process of speculation on exchanges, two terms are very often used: bulls and bears. The term bulls, or *haussiers*, from the French word meaning a "rise in prices or rates", refers to the way a bull kills its prey by lifting it up with its horns. "Bulls" believe in the continued rise of prices and buy securities at a low price and hope for an upward trend, making them optimistic investors. Therefore, the "bull market" is an optimistic market with expected increases and the realization of profits (the price difference) for the purchased securities. 'Over-trained' bulls are those that lose their nerves. As a rule, the bull market appears in the midst of a pessimistic moment on the exchange.

The bull market presupposes that there are more people who want to buy and less people who want to sell. Its characteristics include rising prices, interest rates and the rates of exchange trade items. Those who start their exchange activity with buying, are long; this position is also called a term-position − a speculator buys securities hoping that the securities prices will rise and that he will make profit from the price difference. The investors who want to own a part of a company, are mostly long investors because they often own shares of a company their whole life; often they have inherited them or bought them when they were young. The term "long" is connected with the buying of shares.

This would all be very nice if it were not for the "bears," or *baissiers* (French for a "drop in prices of rates"), referring to the way bears kill their prey by forcing it down in front of them. Those exchange players who sell securities (empty sales, short-term sales) are convinced that the prices will drop, and are called bears. A bear usually does not own stocks but has rather borrowed them on a daily price hoping to buy them off later at a lower price. In this way, the exchange allows one to sell on the floor something that one does not own at the moment of sale. It is typical for a bear market that more people want to sell than to buy. When prices continuously drop, it is pessimistic, which is what we have seen during every world financial crisis: bankruptcies, scandals, fraud and wrong investments. Bears know how to make the best of natural disasters, political upheavals, crises; it is said they profit on "other peoples' misery". This way of buying is called short because the initial position is the sale, also called "selling short," and the seller is called a short seller. The selling short of securities therefore means that the speculator does not actually own securities at the moment of the sale, he owns borrowed securities for a future delivery, in the hope that the prices will fall and he will make profit from the price difference when securities are sold to the buyer at a higher price in the present, and the same number of the same securities bought in the near future at a lower price. The companies that can predict possible international and economic problems also know that the prices of their shares will fall, so they can speculate with their own shares on the stock exchange and earn money (a type of hedging), even though their business will lose. Selling short, i.e. selling for a future delivery, is the riskiest way of exchange activity. In the worst case scenario, a speculator "buying long" can only lose 100% of the money invested due to the initial buy, while the speculator of an "initial sale", selling short, can lose everything he owns and even fall into debt.

The rule that applies at exchanges − the Plus Tick Rule − was first codified in the USA, allowing for short selling to only be realized if the prices of a certain security exhibit a growing trend in the last transaction − up ticking. One transaction is a one tick, which can

be an uptick or a downtick. A transaction at a higher price is an uptick, and at a lower price a downtick. Trade is viewed as an overall, so if half of the transitions were upticks, and half downticks, the result is 0. One uptick is marked 1, one downtick -1, and the result will tell us if the market is a bull or bear market. If the closing tick is high, the exchange trend is positive (more in Bazdan, 2008).

In conclusion, speculations allow for market liquidity, while selling short can cause strong monetary disturbances and even lead to a financial crisis.

2.2.2.2 Major World Stock Markets

My Word is My Bond – these words can be read above the entrances of many large world exchanges but are adhered to less and less nowadays. Parties to transactions which do not follow this idea are suspended. The principles of the stock exchange: personal trust between stakeholders, i.e. brokers and customers; transparency of information on transactions that have been carried out and on the activities of companies with securities listed as well as a constant updating of quotation lists with constant control of the management of companies listed on stock exchanges.

When we talk about stock exchanges, we first think about the USA because the biggest and most important exchanges that dictate the pace to exchanges around the world are located there. These exchanges also influence overall economic development.

World capital prices are formed on the main world financial markets, on stock exchanges where securities, i.e. shares and bonds, as the main instruments of long-term investment capital, are traded. Most exchanges are located in the USA: 32. There are 17 exchanges in Germany, 14 in Japan, 12 in Australia and Russia respectively (there were no exchanges in the former USSR from 1917 to 1992), 8 in Great Britain, 6 in China, Canada and Brazil, and 5 in Hong Kong.

The New York Stock Exchange claims first place in the value of transactions, and by turnover it is second only to the Tokyo Stock Exchange. The magic triangle of global exchange activities is formed by the London, Frankfurt and Paris Stock Exchanges, creating the most potent financial market. London has been recognized by the US Securities and Exchange Commission as the biggest world financial offshore center – as the center for desirable financial deals outside the USA. The Paris Exchange has also been recognized as a safe offshore market in May 2005.

The New York Stock Exchange, also called the Big Board because of the enormous screen where so-called securities rates are registered, is the biggest in the world. This exchange is also an indicator of the state of affairs in the entire capitalist world. The limit of one billion shares in daily transactions was exceeded in 1997. The criteria for being listed at the New York Stock Exchange are a minimum of one million shares emitted, a market value of at least USD 100 million, and trading profits in the previous three years higher than USD 10 million. Every day more than 500 million shares are traded. All companies want to be listed on this exchange, but the "entrance ticket" is expensive, there are 1,366 seat-holders plus 50 individuals paying an annual fee (commission brokers, floor brokers, market makers, competitive traders, odd-lot dealers, specialists) (More in Bazdan, 2008).

A place at the stock exchange can be inherited, rented or sold. The exchange is run by the Board of Directors of 21 members, and supervised by the Government Securities Commission, also in charge of supervising other US exchanges. This stock exchange has

three subsidiaries: the Stock Clearing Corporation calculating daily stock turnover; the New York Quotation Company publishing the quotations of stock listed on the Exchange; the institution in charge of technical maintenance and innovation, and both classic and electronic receipts of orders.

Another important New York stock exchange that has already been mentioned in the historical overview is the American Stock Exchange (the Kerb Exchange). It is different from other exchanges because it functions as a corporation and has a semi-public system – share owners are allowed a share in the profit. Companies listed in this exchange are mostly smaller companies, and the trade is mostly in bonds. It has 650 members, chosen by the decision of the Council of Governors (the Council has 21 members: 10 of whom do not deal with stock trading, 10 who deal only with stock trading, and one president). The trading record of 608.1 million shares was recorded on October 20, 1987 (Norton and Spellman 1991, pp. 115-116).

The most important European exchange and the center of the European financial market is the London Stock Exchange (guiding principle: *Dictum meum pactum – My Word is My Bond*). Some 15,000 securities are listed on this exchange, with ca. 215,000 transactions. There is a trade in shares, depository receipts as proof of ownership of foreign company shares, bonds and other debt securities. It has 5,242 members and 360 member companies (mostly from the IT sector), a Board and a Council, one president, two vice-presidents, regional centers in Belfast, Birmingham, Glasgow, Leeds and Manchester, and is the owner of the Irish Stock Exchange (ISE). It is monitored by a government body: the Security and Investment Board (SIB). The membership fee for the first year is GBP 10,000. The business computer system Talisman was introduced in 1979. The "Big Bank" project in 1986 introduced deregulation, organizing member companies as limited companies that issued public shares through this exchange. The number of foreign companies investing in the London Stock Exchange is constantly growing. In February 2005, the Austrian company Raiffeisen Centrobank became a member of this exchange, raising its own reputation and the reputation of the Exchange.

The Tokyo Stock Exchange is the third in the world by trading value, with more and more transactions being carried out electronically, via the Computer Assisted Trading System (CATS), developed by the Toronto Stock Exchange and used by many world exchanges.

The Frankfurt Stock Exchange forms the magical triangle of global exchange transactions, together with the Paris and London Stock Exchange.

The Paris Stock Exchange works within the Euronext HV (a union of the Paris, Amsterdam and Brussels Stock Exchange). The Euronext acquired the London Stock Exchange and Options Exchange and the Lisbon Stock Exchange. Therefore, by the end of 2005, Euronext was the leading European cross-border exchange and considered to be the first global stock exchange, having merged with the NYSC Group in 2007. The result was the creation of the exchange corporation NYSE Group.

It is also important to mention the NASDAQ High-Tech Exchange – an electronic exchange with a computerized information system where the securities that cannot be traded at the New York Stock Exchange are traded.

All those whose securities have not been listed on the quotation list of stock exchanges in the USA, can turn to the National Association of Securities Dealers Automated Quotations, with its computerized system used by brokers to ensure trade in those securities, also used by NASDAQ.

The leader in monetary transactions in securities is China, followed by Brazil (the Central American Commodities Exchange), and then the USA. One of the best known Chinese

stock exchanges is the Shangai Stock Exchange (SSE) a very modern exchange with electronic trading. We must also mention the Shenzhen Stock Exchange (SKSE) with 82% of listed companies of private investors – as much as 35 million from all over the world. The Organization for Economic Co-Operation and Development (OECD) comprises thirty member states where the most important world exchanges are located (more in Bazdan, 2008).

2.2.2.3 Stock Exchange and News

In our globalized world and information society, information about money is more important than the money itself. According to Daniel Bell, (1973) the strongest strategic source of wealth is information.

Exchange markets are public markets that have to be transparent. It is their *conditio sine qua non*. Still, many investors are in search of so-called inside information on companies that are listed on the exchange market in the hopes of learning about future stock movements. Stock exchange stakeholders study public and secret (confidential) sources in order to make the right decision about their investment, and they also follow economic and political trends. They are especially interested in future bankruptcies and other negative happenings in listed companies. They are also interested in mergers, divisions, and the paying out of special shares. Their knowledge of privileged information gives them an advantage and they use this information to avoid the risk of losing the money invested.

When business is concluded on a world stock exchange, exchange rates are set as the main determinant of world prices for a certain security. That data is transferred electronically all over the world through 24 different time zones via the exchange rate list (a display of the final price with key accompanying data) to the most important exchange markets such as London, New York, Chicago, Los Angeles, San Francisco, Bombay, Hong Kong, Tokyo and Sydney. The world price is valid from the moment of closing until the new opening. When the same securities are being traded at several different exchanges, the world price of that security is the one from the previous closing of one exchange until the price of the security changes on another relevant exchange. There is no stock economy without new listings on exchanges – it is the spirit of the exchange.

The stock exchange reports, with their listings, are published for all stakeholders in the stock exchange trade, but also for all those interested in such information, for example, the policy makers of different states and governments. This is the job of the listings board of every exchange. The matrices of stock exchange reports change over time with respect to the method of presentation and the subject of the exchange trade and in line with the interests of the exchange stakeholders. Daily listings are calculated on the basis of an official document: the diary of brokers and traders who have concluded deals on the exchange floor and that they have the obligation to record (refers to all transactions). They have to report the information every 15 minutes on a form to the clearing house via the local automatic post system. The reports contain exchange indices relating to stocks, bonds, options on shares, futures contracts for petroleum and the euro, and goods if we are talking about an international market.

Since the beginning of 2005, American exchanges have started trading earlier in order to keep up with the pace of European exchanges, because London trades while New York is still asleep (more in Bazdan, 2008).

The global economic crisis that started at the end of 2008 best represents how the exchange can be under the strong influence of the economic situation, with stable or unstable prices, employment or unemployment, and stable or unstable political situations. All of the mentioned characteristics are covered by the media which, thanks to new technologies and globalization, publish new stories every second. All this is instantly reflected in the rise or fall of world stock indices and also on all smaller exchange indices, for example in the transition countries we are interested in.

We should also mention the possibility of manipulating the media in order to profit from buying or selling shares by artificially creating panic or, on the other hand, creating unrealistic optimism, but we can only speculate about this. One exchange slogan is: "Buy a fact, sell gossip." meaning that one should know the facts, but then give completely wrong information to the public (often contrary to the truth), in order to divert the interests of competitive investors.

The strategies for doing business on the exchange largely depend on the news. There are investors who follow and analyze financial programmes via specialized TV stations or have subscribed to databases on exchange information by Reuters, Quick, Telekurs, Topic and other computerized systems. This way, anyone can have a 24-hour insight into what is happening on large world exchanges. Big brokerage companies and investment banks have teams of economists, lawyers, sociologists, and sometimes also doctors, who follow the global state of affairs with the help of the latest technology and satellite channels in order to make important decisions on the exchange.

Furthermore, the best known brokerage companies such as Merrill Lynch, Morgan Stanley and others, have formed their own information centers that gather information. There are also companies that provide information, such as Solomon Brothers, Standard and Poor's, Moody's, and the Japanese companies Nomura, Daiwa, Nikko and Yamaichi.

Individual investors usually use several different types of information: indices, reports of specialized companies such as Moody's and Standard and Poor, and others, brokerage companies, financial intermediaries (commercial banks, insurance companies, savings and loans companies, institutional investors, etc.), economic intelligence services, with the most famous one being the Strategic Analysis Inc. and the SCIP (Society of Competitive Intelligence Professional) magazine.

Therefore, all renowned exchanges use economic intelligence services, and it is known that computer crime also affects, among other things, stock exchanges. In order to protect themselves from espionage and collect data on competition, exchanges use counter-intelligence activities.

Economic espionage is done in several ways: through joint-venture companies with foreign owners as majority shareholders; by stealing IT databases, usually with the help of computer hackers whose services have been paid for; by sending employees, business people or students for specialized training; by exchanging information at various international professional conferences; by recruiting scientists and experts; by petty thefts at laboratories and institutes or through classic intelligence methods including electronic surveillance (surveillance of communication technology); by spreading rumors and disinformation on the alleged "poor quality or unreliability" of a product produced by one's competitor or by making up corruption stories with the aim of undermining a competitor's market reputation (Đozić 2004).

Samuelson and Nordhaus 1953, p. 521), pointed out that scientists have tried to measure the speed of price adjustments in relation to information and have concluded that profits on the exchange can be made if one reacts within 30 seconds after an important piece of

information has been announced. This is possible today in the world of modern technologies, but only for those who are very quick.

There are two basic strategies of conduct on the exchange: the first one demands changes in the fundamentals (fundamental elements of companies themselves) that emit securities, while the second one is based on a technical analysis.

The first ones believe that security price changes are directly linked to the management abilities of a company emitting securities; the abilities also include the possibility of that same company coping with the market within the present political and economic situation and economic cycles of the state a company comes from. These analysts are called fundamentalists. They base their predictions on the creditworthiness of the company and explore the facts that make a company successful (solid income, constant growth, low debt, a leading market position, goodwill as a higher value of the company than at present, the regular paying of dividends, a stock's dividend yield or bond's coupon yield, the dividend-payout ratio, the debt-equity ratio or leverage (USA), gearing (UK), the price-earnings ratio (P/E Ratio), the earnings per share (EPS), and the price to sales ratio (PRS) for company assessment). They are particularly interested in a company's research and development (R&D) sector. As far as the market positioning of a company is concerned, they look at the company sector position and whether the sector is a propulsive one or not. The income stock, whose price-earnings ratio is between 10 and 20, is part of the large cap. There are also blue-chip shares, also known as value stock. The price-earnings ratio per share should not be more than 30 to 40. All indicators over 40 point to speculation and overestimating the share. The Price to Sales Ratio (PRS) is an important indicator and is calculated in the following way: the stock price per share is divided by the total company sale per share. The lower the price to sales ratio, the better. Shares of 2 or lower are considered to be under-estimated. Shares with a ratio over 5 should be avoided. Another important indicator is the Price to Book Ratio (PBR). When investors are looking for underestimated shares, they look for a company market value to be as close as possible to the book value.

We should also mention the Return On Shareholders' Equity (RSE), which is important for shareholders and potential buyers since it allows them to calculate how much a company has made on their capital during one year. This indicator is also important for company board members to see whether equity capital is being used rationally.

Besides these endogenous indicators, fundamentalists study macroeconomic indicators as well. They research monetary and fiscal policies to establish reasons for stock price fluctuations. Macroeconomic indicators that influence security prices are a deficit (positive impact), a tax increase (negative impact), the demand for loans (positive impact), interest rates (inversely proportionate to stock prices), currency prices on the foreign market (the business results of some sectors strongly depend on the exchange rate of euro to dollar, for example), etc. Modigliani (1996) noted that share prices fluctuate because of the anticipation of changes in the earnings of a company. Robert Lucas Jr. (1987, concept of Rational Expectations), believes that the main reason for share fluctuations is investor psychology: their trust in the management of a company, the quality of the production and rational expectations of future income via the ownership of a company's shares. According to this theory, investors base their investments on the intelligent use of information that they have at their disposal (Bazdan 2008, p. 169).

The Random Walk Theory states that successive share-price changes are mutually unrelated and that there is no matrix, and that future share fluctuations cannot be predicted on the basis of past ones.

The Portfolio Theory is a theory of financial property belonging to one investor based on a well-diversified portfolio that has to comprise different instruments such as shares, state bonds, bank deposits, gold, etc. Markowitz (1952, 1999), advocate of the theory, together with Merton Miler and William Sharp (1990), claimed that portfolio diversification could reduce investment risk and improve a portfolio's rate of return. The more securities that are added to the portfolio, the lower the risk. Sharp developed the CAMP model (Capital Asset Pricing Model), according to which the expected premiums on investment risk are proportionate to market risk. John Linter came to similar conclusions, so that the model is also called the Sharpe-Linter CAMP Model (Jagannathan and Wang 1996.).

There is also the Efficient Market Theory (Fama, 1981) based on business information that is quickly linked to exchange business activities and instantly taken into account by market stakeholders and incorporated into prices. Such business information encompasses innovations in medicine and high technology, or takeovers of oil fields, the outbreak of a war in a country, the beginning of a crisis, etc.

Special attention is paid to companies' business cycles, because prices will rise if business cycles rise, but it is interesting that share prices react up to several months before the rise in a cycle is visible. Therefore, exchange activities, in a way, anticipate future activities.

Graham and Zweig (1949) described the life cycle of a company's profit by distinguishing between an early cycle, marked by expansion, the generation of income and profits for investors with higher share prices; and a late cycle, marked by a mature state of development not as promising as the first one, with cheaper shares. In order to make the right decision on when to invest, it is necessary to assess the intrinsic value of the business, national politics, government economic policy, national economy, company industry and the company that issues the securities itself. The fundamentalists also studied national, economic and business cycles. Full employment, stable prices and a good payment balance are good news for any investor. But they also use econometrics to create econometric models that help them make the right investment decisions. So, to make a decision, one must have knowledge and money to invest in the preparation of the model.

Other strategic players, often individual investors and mostly speculators, use technical analyses called chartists (*charta*). The analyses include tables of share prices and other statistical data and are not interested in a company whose shares are being traded or the economy and the political environment in which the companies do business. Chartists predict future price trends for certain shares on the basis of analyzing present and past price fluctuations, believing that security prices contain and reflect the influence of all information relating to a specific security. They believe charts provide all the information necessary for making a decision about future activities, since a certain level of stability can be detected. They believe that technical analysis can first show trend movements, followed by a fundamental analysis. The promoter of this analysis is Charles Henry Dow, journalist and co-founder of Dow Jones & Co., who used the moving averages method on the basis of a 4-, 5-, 6- or 12-day period to conclude that the first trend change to occur is the 3-day change, and is almost entirely caused by market manipulation. It is then followed by a 3- to 6-week change, caused by consolidation or some other everyday market reaction, and finally there is a major change lasting from several months to several years, when the bull market is transformed into a bear market, and vice versa after some time. However, there is no rule about when this will happen. In practice, this is usually the way to calculate a ten-day shift average after summing up ten final prices in those ten days. The following day, the last day is added and the same calculation is repeated. It is crucial to follow the trend line because prices usually follow a straight line, meaning that prices will follow a set direction

until there is an outside shift or a reason to change the direction upwards or downwards[26]. We have to mention the Ellio Wave concept, according to which markets have the characteristics of a trend and are manifested as recognizable waves (impulse waves and corrective waves). Ralph Nelson Elliott (1946)[27] said that the exchange market is the result of human activity and thus reflects the human state of mind. The starting position are impulse waves pulled downwards by corrective waves (bears) from time to time. Each wave can break into two or more positions. Five impulse waves are followed by three corrective waves, while the theory is based on the saying that to every action there is a reaction. Another famous concept is the Gann number by William D. Gann (1935) who believed that regular mathematical patterns rule everything.

Another smaller group of investors rely on the spiritual sphere, so-called economic astrology. There is yet another type of information on exchange markets called inside or privileged information, or investing information. Trading based on this information is called insider dealing or insider trading, and is illegal. The insider can be someone in the company's management but also employees at key informative positions, who should not use their knowledge of the situation or company to make profits on the exchange and are therefore under legal scrutiny in every country. The US law prohibits insiders from quickly buying the stock of their company after just having sold them, and they are prohibited from quickly selling stock, thus limiting the possibility of making an unfair profit. But not all countries with a trade exchange have legally prohibited unfair profits. There are strict repercussions in OECD countries for any attempts to use business information in order to make a profit on the stock exchange.

In addition to insiders, there are also individual investors with at least 10% of a company in their portfolio. They are politically and financially powerful and influential and have strong social connections that give them access to privileged information. In most cases, states protect shareholders and all shareholders should, at least in theory, have an equal chance when trading stocks. Companies should also transparently publish all information with regard to changes in company business, which is not always the case in reality. However, if it is proven that a profit made on a stock exchange is the result of an unfair advantage, the transaction is considered illegal and prosecuted by law. Still, many exchange stakeholders follow the moves of insiders, and if they are buying shares of their own company, it is a good sign for other investors and will reflect positively on the company's goodwill. When insiders sell shares of the company they are working for, it is also a sign.

---

[26] Some of the most popular diagrams among chartists are: the Uptrend Formation (exchange rising, bulls), The Downtrend Formation (exchange falling, bears), the Sideways Trend (as investors decide whether they want to be bulls or bears – a time of reluctance), the Fan Formation (warning that a trend is changing, signal to investors what the „herd" thinks about the price movement direction), the Rounded Bottom (trading plateau), the Spiked Bottom Formation (situation is unpredictable, market nervous), the Double Top Formation (most often signals a trend change but can become a triple top formation), the Support and Resistance Levels (two levels of value – prices move at an interval), Retracements (retracement as a market reaction to the main trend), the Key Reversal Formation (at the top or at the bottom, and signals the main change upwards or downwards, as influenced by crowd psychology), the Inverted Head and Shoulders Formation (most reliable, precedes a big trend change of stock), the Triangle or Coil Formation (upward triangle – when a buying trend provokes a higher price, while a downward triangle provokes a lower price), the Flag Formation (mixture of relatively short bull and bear and sideways trends, often ends as a double top formation) (see Bazdan 2008, p. 189).

[27] More about Ralph Nelson Elliot is available at: [http://www.elliottwave.com/info/default.aspx] (1.11. 2009)

To sum up, we can say that exchanges are part of the current economic and political situation and depend on global events in the world[28]. The exchange can also have an anticipatory role, as we have already mentioned, so politicians have to worry how the exchange will react to their activities.

2.2.2.4 Stock Exchange Index

The exchange index is based on company market value, i.e. on the security listed because market capitalization is the market valorisation of company market value that we get if we multiply the number of all emitted shares (quantity) and the price of every single share (price). A share has its face value, but does not gain its market, or exchange rate, value until it is listed on the exchange. This value represents the present assessment of future earnings of a company offering shares. The nominal and market value do not usually overlap. The nominal value is actually the book value. The share market value is calculated by the formula: SNV X d / i, the share nominal value is multiplied by the dividend rate d and the divided by interest rate i.

The best known world indices are the Dow Jones for the New York Stock Exchange, the DAX for the Frankfurt Exchange, the FTSE for the London Stock Exchange, the Nikkei for the Tokyo Exchange, etc. The Dow Jones Industrial Average, the most famous exchange economic barometer, is based on average values that show trends in share and bond prices. It includes 30 of the biggest US companies (not necessarily from industry) and almost 1/5 of the total market capitalization of all shares at the New York Stock Exchange. General Electric is the only company that has been part of this index since 1896, while other companies have gone on and off the list as time has passed. Dow Jones & Company is a financial publishing company that calculates averages for every hour of trading on the exchange using the weighted arithmetic average method for industrial activity. Based on this, the so-called composite index was created on the basis of 65 companies (industrial, transportation and utilities companies).

The Chicago Options Exchange was established in 1973 and is the biggest options exchange in the world today. In March 1983, they invented a new product: the index CBOE-100 later renamed the S&P 100 index (OEX). Shortly thereafter, the S&P 500 Index (SPX) was introduced. NASDAQ shares were introduced at the Chicago Options Exchange in 1985.

The indices are a very valuable instrument for presenting share market value because they use statistical averages to measure the fluctuations of the securities market. They represent baskets of selected securities and point in the direction the entire market of observed securities might be moving in. The indices are economic barometers: if a stock index shows a positive trend and if it rises for at least 1 point, we say it is in positive territory. Alternately, if it is falling, it is in negative territory. Indices show daily changes in the base period, with the fluctuation being visible in points. The index level reached in the last second of trading is the final level.

---

[28]The factors which influence the exchange can be short-term (daily events), mid-term macroeconomic indicators (inflation, short-term interest, liquidity, exchange rates, exports) with an emphasis on monetary and fiscal policies (if interest rates are low, institutional investors as investment leaders decide to invest in shares; if they are high, they prefer to invest in bonds), or long-term - connected to the assessment i.e. the anticipation of future economic development.

Calculating indices has been accepted by all world exchanges. They started trading indices on stock and futures markets, which protected investors from the risk of stock portfolio fluctuations.

Standard & Poor's Index represents investments, research and consulting services. It was established in 1923 and covers 500 of the largest and most reputable companies from the areas of energy, technology, health and financial sectors, whose shares are traded on the New York Stock Exchange, and that are a representative sample of the entire US economy.

The Financial Times Stock Exchange Group (FTSE) is a company that publishes exchange indices. It was created by the London Stock Exchange and the Financial Times. FTSE 100 is the best known European index on the London International Financial Futures and Options Exchange (LIFFE) and represents 80% of the British stock market value.

The German DAX, of the Frankfurt Stock Exchange, includes 30 companies. The CAC-40 index represents the strongest companies on the Paris Stock Exchange, while the Nikkei Stock Average 225 of the Tokyo Stock Exchange is a Japanese version of Dow Jones. We should also mention the Hang Seng index of the Hong Kong Stock Exchange (HKSE) which represents some 70% of the listed companies' capitalization.

For our topic, it is important to mention that the Vienna Exchange started calculating the index of Croatian shares, the CROX (Croatian Traded Index) in July 2007, which covers the Croatian capital market.

The CROX is the fourth index of the Vienna Exchange covering Southeast Europe, after the Romanian ROTX, the Serbian SRX and the SETX, which covers Bulgaria, Croatia, Romania, Serbia and Slovenia.

The index covers seven shares listed on the Zagreb Stock Exchange with the biggest turnover and highest capitalization, namely shares for INA, Privredna Banka Zagreb, Ericsson Nikola Tesla, Adris Grupa, Podravka, Končar Elektroindustrija and Dalekovod. For index members, there is a value limit of 25% of the total index capitalization. The parameters for calculating the index are checked quarterly and the index content is revised and if needed adjusted two times a year, in March and in September. The CROX is a price index that the Vienna Exchange calculates and publishes in real time in Croatian Kunas, Euros and Dollars. Since June 4, 2009 Crobex has been a part of the Dow Jones cumulative index for Southeastern Europe (Dow Jones FEAS South East Europe).

In cooperation with the Federation of Euro-Asian Stock Exchanges, Dow Jones will follow European and Asian Exchanges with the help of three new indices including the Dow Jones FEAS South East Europe, which incorporates shares listed on the Zagreb Stock Exchange. The Croatian Stock Exchange is the most western member of the Federation, while the the easternmost one is in Mongolia. It has been announced by Dow Jones that new indices represent the best tool for following developing and border markets.

2.2.2.5 Mass Psychology

History has shown that share price fluctuations are partly psychological. In the 1930s, Keynes stated that the securities market is driven by investors' "animal spirit", and their irrational waves of pessimism and optimism. When evaluating shares, one must take into account not what we think, but what others will think about the future value of a company. On the basis of this, Keynes (1936, p. 154) divided all stock exchange participants into entrepreneurs and speculators. The characteristic of entrepreneurs is their wish to predict

probable profits on securities, while the characteristic of speculators is their wish to predict market crowd psychology.

The advocates of market irrationality say that share market trends are often hard to explain on the basis of news that could affect a rational assessment. The advocates of market rationality say that it is impossible to know a precise, rational value of a company so one should not jump to conclusions and claim that any assessment is irrational. If the market is irrational, a rational person should be able to take advantage of this.

Investors' judgments and stereotypes create trends that can take the economy in a positive or negative direction. There are economic and non-economic factors that influence exchange trends. Economic factors are general trends in national economies, the profit levels of companies listed on the exchange, company growth rates, company competitiveness i.e. the demand for its products and/or services, the interest rates of the central bank and the alternative securities market and multiplication rates. In this part of the paper, we will concentrate more on non-economic factors that influence the value of company securities, the psychological reactions of investors and rumors that have a strong influence on investments and sales (disinvestment for diversification).

Rumors can be responsible for causing panic on exchanges and have often led to personal, financial ruin. It is interesting to note that rumors often have no basis in real economic situations.

However, fluctuations in the share market have an an irrefutable macroeconomic influence and often go hand in hand with general economic fluctuations.

The exchange is often compared to gambling and betting houses, specifically with reference to speculators[29] on the exchange (because speculators speculate on a specific share, they are essentially "betting" on it).

Numerous experienced stock exchange investors also agree that it is important to understand crowd psychology when investing on an exchange (i.e. Kostolany 2008).

Crowd psychology was first described by the sociologist Le Bon (1895, pp. 141-148) as a collection of common characteristics passed on to the individuals of a nation, which make the soul of that nation. But when a given number of these individuals come together and form a crowd in order to do something together, the sheer fact of them coming together creates new psychological characteristics that do not exist among the characteristics of a nation and which are different from them. The unconscious actions of crowds replace the conscious activities of individuals and are one of the main characteristics of our age. Sometimes it will seem that there are some dormant forces in the midst of a nation that somehow move it. Crowds are by definition always unconscious, but this unconsciousness could be one of the secrets of their strength. The unconscious has a huge role in all our acts, and reason a minor one. Universal symptoms, which can be noticed in all nations, demonstrate a sudden increase in the power of crowds and do not allow us to presume that this force will soon stop growing. The only capability of crowds is to destroy.

Le Bon used the term „the law of the mental unity of crowds", to describe when the conscious disappears, and the feelings and ideas of all individuals move in the same direction. Then, an organized crowd forms, which is, according to Le Bon, one being. The fact that numerous individuals are at one place in a specific moment is not enough. What is important is the loss of conscious individuality, which is not necessarily linked to a place.

---

[29] Speculators: a profiteer, calculating person, wiseacre, black marketer, dealer, operator, skilled trader, businessman). B. Klaić, Veliki rječnik stranih riječi (Dictionary of Foreign Words), Zora, Zagreb, 1974, p. 1284.

They have to be united by a specific, outside event or stimulant (e.g. the world financial crisis) upon which they gain the characteristics of a crowd with some general features, so that they collectively feel, act and behave differently than they would as individuals. For Le Bon, the crowd is a new being with significantly different characteristics from those of its particular parts.

The crowd is led by unconscious actions just as an individual is often run by his subconscious. A crowd, personified in a new being, is lead by a hidden global driver, like Jung's collective consciousness, the heritage of experiences of world civilizations.

People of very different intelligences can still have very similar impulses, passions and feelings. In case of everything that has to do with feelings: religion, politics, aptitudes and dislikes, etc., extraordinary people very rarely surpass the level of ordinary individuals.

These general characteristics, driven by the unconscious, become visible in the spirit of the crowd. The individual's intellect becomes replaced by the unconscious actions of the crowd, so the crowd, by itself, expresses the average characteristics of everyone, including narrow-mindedness, a sense of power, acting on one's instincts (often the most primitive ones, as witnessed during wartime atrocities), primitive feelings and a tendency to overreact (suggestibility), a tendency to fantasize (bread and games), authoritarian behavior and intolerance, conservative and impulsive behavior, irritability, loss of the ability think, lack of judgment, and personal irresponsibility. Le Bon also mentions automatism, a kind of collective hallucination (experience in images), hypnosis, i.e. "contamination" which leads a crowd to believe, act and do what they would never do individually.

We have all been witnesses of what Le Bon was the first to notice: that people in crowds tend to go down a few steps in the evolutionary chain of civilization, opening the door to spontaneity, ferocity, and savage behavior. Infatuated by the crowd, an individual easily does what is contrary to their individual interest or human nature.

"The crowd easily becomes the executioner, but can just as easily become a martyr." (Le Bon 1895, p. 160)

When talking about morality, Le Bon (1895) believed that the crowd could be highly moral (if led by honorable intentions) but also very immoral (following the lowest impulses) even though the actions are unconscious.

Stock exchange participants can be divided into true investors who buy shares to own part of the company and thus have more influence. They are led by rational reasons and expect long-term benefits. The other group includes speculators (scalpers, day traders, position traders) who invest in a company's shares for its shares, and not because of the company's profits. They expect to buy low and sell at a high price. They are also called adventurers or stock-adventurers. They are not bothered by risk and wish to make a profit as soon as possible. They are motivated by the passion for adventure. There are more of them and they are more important for the activities of an exchange. We can look at them as short-term investors that exemplify the crowd psychology of the market.

There are also those who play it safe and take maximum risk insurance when investing their money in securities. There are also businesspeople who invest their money by buying entire profit-making companies. Finally, there are savers who only invest in bonds and wait for interest rates better than the ones offered by banks. Kostolany (2008) and many other stock exchange connoisseurs claim that it is best to avoid extremes in a crowd mood, so real speculators buy when they assume the rates will go up, and sell when they assume the rates will go down, which is extremely difficult because one must act contrary to the trends.

In any case, buying is a "blessed state" and selling a "restless" one, because selling can be linked to an urgent need to get hold of cash or a feeling that share value will fall and one will lose one's savings.

Stock exchanges are often compared to casinos because speculators, or those who bet on luck, are speculating on a certain share by betting when it is not making profit. There is an element of uncertainty, just like in betting. When deciding to buy or sell securities, some are lead by a meticulous strategy of money management, while others base their decision on random choice theory. In any case, crowd psychology is not easy to understand or "unlock", but it influences the ups and downs of a stock exchange, and also hints at the general world economic situation (one only has to remember the mass of people in banks during the world financial crisis). When a crowd starts feeling fear, it becomes contagious and can be very detrimental to global financial health. This is just one of the reasons why the state should have stricter regulators to manage the situation more successfully in times of economic crisis.

2.2.2.6 The Stock Exchange and New Technologies

We are living in an age when everything is seen through zeros and ones. Workplaces are mobile, linked to a computer. The computer functions as an extension of our senses (sight, touch, smell) or as an artificial limb. Our jobs are largely based on knowledge, information and communication. All jobs are moving in the direction of providing services, towards "informatization."

"Today, the entire economic activity tends to come under the power of the information economy"(Hardt and Negri 2003, p. 243). We are producing non-material work: producing non-material goods, such as services that are based on the permanent exchange of knowledge and information, a cultural product, communication and knowledge itself. The global stock exchange trade is becoming increasingly virtual, i.e. less dependent on a specific place, so that trading over a screen is replacing trading floors. The virtual nature of trading means that the participants do not have to be physically present in order to carry out a certain transaction, and transactions can be done at several different places (for example, in several banks or via electronic or telephone contact between brokers and investors).

It is also possible to react very quickly (only minutes pass from the moment an order is submitted by an investor to it being carried out) since all transactions are done over the IT system. For the first time in history, the basic unit of economic organization is no longer an individual, a family, a company or a state, but a network. This network is a collection of connected nodes, a node is a point where the curves intersect. New networks, in a networked society, are based on IT, computer-based communication. Networks encompass the globe, while the information flow is carried out at great speed and allows instant access to information for network members. The power lies in the link between the nodes and centers, mostly financial centers (the network of all networks or the metanetwork) (Kurtzman 1993). For example, according to Castells (2000), in the network of world financial flows, nodes are exchange markets and their auxiliary centers of developed services. In the political network of the European Union, nodes are national councils of ministers and European commissioners. In the world network of new media, nodes are television systems, production studios, computer graphics communities, news teams and mobile appliances that generate, transmit and receive signals.

There are two ways of manipulating orders towards brokers when using handheld computers. The SuperDot (Designated Order Turnaround System) is used for smaller market orders via the Office for Orders. In the moment the order is carried out, a receipt is automatically sent to the Office for Orders in electronic form, and it takes 22 seconds to send feedback to the broker. The other way is the more sophisticated Broker Booth Support System (BBSS) through which brokers receive orders at the exchange floor. It is linked to the main computer network and there is no need to forward orders to brokers on the floor via outdated telephone technology.

The following exchange electronic systems are also known: Institutional Xpress, NYSE e-Broker, NYSE Broker Volume, NYSE OpenBook, NYSE LiquidityQuote, ITS, OARS).

The London Stock Exchange modernized in 1986 after installing the latest computer system which enables "quote drive" electronic trading. We should also mention several other electronic platforms: the Stock Exchange *Electronic Trading Systems* (SETS) for trading most liquid shares; the Stock Exchange *Electronic Trading Systems* for hybrid systems (SETSmm) which combines the electronic order book and the active role of those who maintain the market and who compete in getting the optimal price for trading shares of low or medium capitalization; the Stock Exchange Automated Quotations (SEAQ) for trading on Alternative Investment Markets (AIM); and the platform for trading shares with poor liquidity (SEATS Plus).

The NASDAQ Technological Exchange is an electronic exchange with a computerized information system enabling the trade in securities that cannot be traded on the New York Stock Exchange, because NASDAQ is an exchange listing only securities traded over the counter. This type of trade is very important because it dispenses numerous securities. Brokers sit in front of screens, buying or selling securities in silence. This is the market where one can buy or sell the securities of many of the fastest growing companies, primarily in the sector of *high technology.*

During 2004 the Securities and Exchange Commission proposed regulatory changes on exchanges, giving an advantage to electronic trading for optimal transparency and to the protection of the anonymity of investors, which is a strong blow to classic trading on the floor.

Today the information and network computer technology has entered into all segments of business (programme trading). A computer, if thus programmed, can also make all key decisions on trading. The advantage is that it instantly gives information on every change. In the stock exchange business, this is called e-bourses or e-exchanges.

Modern brokers practice distance working (teleworking). It is not important where they are, they just have to be proficient in the use of computers, and they become mega-dependent on working with networked computers. Brokers and their clients no longer have to communicate directly, but can do it over the computer, while exchanges are linked with one another via a computer network.

The Selekt and Selekt 2 computer systems have been established. They also work overnight, when the stock exchanges are closed. The users of the electronic trading system today tolerate, at the most, eight seconds of waiting for each transaction. This is often because of errors.

For capital investment transactions, the internet is a powerful virtual trading space. When gathering information on investments, web sites are used to explore investment possibilities, check portfolios, investment funds and electronic stock exchanges. However, electronic trading does not guarantee anonymity (anonymity is one of the main characteristics of stock exchange economic democracy), nor does it guarantee safety because of the ever-present

danger of cybercrime. The accounts of business people in the USA are the most likely to fall under attack, which is a serious problem when taking into consideration the growing electronic trade (part of the internet economy).

In 1999 the European Parliament adopted the EU Action Plan on safer internet use as a start of organizing the EU's virtual space.

2.3 World Financial Crises and Their Legacies

In the chapter on Mass Psychology (2.2.2.5) we explained how dangerous panic prior, or during, every serious world crisis can be. When we talk about serious financial crises we have to go back to 1929 and the First Big Economic Crisis (see Table 1) on Wall Street when the exchange and numerous financial institutions collapsed, first in the USA and later in other countries of the world as well. The recorded loss in paper value back then was USD 30 million. From September 3, 1929 to December 31, 1939, the Dow Jones Average, the main stock exchange index of this Exchange, fell 381.17 points, to 150.24 points, which means that for many stakeholders, money turned into worthless paper.

Before the crisis, the exchange market was blooming (the Roaring Bull Market). Buyers bought on margin (loan), and between ten and twenty million Americans owned shares. The stock exchange market was not legally regulated, and companies often presented false positive business reports in order to increase their security prices. The cause for the crisis was a combination of events, including then-Finance Minister Winston Churchill's 1925 decision to reintroduce the gold standard, making exports from Great Britain partly too expensive and non-competitive, resulting in the loss of jobs, strikes and a further deepening of the crisis. On the other hand, the USA decreased interest rates, granting more loans and putting more cheap money on the market, which stimulated exchange speculations. The imminent cause of the breakdown occurred at the counter of the American Union Bank in New York when, quite by accident, several big investors came to withdraw their money, and the bank could not reply to the requests of all of its clients. The word quickly spread and savers ran to banks, prompted by panic and fear of losing their money.

The time of bears had come to the New York Stock Exchange. The exchange went dead, some shares lost up to 90% of their value. From 1930 to 1933, some 9,000 banks went out of business, resulting in many personal tragedies. The collapse spread to all exchanges of the world via a ripple effect, hitting Germany more than other European countries. The crisis was preceded by the crisis of the agricultural sector in the USA, and part of the cause for the crisis can be seen in the unfair distribution of income (social stratification) and in the lack of a responsible macroeconomic and fiscal policy. The US government made a mistake by passing the Smooth-Hawley Law, which increased import custom duties in order to protect domestic production and prevent cheap imported goods. This policy further deepened the crisis throughout the entire world because everybody was doing the same thing, and at the same time decreasing the value of their currency so that goods could be placed more easily on the international market. However, when everyone does this, it only further deepens the world economic crisis. At that time, the need arose to establish a world organization that would prevent such a crisis with the help of a capital fund. This marked the beginning of the establishment of the World Bank, which will be presented in more detail in Chapter 2.2.1.1. Some believe the cause of the crisis was in the transfer of financial power from Great Britain to America, which provoked exchange rate instability.

Prior to the economic crisis, and due to minimal margins, security prices dropped whenever there was a margin call. Buying on margin is the buying of shares with a certain deposit; a "margin call" occurs when the value of the security drops, and brokers send out a call in order to maintain the margin account. Margin calls forced many investors to sell their shares in order to obtain cash, which caused a mass depreciation of prices and led to a quick chain reaction in the fall of share prices. Due to this, some companies lost up to 90% of their value and many went bankrupt. This was the reason why the Federal Reserve System (FRS) prescribed by law how much the minimal margin should be (40 to 100 per cent). For risk protection, the FRS prescribes which percentage of order value a broker can give on a loan, and how much money a speculator has to deposit on the margin account, after which this percentage is harmonized with national economic policy measures. A decision on increasing margins leads to the limitation of investments, while margins are decreased in order to boost economic activities. Today, margins are usually from 50 to 70 per cent. It is estimated that 1/5 of exchange transactions by speculators today are bought on margin.

Tobin (1918-2002) proposed the introduction of taxes on capital movements over the limit as a protection from risk and crises in unstable economies, and with the aim of "preventing the formation of speculative capital flows which can harm unstable economies." He proposed a tax rate of 0.1 to 1 per cent of the value of a transaction and tried to get the "Tobin tax" accepted in developing countries. This method can be used to penalize the manipulation of transfer prices (over-pricing exports and under-pricing imports) by multinational companies in order to avoid paying customs duties and taxes to developing countries.

Galbraith (1961) gives five reasons for this great world crisis: the poor division of income in American society (5% of the population held 33% of all income); the poor corporate culture (many stock exchange and corporate frauds); poor bank structure with too many independent units, where the downfall of one leads to the collapse of all (the domino effect); the American foreign trade balance (decrease of the trade surplus); and the poor state of economic thought.

The crisis resulted in some positive changes, such as the so-called watchdogs at the Stock Exchange through the Securities and Exchange Commission, which started regulating the stock trade and exchange activities as a whole. President F. D. Roosevelt gathered a team of experts and founded Roosevelt's Brain Trust, which started implementing a new economic policy called the New Deal in 1933. This was primarily used to regulate the financial market by the Glass-Steagall Act, which prevented a conflict of interest, so that investment banks could no longer also trade in securities.

New regulations made sure for the first time that the US stock exchange conducted business in the interest of the public, meaning that stock companies listed on the exchange were not private but public companies, some of them with several hundreds of thousands of owners. The Commission demanded transparency and it does not accept the notion of business secrets unless they are linked to fundamental research. After 1933, circuit breakers were introduced, which could temporarily switch off trade on the exchange in order to prevent a so-called "free fall" on the market. Other countries with developed exchange markets also founded commissions for the regulation of exchange activities. An economic crisis is usually preceded by a political crisis, which is often the reason for fast disinvestments that would further deepen the crisis. Trust in the political elite of a state (president) has a strong influence on the recovery of the exchange market. The election of President Barack Obama in the USA (2008) had a positive impact on the recovery of the stock exchange. If the

political situation is unstable, there is capital flight, which is what happened after the first American economic crisis.

Trade cycles are those economic activities that create models that have an expansion phase, a stagnation and a contraction phase, and they are repeated regularly. They are defined as a certain type of fluctuation characteristic for the overall economic activity of states. The cycles are at the same time composed of economic activity expansions in all areas, then general recession, with contraction and revival overflowing to the next expansion phase. This sequence of change is repeatable but not periodical (Mitchell 1972). The crisis is only the bottom of a cycle (slump or bust). Schumpeter (1939) sees cycles as wavy deviations of the balance of economic activities. According to Keynes (1936), the characteristic of cycles is the successive movement of expansion and stagnation. The overall contractive activity of the economy has a certain regularity and durability in each phase. Furthermore, Keynes said that cycles have a characteristic crisis phase, which occurs after a recession.

Therefore, regardless of the integral exchange stabilizers, periodical exchange collapses have occurred and have always been connected to the economic situation in the world.

TABLE 1: WORLD FINANCIAL CRISES AND STOCK EXCHANGE SHOCKS (1929 – 2008)

Year	Region	Short description
1929	**US**	Great Depression started on Black Thursday, 24 October, panic spread
1955	**US**	Eisenhower's heart attack – massive selling of shares (stock market specialists mitigated the blow)
1980's	**US**	Financial innovations, lower profits in some segments of traditional banking, searching for new riskier jobs, new financial institutions, increased competition, mortgage loans, leveraged buyouts, broker's deposits, deterioration of bank balances, a decline in stock markets, increase in interest rates, massive withdrawal of funds, banking crisis, banks decline (200 per year), debt deflation.
1981	**US**	Reagan assassination attempt, stock exchange shocks
End of 1980's	**Scandinavia**	Banks in state property, limited interest rates, financial liberalization, deregulation, explosion of credit activities especially on the real state market, lack of knowledge in the banking industry and regulatory agencies, prices fall, banking crisis, great losses.
1990's	**Latin America (Mexico)**	Banks in state property, limited interest rates, financial liberalization, privatization of banks, deregulation, explosion of credit activity, lack of knowledge in the banking industry and regulatory agencies, prices fall, irrecoverable loans, banking crisis, political crises, great losses, devaluation of national currency, inflation, stock market decline, state intervention.
1990's	**Russia and Eastern Europe**	Banks in state property with a lack of knowledge in banking industry and regulations, banking panic (In Russia, Aug. 25, 1995), state intervention, interbank markets stopped because of suspicions of the insolvency of the banking system. Russian government places a moratorium on debt repayments on Aug. 17, 1998)
1990	**Japan**	Banks in state property, most heavily regulated financial markets, 1990's explosion of credit (especially mortgage loans) because of deregulation and financial innovations, poor financial reporting, banks taking too much risk, bank inflating its value based on credit, a decline in property values, irrecoverable loans, supervisory authorities don't want to close big banks, banks fall In 1998, the supervision of banks is taken over by the Financial Supervisory Agency and in 2001, the level of irrecoverable credit is one billion dollars.
1991	**US**	Gulf War - stock exchange shocks
1997	**Russia**	Yeltsin in the hospital, Moscow Stock Exchange is shocked
1997	**East Asia (Thailand, Malaysia, Indonesia, Philippines, South Korea)**	Inadequate monitoring of national currency, liberalization of the financial system, explosion of credit activities, irrecoverable loans, stock market decline, collapse of national currencies, increase in unemployment.
2001	**US**	**9/11** – stock exchanges did not work for a day
2005	**EU**	France rejects the EU Constitution – the European Stock Exchanges shake
2008	**US, EU and others**	The latest great world economic crisis. Irrecoverable loans, stock market decline, increase of unemployment. New regulations are needed.
Source: Berg, 1998, Calomiris 1991, Vihriala 1997, Englund 1999, Hoshi and Kashyap 1999, Mishkin 1999, Forbes and Rigobon 2002, Caprio and Klingebiel 2003, Mishkih and White 2003, Kharroubi 2007 and author's summary.		

2.4 Regulations

In the following chapters we will describe the regulatory framework and the supervision of banks and other institutions in the financial system through the "safety net", Basel I and II.

2.4 1 Regulatory Approach

The financial system is considered to be one of the most regulated branches of the economy, with a special emphasis on the supervision of banks. Financial embezzlement has often led to a serious world crisis in the past. A crisis is often based on asymmetric information, negative selection, moral hazards and irrational crowd behavior, but also often on the irresponsible behavior of individuals, and has resulted in the regulatory system that we have today. However, even such a strictly regulated system is, in times of world financial and economic crisis, subject to shocks, which, many theoreticians believe, points to the need for even stricter regulations which should be implemented at a global and/or regional level.

The discussion on the need for stricter regulations stems from basic economic theories which, on the one hand, advocate a free market with little state involvement (see Chapter 2.1.1), and on the other hand, warn about the need to have a certain level of state surveillance, which also includes a stricter regulation of the financial system. The discussion became heated during the 2007 world financial crisis, which many believe would not have happened if there had been adequate banking regulations.

Mishkin and Eakins (2005, p. 517) believe that the existence of a state safety net[30], and not deposit insurance as such, is what increases moral hazard and causes exposure to great risks in banking activities. All banks in countries that have gone through a financial crisis turn to their respective states for help. Before 1933, the government's direct role as an insurer of financial stability was relatively modest. Indirectly, through monetary, fiscal and debt-management policies, government actions contributed to stability or instability. Historically, governments licensed private financial institutions, but microeconomic government interventions, like subsidized lending, insurance of a private institution's claims, or government recapitalization of particular institutions were relatively uncommon (Calomiris 1997, p. 2).

The Federal Reserve in the US at first loaned reserves to banks only against high-collateral assets without preventing the failures of banks whose depositors had lost faith in their solvency. In Britain, Bagehot's maxim for the lender of last resort – to lend freely at a penalty rate during a crisis – had inspired some limited government intervention during a financial crisis that went beyond Fed discount lending policy. The assistance of the Bank of England placed it at minimal risk and maximized the privatizations of risk during the crisis of 1890.

In many countries, banks and governments also acted as partners in special ways during wartime. Governments sometimes relied on banks to assist in war financing in exchange for protection for the banks from failure if the value of government debt fell. Now all

---

[30]"Safety net" is a net for financial institutions and their customers; the regulation of securities, mutual funds, insurance, and other financial instruments; corporate disclosure and corporate governance; and issues engendered by the growth of electronic commerce and the globalization of financial markets. Calomiris C.W, and Mason J.R., (1999), High Loan to Value Mortgage Lending, The AEI Press, Washington D.C.

these interventions, by modern (mid-to-late-twentieth century) standards pre-1930s governments, were skeptical of the merits of publicly managed and funded assistance to financial institutions during peacetime. There is clear evidence that government stinginess was not the result of ignorance for economic externalities associated with bank failures but rather reflected an appreciation for the moral-hazard consequences of providing bailouts (Calomiris 1989, 1992, 1993; Flood 1992). The primary source of protection against the risk of runs on a bank, were other banks. That assistance was not guaranteed but rather depended on the willingness of private coalitions of bankers to provide protection to a threatened institution (Gorton 1985; Calomiris 1989, 1990; Calomiris and Gorton 1991; Calomiris and Schweikart 1991; Calomiris 1992; Calomiris and Mason 1997).

After the 1930s, in the US, President Herbert Hoover provided a new source of government lending to banks and other firms in distress: the Reconstruction Finance Corporation (RFC). Initially, RFC was only authorized to lend against high-quality collateral, but in 1933 its authority was extended to permit the purchase of a preferred stock of banks and other firms, which reduced the probability of failure for distressed institutions (Mason 1996). By the1950s and 1960s, many depression-era reforms had achieved the status of unquestionable wisdom. They constituted part of the new 'automatic stabilizers' lauded by macroeconomists as insurance against financial collapse. Deposit insurance protected banks from the discipline of the market and increased the risk of financial collapse implied by the willingness of banks to assume greater risk in the wake of adverse shocks to their portfolios. Many economists attributed the economic stability of the 1950s and 1960s to the new stabilizing government safety net. After the Second World War, many countries followed the US in establishing aggressive financial safety nets.

The volatile environment of the 1970s and 1980s provided the first test of the safety nets. Shocks to asset prices, exchange rates and commodity prices reminded economists that volatility is the norm and eroded their faith in the financial safety net by demonstrating how drastically different the behavior of protected banks was. It become clear that financial risk was not all exogenous, much of it had been chosen by institutions and individuals that knew they were protected from downside losses. Many came to view the safety net, previously lauded as a risk reducer, as the single most important destabilizing influence in the financial system (Calomiris 1997, White 2004.).

Calomiris and Kahn (1991) and Calomiris, Kahn and Krasa (1994) argued that banks operate as three-party arrangements, bringing together: 'insiders' (bank stockholders/managers), 'informed outsiders' (large depositors who specialize in monitoring bank activities), and 'uninformed depositors' (passive, small depositors). The uninformed rely on the informed depositors to monitor the banker. The 'first come, first-served' rule for deposit withdrawals, along with a sufficient amount of bank reserves, provides payoffs for the informed monitors in 'bad' states of the world that induce them to invest in information about bank activities and to run the bank if they see a sufficiently bad state of the world. Because bank regulators and supervisors do not face strong incentives to invest in information (as would private depositors), it is less likely that they will be as well informed about the true risk characteristics of bank assets.

The importance of asymmetric information[31] deserves emphasis; in the absence of asymmetric information (which makes it necessary for someone to invest credibly in monitoring bank risks and leverage), there would be no incentive problem in the safety net.

---

[31]The lack of transparency of bank risk to outsiders.

The regulation of bank risk could be accomplished easily because deposit risks would be freely observable to everyone. But without asymmetric information, there would also be no need for banks, much less a bank safety net. Ironically, the very information problems that give rise to banks and to the desire for a safety net (to avoid banking panics) make it very difficult to ensure that the bank safety net will be incentive-compatible (Calomiris 1997).

2.4.2 'Safety net'

When depositors know that they are insured against risk, a moral hazard occurs and the disciplinary effect for the market and banks is lost. Therefore, banks that are insured by the state often expose themselves to greater risks than they would otherwise. There is also negative selection: people most likely to create a negative effect (collapse of banks) are at the same time people who wish to use the insurance opportunity. This opens the way to numerous embezzlers who see the banking industry as a good medium for embezzlement and making a lot of money.

Horwitz (1992, pp. 131-160) drew attention to 'moral-hazard' problem. He argued that a loss of capital led these institutions to increase their asset risks (the opposite of prudent banking practice) because their low capital levels imply little risk for further losses and significant upside gains for bank stockholders. Brewer et al. (1992, pp. 65-69) provided formal evidence consistent with the arguments of Barth and Bartholomew (1992, pp. 36-116), Horvitz (1992, pp. 131-160) and some others.

The two most important potential areas of weakness in the American financial system were large commercial-center banks (too-big-to-fail) and life insurance companies (covered by state-level insurance schemes). Brewer et al. (1992) and Brewer and Mondschean (1993) found evidence of the moral hazard in portfolio choices of life insurance companies reminiscent of Brewer's evidence for savings and loans. Caprio and Klingebiel (1996) and Lindgren et al. (1996) have demonstrated how widespread the problem of moral hazard has become in the financial system, across the globe and including developed and developing economies. The lessons they draw are universal: well-intentioned government lenders of last resort (or insurers of deposits) have promoted both large dead-weight losses (from inefficient investments and reconstruction costs) and enormous fiscal strains on governments. Crises also seem to have an important disruptive effect on post-crisis growth and investment rates, probably through the destruction of institutional and human capital in the banking system. (Calomires, 1997, p. 15)

The period from 1988 to 1993 witnessed unprecedented international actions to limit the safety net protection of banks.

The Basel international bank capital standards werethe first steps followed by FIRREA[32] in 1989 and FDICIA[33] in 1991 (see chapter 2.4.3).

Despite the progress that has been made in the US, the question is whether these new and better government rules, implemented by government regulators and supervisors, are really a promising approach to resolving incentive problems attendant to the financial safety net

---

[32] Financial Institutions Reform, Recovery and Enforcement Act

[33] Federal Deposit Insurance Corporation Improvement Act

(Calomiris 1997, p. 18). The government supervisors and regulators sometimes do not know a bank's true deposit risk or, if they do know, face political incentives to ignore it. This tendency is particularly compelling during recession-induced bank 'capital crunches' when politicians and regulators face strong incentives to 'forbear from strict enforcement of bank regulations to promote a larger supply of bank credit in the economy.' The politically mandated forbearance of recent years -- in the US, Chile, Venezuela, Mexico, Japan and elsewhere -- provides scant evidence that regulators can be relied on to control politically powerful bankers, especially when governments face populist pressure to expand credit supply during a downturn (Calomiris 1997, p. 22).

Standard minimum capital requirements through provide an inadequate solution to safety-net incentive problems for two reasons: book capital standards constrain risks only as long as regulators and supervisors ensure that book capital bears a close relationship to true capital (the market value of capital) and even if regulators enforce capital requirements by fully recognizing capital losses whenever they occur, capital standards alone do not obviate safety net subsidies for risk taking (Calomiris 1997, p. 23).

Two of the most popular reforms that have been considered are 'narrow banking' ('safe bank') and 'market discipline'.

The narrow-banking approach would restrict government insurance to a separately chartered narrow bank within the bank holding company, which would hold transparently low-risk, market-priced assets and would issue insured deposits. Narrow banking effectively eliminates any risk to the government from insuring deposits and is thus simply another name for the suggestions that deposit insurance be repealed. Calomiris (1997, p. 25) thinks that narrow banking is not politically credible and uninsured short-term deposits outside the narrow bank would still leave banks susceptible to capital crunches and to the logical possibility of runs, which could be used to motivate *ad hoc* government interventions to protect uninsured deposits.

The second reform is known as 'market discipline.' In order to counteract this loss of market discipline, governments have introduce regulations aimed at preventing bank managers from taking excessive risks. Today, market discipline has been introduced into the Basel II and Basel III Capital Accord as a pillar of prudential banking regulation .

2.4.3 Supervision of Bank and Institutions

The surveillance of banks and institutions is carried out through the financial regulation system, which includes: a state safety net, the limitation of assets and regulatory level of capital, the issuing of permits and bank checks, obligatory reports, the protection of clients, the limitation of competition and separating the banking industry from the securities industry (Mishkin and Eakins 2005, p 491).

In 1934, the American Federal Deposit Insurance Corporation (FDIC) introduced a practice of insuring deposits in a way that, if a bank whose clients have invested their savings goes out of business, the agency is obliged to pay the entire sum for the initial USD 100,000 (methods of payment). This is used to prevent the panic which occurred in the 1930s when clients ran to banks worried about their business future. In time, the same practice of establishing these types of agencies has been adopted by other countries and the number of banks that have had to close down, has significantly decreased. The payment fund is insured by banks themselves, by their insurance payments to the Agency. In addition to the payment

method, there is also the buyout and takeover method, meaning that the reorganization of the bank by an Agency that finds a partner who will take over all the deposits of the collapsed bank -- thus protecting investors' funds. The Agency provides support through subsidized loans or by buying out a part of bad loans. The FDIC most often used the buyout and takeover method until the new 1991 Regulation Act.

Deposit insurance is also possible through state governments, which help domestic banks if panic occurs, i.e. through central banks which lend money to financial institutions in trouble (borrowing as a last resort).

The negative consequences of deposit insurance have been noticed in countries with an ineffective institutional framework (corruption, ineffective regulation). They include lower bank stability, more frequent occurrence of a crisis, volatility, and a slowing down of financial system development.

Another problem is found in big banks that are 'too big to fail'. The Agency has to take special care that they do not go out of business, as this would cause a tremendous imbalance on the financial market. However, when depositors know that the state will not let big banks go down, they are not motivated to control them or withdraw their funds when they notice bank instability. The entire situation stimulates banks to take more risk and get involved in financial operations without security. The consolidation of the financial system developed during the 1990s after the Riegle-Neal Act on Interstate Banking and Branching Efficiency and the Gramm-Leach-Bliley Act on the modernization of financial services in 1999. This meant that the state safety net would have to expand to include new activities (records of issuing securities, insurance activities, real estate activities), which led to taking more risks.

Depositors would have more opportunities to control banks if they could gather data on the risks they are exposed to, but in practice this is very difficult to check.

Acts that regulate banks' business activities promote diversification, which reduces risk by limiting the allowed maximum amount of certain types of loans or loans to individual borrowers. Yet another way to reduce risk exposure is the obligation to maintain the regulatory level of capital based on the capital ratio (amount of capital divided by total assets) which should be more than 5 per cent (if less than 3%, it leads to stricter legal limitations).

Bank surveillance or creditworthiness control is a method used to reduce negative selection and moral hazards in the banking industry.

One surveillance method is issuing work permits to new banks which are meticulously checked to avoid undesirable staff at management positions. Business banks obtain the work permit either from the Currency Control Office (if it is a national bank) or from the competent state authority (state banks).

Regular controls at bank premises serve the purpose of checking whether banks are following the provisions on the regulatory level of required capital, while the limitations on investments in certain type of property are used to try and limit the risk of moral hazard. Bank supervisory bodies award a CAMELS rating: (C) Capital adequacy, (A) Asset quality, (M) Management, (E) Earnings, (L) Liquidity and (S) Sensitivity to market risk, thus controlling different segments of bank business activities. With the help of this information on bank activities, supervisory agencies can issue warnings before suspending licenses or closing a bank. This is also a way of controlling banks without exposing themselves to too much risk, although risk can never be completely eliminated. Similar methods are also used for private financial markets.

After a bank gets its work permit, it has the obligation to submit periodical short reports with data on assets, liabilities, income, dividends, ownership structure, foreign currency

transactions and other details. Controls of banks are sometimes unannounced in order to avoid the possibility of a cover-up in the books. If it is established that a bank has risky loans and suspicious securities, it can be forced to get rid of them or be pronounced problematic and subject to more controls. In the new global financial environment, banks are susceptible to quick changes so it is not enough to assess their business activities on the basis of a current balance sheet on a given date and whether the regulation of capital level is being followed. Controllers today pay more attention to the adequacy of management processes connected to business risk surveillance by rating them on a scale from 1 to 5 following the CAMELS system[34]. Emphasis is put on greater responsibility in risk management by bank management board and executive directors.

The obligation of transparent reporting that is understandable to all bank clients is prescribed by the document of the Eurocurrency Standing Committee of the G-10 Central Bank (1994). This document defines that financial risk assessments, which companies get via their internal risk management systems, should be adapted for publishing and offer additional risk information that is not usually part of the balance sheet.

The protection of clients from the existence of asymmetric information is also regulated by the Consumer Protection Act from 1969, which stipulates that all lenders, not just banks, should provide all the necessary information to their clients on the costs of borrowed funds, including the annual percentage rate and the total fee for the loan granted. The Fair Credit Billing Act from 1974 requires lenders to give exact information to borrowers on the method of calculating financial fees and to quickly resolve possible appeals. The implementation of this Act is controlled by the FED. The Equal Credit Opportunity Act from 1974 prohibits discrimination by borrowers on the basis of race, gender, marital status, age or ethnic origin, and is also controlled by the FED. The Community Reinvestment Act (CRA) from 1977 prevents a borrower from refusing loans for financing projects in a certain area where they receive deposits from, in order to stimulate entrepreneurs and support the local community. The regulation of the banking sector entered a new phase with the development of electronic banking, due concerns for its security and the possibility of misuse (there are attempts to prevent it through cryptology). Therefore, bank surveillance agencies also check technical platforms and knowledge of financial institutions. The Electronic Signatures in the Global and National Commerce Act from 2000 made electronic signatures mandatory and identical to hand-written ones. There is also the issue of the protection of privacy, because banks dispose of large amounts of data on their clients, so the Gramm-Leach-Bliley Act limited the distribution of data, but not as well as the European Directive on Data Protection, which prohibits the exchange of transaction information over the internet.

In reality, financial institutions try to find loopholes and cracks in regulations in order to gain more financial benefits, which forces surveillance agencies to be extra vigilant and watch what is happening on the financial market, to adapt quickly and also change existing or obsolete regulations. Staff working in surveillance agencies have to be well educated and informed about all the details of the work of financial institutions. They are often also under political pressure. Their work has not always been successful, which led to the world banking crisis. (Mishkin and Eakins 2005, p. 506)

---

[34] Four elements of risk management are assessed: the quality of surveillance by the management board and higher executive managers; the appropriateness of the policy and limitations on activities that constitute significant risk; risk measuring and control system quality and the appropriateness of internal controls in the prevention of fraud and unauthorised activities by banking staff.

The federal insurance of deposits functioned well until the 1980s. The increase of financial innovations in the 1960s and 1970s, such as NOW accounts, money market investment funds, speculative bonds, securitization and the development of the commercial bill market etc., decreased the profitability of some segments of traditional banking activities. There was also more serious competition for sources of funds from new financial institutions (such as the money market investment funds). Due to the commercial bill market and securitization, the credit activities of banks also decreased, so banks had to find new, potentially riskier activities such as the real estate business, granting loans for participation in corporate takeovers and leveraged buyouts.[35] Depositors did not worry about risky activities (the new futures contract market, speculative bonds, swap transactions, etc.) of their bank because their deposits were safe. The Depository Institutions Deregulation and Monetary Control Act from 1980 increased the amount of deposit insurance to USD 100,000 per account and suspended limitations on deposit interest rates.

Brokerage deposits enabled depositors to go around the USD 100,000 limit for deposit insurance by allowing them to buy different packages in different banks, each for the insured amount of USD 100,000. This resulted in banks taking on more risk, and by the end of the decade some 200 banks a year were going out of business. The Financial Institution Reform, Recovery and Enforcement Act (FIRREA) from 1989 gave the US Department of the Treasury (the US ministry of finance) the task of preparing a study and a reform plan of the federal deposit insurance system. In 1991, Congress passed the Federal Deposit Insurance Corporation Improvement Act (FDICIA)[36] which introduced changes in the regulation of the banking system. It introduced additional capitalization of the FDIC Bank Insurance Fund and reforms in the system of deposit insurance and banking business surveillance, so that taxpayer losses could be reduced to a minimum. Now, instead of five, the FDIC could borrow USD 30 billion from the US Department of the Treasury. An additional USD 45 billion could be borrowed for working capital. The money would be repaid once the FDIC sold the assets of a bank that had collapsed. The law stipulated that the FDIC should set a higher deposit insurance premium until all their loans were repaid, and within 15 years should reach the level of reserves in their insurance fund equal to 1.25% of insured deposits. They managed to do this after 5 years, in 1995.

The scope of deposit insurance was decreased. The FDIC could insure brokerage deposits only if they were open within a pension insurance in a well capitalized bank. Today, the FDIC has to close a bank that collapses regardless of its size, using the cheapest method, with the following exception: if deciding not to save the bank would cause great disturbances for financial stability and with the consent of a two-thirds majority in the FED Board of Governors, the FDIC Management Board and the Secretary of the Treasury (the US Minister of Finance).

Mishkin and Eakins (2005, p. 508) believes that the most important provisions of this Act are those on corrective actions, which force the FDIC to react before a bank gets into trouble. Banks are divided into five groups: 1) well capitalized – banks that considerably cross the regulatory level of required capital and have the right to insure brokerage deposits

---

[35] A leveraged buyout (or LBO, or highly-leveraged transaction (HLT), or "bootstrap" transaction) occurs when a financial sponsor acquires a controlling interest in a company's equity and where a significant percentage of the purchase price is financed through leverage. Available at: [http://www.lbo-advisers.com/LBO.asp] (10.10. 2009)

[36] Available at: [http://www.fdic.gov/regulations/laws/rules/8000-2400.html] (10.10.2009)

and register the issue of securities; 2) adequately capitalized – those that meet the regulatory level of required capital and are not under corrective actions; 3) insufficiently capitalized – do not meet the regulatory level of required capital; 4) and 5) banks that lack a considerable amount of capital (less than 2% of their assets) and the lack is critical. These banks are not allowed to pay out interest on deposits at rates higher than the average; otherwise the FDIC is obliged to start closing measures. This increases the chances of a given bank still having a positive net value at closing, thus limiting the FDIC's losses. For group 3 banks, the FDIC has to take quick corrective actions, such as ask for a capital renewal plan from the bank, limit the growth of their assets, oblige them to ask for a permit from supervisory bodies before opening new branches or developing new segments of business activities.

According to the law, the FDIC has the obligation of introducing insurance premiums in accordance with their exposure to risk. However, in reality, although the assessments vary from zero for well capitalized banks to 27 cents on USD 100 of deposit insurance for banks that do not have sufficient capital and have a low rating from supervisory bodies, more than 90 per cent of business banks and savings institutions have been classified in the least risky group and they all pay the same premium, namely zero. The problem here is with the method used to determine exposure to risk. Some believe that too much attention is being paid to credit risk and not enough to interest rate risk (Crouhy et al. 2000, Bangia et al. 2002).

Further provisions stipulate that supervisory agencies should conduct on-the-spot controls at least once a year, limit real estate business loans, and ask for stricter and more detailed reporting. The Act can also modify the regulatory level of required capital with regard to interest rate risk, and it allows companies that are in the securities business to have access to FED discount loans in the case of a financial crisis. The Foreign Bank Supervision Enhancement Act (FBSBA) makes the FED responsible for the supervision of foreign banks and grants them the authority to gather data on their activities. It also gives them, if necessary, the authority to forbid a foreign bank from operating in the USA. This prevents foreign banks from engaging in undesirable activities.

Some critics of the Act believe that insured deposits should be lowered or even completely abandoned, while others propose co-insurance, forcing depositors to partly take on the risk of investment. There are those who believe that big banks continue to be over-protected because they are too big to be allowed to go down, which leads to poor discipline. Others believe that depositors have no power of control over banks, while the further limiting of deposits could lead to a withdrawal of deposited funds, which would result in the collapse of banks, panic and the collapse of the entire banking and economic system.

The obligation of a regulatory level of capital forces banks that have more capital to be more careful when engaging in risky activities, because if they have more, they can lose more. However, the regulatory level of required capital is calculated on the basis of book value, and the value of assets is defined according to the initial purchase price. Therefore, the changes in assets and liabilities of a company, which are a result of a change in interest rates or the risk of non-payment, are not reflected in the calculation of a company's subscribed capital. Mishkin ad Eakins (2005, p. 512) promotes using accounting by market value (to be carried out every three months) when calculating the level of required capital because that would clearly show whether a bank's capital is below the regulatory level, and also prevent that bank from doing business with negative capital. The problem is in the difficulty of standardizing accounting on market value, which would oblige banks to gather more data on assets and liability characteristics.

2.4.4 Basel I, II and III

The Bank of International Settlements (BIS) in Basel, Switzerland, under the auspices of the banking officials of developed countries, introduced the Basel Agreement (Basel I) in 1988, Basel II in 2003 and Basel III in 2010.

The Basel Committee on Banking Supervision (BCBS) added a great deal to understanding the work and prudential management of banks and rules for their regulation. It proposed norms for estimating risks and measuring capital adequacy in the new global environment. It also covered norms for best practices for banks and international markets. The committee members come from Belgium, Canada, France, Germany, Italy, Japan, Luxembourg, the Netherlands, Spain, Sweden, Switzerland, the United Kingdom and the United States. Countries are represented by their central bank and also by the authority with formal responsibility for the prudential supervision of the banking business in cases where this is not the central bank. Basel I was a round of deliberations by central bankers from around the world, and in 1988, the Basel Committee (BCBS) in Basel, Switzerland, published a set of minimal capital requirements for banks. This is also known as the 1988 Basel Accord, and was enforced by law in the Group of Ten (G-10) countries in 1992, with Japanese banks permitted an extended transition period. Basel II was the second of the Basel Accords, which are recommendations on banking laws and regulations issued by the Basel Committee on Banking Supervision. The purpose of Basel II, which was initially published in June 2004, was to create an international standard that banking regulators can use when creating regulations about how much capital banks need to put aside to guard against the types of financial and operational risks banks face. Advocates of Basel II believe that such an international standard can help protect the international financial system from the types of problems that might arise should a major bank or a series of banks collapse. In practice, Basel II attempts to accomplish this by setting up rigorous risk and capital management requirements designed to ensure that a bank holds capital reserves appropriate to the risk the bank exposes itself to through its lending and investment practices. Generally speaking, these rules mean that the greater risk to which the bank is exposed, the greater the amount of capital the bank needs to hold to safeguard its solvency and overall economic stability. Sakbany (2008, p. 8) pointed out that the BIS forum has been quite active over the last ten years, while the IMF and other international financial and monetary institutions have been notable for their passive presence. In a global economy with global financial markets, an international authority is essential for dealing with global problems. In 2010, Basel III improved the banking sector's ability to absorb shocks arising from financial and economic stress, improve risk management and governance and strengthen banks transparency and disclosures. Basel III is part of the committee's continuous efforts to enhance the banking regulatory framework and it builds on the International Convergence of Capital Measurement and Capital Standards document (Basel II).[37]

---

[37]Available at:[htttp://www.bis.org/bcbs/basel3.htm] (26.11.2010)

3   FINANCIAL INTEGRATION

3.1 Introduction

Over the past several years, economic science has intensively dealt with financial market integration. There is a great deal of empirical literature on the procyclicality of the stock market as a sign of financial integration and it covers the countries of Central and Southeastern Europe as well as Asia and the Americas.

Research into the matter intensified with the development of the European Union and its enlargement into an ever-widening circle of countries. Existing literature on this topic includes research into the stock markets of transition countries that have already joined, or are joining, the European Union, in order to examine the level of financial integration in the EU. Eventual monetary union is a pre-condition for the process of economic convergence and the financial market of a member country that is well integrated in the global financial market constitutes a key feature in this respect because it boosts stability against economic and financial vulnerability and enhances economic growth (Pagano and Jappelli 1993, Schoenmaker and Oosterloo 2005, Schularick and Steger 2006). Trade links between Central and Southeastern European countries and the EU gradually became stronger, leading to further economic integration by the time of formal accession.

The aim of this study is to research the stock markets of Bulgaria, Bosnia and Herzegovina, Croatia, Montenegro, Serbia, Slovenia and Romania as a representative group of SEE countries and compare them to the stock exchange centers of developed countries such as the United Kingdom and the United States. After the collapse of communist and socialist regimes in the beginning of the 1990s, a number of Central and Eastern European (CEE) economies established capital markets as part of their transition process for adopting the mechanisms of a market economy (Kim et al., 2005). Following the removal of restrictions on capital flows, the opening up to foreign investors, the creation of appropriate corporate governance structures and the establishment of ownership rights, both market capitalization and daily trading volumes increased rapidly in the CEEC's during the transition period. However, the equity markets in these countries are still relatively small compared with developed ones, and they tend to exhibit higher volatility, possibly because of their sensitivity to even relatively small portfolio adjustments (Égert and Kočenda 2007). Some authors have found a strong correlation between transition countries and developed financial markets but a weak correlation between themselves and some others, *au contraire* (see: Chapter 3.4 Empirical literature overview).

With the re-intensified process of monetary integration in the European monetary union, theories of cyclical movement in financial markets multiplied. The interest of many discussions was increasingly based on examinations of the financial momentum transfer from developed markets to emerging markets that were, in general, less developed financial markets. The discussion was further fanned by recent financial crises that spread beyond national borders, creating a 'contagion effect'. Forbes (1993) and Forbes and Rigobon (2002) distinguished between interdependence (existing cross-market linkages) and contagion, which in their definition only occurs if such linkages become stronger in a crisis period (Caporale et al. 2005).

Drawing upon the methods used by authors who have dealt with the correlation of stock market indices, we researched and analyzed the correlation of stock market indices in transition countries, relative to the stock market centers of Europe and the world, with a particular emphasis on Croatia (as a country preparing for EU accession) in order to demonstrate the dependence of small financial markets on large ones and in order to investigate the spillover effect, i.e., the degree and pace of integration of 'new' financial markets into larger markets. This was done with the aid of cointegration analysis, correlations, cross-country regressions, panel regressions and multivariable GARCH model, which offer an efficient tool for analyzing lock-step shifts and the volatility of the spillover of financial factors improved by empirical evidence.

We will test the hypothesis of spillover (the movement of stock exchange indices' prices) in stock-trading financial centers (the U.S. and UK) to the smaller financial markets of Southeast Europe (SEE) that we will observe both individually and within the SEE pool (comprising countries of the European Union (Bulgaria, Romania and Slovenia), EU candidate countries (Croatia and Montenegro) as well as some of the less-developed transition countries of Southeastern Europe as potential EU candidate countries (Bosnia and Herzegovina and Serbia).

The test of stock indices with regard to the main economic indicators in Southeast European countries individually and in panel is based on monthly bases data during 2004-2008. We also examined the procyclicality of the Croatian stock market over a longer period -- from January 2000 to December 2010.

Evidence of integration among stock markets is important, particularly for long-term investors, since that means that the national stock markets share a single common trend. (Kim et al. 2005). There is a great deal of empirical literature on the macroeconomic factors influencing stock market indices (see chapter 3.4).

In our research of intraday data, which was aimed at proving that there is a time delay between large stock exchanges and smaller 'dependent' stock exchanges in transition countries, we followed the findings by Égert and Kočenda (2007) who confirmed the asymmetry of stock markets in transition countries vis-à-vis the G-7 countries. In our research, we analyzed the intraday data of stock exchange indices in Croatia (CROBEX) and Slovenia (SBI20) in comparison with the French stock exchange (CAC40) to research correlations.

3.2 Overview of Financial Integration Theories

Experts agree that financial integration unquestionably yields economic benefits and that Europe's financial integration is instrumental to its economic union.

Some segments of the market seem to have made greater progress than others in terms of integration (Baele et al. 2004). European financial integration theory suggests that the integration and development of financial markets are likely to contribute to economic growth by removing barriers to exchange, and by allocating capital more efficiently. On the other hand, there are some less positive effects. For example, too much consolidation in a market segment might hinder competition.

Experts also agree that financial integration in the euro area is achieved when all economic agents in the euro area financial markets face identical rules and have equal access to financial instruments and services in those markets. To investigate whether cross-country equity return correlations have changed over time, Adjoute and Danthine (2003) compared correlations among country index returns in two different sub-periods. They found that cross-country return correlations are significantly higher during the "post-convergence" period of January 1995 – August 2002 compared to the "pre-convergence" period of May 1987 – December 1994. The risk-reduction potential from geographic diversification within the EMU[38] has decreased. Also, the correlations between EMU sector returns have decreased in the post-convergence period.

Financial integration is also important in light of the implementation of monetary policy into practice. Many authors who are concerned with financial integration analyze diverse economic phenomena in order to define the key determinants of financial integration. The authors of financial integration (Baele et al. 2004) consider the market for a given set of financial instruments or services to be fully integrated when all the potential participants in such a market: (i) are subject to a single set of rules when deciding to buy or sell those financial instruments or services; (ii) have equal access to a set of financial instruments or services and (iii) are treated equally when they operate in the market.

The world capital markets have become more and more integrated in the last 30 years, although some exceptions and some dispersion across the countries and sectors toned to be acknowledged (Bekaert and Harvey 1995, Carrieri et al. 2007). European financial markets (Erdogan 2008) have faced crucial structural and institutional adjustments with the aim of accelerating financial integration in the money, credit, bond, and equity markets. The integration of the financial markets adds to the effective transmission of a common monetary policy and to economic growth by removing frictions and barriers to exchange and by allocating capital more effectively. Integrated stock markets generate better opportunities for international investors by eliminating country-specific risks and let them diversify their portfolios across countries. A larger pool of funds, other than limited local financing, is available for corporations. Integrated stock markets decrease the cost of capital. Hence, the number of productive investments increases, subsequently encouraging economic growth. In an economic environment where better risk-sharing opportunities exist, households will be able to smooth their consumption more efficiently. Moreover, interdependent stock markets are subject to spillovers resulting from shocks. Evaluating

---

[38]Brooks and Del Negro (2004) see part of the reason for the increase in sector diversification in the technology bubble at the end of the 1990s.

the dynamics of equity market integration is, therefore, important for monetary policy makers.

Adam et al. (2002) adopted the law of one price to assess the degree of financial integration. According to the law of one price, the financial market is integrated if the 'law of one price' holds, which, however, cannot be measured when different stock exchange indices are involved, which would require a different methodology of calculation. According to the law of one price, assets with identical risks and return characteristics should have the same price regardless of where they are traded.[39]

Babetskii et al. (2007) warn that the law of one price cannot hold true in the case of different assets, i.e. different national stock exchange indices, which are not calculated based on the same underlying stock exchange assets. Additionally, the law of one price does not necessarily hold true in the presence of market frictions. Nevertheless, while the law of one price represents a rather long-term phenomenon, an alternative argument for why we could expect the equalization of stock market returns in the long- to medium-run is based on the Walras law of markets as applied to the financial system: if $n-1$ (financial) markets are in equilibrium (i.e. the exchange rate, money and bond markets), then the last (stock exchange) market cannot be in disequilibrium.

With regard to the indicators of stock market integration, Adam et al. (2004) proposed the correlation of stock market returns as an alternative indicator especially because of its consistency. This is in contrast to a price-based indicator based on the asset pricing model, which is difficult to estimate and requires longer time series to provide reliable estimates. They also proposed quantity-based indicators based on international investment strategy of equity funds which show an increasing degree of stock market integration in the Euro area. Therefore, Baele et al. (2004) agree that the alternative measures proposed by Adam et al. (2002) and based on stocks and the flow of assets -- quantity-based measures and news-based measures -- may complement price-based measures.

Baele et al. (2004) suggest that financial integration in the EU be monitored on the basis of 'the law of one price' (price-based) which captures discrepancies in asset prices across different national markets. This constitutes a direct check on the law of one price, which in turn must hold if financial integration is complete. If the characteristics of assets are too similar, measures can be taken on direct price or yield comparisons. The cross-sectional dispersion of interest rate spreads or asset return differentials can be used as an indicator of how far away the various market segments are from being fully integrated.

The third proposed measures are quantity-based measures that aim to quantify the effects of friction on the demand for, and supply of, securities by using variables such as money, bonds, shares and loans through the statistic of cross-border activities and listings. Baele et al. (2004) warned that we cannot apply some measures of integration to all markets because of data availability: markets differ in terms of structure and otherwise.

News-based measures analyze the impact that common factors have on the return process of an asset. They are designed to distinguish the information effects from other frictions and barriers. In a financially integrated area, one would expect news of a regional character to have little impact on prices and global news should be relatively more significant. The

---

[39]Still, there are cases where the law of one price is not directly applicable. For example, an asset may not be allowed to be listed on another region's exchange. According to our definition, this would constitute an obstacle to financial integration. Another example can be found with assets like equities or corporate bonds. These securities are characterized by different cash flows and very heterogeneous sources of risk, and as such their prices are not directly comparable (Goldberg and Verboven 2001, Baltzer et al 2008).

prediction is that the degree of systematic risk is identical across assets in different countries. Baele at al. (2004) regarding news-based measures said that when markets are fully integrated, bond yields should react only to news that is common to all observed markets.

Baltzer at al. (2008) suggest more sophisticated measures of comovements (Cappiello et al. 2006, Gérard et al. 2003). In integrated markets, local shocks can be effectively diversified away and prices are mainly driven by common factors. In the same way, news-based measures examine how national returns depend on the returns of a (common) benchmark asset. The greater the proportion of price variation explained by common factors, the greater the degree of integration. But the primary task is the specification of the common factor. [40]

Adam et al. (2004) divided indicators for measuring financial integration into four categories: 1) indicators of credit and bond market integration; 2) indicators of stock market integration; 3) indicators of integration based on the economic decisions of households and firms and 4) indicators of institutional differences that may induce financial market segmentation. Indicators of European stock market integration generally suggest an increasing degree of stock market integration in the Euro area.

Agenor (2003) poses the question of whether financial integration generates more benefits or more costs and who benefits the most: recipient countries or those that are being integrated. He argues that benefits outweigh the costs as long as financial integration is carefully prepared and managed. Otherwise, financial integration may increase the risk of costly financial crises, instead of reducing them. Recent evidence on the effects of foreign bank penetration appears to suggest the view that the competitive pressures that are created lead to improvements in the efficiency of domestic banks, and financial intermediation in general, in terms of lower operating costs and reduced net interest margins. But there is also still limited evidence regarding about whether a greater foreign bank presence contributes to a more stable banking system and less volatility in the availability of domestic credit.

Despite creating the possibility of costly crises, and despite the fact that the existing empirical evidence does not allow blanket generalizations, global financial integration (and the increase in FDI flows it may spur) holds potentially significant benefits in terms of higher domestic investment and economic growth rates. In the next chapter we present the macroeconomic environment of the observed economies.

---

[40] For example, in the case of 10-year government bond markets, the benchmark may be given by the corresponding German bond (Baltzer et al. 2008).

3.3 The Macroeconomic Environment and Stock Exchange Development in Southeastern Europe

3.3.1 The Macroeconomic environment in Southeastern Europe

A financially united Europe is a challenge because it eliminates some of the specific national risks and enables investors to diversify their portfolios across various countries. Countries of the SEE region are all still in the process of transitioning (which mostly began in the 90's) from an old autocratic socialist system towards a market economy. Some countries in the region went through less painful changes in their system, while others went to war. All these circumstances influenced the direction, speed and course of economic and financial integration into the EU. Even the most developed countries of the SEE region are faced with challenges when trying to reach the standards of the most developed market economies.

Recent economic research has shown that Bulgaria and Romania, which joined the EU in January 2007; Slovenia, which became an EU member in 2004 and introduced the Euro in 2007; and Croatia, which is in the process of negotiations, are countries that have gone much further in their development than other countries in the region. Support for EU accession is the best stimulus a region can get. Governments and other state bodies of countries of the SEE region have recently started implementing demanding reforms, which have resulted in a record inflow of foreign investments and a better entrepreneurial climate. One of the signs of recent progress in the region, which is very encouraging, is a huge inflow of direct foreign investment in the last few years, mostly directed to Bulgaria, Romania and Croatia. Less encouraging is the fact that the investments are directed more to real estate and financial services, which means less of a probability of realizing export income than if investments were directed towards production. International institutions, such as the EBRD and the World Bank, provide financial assets and advice to help develop infrastructure and institutions.

After 2000, most Southeastern European countries recorded economic growth[41] with low inflation and progress in the field of market reforms. The average economic growth of South East European (SEE) countries in the last ten transition years was higher than in the EU. Still, the GDP *per capita* in countries of the Southeastern region shows a gap when compared to the developed countries of Western Europe, suggesting that there is long way ahead of them. It is important to study the Southeastern European region (approx. 55 million people) as a whole. It is important to consider the geographic and strategic connections between the countries of the region, and also their individual differences, level of development and their EU accession status.

While the transition process of SEE countries mostly began at the end of the 80's, in the next chapters we will provide a brief overview of the transitions that occurred in the observed countries from the 80's until the present.

---

[41]The average annual growth rate, weighted on the basis of the size of a certain country's economy, has never fallen below 4.7% since 2001. It was the highest – 7% - in 2004. This growth rate was more or less uniform throughout the region (Cviić and Sanfey 2009).

Bosnia and Herzegovina

In April 1992, Bosnia and Herzegovina declared independence, leading to a civil war that would end with the Dayton Peace Agreement in November 1995. In 1997, the EU established political and economic conditionality for the development of bilateral relations and in 1999 the EU proposed the Stabilization and Association Process for five countries of SEE, including Bosnia and Herzegovina. In June 2000, the Feira European Council declared that all Stabilization and Association countries were potential candidates for EU membership. In 2001, the new CARDS programme was designed for Stabilization and Association countries and from 2005 to 2006, EUR 100 million has been allocated through CARDS for this period.

After the war in Bosnia and Herzegovina the unemployment rate was high, but from 2002 to 2008 GDP grew by 5% per year. Bosnia's economic development has taken place in two different regions: the Federation and Republika Srpska, whereas Republika Srpska has grown faster (especially its industry) and the Federation has grown slower. Monetary policy is a cornerstone of economic stability (the Bosnian currency is pegged to the euro), but high levels of public debt, foreign trade imbalances and high unemployment have put the country in a bleak economic situation. Banking reforms were accelerated in 2001 and foreign banks (mostly from Austria and Italy) control most of the banking sector. The successful implementation of a value-added tax in 2006 provided a predictable source of revenue for the government and has helped rein in gray market activity. Bosnia and Herzegovina became a full member of the Central European Free Trade Agreement in 2007. The global economic crisis had an impact on Bosnia and Herzegovina's GDP (which fell 3% in 2009); exports (which fell 24%) and unemployment (which rose to more than 40%). Like other SEE countries in 2010, Bosnia and Herzegovina is slowly showing signs of recovering from the recession -- especially with regard to private sector employers in a small number of industries and higher merchandise exports. However, domestic demand remains weak. The Federation has shown signs of a drop in industrial production (11.8% annually) and in manufacturing (-16.7%). Industrial production in Republika Srpska has increased by 18.8% and in manufacturing by 34.9%. The unemployment rate increased to 43.2% and remains one of the main macroeconomic problems, together with the sizable current account deficit (-12.5% of GDP) often coupled with large external debt (48.5% of GDP). FDI more then halved in 2009. The reason for this is not just the global economic crisis and less investor interest, but also the lack of local reforms and unstable fiscal situation. Bosnia and Herzegovina is poorly integrated into the world economy. The privatization of state enterprises has been slow, particularly in the Federation (due to political reasons). Bosnia and Herzegovina's economic performance is well bellow CEE standards and the private sector share of GDP (at 60%) is relatively small. Bosnia and Herzegovina are waiting for the IMF mission to approve a EUR 38-million disbursement (http://europa.eu.int/comm/enlargement, 2010).

Bulgaria

The transition process in Bulgaria started in 1990 with an economic crisis, demonstrations and a general strike. In 1993, after parliamentary elections, the Bulgarian government started a mass privatization program. In 2005, Bulgaria signed an EU accession treaty to join in 2007, provided reforms were implemented.

From 1999 to 2004, almost all SEE countries saw economic growth. Bulgaria's GDP grew in real terms from 2.4% in 1999 to 4.4% in 2003. The most important components of

economic growth in 2003 were industry (mostly the manufacturing industry and constructing industry (+6.8%)) and the services sector (financial intermediation and the telecommunications (+3.8%)). Strong domestic demand was reflected in the banks' expansive lending policy. Unemployment decreased from 18.1% in 2000 to 14.0% in 2004. The deficit in income balance reached EUR 305 million in 2003, which was nearly three times larger than the previous year, due to higher dividends and interest payments. FDI inflow was the highest in 2000, when Bulgaria was declared an EU candidate country. GDP in Bulgaria grew markedly. The contribution of net exports to GDP growth remained negative, but smaller. The upward pressure on price levels for the whole region in 2004 was largely attributable to rising international energy prices;the disinflation process was further supported by strong currencies and falling unit labor costs in industry. Stock markets received massive foreign investment inflows that boosted almost all stock indices in SEE countries and Bulgaria by 50%.

Bulgaria (together with Romania) signed the EU Accession Treaty in April, 2005 with entry into the EU scheduled for January 2007. Both Moody's and Standard & Poor's gave Bulgaria a rating of Ba1/BBB-. Bulgaria joined the EU in 2007 and averaged more than 6% growth from 2004 to 2008, mostly through significant amounts of foreign direct investment following EU accession. The global recession in 2009 reduced exports, capital inflows and industrial production, and GDP contracted by approximately 5%. In 2010, the situation in Bulgaria started to improve with increased exports, a well-capitalized liquid banking sector, and strong fiscal metrics. But domestic demand weakness is still a sign of a slow economy, just as a lack of control on domestic monetary conditions and a large private sector debt are. Despite Bulgaria's government commitment to economic reforms and responsible fiscal planning, the general government deficit remains very high, which caused a delay in the application for ERM II entry (BACA, UniCredit Group, 2010).

Croatia
In 1996, Croatia joined the Council of Europe and in 2001, signed the Stabilization and Association Agreement with the EU and in 2003 Croatia submitted a formal application for EU membership. The European Commission recommended opening full membership negotiations in 2004, and the European Council decided to promote Croatia to the status of an official candidate for EU membership. In 2005, Accession Negotiations between the Republic of Croatia and the EU were opened.

After the war the Croatian economy started to improve with slow GDP growth, a rebound in tourism and credit-driven consumer spending. Croatians' GDP accelerated in real terms from -0.9% in 1999 to 4.5% in 2003. Gross fixed capital formations grew by a real 18.3% and public sector construction (public projects such as motorways) was the major contributor and private consumption also expanded simultaneously (+4.7% in 2003). The unemployment rate decreased in 2004 to 18.2%, from 22.5% in 2002. Bank loans grew especially to households (31%). The current account deficit rose in 2004 to over EUR 2 billion (nearly 17% of GDP). Gross foreign debt grew (from 57.9% in 2001 to 72% in 2004) but the prices were stable and the favorable inflation rate was, and is, the strength of the Croatian economy. Croatian GDP growth lagged behind other SEE countries and showed a lower growth rate. Private consumption decelerated in Croatia. The growth rate of gross fixed capital formation slowed down in Croatia (from 16.8% in 2003 to 4.4% in 2004). The contribution of net exports to GDP growth in Croatia became slightly positive. And the Croatian kuna has gradually appreciated since the beginning of 2005 (by around 4%). In 2004, stock markets in Croatia received massive foreign investment inflows (30%). In 2005,

global risk perception changed and capital outflows were registered in Croatia (-12.4%). Both Moody's and Standard & Poor's gave rates (Baa3/BB) to Croatia.

Although Croatia signed the Stabilization and Association Agreement in 2001, EU Member States agreed to postpone the start of negotiations in March 2005 because they deemed Croatia's efforts in cooperating with the International Criminal Tribunal for the Former Yugoslavia to be insufficient. In 2010, Croatia has shown slower recovery than other SEE countries. The fiscal deficit is widening and household demand remains very weak. The currency is strong, inflation is low, and the current account deficit is lower, but foreign debt is rising over 100% of GDP. The EUR/HRK is exposed to downward pressure despite the continuation of extremely loose money market conditions. Accession progress has been made (five policy chapters have been closed, namely financial services, energy, social policy and employment) and the EU has adopted a financial package for the first two years of its membership in the EU to EUR 3.7 billion, which will be available through cohesion and structural funds. In 12 months, the number of unemployed people has increased by around 20% (the unemployment rate in 2010 is 16.1%) and this remains one of the main problems of the Croatian economy, together with a growing trade deficit, uneven regional development, a strained state budget and an over-reliance on tourism revenue. The Croatian government is trying to apply a market-oriented economic recovery program (BACA, UniCredit Group, 2010).

Montenegro

Montenegro adopted the euro as legal tender in January 2002, replacing the Deutsche Mark. Starting in 2003, Montenegro set the value-added tax at 17%. The economic growth of Montenegro has been close to 7% in the past couple of years, while cumulative foreign direct investment from 2003 to 2007 has been greater in Montenegro than in all other transition countries. After separating from Serbia (in 2006), Montenegro signed a Stabilization and Association Agreement with the EU in 2007 and joined World Bank and IMF. Montenegro's economic performance is within the SEE average: slightly better than in Bosnia and Herzegovina but well bellow Bulgaria, Croatia, and Slovenia. Regional disparities are significant. Poverty rates in the north are close to 20% and hence roughly two times the national average while the average disposable wage in Podgorica (in 2005) was roughly two times greater than corresponding wages in the northern municipalities of Rozaje and Plav. The impact of the economic crisis on the Montenegrin domestic labor market was felt in 2009, when the amount of unemployment started to increase, and this remains the biggest economical problem in the country. FDI remained surprisingly high despite the global crisis and net FDI reached almost 27% of GDP in annualized terms, thanks to the privatization of the local power company, as well as an aluminum complex, the recapitalization of banks and real state investments (mostly in the tourism sector). The global financial crisis has still had a negative impact due to the credit crunch, the decline in real estate and the fall of aluminum exports. The stock markets partially recovered during the second half of 2009, after heavy losses in 2008 and early 2009. The Montenegrin parliament adopted a set of tax law amendments that tightened fiscal policy, while reducing the personal income flat tax rate from 12% to 9% and further reducing employers' social security contributions. Montenegro became EU candidate country in December 2010 (BACA, UniCredit Group, 2010).

Romania

Like Bulgaria, Romania started with its transition in 1990, when students and opposition protests against the ex-communist leadership were crushed by 20,000 coal miners, who were brought in to stage a counter demonstration. In 1997, an economic reform programme was announced and in 2003 Romanians voted on a new constitution designed to bring Romanian law in line with the EU *acquits communautaire*. In 2005, Romania signed the EU accession treaty, putting it on course to join the EU in 2007, provided the necessary reforms were implemented in time and that the Parliament ratified the EU accession treaty. In 2005, four zeroes were stripped from the old leu, creating a new leu currency as part of preparations for eventual EU entry. Romania emerged out of a recession in 2000, thanks to strong demand in the EU export market. Romania's GDP in terms of real growth (thanks to increased domestic consumption and foreign investments) grew from 1.8% in 2000 to 4.8% in 2004, followed by increased private consumption (7.4%) due to strong growth in lending and real wages. The most important factor for economic growth was the increase in gross fixed capital (+7.9%). The current account deficit widened (+31.2%) due to higher interest and dividend payments. Disinflation continued and reached its lowest level (0.3%) in 2003. In 1990, when prices were liberalized, Romania started to privatize three big enterprises as a response to IMF and EU demands for structural reforms. GDP in Romania grew strongly. Private consumption in Romania jumped to double-digit growth rates. From October to the end of 2004, the Romanian leu appreciated by 6% to 7%. Stock markets received massive foreign investment inflows that boosted almost all the stock indices of SEE countries and especially Romania, with a 90% increase. In 2005, global risk perceptions changed and Romania saw capital outflows (-19.2%). Both Moody's and Standard & Poor's gave Romania a rating of (Ba1/BB+). Both Romania and Bulgaria signed the EU Accession Treaty in April, 2005 with entry into the EU scheduled for January 2007.

Inflation in Romania rose between 2007-2008 due to strong consumer demand and high wage growth, as well as rising energy costs and a relaxation of fiscal discipline. However, it fell in 2009 due to the global recession. In 2010, Romania saw a prolonged recession despite painful fiscal austerity measures such as public sector restructuring and expenditure cuts (a 25% cut in public wages and a 15% drop in pensions and social benefits) because high public deficits and a high FX leverage in the domestic private sector occurred in conjunction with a worsening of the loans portfolio. Exports and inventories are the main drivers of improvement, but consumption is very weak (from 7.6% in 2007 to 1.2% real consumption yoy). The unemployment rate increased a further 7.8% in 2009 compared to 6.1% a year earlier. The Romanian leu, which did not recover its losses in 2009, following a 35% depreciation against the euro in 2008, has helped reduce imports and has had a positive impact on ULC developments for local industries. In the beginning of 2010, the parliament adopted a budget for 2010, which envisages a deficit of 6.4% of GDP and which comprises fiscal consolidation measures of 2.5% of GDP, mostly on the expenditure side (reduction of public wages and a pension freeze). Romania hopes to adopt the euro by 2010. Like Bulgaria, Romania has significant IMF and EU support as members of the EU (BACA, UniCredit Group, 2010).

Serbia

Macroeconomic policy, structural reforms and privatization improved dramatically under the post-Milosevic government. Following the break-up of Yugoslavia, Serbia firstly was a part of the Federal Republic of Yugoslavia along with Montenegro. In May 2006, Serbia officially split from the federation to form an independent nation. On 12 June 2006, the EU Council adopted measures, in which it took note of the Serbian Parliament's decision and recognized the Republic of Serbia as a legal successor to the State Union. In total, when combining CARDS, macro-financial and humanitarian assistance, EU assistance to Serbia and Montenegro has amounted to more than €2.9 billion from 1991 to 2002, of which more than €2 billion has been injected since the fall of the Milosevic regime in October 2000. The support provided through CARDS in 2005 (EUR 154.5 million for Serbia) focused mainly on European Partnership priorities, taking into account the political and economic situation in Serbia and the requirements the Republic will have to meet in order to be able to conclude the SAA negotiations and implement the agreement. Serbia also benefits from the regional CARDS programme, which in 2005 had an overall budget of 40.0 million EUR to support actions of interest for the whole Western Balkans region in the field of infrastructure, institution building and cross-border co-operation. *Serbia* and Montenegro (observed as a whole until 2006) saw their GDP in real terms go from -21.9% in 1999 to 4.0% in 2004, but the inflation rate declined and the government budget met IMF demands with a deficit of 4.5% of GDP. From 2003, Serbia applied a value-added tax of 20% in contrast to Montenegro's 17%.

Serbia offers a generally favorable tax regime for businesses, including incentives for new investors and multi-year tax holidays. The corporate tax rate of 10% is among the lowest in Europe (Montenegro is one of the few countries with a lower rate, at 9%). The rate of personal income tax was reduced from 14% to 12% at the start of 2007.

FDI inflow increased from 27% (net) in 2000 to 700% in 2003. Privatization transactions showed these countries to be an interesting market for foreign investors. In 2004, economic growth in Serbia and Montenegro was more dynamic than in 2003. Serbia has made progress in trade liberalization and enterprise restructuring and privatization (telecommunications and small and medium sized private firms). This led to the signing of a Stabilization and Association Agreement with Brussels in 2008, and the initial implementation of an Interim Trade Agreement with the EU. The global crises prompted a drop in exports to Western Europe countries and a decline in manufacturing output.

Serbia's merchandise exports and industrial production (mostly manufacturing and construction) showed a slow recovery in 2010 but lower FDI inflows have driven a higher basic balance deficit and a depreciating currency looms over an inflation forecast. Transport (8.5%) and financial intermediation (4.2%) show the highest rates. Unemployment has increased to 16.6%. In the first part of 2009, FDI dramatically slowed down and dropped by 47.1%. By the end of 2009 and the beginning of 2010, there was pressure on the foreign exchange market and depreciation of the dinar against the euro by about 4%, which led to interventions by the National Bank of Serbia (three times selling a total of EUR 117.5 million). The market disturbance was mainly caused by the massive sale of foreign currency-denominated funds received by the government in December from the IMF and EU. Unemployment and limited exports remain serious economical problems. Serbia's EU aspirations have been blocked because of a lack of full cooperation with the International Criminal Tribunal for the former Yugoslavia.

Serbia is waiting for an IMF disbursement after reforms such as the rationalization of the number of employed in the public sector (and cutting public sector wages and social

benefits) as well as reforms of the pension system, are carried out (www.bankaustria.at, UniCredit, CEE Economic Data, 2010).

Slovenia

Slovenia was one of the first countries to secede from the Yugoslav federation. In 1989, the Slovene parliament confirmed the right of the country to secede from the Yugoslav federation. In April 1990, the first free and democratic elections were held, and the Democratic Opposition of Slovenia defeated the former Communist party. A new coalition government began economic and political reforms, which established a market economy and a liberal democratic political system. In 1991, Slovenia, along with Croatia, declared its independence. In 1992, the EU recognized Slovenia's independence and in 1996 Slovenia signed an association agreement with the EU and joined the European Union on May 1, 2004.

Slovenians' GDP growth in real terms was not as far along as it should have been in 2003 due to a poor international climate. Export growth dropped to 2%, imports rose to 5.5% and the external deficit increased. In 2004, economic activities grew, increasing industry output (3.4%), and increasing the credit sector (to companies and households). The budget in 2004 was the first as an EU member and Slovenia was a net recipient of EU money, totaling approximately EUR 145 million or 0.4% of GDP in 2005. The amount of incoming FDI to Slovenia during the period from 1993-2000 almost tripled, due to EU accession. GDP in Slovenia also grew significantly. The contribution of net exports to GDP growth remained negative, but smaller, in Slovenia. In 2004, the budget deficit in Slovenia was 1.9%. The Slovenian tolar continued to display remarkable stability. The Slovenian stock market received massive foreign investment inflows (up 25% in 2004).

In 2005, both Moody's and Standard & Poor's gave Slovenia the highest rating for sovereign long-term foreign currency debt: (Aa3/AA-).GDP growth in Slovenia accelerated year on year until the end of 2008, when the global recession began. In 2010, Slovenia showed a stronger recovery, especially in the manufacturing sector and with exports (but with still weak household demand, a weak construction sector and low corporate borrowing from domestic and foreign banks) and has still got relatively low public debt levels (less than 40%). Slovenian foreign debt is essentially denominated in local currency and rose to around 115% of GDP at the end of 2009. Inflation rose to 2.1%, due to an increase in energy prices and other regulated prices. The favorable development of net real exports was also reflected in the combined current and capital account, which posted a small deficit of around 1.5% of GDP in the second half of 2009. The current account benefited from ongoing improvements in trade and a smaller deficit on the income balance, partly due to lower interest payments on external debt and lower FDI-related income outflows.

In June 2010, the Slovenian government introduced a supplementary budget, including a reduction of the government budget deficit from 5.5% of GDP in 2009 to 1.6% in 2013, and with plans to increase excise taxes and cut spending (reforms of the pension and health care system) (www.bankaustria.at, UniCredit, CEE Economic Data, 2010).

 Obviously, clear links are visible between the implemented reforms and economic growth. It is important to mention that no country in the region has expressed the wish to return to the previous economic system. All drawbacks aside, once a country becomes a member of the EU or its candidacy is announced, it becomes a powerful magnet for investors, especially in the private sector. A large portion of increased direct foreign investments have been closely connected to the process of privatization in the region, and there are still many sectors in the region where strategic sales are possible.

In most SEE countries in 2010, the recession has slowed down real GDP. There are lower capital inflows and domestic credit has negatively impacted domestic demand. Most SEE governments, either alone or with IMF and EU support, have tried to reconstruct the public sector and cut expenditures. The effects of the recession are still obvious in rising unemployment -- especially in Croatia, Serbia and Bosnia and Herzegovina. Due to lower domestic and foreign demand, and lower commodity prices, current account deficits continue to narrow in most SEE countries. It seems that all governments and central banks in the SEE region are aware of the importance of stabilization and low inflation for economic growth, but every country has chosen a different approach for monetary policy, exchange rate policy and state intervention. Still, all countries in the region are prone to high deficits in their balance of payments, proving the fact that certain countries are living beyond their realistic possibilities.

TABLE 2: MACRO ECONOMIC ENVIRONMENT SEE (2004/2005/2006/2007/2008/2009/2010)

	GDP real (annual % change)	Unemployment (LFS, in % of workforce)	FDI inflow (% of GDP)	Industrial production real change (Annual %)	Gross foreign debt (% of GDP)
Bosnia and Herzegovina	6.3/3.9/6.1/6.2/5.7/-2.9/-1	44.1/44.7/44.2/42.9/40.6/42.7/43.2	4.9/5.6/6.2/13.5/5.0/1.5/0.1	12.1/10.6/11.6/6.7/10.8/-1.2/-4.7	57.9/57.1/58.4/59.7/61.2/49
Bulgaria	6.2/6.2/6.3/6.2/6.0/-3.5/0	12.2/10.1/9.0/6.9/5.6/6.4/7.5	14.2/16.4/15.0/28.7/17.5/9.6/3.9	6.7/6.7/5.9/9.2/0.8/-17.6/-3	69.0/78.4/81.0/86.0/89.5/107.9/105.6
Croatia	4.3/4.3/4.7/5.5/2.4/-5.8/-1.8	18.0/17.9/16.6/14.8/13.2/15.4/15.0	4.6/8.3/6.6/8.1/6.7/2.6/2.7	5.1/5.1/4.5/5.6/1.6/3.6/-9.3/1.0	82.4/85.3/86.2/86.3/86.2/85.8/85.8
Montenegro	4.4/4.2/8.6/10.7/6.9/-5.7/2.0	27.7/30.3/29.6/19.3/17.2/19/20	3.0/21.0/21.7/19.9/17.9/30.6/21.0	13.8/1.9/1.0/0.1/-2.0/-32.3/41.7	29.3/28.3/23.5/27.5/29/38.3/43.5
Romania	4.1/4.2/7.9/6.2/7.1/8.2/-6.2/0	5.8/5.4/4.3/4.2/4.2/6.3/8.5	6.6/9.3/5.0/5.8/6.6/4.2/3.0	8.4/2.0/7.1/5.4/6.4/-13.0/3	31.0/39.4/40.4/31.3/37.8/56.6/62.5
Serbia	8.3/5.6/5.2/6.9/5.5/-3.1/2.7	20.8/21.8/21.6/18.8/14.7/17.4/19.5	3.9/5.9/13.8/6.3/6.0/4.7/2.0	7.1/0.8/4.4/3.3/0.9/-12.2/5.8	63.8/50.3/36.2/61.8/65.3/74.6/79.9
Slovenia	4.1/4.4/5.9/6.9/3.7/-8.1/1.2	6/6.5/6.0/4.8/4.4/7/7.5	0.9/-0.2/-1.0/-0.6/1.0/-1.5/0.7	4.4/3.3/6.2/6.1/6.2/-1.5/-10/2	58.5/71.0/96.5/100.5/104.5/113.4/116.4
Source: European Commission, EU Candidate and Pre-Accession Countries Economic Quarterly(2010) and UniCredit CEE Quarterly (2010).					

3.3.2 Stock Markets in the SEE Countries

Emerging capital markets in the transition countries of Southeastern Europe are becoming increasingly important for both institutional and individual investors. Southeastern transition countries slowly started opening up to the world market during the end of 1980's and the beginning of the 1990's, and established a local exchange as part of their transition process towards adopting the mechanisms of a market economy (Syllignakis and Kouretas 2006).

The stock markets of SEE have tried to adapt their standards to an international one, by improving the disclosure practices of firms, order execution, ownership rights, and by bringing down limitations to international capital flows (Syllignakis and Kouretas 2006). However, they still remain small, fragmented and underdeveloped in comparison with the capital markets of developed countries.

The first SEE stock exchange that reopened in the 1995 after the fall of communism was the Bucharest Stock Exchange (founded 1882). The Ljubljana Stock Exchange (LJSE) was established on December 26, 1989. The Ljubljana stock market was the first stock exchange to be set up in any socialist country, a move that came only a day before Belgrade got its own stock exchange (1989). The Zagreb Stock Exchange was founded in 1991 as a profit-making corporation with HRK 2.7 million in registered capital. Four banks from Montenegro established the Montenegro Stock Exchange in June 1993. The Bulgarian Stock Exchange was established in 1997 and in 2001 The Sarajevo Stock Exchange was founded by eight brokerage houses.

Some exchanges include some SEE indices, such as the Vienna Exchange and the Dow Jones FEAS South East Europe. The Vienna Exchange started calculating the index of Croatian shares – CROX (Croatian Traded Index) in July 2007, which covers the Croatian capital market. CROX is the fourth index of the Vienna Exchange to cover Southeast Europe, after the Romanian ROTX, the Serbian SRX, and the SETX, which covers Bulgaria, Croatia, Romania, Serbia and Slovenia. The index covers the seven shares listed on the Zagreb Stock Exchange with the highest turnover and the highest capitalization, namely shares of: INA, Privredna Banka Zagreb, Ericsson Nikola Tesla, Adris Groupa, Podravka, Končar Elektroindustrija and Dalekovod. For index members, there is a value limit of 25% of the total index capitalization. The parameters for calculating the index are checked quarterly and the index content is revised and, if needed, adjusted two times a year: in March and in September. CROX is a price index that the Vienna Exchange calculates and publishes in real time in the Croatian Kuna, Euro and U.S. Dollar.

Since June 4, 2009, CROBEX is also a part of the Dow Jones cumulative index for Southeast Europe (The Dow Jones FEAS South East Europe). In cooperation with the Federation of Euro-Asian Stock Exchanges, Dow Jones will follow European and Asian Exchanges with the help of three new indices, including the Dow Jones FEAS South East Europe, which incorporates shares listed on the Zagreb Stock Exchange.

Following the removal of restrictions on capital flows, the opening up to foreign investors, the creation of appropriate corporate governance structures and the establishment of ownership rights, both market capitalization and daily trading volumes increased rapidly in the SEE's during transition. However, since the equity markets in these countries are still relatively small when compared with developed ones, they tend to exhibit higher volatility, possibly because of their sensitivity to even relatively small portfolio adjustments (Kasch-Haroutounian and Price 2001, Égert and Kočenda, 2007).

Stock markets in the SEE's received massive FDI in the course of 2004, which boosted stock indices in almost all countries (see Graph 1 in Chapter 3.7). The dramatic increase in stock prices in the EU accession countries following the announcement of EU enlargement was a result of market integration and the subsequent re-pricing of systematic risk (Dvorák and Podpiera, 2006).

In our research, we relied on the closing prices of stock markets for the CROBEX (Croatia), SBI20 (Slovenia), SASX-10 (Bosnia and Herzegovina), BELEX15 (Serbia), MONEX20 (Montenegro), BG40 (Bulgaria), BET10 (Romania) and FTSE100 (UK) market, DOW JONES (US) and CAC40 (France).

3.4. Empirical Literature Overview on Assessing Financial Integration

3.4.1 Assessing Financial Integration

Measuring financial integration involves some key markets, such as money, corporate bonds, government bonds, as well as credit and equity markets. To analyze financial market integration, there are the widely accepted concepts of Beta – convergence and Sigma – convergence (proposed by Adam et al. 2002) or cross-sectional dispersion in bond yields. Beta-convergence measures the speed of adjustment in the deviations of countries to the long-run benchmark value while Sigma-convergence measures if countries become more similar over time (deviations from the benchmark). The main advantage of using cross-sectional dispersions is that they can be calculated at each point in time by taking the standard deviation of returns across countries. Baltzer et al. (2008) researched the use of changes in return dispersions to test the law of one price (Kwon and Tai 1999, Solnik and Roulet 2000, Adjaoute and Danthine 2003, Baele et al. 2004, Byström and Kwon 2005, and Eiling and Gérard 2006) based on the hypothesis: If returns are highly correlated, then more often than not they will move together on the up side or on the down side. If they do, the instantaneous cross-sectional variance of these returns will be low. Conversely, a lower correlation means that returns often diverge, inducing a high level of dispersion. Correlations and cross-sectional dispersions are inversely related.

Hardouvelis et al. (1999) point out that the integration of European stock markets has been increasing substantially over time, especially since 1995, when these differentials began shrinking, and by mid-1998, six months before the official date of the EMU launch, stock markets in EMU member states seem to have been almost fully integrated.

Baltzer et al. (2008) considered three broad categories of financial integration in the measures proposed by Adam et al. (2002) and Baele et al. (2004) - the market is considered fully integrated if all economic agents with similarly relevant characteristics acting in a market face a single set of rules, have equal access and are treated equally. This serves as an imaginary state of perfect integration, which is not often seen in practice, but provides a useful benchmark for measuring the degree of financial integration. The analysis covers the period from 1996 until 2006, plus 2007 (Slovenia joined the eurozone on January 1, 2007) and 2008 (Cyprus and Malta joined on January 1, 2008). Baltzer et al. (2008) pointed out that money and banking markets are becoming increasingly integrated among themselves (new member states) and vis-à-vis the euro area but the process of financial integration in new EU member states is probably driven by different factors than those in the euro area. The transition from centrally planned to market economies has led to rapid financial developments boosted by a strong, foreign, primarily EU banking presence. [42] Only the largest economies (the Czech Republic, Poland and to a lesser extent Hungary) are exhibiting signs of integration with regard to government bond markets.

The integration into equity markets is measured by evaluating to what extent variations in national equity index returns is driven by common components. Baltzer et al. (2008) adopted the approach of Bekaert and Harvey (1995), based on the differentiation between a euro area and a global common component (for world news, they used innovations from a

---

[42] The percentage of asset shares of foreign-owned banks (relative to total bank sector assets) increased from 30% in 1997 to cca 75% in 2005 (Baltzer et al. 2008).

model on US equity returns, while euro area news were derived from a model for Eurostoxx).

Baele (2005) showed that the rise in European integration mainly took place in the second half of the 1980s and the first half of the 1990s and suggests that further economic integration, as well as efforts to further liberalize European capital markets, were more important in bringing markets closer together than the process of monetary integration through a single currency. He suggests that equity market development, trade integration and price stability stimulate equity market integration.

Baele's et al. (2004) also investigated comovements between the stock markets in the new EU member states from previous Communist states of Central and Eastern Europe in the period from 2000 to 2007 (daily log return indexes). The negative coexceedance variable for the new EU countries counts the number of extreme returns (below the 5%) across the new EU countries on a given day. The positive coexceedance variable for the new EU members (above the 95%) and the negative and positive coexceedance variables for the new EU states, are constructed analogously. They investigated persistence effects, asset class effects, volatility effects, asymmetry effects and EU enlargement effects and found out that negative coexceedances in the new EU stock markets are significantly related to a lag negative coexceedance for new EU members, old EU members, the US stock return, the old EU stock return, old EU stock volatility and interest rate volatility. Also, coexceedances among old EU states appears more connected to the US stock market and to the price movements of other asset classes. They found empirical evidence that the stock markets of entrant countries in the EU area were more exposed to adverse comovements, volatility, and persistence after their accession. This result suggests that the flip side of financial-market integration is stronger cross-country shock propagation.

Baltzer et al. (2008) have assessed the degree of financial integration in the following countries: the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Slovakia, Romania, Bulgaria, Slovenia, Cyprus and Malta, and found that financial markets in the new member states are significantly less integrated than those of the EU financial market and that they are more susceptible to euro market shocks after EU accession. Nevertheless, there is strong evidence that the process of integration is well under way and has accelerated since accession to the EU. Baltzer et al. (2008) monitored these countries' economies not only from a policy-making point of view, but also with attention to their specific characteristics. It is obvious that these economies experienced very rapid development and liberalization of their financial markets, so it is very important to monitor further developments from financial integration and monetary policy perspective.

There is strong evidence that the process of integration is well under way and then accelerated following accession to the EU; money and banking markets are becoming increasingly integrated both among themselves and vis-à-vis the euro area. With regard to government bond markets, only the largest economies (the Czech Republic, Poland and to a lesser extant Hungary) are exhibiting signs of integration. The evidence for equities suggest a relatively low level of integration, but Baltzer et al. (2008) discovered that stock markets are increasingly affected by euro shocks, especially after reviewing accession data. Their measurement included two factors; first they computed the amount of capital that the residents of developed countries invest in developing economies relative to the total foreign assets held by residents in developed countries; second they considered the same amount of capital invested by developed countries, but relative to their total portfolio. They used the flows of commercial banks rather then stocks because computed measures excluded changes in the indices due to exchange-rate evaluation changes.

Baele (2005) investigated to what extant globalization and regional integration led to increasing equity market interdependence in the case of Western Europe, as the region faced a unique period of economic, financial and monetary integration. He measured volatility spillovers from the EU and US markets to 13 local European equity markets (Austria, Belgium, France, Germany, Ireland, Italy, The Netherlands, Spain, Denmark, Sweden, the UK, Norway and Switzerland) to allow the shock sensitivities to change over time from the period of January 1980 to August 2001, and on the basis of weekly total stock return data. He documented that EU and US shock spillover intensity increased substantially over the 1980s and 1990s. and most strongly in the second half of the 1980s as well as the first half of the 1990s. He also proved that increased trade integration, equity market development and low inflation contributed to an increase in EU shock spillover intensity and that there was evidence for a contagion from the US market to a number of local European equity markets during periods of high world market volatility.

Horobet and Ilie (2007) pointed out that the theoretical links between exchange rates and stock prices are microeconomic and may be observed in both the short- and long-run. The paper examines the interactions between the exchange rates and stock prices in Romania after 1997, taking into account the change in the monetary regime that occurred in 2005, when there was a shift towards inflation targeting. The analysis was applied on daily and monthly exchange rates and stock price data collected over the period from 1999 to 2007. Three types of exchange rates were used: the nominal effective exchange rates of the Romanian leu, the bilateral nominal exchange rates of the leu against the US dollar and the euro, and the real effective exchange rates of the leu. In terms of stock prices, the BET and BET-C indices of the Bucharest Stock Exchange were used, denominated in the local currency.

Kim et al. (2005) examined the time-varying level of integration of European government bond markets based on daily bond return and prices over the period from 1998 to 2003 and found out that the degree of integration in the accession markets (Czech Republic, Hungary and Poland) was weak and stable with little evidence of further deepening, despite increased political integration. Strong contemporaneous links were found between individual EU markets and the German market. The UK markets linkage with German markets is relatively weaker than the other EU countries and the rate of integration appears to be stable with little evidence of increased or decreased integration. Convergence appears to be slow and towards the UK for Poland, the largest of the new members. Their results provide strong implications that the government bond market convergence requires more then monetary and fiscal policy coordination. Bond market convergence requires unique policies for this segment of the financial market.

Guiso et al. (2005) pointed out that regional financial integration should increase the supply of finance in the less financially developed countries of the integrating area. The process of integration should increase cross-border investments among countries, which have joined the EU and are in the process of joining the European and Economic Monetary Union (De Santis and Gérard 2006). The current diversity in the degree of financial development across the EU can be a great opportunity, at a time where these areas have become increasingly financially integrated. Integration should accelerate the development of the most backward financial markets, and allow companies from these countries to access more sophisticated credit and security markets. In line with the significant amount of recent literature, it is reasonable to expect that financial integration will have a 'growth dividend' for Europe. This paper attempts to quantify this growth dividend, using both industry and firm-level data to estimate the empirical relationship between financial market

development and growth, and to gauge how it will distribute itself across countries and sectors. The region comprising the new EU Member States is the only developing region that has attracted an increasing amount of foreign capital. Relative international bond allocation from developed to developing countries has declined between 1997 and 2004. With regard to bond markets, only the largest economies (the Czech Republic, Poland and Hungary) have shown signs of integration and when it comes to equities, Baltzer at al (2008) found a relatively low level of integration. Bond markets in the new EU Member States started relatively late, towards the beginning of 2000, and are still characterized by significant structural differences. However, stock markets are increasingly affected by euro area shocks, especially after EU accession.

Adjaoute and Danthine (2003) also analyzed the consequences of the process of financial and economic integration on European equity markets and documented significant changes in the 'fundamentals', notably the increased synchronization of macroeconomic activities, and a non-negligible evolution in pricing, with a decrease in the cost of capital and converging equity premiums. As for equity returns, it could turn out to be long-run upward trends in the correlations among both country and sector returns, with the advantage to the country factor, which could benefit from finding diversification opportunities. They conclude that there is a long-run upward trend in stock market correlations in Europe.

Horská (2005) found that the correlation among the Czech, US and European stock markets has increased over time, leaving less room for portfolio diversification. He researched the Czech stock markets from 1997 to 2003 and attempted to unveil the macroeconomic consequences of stock-price development. The analysis of the stock market's behavior supports a cautionary stance for the hypothesis of the efficient-market theory, even in its weak form. Another finding regards the macroeconomic consequences of stock-price development, undermined by the assumption of the positive wealth effect of rising stocks. In relation to GDP growth, the prediction power of the stock index has proven itself rather limited. The Czech stock market can also function as an instrument of portfolio diversification, at least in relative terms, since the correlation to the Czech bond market was weak. The correlation among the Czech, U.S., and European stock markets increased over time, restricting the room for portfolio diversification.

Égert and Koubaa (2004) investigated the conditional variance patterns in the daily return series of stock market indices in the G-7 and six selected economies of Central and Eastern Europe. Canada, France, Germany, Italy, Japan, the UK and the US were represented by the TSX, CAC-40, DAX-100, BCI, Nikkei-225, FTSE-100 and DJ-30 indices for the period from 1987 to 2002. Furthermore, the official indices of Czech, Hungarian, Polish, Russian, Slovak and Slovenian stock markets were also studied, i.e. the PX-50, BUX, WIGI, RFS, SAX-16 and SBI over the period from 1991/1995 to 2002. The estimation results reveal that the selected stock returns for the G-7 can be reasonably well modeled using linear specifications, whereas the overwhelming majority of the stock indices from Central and Eastern Europe can be much better characterized using asymmetric models. The stock markets in the transition economies exhibit much more asymmetry, because negative shocks hit these markets much harder than positive news. It also turns out that these changes do not occur in a smooth manner but happen rather brusquely. This corroborates the usual observation that emerging stock markets may collapse much more suddenly and recover more slowly than G-7 stock markets.

Sontchik (2003) applied the integration measure of Chen and Knez (1995) to answer the question of whether the introduction of the euro has led to a more integrated European equity market. The research involved 11 country members of the EMU and included the

following industries: Basic Goods, General Goods, Resources, Non-cyclical Consumption Goods, Cyclical Consumption Goods, Non-cyclical Services, Cyclical Services, Utilities, Hitech, and Financial. Treating as a market any set of assets to be priced by no-arbitrage, they applied the integration measure to gauge the degree of top-down and pair wise integration across both countries and industries. A top-down integration measure constitutes the maximum pricing error one could incur when treating the country or industry markets as integrated at a European level. The pairwise integration measure represents the maximum pricing error one incurs if one treats a given pair of markets as one. The results, based on data from January 1995 to December 2002, suggests that country-based integration has decreased after the introduction of the euro, both top-down and pairwise. Industry integration seems to have remained unaffected by the introduction of the euro with one major exception: the hi-tech industry seems to have become significantly more integrated post-euro.

Égert and Kočenda (2007) studied the correlations of stock market movements among three developed countries: France, England and Germany, and three transition countries: Hungary, Poland and Czech Republic.They studied the Czech Republic's five-minute tick intraday stock price data from 2003 to 2006. They found that there was a strong correlation in stock market movements among the developed countries (German and French and US) and that the same could not be said for the transition countries, except for Hungary, which stood out somewhat as the most "lively" financial market with the highest business cycle correlation, as well as the country with the highest extent of banking sector depth and quality. Poland and the Czech Republic produced less clear-cut results. The authors hold that the financial systems of transition countries need further and more vigorous development, if the common capital market is to be synchronized.

Dvorák and Podpiera (2006) observed an increase in stock prices in candidate countries, after EU enlargement was announced. They investigated the hypothesis that the rise in stock prices was the result of the reprising of systematic risk, due to the integration of accession countries into the world market and found that firm-level stock price changes were positively related to the difference between a firm's local and world market betas. The evidence suggests that at least part of the stock price increase can be explained by the difference between stocks' local and world betas. Stocks that had a high local beta but a low world beta experienced a higher price increase than other stocks. They also tested whether the dramatic rise in stock prices is a reflection of an increase in expected earnings. They found that changes in expected earnings were consistently related to changes in stock prices. An upward revision of expected earnings had a positive impact on a firm's stock price.

Cappiello et al. (2006) wanted to show that the integration of the new EU member states with the euro area increased during the process of EU accession. The Czech Republic, Hungary and Poland were found to exhibit return co-movements both between themselves and with the euro area. As the largest transition countries, the Czech Republic, Hungary and Poland exhibited higher correlations both among themselves and vis-à-vis the EU zone as monitored over two different periods: before and after convergence, using a simple factor model for market returns, which distinguishes between common and local components. For the four smaller countries; Cyprus, Estonia, Latvia and Slovenia, a very low degree of integration between them was found. Estonia, and to a lesser extent Cyprus, showed increased integration both with the euro area and the block of large accession countries. The results indicated that although all observed countries experienced rapid development in their financial markets, they exhibited differing degrees of integration and

different speeds of convergence with the euro zone. Cappiello et al. (2006) also measured correlations against the backdrop of world stock markets in order to examine to what extent the integration of transition countries in the EU zone depend on global factors and found evidence that, while global trends significantly increased index movements, regional characteristics nevertheless remained the most significant determinants of integration.

Syllignakis and Kouretas (2006) researched the relationships between seven CEE countries and two developed stock markets, i.e. the German and US markets, and found that the Czech Republic, Hungary, Poland, Slovenia and Slovakia have significant common trends with German and US financial markets, while the Estonian and Romanian markets are segmented, and that market interrelationships strengthened during the Russian and Asian crises. The results, based on daily and weekly data from 1995 to 2005, indicated that the examined stock markets are partially integrated and the investor's benefits from diversifying into the CEE equity market are reduced particularly for five markets: the Czech Republic, Hungary, Poland, Slovenia and Slovakia in relation to developed markets (Germany and US). In contrast, the application of portfolio diversification strategies on the Estonian and Romanian markets was more profitable, as they appear to be segmented from the system of stock exchanges and there is no sign of a cointegration relation between these two markets and developed markets.

Savva and Aslanidis (2007) investigated the degree of stock market correlation among five new EU members and the euro zone. They demonstrated that the correlation between the Czech and Polish markets and the euro zone has been increasing over the past years, although the phenomenon cannot be said to be widely present in all the transition countries. They have also shown that new EU members have closer ties with the eurozone market than with the US market.

Babetskii et al. (2007) investigated financial markets and their integration in four new EU members (Czech Republic, Hungary, Poland and Slovakia) relative to the European Union market at the country level (using national stock exchange indices) and at the sectoral level (banking, chemical, electricity and telecommunications) and found evidence of respective stock market integration on both levels. Their main objective was to test for the existence -- and determine the degree -- of financial integration of the selected new member states relative to the euro area. The results point to the existence of beta-convergence in the stock markets under review, at both the national and sectoral levels. The speed at which shocks dissipate is quite high: less than half of the week. However, they did not find a major impact from either EU enlargement or the announcement on beta-convergence. In fact, the high speed of beta-convergence was achieved much earlier, during the 1990s. The dynamics of the sigma-convergence for the EU-4 block suggest overall convergence, yet some diverging increase in volatility since 2005.

Poghossian (2008) employed an interest rate series from different segments of financial markets in Germany (benchmark country) and eight "new" EU members: the Czech Republic, Estonia, Hungary, Lithuania, Latvia, Poland, Slovenia and Slovakia. He used dataset runs from 1994 to 2006 and included monthly series on the T-bill, interbank, deposit and loan rates. His main finding was that financial links between "new" and "old" EU member states (benchmarked by Germany) have strengthened over time. This finding is valid for each of the four financial segments (T-bill, interbank, deposit and loan rates) under consideration, although the findings vary across countries and segments. Probably the most important factors driving the acceleration of financial integration are related to the policy measures undertaken by the "new" member states in order to meet European financial standards, including the liberalization of capital accounts, as well as legal and

institutional reforms. All these measures resulted in the reduction of market frictions and transaction costs. The increasing degree of financial integration has important practical implications for the "new" member states. Increased financial integration implies that the benefits of adopting the euro will increase over time. Financial links are anticipated to strengthen even further with the introduction of euro, due to the elimination of transaction costs necessary for hedging against risks related to unexpected currency fluctuations.

Caporale et al. (2005) tested for convergence in stock returns with an extensive dataset, including monthly stock price indices for five EU countries (Germany, France, the Netherlands, Ireland and the UK) as well as the US from the period 1973-2008 on both sectors and on individual industries within sectors. Splitting the cross-section into two subgroups, including Euro area countries, the UK and the US respectively, provides evidence of a global convergence/divergence process not obviously influenced by EU policies.

Onay (2007) examined the long-term financial integration of second-round acceding and candidate countries with the European Union and the US stock markets during the accession process. The long-term stock market interdependence indicated no long-term relationship between the second-round countries and the EU and US stock markets. The results indicated that the completion of accession negotiations with Bulgaria and Romania and ongoing negotiations with Croatia and Turkey have not yet resulted in the complete financial integration of these markets with the European Union. Assets traded in their stock markets will be integrated in time, and stock prices will be dominated by common global factors, rather than country-specific factors. They still offer significant long-term diversification opportunities for European as well as US investors.

Christiansen and Ranaldo (2008) investigated stock market integration in ten new member states: Bulgaria, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia and Slovenia, demonstrating a higher degree of mutual relationship and dependence on the European stock market, especially after EU enlargement in 2004. After this, new EU markets have become more integrated with old EU markets and more related to the euro. The study attempts to illustrate whether, and to what extent, comovements across national stock markets change after EU enlargement by measuring financial market integration by how often extreme returns (large positive and large negative returns) on different markets occur simultaneously.

Berben and Jansen (2005) investigated structural increases in financial market integration in nine EU countries and the US, during the period from 1980-2003, in order to estimate the date of change and the speed of transition between the low and high correlation regimes. Dates of change and the speed of the transition between low and high correlation regimes vary across countries. Country-specific factors (besides global factors such as information technology, financial innovation, greater trade interdependence and convergence of inflation rates to a low level) also played an important role in the degree of comovement among international financial markets. Those factors may be: exchange rate risk, market size, differences in economic policies and financial market regulations, as well as different transaction and information costs. For the euro area, the highest correlations were found among themselves, and the lowest with the US and Switzerland. They found out that stock market integration is a more gradual process than bond market integration and exchange rate stability and monetary (as well as fiscal) policy convergence appears to be a more important driver for bond market integration than stock market integration. Regarding the emergence of the European monetary union, they suggest that its impact has been limited. For policy makers, higher correlations mean that financial market

disturbances in one country are more likely to be transmitted to other countries. International stock market spillovers have become more significant as the link between stock markets and the real economy has intensified.

Vizek and Dadić (2006) examined the bilateral and multilateral integration of equity markets of selected Central and Eastern European countries including Croatia, and the German equity market for the period from January 2, 1997 to June 10, 2005. The study offers compelling evidence that the forces driving financial integration are quite powerful, and that we are likely to see more substantial movement in the same direction with time and once these countries join the EMU, since evidence from this study suggests that bilateral integration between particular CEE equity markets and the German equity market is still absent.

Erdogan (2008) examined the integration of stock markets in Germany, France, the Netherlands, Ireland and UK from January 1973 to August 2008 at the aggregate market and industry level, and considering the following industries: basic materials, consumer goods, industrials, consumer services, health care and financials. The study offers evidence for an increasing degree of integration both at the aggregate level and also at the industry level, although some differences in the speed and degree of convergence exist among stock markets. Surprisingly, there is an upswing of cross sectional dispersion for the health care industry, which is more prone to regional shocks. The other industries show significant convergence. The average half-life of shock to convergence changes at a range from 5.75 days for the aggregate market to 10.25 days for consumer goods.

Adjaoute and Danthine (2003) measured the relative importance of country and sector effects and discovered higher the cross-sectional dispersion. The lower the correlations are, the higher is the diversification potential. During the 1980s and 1990s, country diversification has been superior to sector diversification, but by the end of 1990, the potential of sector diversification increased to levels higher than those possible in country diversification.

Piesse and Hearn (2002) examined the degree of price-integration of equity index assets between the major markets of Africa: Morocco, Tunisia, Egypt, Kenya, Nigeria, Namibia and South Africa, and the prominent European markets of London and Paris. The only markets that are price-integrated have shared economic and financial institutions, such as Namibia and South Africa, and Egypt, Tunisia and France. This evidence suggests that development policy should be focused on enhancing existing institutions rather than embarking prematurely on regional integration.

Chen and Knez (1995) found that integration can be measured by calculating the distance between the estimated stochastic discount factors implied in observed returns and the theoretical discount factor under full integration. A durable asset serves as a productive input and as collateral for loans. The propagation mechanism of a negative productivity shock is enhanced and prolonged through the interaction of credit constraints and asset prices, where the bank loan and the investment are squeezed by a higher bank capital–asset ratio for lending and at the same time, a stricter collateral requirement for borrowing. The model explains why banking crises often coincide with a depression in the asset markets. The results also contain policy implications for the debates over regulatory bank capital adequacy and credit control policies.

Bekaert and Harvey (1995) found that a number of markets (European, Southeast Asian, and Latin American stock markets) exhibit time-varying integration, thereby allowing them to identify the reasons for rejecting the international CAPM, which instead assumes perfectly integrated markets. They define contagion as correlation among the model

residuals. The two factors are the U.S. equity market return and a regional equity portfolio return. They test asset pricing specifications by adding local factors. Their sample of national equity markets includes data for both developed markets, as compiled by Morgan Stanley Capital International (MSCI), and emerging markets from the International Finance Corporation (IFC) of the World Bank. The sample period begins in January 1980 for most of the MSCI data and January 1986 for the IFC data. The sample ends in December 1998. They study a total of 22 countries, grouped into three geographical regions: Asia, Europe, and Latin America. The regional equity indices they examine are the MSCI Europe index, as well as Asian and Latin American emerging market indices. The Asia (or Latin America) emerging market index is a weighted average of all the Asian (or Latin American) emerging markets, excluding the country under investigation.

Azman-Saini et al. (2002) proved the existence of long-term relationships among the ASEAN-5 equity markets. This study utilized weekly data spanning from January 1988 to August 1999. The results of a Granger noncausality test revealed that other markets, with the exception of the Philippines, did not affect the Singapore equity market in the long run. This result shows that there are opportunities for beneficial international portfolio diversification within the context of the Asean-5 equity markets.

This method is followed by Ayuso and Blanco (1999) on seven selected stock exchanges: New York, London, Paris, Madrid, Frankfurt, Milan and Tokyo. They suggest that more integration means fewer barriers to trade and that the degree of integration in the largest stock markets has increased over the 1990s. Not only has the weight of foreign assets in agents' portfolios increased, but so has the correlation between stock indices and the ability of each market return to explain the behavior of the returns on other markets. Greater financial market integration means higher financial market efficiency and an improvement in the risk-and-return combinations available to investors. However, greater market integration also reduces the ability of domestically focused policies to deal with the new problems arising in financial markets. They conclude that the closer we are to a single world market, the greater the need for worldwide supervision.

Portes and Rey (2000) analyzed the timing and geographical pattern of cross border equity flows and point out that, in the absence of barriers to financial transactions, these flows should be related to geographical distance, the size of the relevant markets, and to proxies for international information barriers (telephone, traffic etc.).

Diebold and Yilmaz (2008) measured links in asset returns. They used data from daily nominal local-currency stock market indices, from January 1992 to September 2005. They used four major indices: The Dow Jones Industrial Average for the New York Stock Exchange, the FTSE-100 index for the London Stock Exchange, the Hang Seng index for the Hong Kong Stock Exchange, and the Nikkei 225 index for the Tokyo Stock Exchange. Similarly, they used daily nominal local-currency stock market indices for twelve emerging markets: Indonesia, South Korea, Malaysia, Philippines, Singapore, Taiwan, Thailand, Argentina, Brazil, Chile, Mexico and Turkey. They studied both crisis and non-crisis periods, including trends as well as bursts in spillovers. In an analysis of sixteen global equity markets from the early 1990s until the present, they found striking evidence of divergent behavior in the dynamics of return spillovers vs. volatility spillovers. Return spillovers displayed no bursts but a gently increasing trend, presumably associated with the gradually increasing financial market integration of the last fifteen years. Volatility spillovers, in contrast, display no trend, but clear bursts associated with readily identified "crisis" events.

Some researchers of financial integration examined, in particular, the reaction of the stock market on global and/or local news, negative or positive news, announcement news for EU accession, and flow and speed of information though different stock markets.

Andersen et al. (1999, 2003) examined the response of U.S., German and British stocks, bonds and foreign-exchange markets to real-time U.S. macroeconomic news based on a unique data set of high-frequency futures returns for each market. They showed how a stock market reacts differently to the same piece of news depending on the state of the economy: bad news has a positive impact in times of expansion and an expected negative impact during a recession. They explained these phenomena by temporal variations in the competing "cash flow" and "discount rate" effects for equity valuation. This finding helps explain the time-varying correlation between stock and bond returns, and the relatively small equity market news effect, when averaged across expansions and recessions. Relying on the pronounced heteroskedasticity in the high-frequency data, they also document important contemporaneous linkages across all markets and countries over-and-above the direct news announcement effects.

Martens and Poon (2001) used the Datastream 16:00 (London time) stock market series to test the effectiveness of these non-synchronicity adjustment models, and to study the daily correlation dynamics between the US and two European countries, i.e. France and the UK, and find volatility spillovers from the US to the UK/France, and vice versa.

Fratzscher (2002) analyzed the integration process of European equity markets in the 1980s, based on data from daily returns from January 1986 to June 2000. Its central focus was on the role that the EMU, and specifically, changes in exchange rate volatility, played in this process of financial integration. This approach allowed him to evaluate the relative importance of regional shocks originating in the euro area with respect to global shocks coming from the rest of the world (particularly from the US) on the dominant market in Europe. He concludes that European equity markets have become more integrated with each other and have gained in importance in world financial markets since 1996, and that exchange rate variability has been reduced in the meantime. The driving force behind these outcomes is suggested to be the convergence of interest rates. He also concludes that there has been an increased correlation between stock returns within the Euro since the announcement of new Euro members in May 1998.

Černý and Koblas (2008) studied stock market integration and the speed of information transmission on intraday data or even less frequent observations. They also studied the effect of macroeconomic releases (market returns, volatility and trading volumes) from different countries on different markets through high-frequency index data from markets in the U.S. and London. The authors suggest that the speed of information transmission on stock markets is very high and that in most cases it is within one hour that a reaction to stock prices occurs. With integrated stock markets, information originating from one market should be important to other markets. They found out that stock markets in Warsaw and Krakow depend on the movements of the Frankfurt Stock Exchange, but not vice versa. The three small Eastern European markets in Warsaw, Prague and Budapest react to information revealed in the market in Frankfurt – usually within 40 minutes to an hour. The stock market in Prague seems to be the slowest, while stock market in Budapest is the leader. The U.S. market seem to be an important source of information for the markets in London and Frankfurt, which react to such information within approx. 30 to 40 minutes, with the strongest reaction in the first ten minutes. Markets in London, Frankfurt and Paris react to information within one hour, while the strongest reaction is detected after 20 minutes. They found that the strongest reaction is in the FTSE index.

Veronesi (2000) tried to find the relationship between the precision of public information about economic growth and stock market returns. The conclusion was that a higher precision of signals tends to increase risk premium. When signals are imprecise the equity premium is bounded above, independent of an investor's risk aversion, while the relationship between conditional expected returns and conditional variance is ambiguous.

Hanousek and Filer (2000) used intraday data to examine the interconnections between equity market returns and global macroeconomic information in the markets of Poland, the Czech Republic, Hungary and Slovakia. They concluded that equity markets in the most advanced post-communist countries provide a mixed picture: two or three of those markets appear to be linked to both the real economy and to the developed world. This leads to the conclusion that there is significant risk involved in trade profitability in those markets, on the basis of public information. They found the difference between Poland and Hungry on one side and the Czech Republic (and to a lesser extent Slovakia) on the other. Poland and Hungary built equity markets slowly and deliberately, adopting rules and procedures. The Czech Republic, on the other hand, adopted a policy of trading massive numbers of firms on equity markets with the hope that an appropriate institutional support system would evolve over time. In the Czech Republic, they found no connection between movements in the equity market and either the local real economy or the global economy.

The US National Bureau of Economic Research analyzed very long time periods and confirmed a high level of dependence between share value movements and many macroeconomic indicators such as GDP, total employment rates, profits, balance of payments, etc.

The authors of stock market integrations proved that the main economic variables, such as real GDP, trade balances, the import and export of goods and services, exchange rates, interest rates, unemployment, government debt and consumer price indexes are significant in their relation to the indices of the stock market. There has been a growing amount of literature showing the strong influence of macroeconomic variables and stock markets, mostly for industrialized countries (Black 1976, Chen et al. 1986, Balduzzi 1995, Fifield et al. 2000, Lovatt and Ashok 2000, and Nasseh and Strauss 2000, Hondroyiannis and Papapetrou 2001, Muradoglu et al. 2001, Cumhur et al. 2005, Menike 2006, Loayza et al. 2007, Ali et al. 2009).

The existence of a stable relationship between money and prices is generally regarded as a prerequisite for the use of monetary aggregates in the formulation of monetary policy (Calza and Sousa 2003) while even aggregation gains are likely to remain due to the existence of cross-country differences in the EU when it comes to fiscal policies, regulations, institutions, banking structures, etc. These will continue to be a source of national idiosyncrasies for some time. Bahmani-Oskooee et al. (2001) found evidence of a cointegration relation between the stock of real M2, income and interest rates.

Capital inflow is the sum of FDI, portfolio flows, trade credits and loans. Razin et al. (1999) showed that in an environment with asymmetric information, FDI can have positive welfare effects if credit markets are undeveloped, but these effects turn into losses in economies with a well functioning domestic credit market. Levine and Zervos (1998) showed that stock markets and banks provide different services, but both stock market liquidity and banking development positively predict growth, capital accumulation and productivity improvements.

Wurgler (2000) pointed out that even if financial development does not lead to higher levels of investment, it seems to help allocate existing investments better and thus spur economic growth.

Aizenman and Noy (2005) found the strongest feedback between FDI and manufacturing trade based on the argument that a larger inflow of FDI will lead to a higher volume of trade as well as other benefits, such as increased rates of total factor productivity growth or higher output growth rates (Do and Levchenko 2004, Lane and Milesi-Ferretti 2004, Rose and Spiegel 2004, Swenson 2004).

Mohammad and Abdelhak (2009) tested the relationship among government expenditures, CPI, M2 and economic growth and found that that these variables have important, dominant and positive effects on prices and variations in real output.

Additionally, researchers have begun to turn their attention to examining similar relationships in developing countries, particularly those in the growth engines of Asia (see: Maysami and Sims 2002, Maysami and Koh 2000). A substantial number of studies focused on US and Japanese stock markets (Kaneko and Lee 1995, Lee 1992, Fama 1965, Fama 1981, Barsky et al. 1993) determined that there is a positive relationship between stock returns and real economic activity. An example of this type of research is Jones and Kaul (1996), who recognized the significant importance of crude oil prices and exchange rates on share prices in the Japanese market. Another dimension of this type of research is to forecast future stock returns (Rozeff 1984, Shanken 1992, Mavrides 2000). These studies have generally focused on the relationship between dividend returns and forecasting future returns.

Some studies, however, could not improve the relationship mentioned above for the European markets. Poon and Taylor (1991)'s study of the UK market, Martinez and Rubio (1989)'s study of the Spanish market, and Gjerde and Saettem (1999)'s study of the Norwegian market have not shown a significant relationship between stock returns and macroeconomic variables. The relationship between stock markets and macroeconomic forces has been widely debated in financial and macroeconomic literature (Fama 1981, Friedman 1988, Keran 1971, Nelson 1976). Most of these studies suggest that financial and macroeconomic variables influence stock prices across a variety of markets and time frames (Been et al. 1990, Bulmash and Trivoli 1991, Campbell 1987, Cochrane 1991, Fama and French 1989, Golsten et al. 1993, Ibrahim 1999, Maysami and Koh 2000, Brennan and Yihong 2001, Mukherjee and Naka 1995, Poon and Taylor 1991).

The outcome of all these studies suggests that, with minor degrees of variation, fundamental macroeconomic dynamics are indeed influential factors for stock market returns.

3.5 Testing the Procyclicality of Stock Exchange Indices

3.5.1 Testing the Procyclicality of Stock Exchange Indices via Different Methodologies

Many authors of financial integration have tested the procyclicality of stock exchange indices, and here we want to emphasize those who have tested equity market integration in the EU, in the EU compared with other developed countries, and especially in the EU compared with countries in transition. A number of studies have analyzed how stock market integration affects stock market returns and investigated if stock market returns become more correlated in a more integrated market.

Adam et al. (2004) believe that ex-post return data cannot be useful because market returns can vary because of some shocks. This is especially the case for the EU, because of the ongoing process of the goods and labor markets, which is likely to speed up the transmission of shocks between countries, increasing their common components. Therefore, literature aimed at estimating and comparing ex-ante returns in various markets requires the specification of a capital asset-pricing model (CAPM)[43]. According to CAPM, in the presence of fully integrated stock markets, only the covariance risk with the world portfolio is priced in ex-ante returns and that diversifiable country-specific risks does not command any return. If the country-specific risk exceeds the covariance risk with the world portfolio, financial integration should be accompanied by a decrease in the risk premium required by investors in equilibrium, and there is therefore a reduction in the expected returns on equity and the cost of capital (Stulz 1999). Depending on CAPM being the right model to describe asset returns, the model has three testable indicators for segmentation: first, a country's beta with the world market does not (fully) capture the risk premium that is observed on its equity market; second, the real rate of return on risk-free assets may differ across countries; third, the component of country-specific risk that could be diversified internationally has an explanatory power for expected returns.

Hardouvelis et al. (1999, 2004) used a conditional asset pricing model (CAPM) to determine the importance of EU-wide risk relative to country-specific risk, and they report a tendency towards higher market integration. Hardouvelis et al. (2004) provide evidence for diminishing country effects and amplifying sector effects as stock market integration increases. The disadvantage of this part of the literature is that the results depend on the specification of the asset-pricing model. Hardouvelis et al. (2004) investigated whether European stock returns are driven by local or by Europe-wide risk factors and found out that the relative importance of Europe-wide factors increased with the probability of joining the EMU, which suggests a shift from a country-specific to common European pricing kernel, in line with increased equity market integration in Europe. Risk premiums and the cost of capital explicitly decreases in more integrated markets (they estimate a decrease in the cost of capital related to the increase in equity market integration of

---

[43] The capital asset pricing model (CAPM) is used to determine the theoretically appropriate required rate of return of an asset, if that asset is to be added to an already well-diversified portfolio, given that asset's non-diversifiable risk. The model takes into account the asset's sensitivity to non-diversifiable risk (also known as systematic risk or market risk), often represented by the quantity beta (β) in the financial industry, as well as the expected return of the market and the expected return of a theoretical risk-free asset.

between 0.5 and 3 percent, depending on the sector. Baele et al. (2004) reported that the results in this methodology depend on the specification of the asset pricing model and hence on the correct identification of the risk factors.

Chen and Knez (1995) proposed a method for testing equity market integration based on the low of one price with no specifications in the asset pricing model and discovered that integration can be measured by calculating the distance between the estimated stochastic discount factors implied in the observed returns, and the theoretical discount factor under full integration. They use a dynamic general equilibrium model[44] to study the interactions between the banking sector, asset prices and aggregate economic activity. Bekaert and Harvey (1995) constructed a two-factor model with a time-varying measure of financial market integration. Diebold and Yilmaz (2008) proposed a simple framework for measuring links in asset returns and returns based directly on the familiar notion of vector autoregressive variance decompositions.

Sentana (2000) proposed a dynamic APT multi-factor model[45] with time-varying volatility for currency, bond, and stock returns for ten European countries over the period from 1977-1997 and he rejected the null hypothesis that country-specific risks are not priced, thus providing evidence against financial market integration. Fratzscher (2002) proposed a multivariate GARCH model with time-varying coefficients to analyze the integration process of European equity markets since the 1980s, based on data from daily returns from January 1986 to June 2000. Baele (2005) measured the time-varying nature (by the regime-switching model) of volatility spillovers to investigate to what extent globalization and regional integration lead to increasing equity market interdependence in the case of Western Europe, as the region faces a unique period of economic, financial and monetary integration.

Poghossian (2008) used a threshold vector error-correction (TVECM) model[46] with fixed rolling windows. This methodology is more general than those applied in previous studies, as it is based on a more realistic assumption of the existence of transaction costs. Furthermore, it allows for the testing of the presence of regime-dependent adjustments on long-run equilibrium. Erdogan (2008) used correlation analysis and convergence methods to measure the speed of convergence and degree of financial integration carries out the analysis. Veronesi (2000) used a simple dynamic asset-pricing model to find the relationship between the precision of public information about economic growth and stock market returns.

---

[44] Dynamic stochastic general equilibrium modeling (abbreviated DSGE or sometimes SDGE or DGE) is a branch of applied general equilibrium theory that is increasingly influential in contemporary macroeconomics. The DSGE methodology attempts to explain aggregate economic phenomena, such as economic growth, business cycles, and the effects of monetary and fiscal policy, on the basis of macroeconomic models derived from microeconomic principles.

[45] The APT multi-factor model is a financial model that employs multiple factors in its computations to explain market phenomena and/or equilibrium asset prices. The multi-factor model can be used to explain either an individual security or a portfolio of securities.

[46] The vector error correction models (VECM) specify the short-run dynamics of each variable in the system, and in a framework that anchors the dynamics to long-run equilibrium relationships suggested by economic theory.

Černý and Koblas (2008) studied stock market integration and the speed of information transmission by using the Engle-Granger causality test on intraday data or even less frequent observations. Égert and Koubaa (2004) applied the heteroscedasticity (GARCH) analysis to stock market indices (based on a daily return series) in the CEE region, confirming the asymmetry of stock markets in transition countries as compared to G-7 countries. Égert and Kočenda (2007) applied a Dynamic Conditional Correlation GARCH model to five-minute tick intraday stock price data to study the correlations of stock market movements among three developed countries: France, England and Germany, and three transition countries: the Czech Republic, Hungary and Poland.

Vizek and Dadić (2006) used the Johansen cointegration test, which indicates multilateral integration between the equity markets of analyzed CEE economies. Cappiello et al. (2006) used a factor model for market returns to show that the integration of new EU member states with the euro area increased during the process of EU accession.

Syllignakis and Kouretas (2006) used Granger's (1995) methodology to identify, estimate and test for the number of common trends among the group of examined stock markets. They also used Dynamic Conditional Correlation (DCC) by to the conditional relationship between the examined stock markets in the CEE region and the two developed stock markets. On the end they applied the Markov Switching ARCH-L (SWARCH-L) model of Hamilton (1994) to study for the structural breaks in volatility of the examined markets during the examined period.

Savva and Aslanidis (2007) used the STCC-GARCH methodology to investigate the degree of stock market correlation among five new EU members and the euro zone. They used the STCC (Smooth Transition Conditional Correlation) to demonstrate the correlation between the Czech and Polish markets and the eurozone.

Martens and Poon (2001) demonstrated that a multivariate approach is the only proper platform for studying transmission mechanisms and correlation dynamics. The parameter estimates produced from fitting the Asymmetric Dynamic Covariance (ADC) model confirms that there are asymmetrical effects in the conditional covariance's of international stock markets, similar to those found in conditional variances. A (large) negative return leads to a larger increase in covariance than (large) positive returns.

Onay (2007) used the Engle-Granger (1987) causality test to present evidence of a causal flow from European and US equity markets to the Croatian stock market and from the Turkish Stock market to the Bulgarian stock market. Christiansen and Ranaldo (2008) used a multinomial logit model[47] to investigate stock market integration in ten new EU member states. Their study is based on Baele's et al. (2004) multinomial logit model and the hypothesis that contagion[48] depends on interest rates, exchange rate changes and conditional stock return volatility.

Caporale et al. (2005) apply the Phillips and Sul (2007) method to test for convergence in stock returns. They used the Stock and Watson (2003) procedure to filter data in order to extract the long-run component of the series; then, following Phillips and Sul (2007), they

---

[47] Multinomial logit models are used to model relationships between a polytomous response variable and a set of regressor variables. The term "multinomial logit model" includes, in a broad sense, a variety of models. The cumulative logit model is used when the response of an individual unit is restricted to one of a finite number of ordinal values. Generalized logit and conditional logit models are used to model consumer choices.

[48] For contagion, there are different terms: pure contagion, interdependence, spillovers, transmission effects, and shock propagation.

estimated the relative transition parameters and in the case of sectoral indices, found convergence in the middle of the sample period, followed by divergence, and also detected four (two large and two small) clusters. The analysis at a disaggregate industry level again points to convergence in the middle of the sample, and subsequent divergence, but a much more significant number of clusters is then found.

Šestović and Latković (1998), Latković (2002) and Levaj et al. (2005) used the main Croatian stock market index and a few company indices to estimate a GARCH model and illustrate how this model can be used in volatility forecasting. Posedel (2006) found that the nonlinear GARCH models better describe short-run dynamics, while Anatolyev (2006) rejected conditional mean independence in the volatility model for the Croatian stock market.

Žiković (2005, 2006) applied a VaR (Value-at-Risk) methodology and historical simulation of the Croatian stock market indices in an effort to measure Value-at-Risk. Calendar effects, and their impact on conditional volatility, was also the subject of an investigation of the Croatian stock market. Ajayi et al. (2004) did not find a day-of-the-week effect, while Fruk (2004) rejected the hypothesis of seasonal unit roots in the Croatian index. When investigating volatility transmission or spillovers between Croatian stock markets and other markets in the region and Europe, mixed results were obtained.

Samitas et al. (2006) discovered equilibrium relationships, i.e. links between stock markets in transitional economics (Croatia, Serbia and Macedonia) by using Markov switching regime regressions. Miljković and Radović (2006) discovered commonly known stylized facts in Serbian stock market data. The mean predictability in the volatility model for Slovenia was not detected in the Slovenian index (Anatolyev 2006).

Hasan and Quayes (2005) tried to identify the level of integration between Slovenian and European financial markets. As with Croatia, they discovered no long-run relationships between Slovenia and nine other considered countries. Ajayi et al. (2004) identified the day-of-the-week effect in the Slovenian index (negative Tuesday and positive Thursday and Friday effects).

Tonchev and Kim (2004) found weak evidence for the day-of-the week effect in the opposite direction, i.e. reverse effects in positive returns. By using the GARCH model they identified calendar effects in the conditional variance such as January effect, monthly seasonality in variance, and the reverse half-month effect. Piesse and Hearn (2002) used the application of the Vector Autoregressive and Autoregressive Distributed Lag methods to reveals that African markets are largely price-segmented. This method follows Ayuso and Blanco (1999) with a simple univariate autoregressive model and the (sum of the squared) residuals of a VAR model on seven selected stock exchanges: New York, London, Paris, Madrid, Frankfurt, Milan and Tokyo.

Our research is particularly interested in stock market index movements in the transition countries of Southeastern Europe, especially when compared to the European Union and world stock exchanges, in order to demonstrate that the markets in transition countries are dependent on large, developed economic centers. In that sense, our study follows up on the papers of those authors who compared the movements of stock market indices in the new European Union member countries in order to determine the degree and pace of financial integration. There are some studies that evaluate the financial integration of some new EU member states among themselves and with the euro zone.

3.6 Methodology and data

3.6.1 Data specification

Based on the studies investigating the correlation of stock market indices and macro economic variables in the empirical literature, we constructed a data set of explanatory variables that are usually included in models: capital inflow expressed as percentage points of GDP; the exchange rate express in the price of one unit of foreign currency in units of domestic currency; GDP expressed in annual percentage change; government debt expressed as percentage points of GDP; the industrial production index; interest rates (p.a.); the consumer price index; trade balance expressed as percentage points of GDP, and the unemployment rate expressed as a percentage of the total labor force. We relied on the internal database of the CCEQ (2010) [49], BACA (2009) and on the databases of the national statistical bureaus of individual countries, especially for the US and UK.

A monthly time series was used for the period from January 2004 to December of 2008, in order to explain the stock exchange procyclicality in selected SEE countries. In the case of Croatia, we used an additional longer period of research − a monthly time series from January 2000 to December 2010.

The local stock price indices (closing prices) were used for each of the examined stock markets: CROBEX (Croatia), SBI20 (Slovenia), SASX-10 (Bosnia and Herzegovina), BELEX15 (Serbia), MONEX20 (Montenegro), BG40 (Bulgaria), BET10 (Romania), FTSE100 (UK) and DOW JONES (US). Stock indices' data (closing) were collected on national stock exchanges and adapted to monthly average indices from January 2004 to December 2008. For CROBEX, we also used the monthly average indices from January 2000 to December 2010.

In order to control for a potential endogenity problem, several instrumental variables were employed in regressions: broad money expressed in annual percentage change, credit volume expressed in annual percentage change of broad money in percentage points, the export of goods and services expressed as a contribution to GDP in percentage points, the import of goods and services expressed as a contribution to GDP in percentage points, capital outflow expressed as the percentage points of GDP and wages expressed as the annual change for the average wage per employee.

In addition to the monthly data time series, a daily frequency of intraday stock exchange indices were employed only on the sample of one day for Croatia (CROBEX), Slovenia (SBI20) and France (CAC40)[50].

---

[49] Source: http://ec.europa.eu/economy_finance/db_indicators/cpaceq/index_en.htm (2010), EIPF (internal data base).

[50] In addition to the monthly data series, a daily frequency of intraday indices were employed on the sample of one day (26/10/2009) for Croatia (CROBEX), Slovenia (SBI20) and France (CAC40) from the opening (adjusted for all three countries from 10:00:00) to closing (adjusted for all three countries to 12:51:30.)

3.6 2 Methodology

In different estimations for the empirical evidence of a relationship between stock-exchange indices and main (macro) economic indicators, we used methods such as correlations cointegration, cross-country regressions and panel regressions. There are two primary methods to examine the degree of cointegration among indices: the Engle-Granger methodology (1987) which is bivariate (testing for cointegration between pairs of indices) and the Johansen-Juselius technique (Johansen 1988).

The methods primarily used in measuring financial integration (cross country and panel regressions) are OLS (Ordinary Least Squares) and TSLS (Two-stage Least Squares).

In the course of our research we used OLS (Ordinary Least Squares), GARCH (General Autoregressive Conditional Heteroscedasticity), TSLS (Two-stage Least Squares) and panel regression.

To uncover empirical evidence for a relationship between stock return indices and economic variables of SEE countries, we used the individual Ordinary Least Square and we also applied a GARCH (General Autoregressive Conditional Heteroscedasticity) method. Numerous studies have shown that the GARCH specification is most suited for analyzing financial time series such as stock prices, inflation rates and exchange rates (Engle 1982, 1986, Bollerslev 1988, Bollerslev et al. 1988, Bollerslev and Wooldridge 1992, Bollerslev et al. 1994, Poon and Stapleton 2005). The GARCH model implies that the conditional distribution of returns is normal, i.e. standardized residuals of this model should be normal (Glosten et al. 1993, Rabemananjara and Zakoian 1993, Jaganathan and Runkle 1993, Engle and Rangel 1995). We used the simplest GARCH (1,1) originally proposed by Bollerslev 1986:

$$\sigma i^2 \ = \ \alpha_0 \ + \ \alpha_1 u_{t-1}{}^2 \ + \ \alpha_2 \sigma_{t-1}{}^2$$

which says that the conditional variance of *u* at time *t* depends not only on the squared error term in the previous time period but also on its conditional variance in the previous time period.

The Two Stage Least Squares (TSLS) method was also used for every country to avoid an endogenity problem, which could arise in an estimation where explanatory variables are correlated with the disturbances. Such explanatory variables were substituted by employing suitable instrumental variables (see the description in the *Data Explanation*). The two-stage least squares (TSLS) method is a method applied for estimating instrumental variables regression. As the name makes clear, there are two stages: in the first stage, TSLS finds the portions of the endogenous and exogenous variables that could be connected to the instruments.

The second stage is the regression of the original equation, with all the variables replaced by the fitted values from the first-stage regressions. TSLS Instrumental variable methods rely on two assumptions (Staiger and Stock 1997): instrumental variables are uncorrelated with the disturbances (instruments are distributed independently of the error process (i.e. instruments are valid), and the instruments are sufficiently correlated with the included

explanatory variables in the equation (i.e. instruments are not weak). To provide a TSLS estimation, we have to satisfy the order condition for identification (there must be at least as many instruments as there are coefficients in the equation).

We also applied panel estimation. Therefore, we used SEE countries in a group to obtain more information on the analyzed parameters and to avoid the eventual problem of certain similarities of individual country economies and the problem of relatively short time series (Arrelano and Bond 1991, Beck and Katz 1995, Wooldridge 2002 and Hsiao 2003).

For the united SEE group, we applied EGLS and IV Two-Stage EGLS methods for the fixed effects model. These methods allow the cross-country differences to be treated as unobserved time invariant characteristics (Babihuga 2007) and give us control of omitted variables over time and may alleviate measurement errors and endogeneity bias (Maddala and Wanhong 1996, Maddala and Li 1996, Maddala and Wu 1999, Baltagi 2001). This methodology also lowers co-linearity between explanatory variables (Kothari and Shanken 1992, Davidson and MacKinnon 1993) and dismisses heterogeneous effects (Western 1998).

An additional OLS (Ordinary Least Squares) estimation was applied for the procyclicality of Croatian stock markets through the longer period of historical data (main economic indicators and CROBEX stock price (closing)) from January 2000 to December 2010 on monthly bases, in order to find the break-even point when the analyzed cycles started to accelerate by using a Chow stability test (Chow 1985, Andrews 1993 and Hansen 1997).

The period from 2000 to 2010 was divided into two sub-periods. The first period (from January 2000 to October 2005) is the period of screening and the second period from November 2005 to December 2010 is a period of negotiation about Croatian EU accession. We included the break-even point in October 2005, which marks the beginning of Croatia's EU accession negotiations (October 3, 2005, to be precise).

Before applying linear regression methods, we eliminated the overly correlated explanatory variables for every country (Appendix Table: E).

There are two primary methods to examine the degree of cointegration among indices: the Engle-Granger methodology (1987) which is bivariate (testing for cointegration between pairs of indices) and the Johansen-Juselius technique (Johansen and Juselius 1988). The essence of cointegration implies that a long-term relationship exists between these series. Cointegrated markets exhibit common stochastic trends that limit the amount of independent variations between markets (Christiansen and Ranaldo 2008). The requirement for assets that are integrated in an economic sense to share common stochastic factors is pointed out in Chen and Knez (1995).

Johansen and Juselius (1988) is a multivariate technique and allows for more than one cointegrating vector or common stochastic trend to be present in the data. It allows testing for the number as well as the existence of these common stochastic trends and involves determining the rank of a matrix of cointegrating vectors.

Based on the authors who did research for cointegration between economic variables and based on our own research, we used the Johansen methodology to find cointegrated variables in our case could be capital inflow/GDP, interest rates and trade balance/GDP (Johansen and Juselius 1988) (Appendix Table: F). Trade variables are known to be highly correlated. Capital inflow and interest rates in one country are connected to a whole range of economic activities and connected to many macro-economic variables within the observed country.

We employed a set of instrumental variables: capital outflow, broad money, credit volume, exports, imports, and wages, which we expected to be correlated with the endogenous

variables. The correlation between capital inflow and capital outflow is based on the theory that capital outflow stimulates capital inflow[51]. We also substituted wages for capital inflow. Lower wages could be one trigger for increasing the capital inflow in some countries.[52] The interest rate is substituted with instruments such as broad money and credit volume, because interest rates positively impact the supply of money[53] (lower interest rates increase the supply of money) and the interest rate is also strongly correlated to the volume of credits[54] (lower interest rates increase the volume of credits). Trade balance is substituted with instrumentals such as the export and import of goods and services, because in economic theory the balance of trade (or net exports) is the difference between the monetary value of exports and imports of output in an economy over a certain period[55].

The choice of suitable instrumental variables in regression can eliminate bias that can arise from the correlation between the vector of explanatory variables and the error term. We constucted a set of instrumental variables that should be correlated with the endogenoues variables but not with the error term (Hansen 1986, Angrist and Krueger 2001, Hahn and Hausman 2002, Murray 2005).

For the weak instrument diagnostic, Cragg and Donald (1993) originally proposed the statistic test for a test of underidentification. When disturbances are heteroskedastic or autocorrelated, these test statistics are no longer valid (Stock and Yogo 2005). The Stock and Yogo (2005) test for weak instruments is based on the largest acceptable bias of the TSLS estimation, relative to the OLS estimation. But the Stock-Yogo test can only be used for up to three endogenous variables with a null hypothesis that instruments are weak. In our estimation, it is not applicable because of the number of endogenous variables that are used. Research by Kleibergen and Paap (2006) led to the development of a robust version of the weak instruments test statistic that can also be used when the disturbances are heteroskedastic or autocorrelated.

The Hansen-Sargan test for over-identifying restrictions addresses the first assumption, whereas the weak identification tests address the second assumption (Bound et al. 1995). The Hansen-Sargan statistic is also called J-statistic and provides evidence for the instrumental quality of every regression. In models where there are the same numbers of instruments and parameters, the value of the optimized objective function will be greater

---

[51] The removal of capital outflow controls has been shown to stimulate a net inflow of capital (Laban and Larrain 1994, Reinhart and Talvi 1998).

[52] Any tendency for labour to push down wages and the costs of production and raise the returns on capital may attract a capital inflow (Chiarini 1998, Eicher et al. 2009).

[53] It has been proven that monetary policy responds positively and significantly to stock returns and it is hard to conceive of any instruments that would affect the stock market without affecting the path of interest rates (Rigobon and Sack 2001). Interest rate shocks have a positive effect on the supply of money (Artis and Chan 1986, Kiyotaki and Moore 1997, Brückner and Schaber 2002).

[54] Interest rate changes impact the credit quality of assets (Jarrow and Turnbull 2000, Duffie and Singleton 2003, Gentle et al. 2005, Grundke 2005).

[55] The export and import of goods and services are employed instruments, which is substitute for a trade balance as one endogenous variable (Aizenman and Noy 2005, Baele 2005).

than zero. The probability (p-value) of the J-statistic (Table 4: TSLS) shows evidence for the validity of instrumental variables that we used in equations. The Kleibergen-Paap test, with the rejection of the null hypothesis, also suggested that chosen instruments are not weak for equations (Kleibergen and Paap 2006).

All variables were seasonally adjusted by the seasonal adjustment method (Eviews 7, Stata 10) on the basis of monthly data from 2004 to 2008 for individual regressions and the SEE panel regression of all observed countries -- especially on the basis of monthly data from 2000 to 2010 for Croatia's regression.

We used the Augmented Dickey-Fuller (1979) test to test a series for the presence of a unit root. According to the test results given in table A, all variables are stationary in the form dlog (x) i.e. integrated of order 1 in the log form (see Appendix, Table: A). The logarithmic approximation is accurate in certain cases such as when the rates of change in variables are reasonably small (Frances and Koop 1998, Moffatt and Salies 2006, Lütkepohl and Xu 2009).

To determine the lag length, we used Schwarz Information Criterion because the Schwarz criterion and its parsimonious model perform better over a longer period of research (Asghar and Abid 2007) and also Akaike and Hannan-Quinn Information Criterion (Akaike 1987). A maximum of twelve lags was considered for each variable when determining the lag length.

For pooled SEE countries, the ADF-Fisher Chi-square panel unit root test for pool estimation, which was proposed by Maddala and Wu (1999), was applied to test for stationarity of all the transformed time series. The probabilities for the Fisher test are computed using an asymptotic Chi-square distribution. The test is characterized by the combining of individual unit root tests to derive a panel-specific result.

In the estimations of individual regressions we used dlog (x) (variables were integrated of order 1 in the log form) but for the pool estimation we applied d(x) because of the significant oscillation of variables through different countries integrated in the SEE pool. By using the differences of the variables expressed as percentage changes, the problem of spurious regression was avoided (Dickey and Fuller 1979, Esaka 2003).

Tests known for serial correlation are the *Q*-statistic and the Breusch-Godfrey LM test (Breusch et al. 1979). Q-statistics were estimated to check autocorrelation in the residuals (Iwaisako 2004) by a test statistic for the null hypothesis that there is no autocorrelation of residuals with high probabilities and low Q-statistics (Appendix: Table C). The results indicated that residuals are not serially correlated and, therefore, suitable for analysis.

3.7 Results

The stock exchanges in SEE transition countries reacted in similar ways to significant capital inflows and the opening of markets in the observed period, despite differences among the individual countries.

The obtained results confirmed the significant influence of the chosen explanatory variables on the stock exchange indices. As expected, we found a correlation among the main economic indicators and stock exchange indices of the SEE countries. We can confirm the positive influence of capital inflow, GDP, inflation, industrial production and trade balance on stock exchange indices. We also confirmed that exchange rate, interest rate, unemployment and government debt have negative impact to stock exchange indices.

The complete results provide evidence of the volatility of macroeconomic factors such as GDP growth, inflation and short-term interest rates. These factors are important explanatory variables that increase the volatility of stock exchange indices (see French et al. 1987, Rigobon and Sack 2001, Gupta et al. 2002, Karamustafa and Kucukkale 2003, Tsoukalas 2003, Caporale et al. 2005, Lin 2009). Our result also confirmed government debt and exchange rates as important explanatory variables that significantly impact stock exchange indices.

Stock market performance illustrates the state of the country's economy - if stock prices start to fall, an economic depression is likely to take place. Conversely, rising stock prices signal possible economic growth. Rising stock prices in the SEE countries in the scope of our interest, provide evidence about economic growth in the region in the light of the financial integration process in general and in light of the EU integration process in particular. Stock prices increase usually go together with large FDI as well as the implementation of reforms regarding EU integration. European financial markets (see: Erdogan 2008) have faced crucial structural and institutional adjustments, with the aim of accelerating financial integration in the money, credit, bond, and equity markets. This integration is, additionally, positively associated with real per capita GDP, educational level, banking sector development, monetary growth, credit growth, stock market development, the legislation of the country and government integrity (see Aslanidis et al. 2002, Borio et al. 2001, Borio and Lowe 2002, Edison et al. 2002, Chong and Koh 2003, Dimelis 2005, Enderleing 2006, Uhde and Heimeshoff 2009).

These processes are also pushing the whole SEE region towards further international financial integration because almost all SEE countries are trying to follow European financial markets.

The positive influence of GDP, capital inflow and trade balance, which is obvious in individual countries' regressions and confirmed in the SEE pool, improves the theory that foreign direct investments in developing economies have grown rapidly following financial and political transformations. Local stock markets were established as part of their transition process towards adopting the mechanisms of a market economy to intermediate funds towards investment projects (see Adam and Tweneboah 2009).

The stock markets of SEE have tried to adapt their standards to international ones, by improving: the disclosure practices of firms, order execution, ownership rights, and by bringing down limitations to international capital flows because economic growth and prosperity is possible only when capital markets work efficiently (see Syllignakis and Kouretas 2006, Mohammad and Abdelhak 2009).

Emerging capital markets in the transition countries of Southeastern Europe are becoming increasingly important for both institutional and individual investors on the global market. The efforts of transition countries with respect to changing to a market economy, has resulted in massive FDI for the stock markets, especially in the course of 2004, which boosted stock indices in almost all countries (see Graph 1). The dramatic increase in stock prices in the EU accession countries clearly followed the announcement of EU enlargement (for Bulgaria, Romania and Slovenia and subsequently Croatia and Montenegro) and obviously was a result of market integration and the subsequent re-pricing of systematic risk.

GRAPH 1: STOCK INDICES OF THE SEE COUNTRIES + UK AND US (01:2004 – 12:2010)
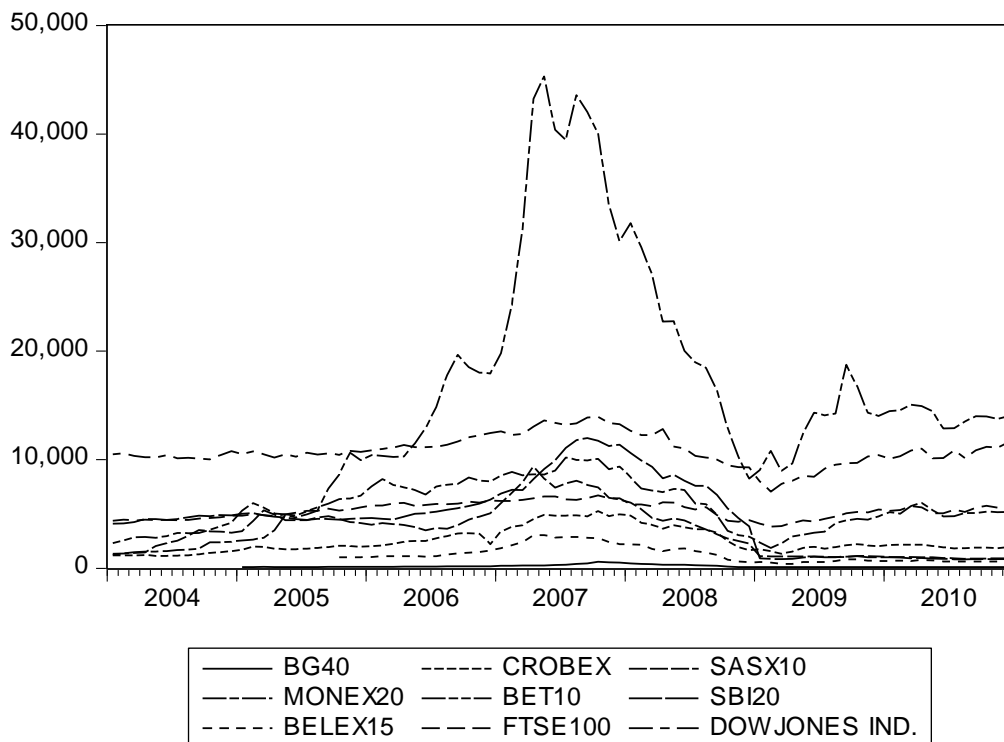
Symbols: CROBEX (Croatia), SBI20 (Slovenia), SASX-10 (Bosnia and Herzegovina), BELEX15 (Serbia), MONEX20 (Montenegro), BG40 (Bulgaria), BET10 (Romania), SASX10 (UK) and DOW JONES IND. (US).

This development of the financial markets was not homogenous across the SEE region. *Bulgaria*, *Romania* and *Slovenia*, as countries that are already in the EU, had previously

experienced strong capital inflows coupled with particularly high asset valuations and buoyant demand conditions due to their announcement of EU accession (see Dvorák and Podpiera 2006). *Croatia* and *Montenegro*, as EU candidate countries, have also seen strong capital inflows in the last decade connected with the announcement of eventual EU membership (see: Berben and Jansen 2005, Horobet and Ilie 2007). But the completion of EU accession of *Bulgaria*, *Romania* and *Slovenia* and ongoing negotiations with *Croatia* and *Montenegro* have not yet resulted in the complete financial integration of these markets with the European Union (see: Onay 2007).

Economic performance in *Serbia* and *Bosnia and Herzegovina* is still well below EU standards with respect to the lack of local reforms and unstable fiscal policy. Regardless, these countries are also on the way to the EU (potential EU candidates) which is obvious through their privatization efforts (telecommunication sector) and trade liberalization. *Serbia* has also attracted foreign investments through a favorable tax regime and *Bosnia and Herzegovina* (especially Republika Srpska in contrast to another entity – Federacija BiH) has got significant industry production but rather slow privatization progress.

As we can see in Table 5, the rise of capital markets was very strong in SEE countries over the last few decades due to large FDI inflows (+20 in the pooled SEE result) followed by a high coefficient for the industrial production index (which naturally goes together with FDI inflows) and a high coefficient for their trade balance due to the liberalization of the market.

Obviously, the liberalization of the market is connected with EU accession and other regional and international trade integration (see Baltzer et al. 2008).

Cumulative FDI from 2003 to 2007 has been greater in *Montenegro* than in all other transition countries and remained surprisingly high despite the actual global slowdown of economic activities, partly due to the privatization of the local power company and aluminum industry as well. FDI in *Serbia* increased from 27% net in 2000 to 700% in 2003 due to privatization and the interest of foreign investors (attracted by low taxes). The amount of incoming FDI to *Slovenia* during the period before 2000 almost tripled due to EU accession. The stock market of *Romania* received massive foreign investment inflows with a 90% increase in 2004 due to EU accession. Similarly, *Bulgaria* saw more then 30% increase in stock indices. Since 1999, *Croatia's* FDI inflows increased by up to EUR 1 billion (see Škudar 2004, Bozic et al. 2006) and increased especially in 2005 (after its announcement as an EU candidate country). The great majority of FDI inflow in Croatia was through the acquisition of existing companies (mostly through privatization in the service sector, telecommunications and financial services).

The empirical evidence of SEE countries, when united in a pool, also shows significant negative coefficients of government debt, which is confirmed in the results of individual countries regressions – in the SEE countries and also in the UK and the US, due to the global recession that started at the end of 2008 (see: Yang et al. 20003, Muradoglu 2009).

It provides us with evidence that the accession of the SEE countries in the EU required the implementation of reforms that lead to further economic expansion. Probably the most important factors driving the acceleration of financial integration are related to the policy measures undertaken by the "new" member states in order to meet European financial standards, including the liberalization of capital accounts, as well as legal and institutional reforms (see: Poghosian 2008).

Implementing reforms that includes cutting government spending is a pre-condition for EU accession, and was a strong motivation factor for SEE countries on their way to EU membership. Most reforms in *Slovenia* were done from 1996 to 2004 and in *Bulgaria* and

Romania from 2001 to 2004, when they were motivated to join the EU. The reforms in *Croatia* started in 2005 when the official negotiation process began (see Mohammad and Abdelhak 2009).

TABLE 3: GARCH (1 , 1)

	Dependent variable: dlog(x) (01m 2004 to 12m 2008)
Variable	BIH	BUG	CRO	MN	ROM	SLO	SER	UK	US
C	-	-	-	-0.051198 (-5.819785) (0.0000)***	-	-	-	-	0.004488 (8.702434) (0.0000)***
dlog(CAP)	0.136738 (/) (3.627574) (0.0003)***	0.052664 (-1) (1.911040) (0.0560)*	0.359473 (-11) (9.126916) (0.0000)***	0.321874 (-8) (5.780412) (0.0000)***	0.096267 (-11) (3.949294) (0.0001)***	-	0.200741 (-12) (8.106457) (0.0000)***	0.239144 (-4) (4.950975) (0.0000)***	0.005003 (-7) (9.029894) (0.0000)***
dlog(EXR)	-18.37072 (-8) (-2.165039) (0.0304)**	-4.601634 (-8) (-4.164247) (0.0000)***	-4.086524 (-12) (-1.979519) (0.0478)**		-0.925078 (-2) (-2.693734) (0.0071)***	-	-1.032017 (-2) (-1.832210) (0.0669)*	-	-
dlog(GDP)	0.164163 (-7) (3.479148) (0.0005)***	0.087123 (-3) (1.969830) (0.0489)**	0.078908 (-8) (3.033692) (0.0024)***		0.133182 (-1) (5.240316) (0.0000)***	-	0.259786 (-12) (3.541450) (0.0004)***	-	0.015715 (-12) (5.256944) (0.0000)***
dlog(GVD)	-0.619305 (-5) (-6.697729) (0.0000)***	-	-3.072211 (/) (-5.227902) (0.0000)***		-0.271813 (-6) (-1.539833) (0.1236)*	-2.602766 (-12) (-2.660621) (0.0078)***	-0.324456 (-3) (-1.805578) (0.0710)*	-0.591878 (-9) (-2.049496) (0.0404)**	-1.790655 (-10) (-5.636630) (0.0000)***
dlog(IND)	-	-	-	0.185264 (-6) (6.237757) (0.0000)***	0.045817 (-2) (2.060272) (0.0394)**	0.105039 (-12) (3.548206) (0.0004)***	-	-	0.039872 (-12) (4.438737) (0.0000)***
dlog(INT)	-0.570486 (-4) (-3.622772) (0.0003)***	-0.401587 (-9) (-3.697638) (0.0002)***	-0.368912 (-12) (-2.387979) (0.0169)**	-0.202402 (-4) (-20.84552) (0.0000)***	-0.318602 (-9) (-12.08223) (0.0000)***	-0.840482 (-12) (-4.210526) (0.0000)***	-	-0.348002 (-1) (-1.778554) (0.0753)*	-
dlog(CPI)	0.024218 (-12) (2.125279) (0.0005)***	0.165596 (-12) (2.832857) (0.0046)***	0.195607 (-3) (2.625541) (0.0087)***	0.087803 (-9) (1.983832) (0.0473)**	0.461919 (-12) (5.001303) (0.0000)***	0.043224 (-9) (4.480008) (0.0000)***	0.153131 (-11) (3.485304) (0.0000)***	0.086687 (-8) (2.633782) (0.0084)***	0.040473 (-8) (4.438737) (0.0000)***
dlog(TRB)	-	-	0.968309 (-12) (1.900301) (0.0574)*	0.267588 (-7) (2.067618) (0.0387)**	0.477068 (-6) (12.78771) (0.0000)***	-	0.375208 (-1) (4.857127) (0.0000)***	0.100874 (-12) (3.856287) (0.0001)***	0.396802 (-12) (3.034570) (0.0024)***
R-squared	0.540797	0.271281	0.722968	0.336409	0.441160	0.682931	0.438347	0.349914	0.374475
Adjusted R-squared	0.368596	0.198091	0.619082	0.183273	0.217624	0.597567	0.179123	0.157296	0.195754
S.E. of regression	0.073451	0.074002	0.070993	0.446274	0.056791	0.031207	0.123426	0.040773	0.018865
Sum squared resid.	0.129442	0.139961	0.121082	0.116543	0.080631	0.02997	0.198041	0.044654	0.007473
Durbin-Watson stat.	1.860156	1.820909	1.845780	2.723888	1.795590	1.420417	1.393155	2.491487	2.169204
S.D. dependent. Var	0.092437	0.075453	0.115028	0.044416	0.493814	0.064206	0.049193	0.136228	0.021036

Symbols: BIH – Bosnia and Herzegovina, BUG – Bulgaria, CRO – Croatia, MN – Montenegro, ROM – Romania, SLO – Slovenia, SER – Serbia, UK – United Kingdom, US – United States,
Variables:
CAP: capital inflow expressed in percentage points of GDP; EXR: exchange rate expressed in the price of one unit of foreign currency in units of domestic currency; GDP: expressed in annual percentage change; GVD: government debt expressed in percentage points of GDP; IND: industrial production index; INT - interest rate in p.a.; CPI: consumer price index; TRB: trade balance expressed in percentage points of GDP.
Notes:
dlog(x) is used beacuse the variables are integrated of order 1.The time lag of the variables is given in brackets; (t-statistics) are in brackets below and (probabilities)*** are in brackets below (t-statistics).
Significance levels are denoted as: *** significant at 1%; ** significant at 5%; * significant at 10%.

TABLE 4: TSLS

Variable	BIH	BUG	CRO	MN	ROM	SLO	SER	UK	US
Dependent variable: dlog(x) (01m 2004 to 12m 2008)									
C	-	-	-	-0.215463 (-1.702011) (0.1042)*	-	-	-	-	0.013661 (3.052326) (0.0224)**
dlog(CAP)	0.094581 (/) (2.076309) (0.0543)*	0.144803 (-9) (2.063302) (0.0557)*	0.349682 (-11) (4.541061) (0.0001)***	0.853256 (-8) (2.253319) (0.0356)**	0.300636 (-11) (26.06167) (0.0000)***		0.106363 (-12) (3.416035) (0.0142)**	0.241479 (-4) (5.516286) (0.0000)***	0.009603 (-7) (5.342431) (0.0018)***
dlog(EXR)	-18.39730 (-8) (-2.096159) (0.0523)*	-6.127371 (-3) (-2.304564) (0.0349)**	-6.157387 (-12) (-2.785870) (0.0098)***		-1.835372 (-2) (-35.79663) (0.0000)***	-	-2.762409 (-2) (-6.468528) (0.0006)***	-	-
dlog(GDP)	0.172721 (-7) (4.227345) (0.0006)***	0.184615 (-4) (2.360444) (0.0313)**	0.064962 (-8) (2.249863) (0.0331)**		0.144385 (-1) (5.312749) (0.0060)	-	0.204522 (-12) (3.748504) (0.0095)***	-	0.016774 (-12) (3.647964) (0.0107)**
dlog(GVD)	-0.762530 (-5) (-4.975444) (0.0001)***	-	-3.865007 (/) (-5.338394) (0.0000)***		-5.247041 (-6) (-2.37E+08) (0.0000)***	-2.227578 (-12) (-2.449278) (0.0211)**	-0.326172 (-1) (-1.981371) (0.0948)**	-1.282403 (-9) (-2.839178) (0.0113)**	-2.641411 (-10) (-2.200500) (0.0701)*
dlog(IND)	-	-	-	0.786717 (-6) (5.536044) (0.0000)***	0.081773 (-12) (41.44746) (0.0000)***	0.114558 (-12) (2.838874) (0.0085)***	-	-	0.077040 (-12) (3.462961) (0.0134)**
dlog(INT)	-0.712238 (-4) (-2.772183) (0.0136)**	-1.222261 (-9) (-4.153112) (0.0007)***	-0.331848 (-12) (-2.278367) (0.0312)**	-1.219462 (-4) (-2.296666) (0.0326)**	-	-0.757411 (-12) (-4.169434) (0.0003)***	-	-0.408849 (-1) (-3.417262) (0.0033)***	-
dlog(CPI)	0.031565 (-12) (3.021754) (0.0081)***	0.259213 (-1) (2.814706) (0.0125)**	0.160875 (-3) (1.987594) (0.0575)*	1.106634 (-9) (2.264863) (0.0348)**	0.306795 (-6) (2.705974) (0.0538)*	0.062012 (-9) (1.963031) (0.0600)*	0.164701 (-11) (3.315223) (0.0161)**	0.051032 (-8) (1.970110) (0.0653)*	0.086575 (-8) (9.391181) (0.0001)***
dlog(TRB)	-	-	1.156284 (-12) (2.506115) (0.0188)**	8.244719 (-7) (3.098824) (0.0057)***	0.396077 (-12) (16.95547) (0.0001)***	-	0.275458 (-1) (4.888631) (0.0027)***	0.080764 (-12) (2.792757) (0.0125)**	0.194419 (-12) (2.045499) (0.0879)*
R-squared	0.805790	0.739891	0.723396	0.615588	0.849065	0.696547	0.924336	0.683060	0.833986
Adjusted R-squared	0.732962	0.658607	0.659564	0.500265	0.622663	0.651591	0.848672	0.589843	0.667973
S.E. of regression	0.044816	0.057566	0.068147	0.461932	0.030442	0.029262	0.029485	0.014520	0.009916
S.D. dependent. var	0.086725	0.098524	0.116797	0.653443	0.049557	0.049574	0.075794	0.022672	0.017209
J-statistic[i] probability	(0.822996)	(0.335170)	(0.553863)	(0.794457)	(0.406006)	(0.333457)	(0.423190)	(0.462557)	(0.423190)
Kleibergen-Paap test[ii]	(0.0000)	(0.0002)	(0.0004)	(0.0021)	(0.0011)	(0.005)	(0.007)	(0.0003)	(0.005)

Symbols: BIH – Bosnia and Herzegovina, BUG – Bulgaria, CRO – Croatia, MN – Montenegro, ROM – Romania, SLO – Slovenia, SER – Serbia, UK – United Kingdom, US – United States.

Variables:

CAP: capital inflow expressed in percentage points of GDP; EXR: exchange rate expressed in the price of one unit of foreign currency in units of domestic currency; GDP: expressed in annual percentage change; GVD: government debt expressed in percentage points of GDP; IND: industrial production index; INT - interest rate in p.a.; CPI: consumer price index; TRB: trade balance expressed in percentage points of GDP.

Instrumental variables:

BM: broad money expressed in annual percentage change; CV: credit volume expressed in annual percentage change of broad money in percentage points,; EXP: export of goods and services expressed as contribution to GDP in percentage points; IMP: import of goods and services expressed as contribution to GDP in percentage points; COF: capital outflow expressed as percentage points of GDP; WAG: wages expressed as annual change of average wage per employee.

Notes: dlog(x) is used beacuse the variables are integrated of order 1. The time lag of the variables is given in brackets; (t-Statistics) are in brackets below and (probabilities)*** are in brackets below (t-Statistics).

Significance levels are denoted as: *** significant at 1%; ** significant at 5%; * significant at 10%.

[i] J-statistic probability (Hansen-Sargan test) give us evidence of validity of instrumental variables.

[ii] The Kleibergen-Paap test - low probability rejects the null hypothesis that instrumental variables are not valid.

The goverment debts of Slovenia and Romania, as current EU members, provides us with clear evidence that reforms affecting budgetary discipline do not end after EU accession. In June 2010, the Slovenian government introduced a supplementary budget (reducing the government budget deficit) with plans to increase taxes and cut spending (reforming the pension and health care system) while the *Romanian* government is in the middle of taking measures (such as public sector restructuring and expenditure cuts) towards government spending. The flexibility of fiscal policy in much of the SEE countries could be improved by lowering the high share of nondiscretionary expenditures in total and also the high level of public spending. Definitely, public sector wage bills and transfers are particularly large in most of the SEE countries, reflecting the still generous and often unreformed social security systems that these countries cannot afford.

The observed countries that are already in the EU (*Bulgaria, Romania and Slovenia*) or in the process of negotiations (*Croatia* and *Montenegro*) were found to depend more on the global financial markets (the regression of the coefficient – of government debts (from -3.07 to -5.25) than others (*Bosnia and Herzegovina* and *Serbia*), which confirmed the hypothesis that financial links between "new" and "old" EU member states have strengthened over time. These results are also confirmed by the fact that the stock markets of new member states are more exposed to adverse comovements (see: Poghosian 2008 Cappiello et al. 2006, Ocampo 2007, Savva and Aslanidis 2007, Dvorák and Podpiera 2006, Christiansen and Ranaldo 2008). This empirical results are in the line with Syllignakis and Kouretas (2006) who have researched the relationship between seven CEE countries and two developed stock markets, i.e. the German and US markets, and found that the Czech Republic, Hungary, Poland, Slovenia and Slovakia have significant common trends with the German and US financial markets, while the Estonian and Romanian markets are segmented. The results are also in the line with Cappiello et al. (2006) and Baltzer et al. (2008). They found that money and banking markets are becoming increasingly integrated among themselves (new member states) and vis-à-vis the euro area. However, they also found that the process of financial integration in new EU member states was driven by different factors than those in the euro area. Cappiello et al. (2006) found evidence that, while global trends significantly increased index movements, regional characteristics nevertheless remained the most significant determinants of integration.

Our results also imply strong GDP growth in the SEE countries in the period from 2004 to 2008, together with a growth in capital inflow, trade balances and industrial production as well.

GDP growth presumes a rise of the industrial production index and the rise of trade due to closer trade connections between the EU and candidate countries (see: Onay 2007). Additionally, the strongest feedback between FDI and manufacturing trade is based on the argument that larger inflows of FDI will lead to a higher volume of trade as well as other benefits such as increased rates of total factor productivity growth or higher output growth rates (see: Do and Levchenko 2004, Lane and Milesi-Ferretti 2004, Rose and Spiegel 2004, Swenson 2004, Aizenman and Noy 2005).

EU candidate countries such as *Croatia* and *Montenegro* are very open to trade with the EU and trade represents a very high share of their GDP. Openness to international trade, domestic credit supply and GDP are quite successful candidates among the drivers of international financial integration. EU accession provides better market access for Southeastern European firms and increased assistance from the EU budget, which leads to greater consumer confidence in light of the prospects of EU membership (see: Hanousek

and Filer 2000, Dvorák and Podpiera 2005). Beyond direct trade links, openness in general (possible through indirect trade links) make economies less prone to move with others (see: Gelos and Sahay 2001, Vo 2005 and Onay 2007).

The implication of a positive trade balance in *Montenegro* also lies in the summer seasons (Montenegro is a tourism-oriented country). Progress has also been madetowards liberalizing trade in Montenegro, because the government has, consequently, undertaken several measures to liberalize Montenegro's trade regime.

When compared to other transition countries, *Croatia* in the middle of the last decade did not fully succeed in adjusting its export structure to new demand, while strong imports were necessary to satisfy the domestic demand for consumption, and recently, for investments (see Stučka 2004). Trade in Croatia started to slow down in 2009, as was the case in all other SEE countries. It resulted in Croatian GDP growth lagging behind other SEE countries.

Our results also confirmed the exchange rate as an important explanatory variable that has a significant impact on stock exchange indices. The evidence of negative exchange rates are followed by negative interest rates on the stock market returns in individual SEE countries and in the SEE pool (see: Fama 1981, Fratzscher 2002, Hartmann and Pierdzioch 2006, Knif et al. 2008). These results confirmed the theory that exchange rate volatility has significant implications on the financial system of a country, especially the stock market (see: Berben and Jansen 2005, Horobet and Ilie 2007 and Adjasi et al. 2008).

There are two portfolio models known as the "Flow-Oriented"[56] model and the "Stock-Oriented"[57] model (see: Dornbusch and Fischer 1980, Branson 1983, Frankel 1983, Gavin 1989, Adjasi and Biekpe 2005) which explain the strong negative correlations between the exchange rate and stock exchange volatility.

Strong negative exchange rates for stock exchange indices (*Romania, Bulgaria, Bosnia and Herzegovina, Croatia* and *Serbia*) strengthens the theory that stock price movements may influence, or be influenced by, exchange rate movements and a depreciating currency has a negative impact on stock market returns -- especially in the long-run for exchange rate depreciation. There is also an opposite view on the correlation between exchange rates and stock exchange prices. When stock prices rise, foreign investors become willing to invest in a country's equity securities. Thus, they benefit from international diversification. This situation leads to capital inflows and currency appreciation (see: Wu 2000, Caporale et al. 2002, Stavárek 2005, Pan et al. 2007).

The depreciation of exchange rates has adverse effects on exporters and importers. Exporters have an advantage over other countries' exporters and increase their sales and

---

[56] The "Flow-Oriented" model improves the fact that exchange rate movement affects output levels of firms and also the trade balance of an economy. Share price movements on the stock market also affect aggregate demand through wealth, liquidity effects and indirectly the exchange rate. Specifically, a reduction in stock prices reduces the wealth of local investors and further reduces liquidity in the economy, which also reduces interest rates which in turn induces capital outflows and causes currency depreciation (see: Adjasi et al. 2008)

[57] In the case of the "Stock-Oriented" model, the exchange rate equates demand and supply for assets (bonds and stocks). Therefore, expectations of relative currency movements have a significant impact on the price movements of financially held assets. Thus, stock price movements may influence or be influenced by exchange rate movements. That is, if the domestic currency for example depreciates against a foreign currency, this will motivate investors to move funds from domestic assets (stocks) towards valuta's assets, depressing stock prices. Thus, a depreciating currency has a negative impact on stock market returns (see: Adjasi e al. 2008).

their stock prices go higher (see: Baele's et al. 2004, Adjasi and Biekpe 2005, Yau and Nieh 2006, Horobet and Ilie 2007).

TABLE 5: PANEL REGRESSION RESULTS FOR THE SEE REGION (CROATIA, BOSNIA AND HERZEGOVINA, BULGARIA, MONTENEGRO, ROMANIA, SERBIA AND SLOVENIA)

Dependent variable: d(x), cross-section included: 7 (monthly 2004 – 2008), Cross section included:5		
Variable	*EGLS fixed effect model*	*IV Two-stage EGLS fixed effect model*
d(CAP) (-2)	20.97660 (4.954005) (0.0001)***	17.56979 (3.786017) (0.0010)***
d(GDP) (-12)	12.43523 (2.013816) (0.0559)*	12.91708 (8.614207) (0.0000)***
d(GVD)	-17.73085 (-7.714151) (0.0000)***	-11.62261 (-3.019839) (0.0061)***
d(IND) (-12)	6.211327 (6.124719) (0.0000)***	14.00244 (5.257360) (0.0000)***
d(INT)	-19.48193 (-3.640742) (0.0014)***	-17.04761 (-3.532648) (0.0018)***
d(TRB) (-10)	14.72069 (2.564458) (0.0173)**	2.340819 (2.346399) (0.0279)**
Weighted Statistics		
R-squared	0.662393	0.662997
Adjusted R-squared	0.574321	0.575083
S.E. of regression	1.039794	0.905857
S.D. dependent. Var	1.493386	5.107697
Sargan test[i]	(0.783412)	(0.829761)

Symbols:
Variables: CAP: capital inflow expressed in percentage points of GDP; GDP: expressed in annual percentage change; GVD: government debt expressed as percentage points of GDP; IND: industrial production index; INT - interest rate in p.a.; CPI: consumer price index; TRB: trade balance expressed as percentage points of GDP.
Instrumental variables:
BM: broad money expressed in annual percentage change; CV: credit volume expressed in annual percentage change of broad money in percentage points,; EXP: export of goods and services expressed as a contribution to GDP in percentage points; IMP: import of goods and services expressed as a contribution to GDP in percentage points; COF: capital outflow expressed as percentage points of GDP; WAG: wages expressed as the annual change in the average wage per employee.
Notes:
d(x) denotes the difference in variables as a percentage change (measured in percentage points). The time lag of the variables is given in the subscript; (t-Statistics) are in brackets and (probabilities)*** are in brackets below (t-Statistics). Significance levels are denoted as: *** significant at 1%; ** significant at 5%; * significant at 10%.
[i] The probability of the Sargan test gives us evidence for the validity of instrumental variables.

While the SEE countries are importers rather than exporters, the depreciation of exchange rates has a negative impact on the stock exchange rate. Like many other countries in the early phases of transition, the SEE countries relied mainly on exchange rate anchors to

lower inflation. However, in the early 1990s most Southeastern and Central European countries pegged their currencies to the dollar or currency baskets, which contained both the dollar and European currencies, exchange rate strategies have been gradually redirected towards the euro[58] (see: Schnabl 2004, ECB 2005). Increased financial integration implies that the benefits from adopting the euro will increase over time.

In 2004, the central bank of *Romania* made the exchange rate more flexible but inflation in Romania rose between 2007 and 2008 due to strong consumer demand and high wage growth and has not recovered yet. The international competitiveness of the Bulgarian economy has been boosted by productivity gains and real exchange-rate appreciation (see: Samita et al. 2006 and Onay 2007). The *Croatian* kuna has gradually appreciated since the beginning of 2005 and exchange rate movements in Croatia are characterized by the usual seasonal pattern reflecting tourism. Evidence of a strong relationship between stock prices and exchange rates in the case of Croatia can also be explained by the fact that the Croatian economy partly depends on services such as tourism. Croatia faced the highest inflation rate in 2009 but the national currency, the kuna, is stable. In an environment of ample liquidity and depressed economic activity, the Croatian National bank did not change its accommodative monetary policy stance in 2010.

Croatia, as an actual EU candidate country, (negotiations should end in June 2011) is very suitable for the empirical research of procyclicality regarding EU accession. In the case of a longer period of research of stock exchange indices in Croatia (from January 2000 to December 2010 on a monthly basis) the break-even point was presumed to be in October 2005, when the process of negotiation for EU accession began (i.e. the 3rd of October, 2005). In light of that prediction, the transition period in Croatia was divided into a first sub-period (from January 2000 to October 2005) as a period of screening while the second one stretched from November 2005 to December 2010, as a sub-period of negotiations for EU accession. The results of the stability test confirmed the hypothesis of the break-even point in the beginning of negotiations for EU accession (probability 0.46) (see: Cappiello et al. 2006, Dvorák and Podpiera 2006).

The announcement of EU enlargement was obviously a trigger for a rise in stock prices in EU candidate countries, which is confirmed in the case of Croatia, and was also followed by significant capital inflow, stronger currency and low inflation. The positive environment that accompanied EU accession started reversing at the end of 2008, with the global recession and inner political instabilities (significant cases of corruption followed by many court trials) as well as lower consumer spending and lower industrial output.

---

[58] *Slovenia* introduced the Euro in 2007, *Romania* and *Bulgaria* have plans to introduce the Euro in 2013-2014 and *Montenegro* adopted the Euro as an official currency in 2002, without entering the eurozone, and by rejecting their old currency – the dinar.

TABLE 6: OLS - CROATIA

Dependent variable: dlog(x) (01m 2000 to 12m 2010)	
Variable	*(from January 2000 to December 2010)*
dlog (CAP) (-8)	0.164917 (2.360305) (0.0208)**
dlog (EXR) (-12)	-2.655832 (-2.317968) (0.0231)**
dlog (GVD) (-11)	-2.506156 (-3.287568) (0.0015)***
dlog (INT) (-4)	-0.127834 (-1.774719) (0.0798)*
dlog (CPI) (-12)	0.083220 (2.166649) (0.0333)**
dlog (UNE) (-3)	-0.718921 (-2.742332) (0.0076)***
	Weighted statistic
R-squared	0.395416
Adjusted R-squared	0.348910
S.E. of regression	0.064862
Durbin-Watson stat.	2.078646
S.D. dependent. Var	0.080384
Stability test (Chow Breakpoint Test)[i]	(0.4649)

Variables:
CAP: capital inflow expressed in percentage points of GDP; EXR: exchange rate expressed in the price of one unit of foreign currency in units of domestic currency; GVD: government debt expressed in percentage points of GDP; INT - interest rate in p.a.; CPI: consumer price index; UNE: unemployment expressed in percentage points of the total labour force.
Notes:
dlog(x) is used beacuse the variables are integrated of order 1.The time lag of the variables is given in subscript; (t-Statistics) are in brackets and (probabilities)*** are in brackets below (t-Statistics).
Significance levels are denoted as: *** significant at 1%; ** significant at 5%; * significant at 10%.
[i] Probability F (7.71), Probability Chi-Square distribution (0.4427)

The emerging problems of the Croatian economy are the still-growing trade deficit, high unemployment (obvious in the negative coefficient of the unemployment rate in the longer period of our research) and high government debt (confirmed by negative coefficients in both individual Croatian regressions – during the shorter and longer period of observation).

In the process of EU accession, Croatia, just as other EU candidate countries, had to implement reforms in light of cut expenditures (such as in the pension and social system), while maintaining budgetary discipline and the reconstruction of the public sector due to high deficits in the balance of payment and living beyond realistic possibilities (see Vizek and Dadić, 2006). In 2011, the alarming unemployment rate in Croatia stood at nearly 20%.

The positive impact of industrial production on stock exchanges in individual countries and in the SEE pool estimations, has proven the theory that industrial production affects stock returns positively and significantly -- primarily through increasing the expected cash flow, which has been confirmed in many studies (see: Fama 1981, Kaul 1987, Balvers et al. 1990, Cochrane 1991 and Lee 1992).

Inflation and the stock exchange in all the observed SEE countries are positively correlated in our research, confirming the Fisher hypothesis[59] about positive correlation between inflation and stock exchange volatility. Obviously, there is no consensus in theories and empirical evidence about the influence of inflation on stock exchange. The influence of inflation on stock exchange volatility could be negatively or positively correlated to the stock exchange. In the long-run, inflation is usually negatively correlated to stock exchange returns, especially in countries with higher rates of inflation but could also be positively correlated to stock exchanges, especially in the case of more stabile economies (see: Fama 1981, Kaul 1987, Lee 1992, Muradoglu et al. 2001, Fratzscher 2002, Baele 2005, Roll et al. 2005, Luintel and Paudyal 2006, Ryan 2006, Knif et al. 2008).

The interest rates should also be an important factor in explaining stock market returns (see: Dornbusch 2001, Konan 2008) because it can influence the level of corporate profits, which in turn influences the price that investors are willing to pay for the stock through expectations of higher future dividends payments. A reduction in interest rates reduces the costs of borrowing, which have a positive effect on the future expected returns for the firm. Also, an increase in interest rates would make stock transactions more costly. Investors would require a higher rate of return before investing. This will reduce demand and lead to a price depreciation (see: Dornbusch 2001).

Negative interest rates in individual countries is as can also be confirmed in the SEE pool) in line with the theory that stock market returns are usually negatively correlated to interest rates (see: Fama 1981). A rather high interest rate is typical for transition countries due to insufficient money supply. The transition from planned to market economies in the SEE region has led to rapid financial developments, which were further boosted by a strong, mainly EU, banking presence (see: Baltzer et al. 2008).

The strong presence of foreign banks in those countries in the last decade did not seriously help in reducing interest rates, but helped in the supply of different financial products and services to the government, companies and households. Foreign banks saw transition countries as a new market for applying their different financial products and services. The privatizations boosted confidence in banks, which in turn led to increasing monetization with rapid deposit growth. Together with enhanced access to foreign loans by the new

---

[59] The Fisher hypothesis (Fisher 1930) is that the market rate of interest comprises the expected real rate of interest and expected inflation. This hypothesis, when applied to stock markets, postulates a positive one-to-one relation between stock returns and inflation.

private banks, this has helped fuel a boom in lending in most of the region (see: Buch 2000, Fratzscher 2002, Poghossian 2008 and Festić et al. 2009).

Interest rates in *Montenegro* are constantly increasing due the banks' need for large quantities of deposits, which leads to higher interest rate loans to citizens, companies and the government. There is significant competition among lending institutions in Montenegro (see: Stešević 2008). The high results of the *Bulgarian* interest rate is a confirmation of the fact that Bulgaria boasts the highest interest rates among EU member states that have yet to introduce the Euro. The effective interest rates in Bulgaria in the end of 2010 has been 9.38% (Bulgarian National Bank, 2010).

Additional research on the procyclicality of stock exchange indices for *Croatia* (CROBEX), *Slovenia* (SBI20) and *France* (CAC40) from the opening (adjusted for all three countries from 10:00:00) to closing (adjusted for all three countries to 12:51:30) is presented in the Appendix (graph 2, graph 3 and graph 4) and show similarities in the directions of the procyclicality of stock exchange indices. However, Croatian and Slovenian stock indices changes react with a delay to the changes of the French stock indices, which is in line with other empirical research on intraday data for stock exchange indices of transitional countries in comparison with major EU stock exchange indices (see: Černý 2004, Égert and Koubaa 2004, Égert and Kočenda 2007, Černý and Koblas 2008[60]). Černý and Koblas confirmed that the three small Eastern European markets in Warsaw, Prague and Budapest react to information revealed in the market in Frankfurt – usually within 40 minutes to an hour. Égert and Kočenda (2007) confirmed a strong correlation in stock market movements among the developed countries (German and French and US) while Poland and the Czech Republic produced less clear-cut results. We agree with these authors that the financial systems of transition countries need further and more vigorous development, if the common capital market is to be synchronized.

---

[60] The three small Eastern European markets in Warsaw, Prague and Budapest react to the information revealed in the market in Frankfurt – predominantly after 40 minutes to one hour (Černý and Koblas 2008).

4 CONCLUSION

4.1 Conclusion and discussion

Financial globalization got started in the mid 1980s with the rise of cross-border financial flows among industrial economies and between industrial and developing economies, which led to the better global allocation of capital, common monetary policy and to economic growth by removing frictions and barriers while improving international risk-sharing possibilities. On the other hand, there have also been some less positive effects, such as too much consolidation in a market segment that might hinder competition.

The authors of financial integration consider the market for a given set of financial instruments or services to be fully integrated when all the potential participants in such a market: (i) are subject to a single set of rules when deciding to buy or sell those financial instruments or services; (ii) have equal access to a set of financial instruments or services and (iii) are treated equally when they operate in the market.

Monetary integration in a unified European Union is a pre-condition for the process of economic convergence and the financial market of a member country that is well integrated in the global financial market marks a key feature in this respect because it boosts stability against economic and financial vulnerability and enhances economic growth followed by stronger trade links with the EU.

European financial markets have faced crucial structural and institutional adjustments with the aim of accelerating financial integration in the money, credit, bond, and equity markets, which generates better opportunities for international investors by eliminating country-specific risks and lets them diversify their portfolios across countries. A larger pool of funds, other than limited local financing is, therefore, available for corporations. Integrated stock markets decrease the cost of capital. Hence, the number of productive investments increases, thereby encouraging economic growth. Moreover, interdependent stock markets are subject to spillovers resulting from shocks. Evaluating the dynamics of equity market integration is, therefore, important for monetary policy makers.

After the collapse of communist and socialist regimes in the beginning of the 1990s, a number of Central and Eastern European (CEE) economies established capital markets as part of their transition process for adopting the mechanisms of a market economy. Following the removal of restrictions on capital flows, the opening up to foreign investors, the creation of appropriate corporate governance structures and the establishment of ownership rights, both market capitalization and daily trading volumes increased rapidly in the CEE's during the transition period.

After 2000, most Southeastern European countries (approx. 55 million people) recorded economic growth with low inflation and progress in the field of market reforms. Still, the GDP *per capita* in countries of the Southeastern region shows a gap when compared to the developed countries of Western Europe, suggesting that there is long way ahead of them. The equity markets in the CEE countries are still relatively small compared with developed ones, and they tend to exhibit higher volatility, possibly because of their sensitivity to even relatively small portfolio adjustments.

The stock markets of Bulgaria, Bosnia and Herzegovina, Croatia, Montenegro, Serbia, Slovenia and Romania are a representative group of SEE countries, which are integrating with the European Union. Bulgaria and Romania, which joined the EU in January 2007; Slovenia, which became an EU member in 2004 and introduced the Euro in 2007; and Croatia, which is in the process of negotiations, are countries that have gone much further in their development than other countries in the region. Support for EU accession is the best stimulus a region can get. Governments and other state bodies of countries in the SEE region have recently started implementing demanding reforms, which have resulted in a record inflow of foreign investments and a better entrepreneurial climate.

In this doctoral dissertation, we provided answers on research objectives for the testing of the procyclicality of stock exchange indices in Southeastern European countries and we demonstrated that all analyzed transition countries are, regardless of their current status (European Union members or otherwise), to a certain extent already dependent on the EU financial market, and that the spillover effect from more developed financial markets to less developed ones can already be noted (H1 +H2).
Empirical research demonstrated that the opening of the transition economies go hand in hand with massive FDI, which boosted stock indices, followed by GDP growth, and an increase in industrial production and trade. The result also proved that stock indices in the transitional SEE countries are negatively correlated to exchange rates, interest rates, unemployment, and government debt.
It is confirmed that the financial system of Southeastern transition countries (Croatia, Bulgaria, Bosnia and Herzegovina, Montenegro, Romania, Slovenia and Serbia) is related to European and world financial systems, as seen through the main stock indices centers in the world (i.e. the UK and the US). The spillover effect i.e. the dependence of small financial markets on large ones, is also confirmed. Observed countries that are already in the EU wing (Bulgaria, Romania and Slovenia) or in the process of negotiation (Croatia and Montenegro) were found to depend more on the global financial market and found to be more exposed to adverse co-movements then others (Bosnia and Herzegovina and Serbia) (H1+H2).
The results of the individual countries' regression and the pooled SEE group imply that the observed transition countries of SEE were, in the last decade, exposed to large FDI inflows, boosted by the integration processes of EU association (but were also exposed to the global financial crisis that started in 2008) which is reflected in the empirical evidence of the procyclicality of government debts in almost all observed countries, including developed ones such as the UK and the US. It provides us with evidence that recent financial crises are overflowing, creating a 'contagion effect' and, with EU enlargement, into an ever-widening circle of countries.

The significant negative coefficient of government debts for all SEE countries also led us to a conclusion about the necessity of economic and social reforms in SEE countries on their way to the EU and that these reforms should not stop after EU accession.

The results of measuring the procyclicality of the Croatian stock market from January 2000 to December 2010 also implies that the beginning of Croatian negotiation for EU accession in October 2005 was a trigger for a rise in stock prices and economic revival, signaled by the increase in GDP, large FDI and trade relaxations as well. It demonstrated that cycles accelerate over time due to modern information economies and globalization (EU integration (H3)).

We can also state that for the whole group of observed SEE countries, real exchange rates are symptomatically procyclical due to different institutional characteristics and different values in relation to the Euro -- as was the case with other countries in transition. A negative correlation was also confirmed for the interest rates of the SEE group due to the strong presence of the foreign banks in SEE transition countries and their applying of different financial products and services even (and despite) the global recession that began in 2008.

For the aim of empirical research of the financial integration and spillover effect we constructed a model through the next phases:

- We collected the data from individual SEE countries (the main macro economic indicators and stock exchange indices) namely: Croatia, Bosnia and Herzegovina, Bulgaria, Montenegro, Romania, Slovenia and Serbia and from the main developed economic centers (main macro-economic indicators and stock exchange indices) such as the UK and the US.

- We chose and prepared the data components from 2004 to 2008 for all SEE countries + the UK and the US and seasonally adjusted on a monthly basis. An additional model included Croatia for a longer period: from 2000 to 2010 on a monthly basis. All the dates were checked, analyzed, prepared and reduced to fit into a regression analysis for every seris.

- All the smaller stock exchanges of transition countries were encompassed into one series (SEE pool), and the other series include one analyzed stock market center (Dow Jones or FTSE).

- The illustrated procyclicality of the observed countries is present also through additional intraday indices to give a picture of time delays between large stock exchanges and smaller 'dependent' stock exchanges in transition countries.

4.2 Topics and instructions for further research

We strongly believe that a doctoral dissertation include a properly constructed model that gives us answers to the aims of our research. In further research on this topic, it is also possible to:

- Include in the correlation analysis some other SEE countries such as Albania and the Republic of Macedonia, which we did not do, due to an insufficient source of data. Possible EU candidature of those countries would provide official observers with the appropriate macro-economic data.

- Involve some other main economic centers for correlation analysis, such as Germany and/or Austria due to the known historical economical and geopolitical connections between those countries and the countries of ex-Yugoslavia.

- The model included data from 2004 to 2008 for all SEE observed countries. Further analysis could involve a longer period of research to also encompass 2009 and 2010, when the global recession was present the most.

- In the OLS estimation of Croatia's longer historical period, a Chow break-even point test gave us evidence that the announcement of EU enlargement is a trigger for a rise in stock prices in EU candidate countries. Further research could apply "the EU announcement effect" and "possible EU candidate effect" on other transitional countries that also passed or are now passing through the process of EU integration (such as Montenegro).

The results of the empirical research in this doctoral dissertation provided evidence that we improved the premise of a global financial system that is susceptible to the spillover effect from larger financial markets on smaller ones; namely from the less-developed transitional countries of Southeastern Europe to developed centers such as the EU and the US. The procyclicality of business cycles is improved in Croatia's extended period of research and provides evidence that business cycles accelerate over time due to the process of globalization (EU accession) and information technology.

LITERATURE:

1. Acemoglu, D. and Zilibotti, F. 1997. Setting Standards: Information Accumulation in Development, *Working papers* 97-6, Massachusetts Institute of Technology (MIT), Department of Economics.

2. Adam, K., T. Japelli T., Menichini A., Padula M. and Pagano M. 2002. Analyse, Compare, and Apply Alternative Indicators and Monitoring Methodologies to Measure the Evolution of Capital Market Integration in the European Union. *European Commission*, 1–95.

3. Adam, A.M. and Tweneboah, G. 2009. Foreign Direct Investment and Stock Market Development: Ghana's Evidence, *International Research Journal of Finance and Economics 26.*

4. Adjasi, C. K.D., and B.N. Biekpe. 2005. Stock Market Returns and Exchange Rate Dynamics in Selected African Countries: A bivariate analysis, *The African Finance Journal*, July, Cape Town, South Africa.

5. Adjasi Ch., Harvey, S.K. and Agyapong, D. 2008. Effect of Exchange Rate Volatility on the Ghana Stock Exchange. *African Journal of Accounting, Economics, Finance and Banking Research 3(3).*

6. Adjaoute, K. and Danthine, J. 2003. European Financial Integration and Equity Returns: A Theory-Based Assessment. In: Gaspar, V., P. Hartmann, and O. Slejpen (eds.): *The Transformation of the European Financial System*. European Central Bank, Frankfurt, 185–246.

7. Agenor, P. R. 2003. Benefits and Costs of International Financial Integration: Theory and Facts. *World Economy*, 26 (8), 1089–1118.

8. Aizenman, J. and Noy, I. 2005. FDI and Trade - Two Way Linkages? June 2005. *NBER Working Paper* w11403.

9. Ajayi, R. A., Mehdian, S., & Perry, M. J. 2004. The Day-of-the-week Effect in Stock Returns - Further Evidence from Eastern European Emerging Markets. *Emerging Markets Finance and Trade*, 40(4), 53-62.

10. Akaike, H. 1987. "Factor Analysis and AIC," *Psychometrika*, 52(3), 317–332.

11. Ali, I., Rehman, K.U. Yilmaz, A.K., Khan M.A. and Afzal, H. 2009. Causal Relationship Between Macro-economic Indicators and Stock Exchange Prices in Pakistan. *African Journal of Business Management* 4 (3), pp. 312-319.

12. Anatolyev, S. and Shakin, D. 2006. Trade intensity in the Russian stock market: Dynamics, distribution and determinants. Centre for Economic and Financial Research at New Economic School, Moscow.

13. Andersen, TG., Bellerslev, T., Diebold X.F. and Labys, P. 1999. Realized Volatility and Correlation. New York: Stern School of Business Working Paper Series.

14. Andersen, TG. Bellerslev, T. Diebold X.F. and Vega, C. 2003. Real-Time Price Discovery in Stock, Bond and Foreign Exchange Markets. Available at: www.ssb.rochester.edu [July 2003].

15. Andrews, D.W.K. 1993. Test for Parametar Instability and Structural Change with unknown change point, *Econometrica* 61, 821 − 856

16. Angrist, J., Krueger, A.B. 2001. Instrumental Variables and the Search for Identification: From Supply and Demand to Natural Experiments, NBER Working Papers 8456, National Bureau of Economic Research, Inc.

17. Arrelano, M., Bond, S.R. 1991. Some Tests of Specification for Panel Data: Monte Carlo Evidence and an Application to Employment equationas. *Review of Economic Studies* 58 (2), 227 -297.

18. Asghar Z., Abid, I . 2007. Performance of Lang Lenth Selection Criteria in Three Different Situtations. *Interstat.* Available at: [interstat.statjournals.net/YEAR/2007/articles/0704001.pdf], (28.9.2009)

19. Aslanidis, N. 2002. Smooth Transition Regression Models in UK Stock Returns, University of Crete, Department of Economics, *Working Paper* 0201.

20. Azman-Saini, WNW., Azali, M., Habibullah MS. and Matthews, KG. 2002. Financial integration and the ASEAN-5 equity markets. *Applied Economics*, 34, 2283–2288.

21. Ayuso J., Blanco R. 1999. Has financial Market Integration Increased during the Nineties?, *Journal of International Financial Markets*, Institutions and Money, 11(3), 265-287.

22. Babetskii, I., Komârek L. and Komârkovâ Z. 2007. Financial Integration of Stock Markets among New EU Member States and the Euro Area. *Finance a úver - Czech Journal of Economics and Finance*, 57, 7-8.

23. Babihuga, R. 2007. Macroeconomic and Financial Soundness Indicators: An Empirical Investigation, *IMF Working Papers*, 1-30.

24. Backhouse, R., 1997. *A History of Economic Analysis*, B. Blackwell, London.

25. Baele, L., Ferrando, A., Hördahl, P., Krylova, E. and Monnet, C. 2004. Measuring Financial Integration in the Euro Area. *European Central Bank*, Occasional paper Series (14): 1–93.

26. Baele, L. 2005. Volatility Spillover Effects in Europeean Equity Markets. *Journal of Financial and Quantitative Analysis.* 40 (2), School of Business Administration University of Washington, Seattle, WA 98195.

27. Bahmani-Oskooee, M. and Nasir, A. 2001. Panel Data and Productivity Bias Hypothesis, *Economic Development and Cultural Change*, University of Chicago Press, vol. 49(2), 395-402, January.

28. Balduzzi, P. 1995. Stock Returns, Inflation, and the 'proxy hypothesis': A New Look at the Data. *Economic Letters* 94, Elsevier.

29. Baltagi, B.H. 2001. *Econometric Analysis of Panel Data.* 2nd ed. Chichester,UK. John Wiley.

30. Baltzer, M., Cappiello, L., De Santis, R. and Manganelli, S. 2008. Measureing Financial Integration in the New EU Member States. *European Central Bank*, Occasional Paper Series, No. 81.

31. Balvers, R.J., Cosimano T.F. and McDonald B. 1990. Predicting Stock Returns in an Efficient Market, *Journal of Finance* 45, 1109-1135.

32. Bangia, A., Diebold, F.X., Kronimus, A., Schagen, C. and Schuermann, T. 2002. Ratings Migration and the Business Cycle with Application of Credit Portfolio Stress Testing, *Journal of Banking and Finance* 26(3), 445-474.

33. Barsky, B. R. and De Long, B. J. 1993. Why does the Stock Market Fluctuate? *Quarterly Journal of Economics* 108 (2), May, 291-311.

34. Barth, J. R., and Bartholomew, P. F. 1992. The Thrift Industry Crisis: Revealed Weaknesses in the Federal Deposit Insurance System*,* In *The Reform of Federal Deposit Insurance*, edited by James R. Barth and R. Dan Brumbaugh, Jr. New York: Harper Business, 36–116.

35. Bazdan, Z., 2008. *Efektne burze, Burze vrijednosnica.* Sveučilište u Dubrovniku, Dubrovnik.

36. Beck, N. and Kats, J.N. 1995. What to Do (and not to Do) with Time-series Cross-section Data. *American Political Science Review* 89 (3), 634-47.

37. Bekaert, G. and Harvey, C.R. 1995. Time-Varying World Market Integration. *Journal of Finance* 50, 403–444.

38. Berg, S. 1998. Bank Failures in Scandinavia, in Caprio et al. (eds), *Preventing Bank Crises - Lessons from Recent Global Bank Failures,* chapter 11 (Washington, The World Bank), 57-88.

39. Been, W., Glosten, L. R., and Jagannathan, R. 1990. Predictable Variations in Stock Index Returns. *Journal of Finance*, 22, 1177-1189.

40. Berben, R.P. and Jansen W.J. 2005. Comovement in International Equity Markets: A Sectoral View, *Journal of International Money and Finance* 24, 832-857.

41. Bhagwati, J. 1988. Poverty and Public Policy, Vikram Sarabhai Lecture. *World Development*. 16(5),539-555; eprinted as Chapter 25 in Bhagwati, *Political Economy and International Economics,* edited by Douglas Irwin, MIT Press: Cambridge, Mass., 1991.

42. Black, F. 1976. Studies of Stock Price Volatility Changes. Proceedings from the American Statistical Association, Business and Economic Statistics Section, 177-181.

43. Bollerslev, T. 1986. Generalised Autoregressive Conditional Heteroscedasticity. *Journal of Econometrics,* 31, 307-27.

44. Bollerslev, T. 1988. A Multivariate Generalised ARCH Model with Constant Conditional Correlation for a Set of Exchange Eates, unpublished manuscript. Northwestern University.

45. Bollerslev, T. Engle, R. and Wooldridge, J. 1988. A Capital Asset Pricing Model with Time Varying Covariances. *Journal of Political Economy,* 96, 116-31.

46. Bollerslev, T. and Wooldridge, J. 1992. Quasi-maximum Likelihood Estimation and Inference in Dynamic Models with Timevarying Covariances. *Econometric Reviews.* II, 143-72.

47. Bollerslev, T. Engle. R. and Nelson, D. 1994. ARCH Models, in (Eds) Engle, R. and McFadden, D. *Handbook of Econometrics,* Vol. 4, North Holland, Amsterdam.

48. Bon, Le G. 1895. La psychologie des foules. English translation *The Crowd: A Study of the Popular Mind, 1896) The Psychological Laws of the Evolution of Peoples*; 2004. *Psihologija naroda, gomila, revolucija*), Golden marketing – tehnička knjiga, Zagreb, 141–148.

49. Borio, C.E., Furfine C. and Lowe, P. 2001. Procyclicality of the Financial System and Financial Stability: Issues and Policy Options, *Marrying the Macro and Micro-Prudential Dimension of Financial Stability.* Bank for International Settlements, March (1), 24-31. Available at: [http.//www.bis.org]. (25. 3. 2008)

50. Borio, C. E. and Lowe, P. 2002. Asset Prices, Financial and Monetary Stability: Exploring the Nexus. Bank for International Settlements, *BIS Working Papers* 114, July 3-45.

51. Bound, J., Jaeger, D. and Baker, R. 1995. Problem with Instrumental Variables Estiamtion When the Correlation Between the Instruments and the Endogenous Explanatory Variable is Weak. *Journal of the American Statisticial Association 90:430, 443 – 450.*

52. Bozic, L. And Gallaher, P. Report. 2006. *Export Oriented Foreign Direct Investment into Croatia and its Major Competitors. Strategic Plan for the Long Term Development of Existing Free Zones in Croatia.* CARDS Project. Zagreb.

53. Branson, W.H. 1983. Macroeconomic Determinants of Real Exchange Risk in Managing Foreign Exchange Risk, In: R.J. Herring (ed.), *Cambridge University Press*, Cambridge MA.

54. Brennan, M. and Yihong X. 2001. Stock Prices Volatility, Learning and the Equity Premium. Los Angeles, Anderson Graduate Scholl of Management, University of California. Available at: [http://repositories.cdlib.org/anderson/fin/19-01org/anderson/fin] (24. 5. 2008).

55. Breusch, T. S., and A. R. Pagan 1979. A Simple Test for Heteroskedasticity and Random CoefficientVariation. *Econometrica*, 48, 1287–1294.

56. Brewer, E., Mondschean, T. and Strahan, P. 1992. The Effect of Capital on Portfolio Risk at Life Insurance Companies, *Working paper*, Federal Reserve Bank of Chicago, 92-29.

57. Brewer, E., and Mondschean, T. 1993. Junk Bond Holdings, Premium Tax Offsets, and Risk Exposure at Life Insurance Companies. *Working paper* 93-3, Federal Reserve Bank of Chicago.

58. Brooks, R. and Del Negro, M. 2004. Firm-level Evidence on International Stock Market Movement. *Working Paper* 2003-8, Federal Reserve Bank of Atlanta.

59. Brückner, M. and Schaber, A. 2002. Does Broad Money Matter for Interest Rate Policy? *ZEI Working paper* 15.

60. Buch, C.M. 2000. Capital Market Integration in Euroland: The Role of Banks, *German Economic Review 1*(4), 443-464

61. Bulmash, S. B. and Trivoli, G. W. 1991. Time-lagged Interactions between Stock Prices and Selected Economic Variables. *Journal of Portfolio Management,* 17, 61-67.

62. Byström, H. and Kwon, O. K. 2005. Default Probabilities According to the Bond Market, *Working Papers* 2005:7, Lund University, Department of Economics.

63. Calomiris, Ch.W. 1989. Deposit Insurance: Lessons from the Record, Federal Reserve Bank of Chicago Economic Perspectives, 10–30.

64. Calomiris, Ch. W. and Schweikart L. 1991. The Panic of 1857: Origins, Transmission, and Containment, *Journal of Economic History* 51, 807–34.

65. Calomiris, Ch. W. and Gorton G. 1991. The Origins of Banking Panics: Models, Facts, and Bank Regulation, *Financial Markets and Financial Crises*, edited by R. Glenn Hubbard. Chicago: University of Chicago Press, 109–73.

66. Calomiris, Ch. W. and Kahn Ch. M. 1991. The Role of Demandable Debt in Structuring Optimal Banking Arrangements*, American Economic Review* 81, 497–513.

67. Calomiris, C.W. 1992. Do 'Vulnerable' Economies Need Deposit Insurance?, Lessons from U.S. Agriculture in the 1920s, In *If Texas Were Chile: A Primer on Banking Reform*, edited by Philip Brock. San Francisco: ICS Press, 214 – 237.

68. Calomiris, C.W. 1993. The Decline of Private Deposit Insurance in the United States: A Comment, *Carnegie-Rochester Series on Public Policy* 38, 129–42.

69. Calomiris, Ch. W. Kahn Ch. M. and Krasa S. 1994. Optimal Contingent Bank Liquidation under Moral Hazard, Working paper, Columbia University.

70. Calomiris, Ch.W. 1995. Financial Fragility: Issues and Policy Implications. J*ournal of Financial Services Research* 9 (3-4), 241-57.

71. Calomiris, Ch.W. 1997. The Postmoder Bank Safety Net: Lessons from Developed and Developing Economies, The AEI Press, Washington D.C. 2.

72. Calomiris, Ch. W. and Mason J. 1997. Contagion and Bank Failures during the Great Depression:The June 1932 Chicago Banking Panic. *American Economic Review*, 863 - 883.

73. Calza A. and Sousa, J, 2003. Why has Broad Money Demand Been More Stable in the Euro Area then in Other Economies? *A literature review*. Working Paper Series 261.

74. Campbell, J. Y. 1987. Stock Returns and the Term Structure. *Journal of Financial Economics* 18, 373-399.

75. Cappiello, L. Kadareja, G.A. and Manganelli, S. 2006. Financial Integration of New EU Member States. *ECB working paper Series*, no. 683.

76. Caporale, G.M., Pittis, N., and Spagnolo, N., 2002. Testing for Causality-in-variance: an Application to the East Asian Markets, *International Journal of Finance & Economics* 7 (3), pp. 235-245.

77. Caporale, G.M., Cipollini, A. and N. Spagnolo 2005. Testing for Contagion: a Conditional Correlation Analysis. *Journal of Empirical Finance* 12(3) ,476-489.

78. Caprio, G. and Klingebiel, D. 1996. Bank Insolvency: Bad Luck, Bad Policy, or Bad Banking, In Annual World Bank Conference on Development Caprio, Gerard, and Daniela Klingebiel. (1996b), *Bank Insolvency: Cross-Country Experience*. World Bank policy research working paper 1620, July.

79. Caprio, G. and Klingebiel D. 2003. Episodes of Systemic and Borderline Financial Crises 1970s-2002. *World Bank.* Available at: [http://econ.worldbank.org/programs/finance/datasets](19. 1. 2008).

80. Carrieri, F., Errunza V. and Hogan K. 2007. Characterizing World Market Integraton through Time, *Journal of Financial and Quantitative Analysis*, 42(4) ,915-940.

81. Castells, M. 2000. The Rise of the Network Society, The Information Age: Economy, Society and Culture, Golden marketing, Zagreb, 99.

82. Chen, N. F., Roll, R. and Ross, S. 1986. Economic Forces and the Stock Market. *Journal of Business 5*9(3) 83-403.

83. Chen, Z. and Knez P. J. 1995. Measurement of Market Integration and Arbitrage. *The Review of Financial Studies*, Vol. 8(2), 287–325.

84. Chen, N.K. 2001. Bank Net Worth, Asset Prices and Economic Activity*, Journal of Monetary Economics*, 48(2), 415-436.

85. Chiarini, B. 1998. Cyclicality or Real Wages and Adjustment Costs, *Applied Economics* 30, 1249 – 1250.

86. Christiansen, C. and Ranaldo, A. 2008. Extreme Coexceedances in New EU Member States' Stock Markets. *Swiss National Bank*, Working Paper 2008/10.

87. Cochrane, J. H. 1991. Production-based Asset Pricing and the Link between Stock Return and Economic Fluctuations. *Journal of Finance* 46, 209-238.

88. Crouhy, M., Galai, D. and Mark, R. 2000. A Comparative Analysis of Credit Risk Models. *Journal of Banking and Finance* 24 January, 1-2, 57-117.

89. Cumhur, E., Cem, K. A. and Erdem, M. 2005. Effects of Macroeconomic Variables on Istanbul Stock Exchange Indexes. *Applied Financial Economics* 15 (14), 987 – 994.

90. Cviić, K. and Sanfey, P. 2008. *Jugoistočna Europa. South-Eastern Europe*. Europapress Holding.

91. Černý, A. 2004. Stock Market Integration and the Speed of Information Transmission. CERGE-EI. Working paper series, 242.

92. Černý, A. and Koblas, M. 2008. Stock Market Integration and the Speed of Information Transmission. *Czech Journal of Economics and Finance*, 58(1-2).

93. Dalić, M. 2002. Usporedna analiza hrvatskog financijskog sustava i financijskih sustava naprednih tranzicijskih zemalja (Comparative Analysis of the Croatian Financial System and the Financial Systems of Advanced Transition Countries), *Privredna kretanja i ekonomska politika (Economic Movements and Economic Policy)* 92/2002, 27-28.

94. Davidson, R. and Mackinnon, J.G. 1993. *Estimation and Inference in Econometrics.* Oxford Univeristy Press.

95. Davis, E. P. 1999. Financial Data Needs for Macro-Prudential Surveillance: What Are the Key Indicators of Risks to Domestic Financial Stability? London, Bank of England, *Centre for Central Banking Studies 2*(2), May 8-15.

96. De Santis, R. A. and Gérard, B. 2006. Financial Integration, International Portfolio Choice and the European Monetary Union. *Working Paper Series* 626, European Central Bank.

97. Diamond, D. and Raghuram, G. R. 2001. Liquidity Risk, Liquidity Creation and Financial Fragility: a Theory of Banking. *Journal of Political Economy* 109(2), 287-327.

98. Dickey, D.A. and W.A. Fuller 1979. Distribution of the Estimators for Autoregressive Time Series with a Unit Root, *Journal of the American Statistical Association*, 74, p. 427–431.

99. Diebold, X. F. and Yilmaz, D. 2008. Measuring Financial Asset Return and Volatility Spillovers, with Application to Global Equity Markets. National Bureau of Economic Research February, *NBER Working Paper* W13811.

100. Dimelis, S. 2005. Spillovers from Foreign Direct Investment and Firm Growth: Technological, Financial and Market Structure Effects, *Int. J. of the Economics of Business* 12(1) February, 85 – 104

101. Do, Q.-T. and Levchenko, A., 2004. Trade and Financial Development. *Policy Research Working Paper Series* 3347, The World Bank.

102. Dornbusch, R., and S. Fischer. 1980. Exchange Rates and Current Account, *American Economic Review*, 70, 960-71.

103. Dornbusch, R. 2001. Fewer Monies Better Monies, Discussion on Exchange Rates and the Choice of Monetary-Policy Regimes. *American Economic Review* 91 (May), 238–42.

104. Duffie, D., Singleton, K.J., 2003. *Credit Risk*. Princeton University Press.

105. Dvorák, T and Podpiera, R. 2006. European Union Enlargement and Equity Markets in Accession Countries. *Emerging Markets Review* 7(2), 129–146.

106. Đozić, T. 2004. Gospodarska špijunaža i protušpijunaža (Economic Espionage and Counter-Espionage), Bilandžić, M., (ed.), *Business Intelligence i poslovna špijunaža (Business Intelligence and Business Espionage)*, Defimi, Zagreb.

107. Égert, B and Kočenda, E. 2007. Interdependence between Eastern and Western European Stock Markets: Evidence from intraday data. *Economic Systems* 31(2), 184–203.

108. Égert, B. and Koubaa, Y. 2004. Modelling Stock Returns in the G-7 and in Selected CEE Economies: A Non-linear GARCH Approach. *William Davidson Institute Working Paper* 663.

109. Eicher, T.S., Mutti, J.H. and Turnovsky, M.H. 2009. *International Economics,* Taylor & Francis.

110. Eiling, E. and Gérard, B. 2006. Dispersion, Equity Returns Correlations and Market Integration. *Working paper*, Tilburg University.

111. Eitrheim, O. and Teräsvirta, T. 1996. Testing the Adequacy of Smooth Transition Autoregressive Models, *Journal of Econometrics* 74, 59 – 76.

112. Enderleing, H. 2006. The Euro and Political Union: Do Economic Spillovers from Monetary Integration Affect the Legitimacy of Emu? *Journal of European Public Policy* 13:7 Sept., 1133-1146.

113. Engle, R. 1982. Autoregressive Conditional Heteroscedasticity with Estimates of Variance of UK Inflation, *Econometrica* 50, 987-1008.

114. Engle, R.F. and Granger C.W. 1987. Co-integration and Error Correction: Representation, Estimation and Testing, *Econometrica* 55, 251–276.

115. Engle, R. and Rangel, G. 1995. The spline GARCH model for Unconditional Volatility and its Global Macroeconomic Causes (August 2005).

116. Englund, P. 1999. The Swedish Banking Crisis: Roots and Consequences. Oxford Review of Economic Policy 15(3), 80-97.

117. Erdogan, B. 2008. Financial Integration in the European Stock Markets, *Working paper* D. 1.1.a., Finess, European Commision.

118. Esaka, T. 2003. Panel Unit Root Tests of Purchacing Power Parity Between Japanese Cities, 1960 – 1998: disaggregated price data. *Japan and the World Economy,* 15(2), 233–244

119. Fama, E. 1965. The Behavior of Stock Market Prices. Journal of Business, 38. 34-105.

120. Fama, E. 1981. Stock Returns, Real Activity, Inflation, and Money. *American Economic Review.* September 71, 545-565.

121. Fama, E. and French, K. 1989. Business Conditions and the Expected Returns on Stocks and Bonds. *Journal of Financial Economics* 25, 23-50

122. Festić, M., Repina, S. and Kavkler, A. 2009. The Overheating of Five EU New Member States and Cyclicality of Systemic Risk in the Banking Sector, *Journal of business economics and management.* Vilnius: Technika 10 (3) 219-232.

123. Fifield, S., Power, D., and Sinclair, C. 2000. A Study of Whether Macroeconomic Factors Influence Emerging Market Share Returns. *Global Economy Quarterly* 1., 315-335.

124. Fisher, I., 1930, *The Theory of Interest,* Macmillan, New York.

125. Fisher, I. 1933. The debt-deflation Theory of Great Depressions. *Econometrica* 1(4) oktober, 337-57.

126. Forbes, W. 1993. The Integration of European Stock Markets: The Case of the Banks, *Journal of Business Finance & Accounting* 20(3), 0306-686x.

127. Forbes, K. and Rigobon, R. 2002. No Contagion, Only Interpendence: Measuring Stock Market Co-Movements. *The Journal of Finance* 57(5), 2223-2261.

128. Frances, P. H. Koop, G. 1998. On the sensitivity of unit root to non-linear data transformation. *Economic letters* 59(4), 7-15.

129. Frankel, J.A. 1983. Monetary and Portfolio-balance Models of Exchange Rate Determination, in *Economic Interdependence and Flexible Exchange Rates,* In:J.S Bhandari and B.H Putnam (eds.), MIT Press, Cambridge MA.

130. Fratzscher, M. 2002. Financial market integration in Europe: On the effects of EMU on stock markets. *International Journal of Finance and Economics* 7, 165-193.

131. Friedman, M. and Schwartz, A. 1963. A Monetary History of the United States. Princeton: Princeton University Press, 1867-1960.

132. Friedman, M. 1988. Money and the Stock Market. *Journal of Political Economy* 96(21), 221-245.

133. French, K.R., Schwert, G.W. and Stanbaugh, R.F. 1987. Expected Stock Returns and Volatility *Journal of Financial Economics*, Vol. 19, pp. 3-29.

134. Fruk, M. 2004. Sezonalnost prinosa dionica na Zagrebačkoj burzi. *Finansijska Teorija i Praksa 28*(4), 435-444.

135. Fry, M. 1997. Emancipating the Banking System and Developing Markets for Government debt. London, Routledge, Bank of England, Centre for Central Banking Studies, 37-49.

136. Frye, J. 2000. Depressing Recoveries. Chicago, Federal Reserve Bank of Chicago, *Emerging Issues Series* S&R, October (8), 3-14.

137. Galbraith, J.K.1961. *The Great Crash 1929*, Pelican.

138. Gann W. D. 1935. *The Basis of My Forecasting Method*, Royal Economic Society.

139. Gavin, M. 1989. The Stock Market and Exchange Rate Dynamics, *Journal of International Money and Finance*, 8, 2, 181-200.

140. Gelos G. and Sahay R. 1991. Financial Market Spillovers in Transition Economies. *Economics of Transition 9*(1), 53 – 86.

141. Gentle, P.F., Paudel, K.P., and Upadhyaya, K.P. 2005. Real Wages, Real Interest and the Phillips Curve. *Applied Economics*, 37(4), 397-402.

142. Gérard, B., Hillion P. and Roon, F. 2003. International Portfolio Diverzification: Industy, country and currency, Effects Revisited, *Working paper.*

143. Gjerde, Ø. and Saettem, F. 1999. Causal Relations among Stock Returns and Macroeconomic Variables in a Small, Open Economy. *Journal of International Finance Markets Institutions and Money* 9, 61-74.

144. Godfrey, L. G. 1978. Testing for Multiplicative Heteroscedasticity. *Journal of Econometrics*, 8, 227–236.

145. Goldberg, P. and Verboven, F. 2001. Market Integration and Convergence of the Law of One Price: Evidence from the European Car Market. *CEPR Discussion Paper* 2926, London.

146. Golsten, L., Jarannathan, R. and Runkle, D. 1993. Relationship between the Expected Value and Volatility of the Nominal Excess Returns on Stocks. *Journal of Finance* 48, 1779-802.

147. Graham, B. and Zweig, J. 1949. *The Intelligent Investor.* HarperCollins.

148. Granger, C. J. 1969. Investigating Causal Relationships by Econometrics Models and Cross Spectral Methods. *Econometrica* 37, 425-435.

149. Grossman, J. S. and Shiller, R.J. 1981. The Determinants of the Variability of Stock Market Prices. *American Economic Review* 71(2) May, 222-227.

150. Grundke, P. 2005. Risk Measurement with Integrated Market and Credit Portfolio Models. *Journal of Risk* 7(3).

151. Guiso, L., Jappelli, T. Padula, M. and Pagao, M. 2005. Financial Market Integration and Economic Growth in the EU. *Economic Policy*, 523-577.

152. Gujarati D.N. 2004. *Basic Econometrics.* 4th Edition. New York. The McGraw-Hill Companies.

153. Gupta, J.P, Chevalier, A. and Sayekti, F. 2002. The Causality between Interest Rate, Exchange Rate and Stock Price in Emerging Markets: The Case of the Jakarta Stock Exchange. *Working paper of the Groupe ESP-EAP*, Paris.

154. Hamilton, D.J. 1994. *Time Series Analysis.* New York: Princeton University Press. 53-69.

155. Hahn, J. and Hausman, J. 2002. A New Specification Test for the Validity of Instrumental Variables. *Econometrica* 70, 163 – 189.

156. Hanousek, J. and Filler, R. 2000. The Relationship between Economic Factors and Equity Markets in Central Europe. *Economics of Transition* 8(3), 623–638.

157. Hansen, L. P. 1986. Asymptotic Covariance Matrix Bounds for Instrumental Variables Estimators of Linear Time Series Models. Manuscript, University of Chicago, Chicago, IL, USA.

158. Hansen, B.E. 1997. Approximate Asymptotic P-Values for Structural-Change Tests, Journal of Business and Economic Statistics 15, 60-67.

159. Hardouvelis, G., Malliaropulos, D. and Priestly, R. 1999. EMU and European Stock Market Integration. *CEPR Discussion Paper* 2124.

160. Hardouvelis, G. A., Malliaropoulos, D. and Priestley, R. 2004. The Impact of Globalization on the Equity Cost of Capital, *CEPR Discussion Papers* 4346, C.E.P.R. Discussion Papers.

161. Hardt, M. and Negri, A. 2003. *Empire (Imperij)*, Multimedijalni institut, Zagreb 243.

162. Hartmann, D. and Pierdzioch, Ch. 2006. Nonlinear Links between Stock Returns and Exchange Rate Movements. UNSPECIFIED. Available at: [http://mpra.ub.uni-muenchen.de/2918] (7.6.2009).

163. Hasan, T. and Quayes, S. 2005. An Empirical Analysis of Stock Prices in the Transitional Countries of Europe, Russia and the United States. Unpublished paper.

164. Hondroyiannis, G. and Papapetrou, E. 2001. Macroeconomic Influences on the Stock Market. *Journal of Economies and Finance* 25(1) Spring, 145-153.

165. Horobet, A. and Ilie, L. 2007. On the Dynamic Link Between Stock Prices and Exchange Rates: Evidence from Romania. Munich Personal RePEc Archive *MPRA Paper* 6429.

166. Horská, H. 2005. Český Akciový Trh – Jeho Efektivnost a Makroekonomické Souvislosti. Finance a úvŭr-*The Czech Journal of Economics and Finance* 55(5 6),283–301.

167. Horvitz, P. 1992. The Causes of Texas Bank and Thrift Failures. *If Texas Were Chile: A Primer on Banking Reform*, edited by Philip Brock. San Francisco: ICS Press,131–60.

168. Hoshi, T. and Kashyap, A. 1999. The Japanese Banking Crisis: Where did it Come From and How will it End? National Bureau of Economic Research, Macroeconomics Annual. 129-201. Available at: [http://www.ideas.repec.org/p/nbr/nberwo/7250.html.] (23. 5. 2009).

169. Hsiao, C. 2003. *Analysis of Panel Data*. Kindle edition. Oxford University Press.

170. Ibrahim, M. H. 1999. Macroeconomic Variables and Stock Prices in Malaysia: an Empirical Analysis. *Asian Economic Journal* 13, 219-231.

171. Iwaisako, T, 2004. Stock Index Autocorrelation and Cross-Autocorrelation of Size Sorted Portfolios in the Japanese market. *Journal of Financial Economics* 3, 281-318.

172. Jagannathan, R. and Wang, Z. 1996. The Conditional CAPM and the Cross-Section of Expected Returns. *Journal of Finance* 51, 3-53.

173. Jarrow, R.A., Turnbull, S.M. 2000. The Intersection of Market and Credit Risk. *Journal of Banking & Finance* 24, 271-299.

174. Johansen, S. 1988. Statistical Analysis of Cointegration Vectors, *Journal of Economic Dynamics and Control* 12, 231-254.

175. Jones, C. and Kaul, G. 1996. Oil and the Stock Markets. *Journal of Finance* 51, 463-491.

176. Jordan, J., Peek, J. and Rosengren, E. 2002. Credit Risk Modeling and the Cyclicality of Capital. Federal Reserve Bank of Boston. *Changes in Risk through Time, Measurement and Policy Options,* March. Available at: [http://www.bis.org/events/conf020306.htm] (14. 9. 2009).

177. Kaneko, T. and Lee, B. S. 1995. Relative Importance of Economic Factors in the U.S. and Japanese Stock Markets. *Journal of the Japanese and International Economics* 9(3), 290-307.

178. Karamustafa, O and Kucukkale, Y. 2003. Long Run Relationships between Stock Market Returns and Macroeconomic Performance: Evidence from Turkey. *EconWPA* 0309010. Available at: [http://129.3.20.41/eps/fin/papers/0309/0309010.pdf.] (23.5.2009)

179. Kasch-Haroutounian, M and Price, S. 2001. Volatility in the Transition Markets of Central Europe. *Applied Financial Economics* 2001(11), 93-105.

180. Kaul, G. 1987. Stock Returns and Inflation: the Role of the Monetary Sector, Journal of Financial Economics, 18, 253-276.

181. Kenen, P. B. 2007. The Benefits and Risks of Financial Globalization. *Cato Journal* 27(2) Spring/Summer 2007. Cato Institute, 179.

182. Kenneth, J. A. and Debreu, G. 1954. Existence of a Competitive Equilibrium for a Competitive Economy. *Econometrica* 22(3), 265–90.

183. Keran, M. 1971. Expectations, Money and the Stock Market. *Federal Reserve Bank of St. Louis Review*. January 53, 16-32.

184. Keynes, J. M. 1936. *The General Theory of Employment Interest and Money*. London, 154.

185. Kharroubi, E. 2007. Crisex, Volatiltity, and Growth, *The World Bank Economic Review*, Vol 21(3), 439-460.

186. Kim, S.J., Lucey, B.M. and Wu, E. 2005. Dynamics of Bond Market Integration between Existing And Accession EU Countries, *The Institute for International Integration Studies Discussion Paper Series.*

187. Kiyotaki, N. and Moore, J. 1997. Credit cycles. *Journal of Political Economy* 105(2), 211-48.

188. Kleibergen, F. and Paap, R. 2006. Generalized Reduced Rank Test Using the Singular Value Decomposition, *Journal of Econometrics*, Elsevier 133 (1), 97 – 126.

189. Knif, J., Kolari, J. and Pynnönen, S. 2008. Stock Market Reaction to Good and Bad Inflation News. *Journal of Financial Research* 31(2), 141–166

190. Kose, M.A, Prasad, E., Rogoff, K. and Wei. S.J. 2006. Financial Globalization: A Reapraisal, *IMF Working Paper* 06/179, 7.

191. Kostolany, A. 2008. *Psihologija Burze, Stock Market Psihology*, Masmedia, Zagreb

192. Kothari, S. and Shanken, J. 1992. Stock Return Variation and Expected Dividends: A Time-Series and Cross-Sectional Analysis. *Journal of Financial Economics* 31, 177-210.

193. Kunov H. 1959. *Opšta privredna historija, (General Economic History),* Beograd, 252.

194. Kwon, S. Ch. and Tai, S. S. 1999. Cointegration and Causality Between Macroeconomic Variables and Stock Market Returns. *Global Finance Journal* 10(12), 71-81.

195. Laban, R. and Larrain, F. 1994. Can a Liberalization of Capital Outflows Increase Net Capital Inflows *Mimeograph*, Santiago Chile: Pontificia Univeridad Catolica de Chile, January.

196. Lane, Ph.R. and Milesi-Ferretti, G.M. 2004. The Transfer Problem Revisited: Net Foreign Assets and Real Exchange Rates. *Review of Economics and Statistics* 58(4), 841–57.

197. Latković, M. 2002. Risk management: Identification, Measurement and Control. *Finansijska Teorija i Praksa, 26*(2), 463-477.

198. Lazibat, T., Brizar B. and Baković T. 2007. *Burzovno poslovanje − Terminska trgovina*, Znanstvena knjiga d.o.o., Zagreb.

199. Lee, B. S. 1992. Causal Relations among Stock Returns, Interest Rates, Real Activity and Inflation. *Journal of Finance* 47, 1591-1603.

200. Levaj, L., Kamenarić, T., Mišković, J. and Mokrovčak, I. 2005. Metode obrade signala u ekonomiji. Fakultet Elektrotehnike i Računarstva, Sveučilište Zagreb.

201. Levine, R. 1997. Financial Development and Economic Growth: Views and Agenda. *Journal of Economic Literature,* American Economic Association 35(2), 688-726.

202. Levine R. and Zervos, S. 1998. Stock Market Development and Long-run Growth. *Policy Research Working Paper Series* 1582, The World Bank.

203. Lin, S.C. 2009. Inflation and Real Stock Return Revisited. *Economic Inquiry,* 47: 783–795.

204. Lindgren, C.-L., Gillian, G., and Saal, M. I. 1996. Bank Soundness and Macroeconomic Policy. Washington, D.C. *International Monetary Fund.*

205. Loayza, N. V., Ranciere, R., Serven, L. And Ventura, J. 2007. Macroeconomic Volatility and Welfare in Developing Countries: An Introduction. *The World Bank Economic Review* 21 3, 343 – 357.

206. Lovatt, D. and Ashkok, P. 2000. Stock Returns and Economic Activity: the UK Case. *European Journal of Finance, Taylor and Francis Journals* 6(3), 280-297.

207. Lucas, R. 1990. Why doesn't Capital Flow from Rich to Poor Countries? *American Economic Review 80, 92–96.*

208. Luintel, B. K. and Paudyal, K. 2006. Are Common Stocks a Hedge Against Inflation? *Journal of Financial Research* 29 (1)(March),1–19.

209. Luukkonen, R., Saikkonen, P. and Teräsvirta, T. 1998. Testing Linearity against Smooth Transition Autoregressive Models. *Biometrika* 75, 491 – 499.

210. Lütkepohl, H., Xu, F. 2009. The role of log transformation in forecasting economic variables. Munchen: Center for Economic Studies, *CESifo Working Paper*, No. 2591.

211. Lynch, P. 1994. *Beating the Street*, New York etc. 18.

212. Maddala, G.S., Wanhong, H. 1996. The Pooling Problem. *The econometrics of panel data*, ed. L. M´aty´as and P. Sevestre, 307-22. Dordrecht: Kluwer Academic.

213. Maddala, G.S. and Li, H. 1996. Bootstrap Based Tests in Financial Models. In Handbook of Statistics, 14. Maddala, G.S., Rao, C.R. (ed.), Amsterdam, Elsevier, 463-488.

214. Maddala, G.S., Wu, S. 1999. A Comparative Study of Unit Root Test with Panel Dana and a New Simple Test.*Oxford Bulletin of Economics and Statistics*, Special Issue 0305-9049.

215. Markowitz, H.M. 1952. Portfolio Selection. *The Journal of Finance* **7** (1): 77–91.

216. Markowitz, H.M. 1999. The Early History of Portfolio Theory: 1600-1960, Financial Analysts Journal, 55(4), 5-16.

217. Marx, K. 1948, *Capital III*, Zagreb, 496.

218. Martens, M. and Poon, S.H. 2001. Returns Synchronization and Daily Correlation Dynamics between International Stock Markets. *Journal of Banking and Finance* 25(10), 1805–1827.

219. Martinez, M.A. and. Rubio, G. 1989. Arbitrage Pricing with Macroeconomic Variables: An Empirical Investigation using Spanish Data. *Working Paper,* Universidad del Pais Vasco.

220. Mason, J. 1996. The Effects of Reconstruction Finance Corporation Assistance to Banks during the Great Depression*, Working paper*, Office of the Comptroller of the Currency.

221. Mavrides, M. 2000. Granger Causality Tests of Stock Returns: The US and Japanese Stock Markets. *Journal of Managerial Finance*, 26(12).

222. Maysami, R. C., and Koh, T. S. 2000. A Vector Error Correction Model of the Singapore stock market. *International Review of Economics and Finance* 9, 79-96.

223. Maysami, R. C., Sim, H. H. 2002. Macroeconomic Variables and their Relationship with Stock Returns: Error Correction Evidence From Hong Kong and Singapore. *The Asian Economic Review* 44, 69-85.

224. Menike, S. 2006. The Effect of Macroeconomic Variables on Stock Prices in Emerging Sri Lankan Stock Market. *Sabaragamuwa University Journal* 6(1), pp 50-67.

225. Mesarić, M, 2002. Nobelovac Joseph Stiglitz: *Kritika* „Tržišnog fundamentalizma", globalizacije i politike međunarodnog monetarnog fonda (Nobel laureate Joseph Stiglitz the Crioticque of „Market Fundamentalism"of the Globalization and Policy of the International Monetary Fund). *Ekonomski pregled*, Zagreb 53(11-12), 1152-1182

226. Miljković, V. and Radović, O. 2006. Stylized facts of asset returns: Case of BELEX. *Facta Univertitatis Series: Economics and Organization 3*(2), 189 - 201.

227. Mishkin, F. 1999. Global Financial Instability: Framework, Events, Issues. *Journal of Economic Perspectives* 13(Fall), 3-20.

228. Mishkin, F. and Eakins, S.G. 2005. Financijska tržišta + institucije. *Financial markets and istitutions.* Mate, Zagreb.

229. Mishkin, F. and White, E. 2003. U.S. Stock Market Crashes and their Aftermath: Implications for Monetary Policy. Hunter et al. (eds), Effects on monetary policy (*NBER, working papers*, no. 8992), chapter 6. Available at: [http://ideas.perec.org/p/hut/ruters/200208.html.] (2. 7. 2009).

230. Mitchell, W.C. 1927. *Business Cycles - The Problem and Its Setting*, London.

231. Moffatt, F., Salies, E. 2006. Inaccurate approxximation in the modelling of hyperinflations. Quality & Quantity 40 (6), 1055-1060.

232. Mohammad, B. and Abdelhak, B. 2009. The Relationship between Money and Prices in the Maghreb Countries: a Cointegration Analysis. MPRA paper 12741. Available at: [http://mpra.ub.uni-muenchen.de/12741/] (12.11. 2010).

233. Mukherjee, T. K., and Naka, A.1995. Dynamic Relations between Macroeconomic Variables and the Japanese Stock Market: an Application of a Vector Error Correction Model. *Journal of Financial Research* 18, 223-237.

234. Muradoglu, G., Metin, K. and Argac, R. 2001. Is There are Long Run Relationship between Stock Return and Monetary Variables: Evidence from Emerging Market? *Applied Financial Economic* 11, 641 – 649.

235. Muradoglu, G. 2009. The UK Crisis of 2008. What is Real and What is Behavioural? Available at: http://ssrn.com/abstract=1373025

236. Murray, M.G. 2005. The Bad, the Weak, and the Ugly: Avoiding the Pitfalls of Instrumental Variables Estimation. Social Science Research. Network Working Paper 843185.

237. Nasseh, A. and Strauss, J. 2000. Stock Prices and Domestic and International Macroeconomic Activity: a Cointegration Approach. *Quarterly Review of Economics and Finance* 40, 229-245.

238. Nelson, C. 1976. Inflation and the Rates of Return on Common Stock. *The Journal of Finance* (May)31, 471-483.

239. Norton, J. J. and Spellman, P.R. (ed.) 1991. *Asset Securitization: International Financial and Legal Perspectives*, London, 115 – 116.

240. Novak, B. 2002. *Financijska tržišta i institucije. Financial markets and institutions.* Ekonomski fakultet u Osijeku, Osijek.

241. Obstfeld, M. and Rogoff, K., 1994. The Intertemporal Approach to the Current Account, *Center for International and Development Economics Research (CIDER) Working Papers* C94-044, University of California at Berkeley.

242. Ocampo, J. A. 2007. The Instability and Inequities of the Global Reserve System, *International Journal of Political Economy* 36(4) (Winter 2007-8), 71-96

243. O'Donoghue, T. and Rabin, M. 1999. Doing It Now or Later. *American Economic Review*. American Economic Association 89(1), 103-124.

244. Onay, C. 2007. Integration of Bulgaria and Romania to the European Union. *The Business Review*. Cambridge; Dec. 9, 1, 119-126

245. Orsag, S. 2008. *Priručnik za polaganje ispita (Exam Manual)*, op. cit., Zagreb, 704.

246. Ostergaard, Ch., Bent, S.E. and Oved, Y. 2001. Consumption and Aggregate Constraints: Evidence from US States and Canadian Provinces. *CEPR Discussion Papers 2947.*

247. Pagano, M. and Jappelli, T. 1993. Information Sharing in Credit Markets. *Journal of Finance*, American Finance Association 48(5), 1693-1718 (December).

248. Pan, M.S., Fok, R., Chi-Wing and Liu, A.Y. 2007. Dynamic Linkages between Exchange Rates and Stock Prices: Evidence from East Asian Markets, *International Review of Economics and Finance* 16, pp. 503-520.

249. Peter, C. B. and Donggyu, S. 2007. Transition Modeling and Econometric Convergence Tests, *Econometrica*. Econometric Society 75(6) 1771-1855 (November).

250. Piesse, J. and Hearn, B. 2002. Equity Market Integration versus Segmentation in Three Dominant Markets of the Southern African Customs Union: Cointegration and causality tests. *Applied Economics* 14, 1711–1722.

251. Poghossian, T. 2008. Are "New" and "Old" EU Members Becoming More Financially Integrated? A Threshold Cointegration Analysis. International Economics and Economic Policy. 6(3), 259 – 281.

252. Poon, S. H. and Taylor, S. J. 1991. Macroeconomic Factors and the UK Stock Market. *Journal of Business and Accounting* 18, 619-636.

253. Poon, S., Stapleton, R. 2005. *Asset Pricing in Discrete Time: a Complete Markets Approach.* Oxford University Press.

254. Portes, R. and Rey. H. 2000. The Determinants of Cross-Border Equity Flows: The Geography of Information. Center for International and Development Economics Research (CIDER) *Working Papers* C00-111, University of California at Berkeley.

255. Posedel, P. 2006. Analysis of the Exchange Rate and Pricing Foreign Currency Options on the Croatian Market: The NGARCH Model as an Alternative to the Black-Scholes Model. *Financial Theory and Practice 30*(4), 347-368.

256. Rabemananjara, R. and Zakoian, J. M. 1993. Threshold Arch Models and Asymmetries in Volatility. *Journal of Applied Econometrics* 8,31-49.

257. Rajan, G. R. 2005. Has Financial Development Made the World Riskier? Jackson Hole Conference, paper presented at the *Jackson Hole Conference*, August. Available at:
 [http://neweconomist.blogs.com/new_economist/2005/papers_from_the-html.] (2. 8. 2009).

258. Razin, A., Sadka, E. and Yuen, C. 1999. An Information Based Model of FDI, the gain from trade revisited, *NBER Working Paper* 6884.

259. Reinhart, C., Talvi, E. 1998. Capital Flows and Saving in Latin America and Asia: a Reinterpretation. Journal of Development Economics. Elsevier 57(1), 45-66.

260. Rigobon, R. and Sack, B. 2001. Measuring the Reaction of Monetary Policy to the Stock Market, *Finance and Economics Discussion Series* 2001-14, Board of Governors of the Federal Reserve System (U.S.)

261. Rodrik, D. 1998. Why Do More Open Economies Have Bigger Governments? Forthcoming, *Journal of Political Economy* 106 (5), 997-1032.

262. Roll, R., Bhagwan, Ch. and Yihong, X. 2005. Extracting Inflation from Stock Returns to Test Purchasing Power Parity. *American Economic Review* 95 (1), 255-276.

263. Rose, S.P. 1989. *Money and Capital Markets*, Third Edition, Homewood Il, Boston, 4.

264. Rose, A.K. and Spiegel, M.M. 2004. Institutional Efficiency, Monitoring Costs, and the Investment Share of FDI. *Working Papers in Applied Economic Theory* 2003-06, Federal Reserve Bank of San Francisco.

265. Rozeff, M.S. 1984. Dividend Yields Are Equity Risk Premiums, SUNY at Buffalo - Department of Financial & Managerial Economics, *Journal of Portfolio Management,* 68-75, (Fall).

266. Ryan, G. 2006. Irish stock return and inflation, a long-run perspective, Applied Financial *Economics*,16, 699-706.

267. Samitas, A., Kenourgios, D. and Paltalidis, N. 2006. Short and Long Run Parametric Dynamics in the Balkans Stock Markets. *International Journal of Business, Management and Economics,2*(8), 5-20.

268. Saunders, A. and Allen, L. 2003. A Survey of Cyclical Effects in Credit Risk Measurement Models- Basel, *BIS Working Paper*, 126(January), 19-26.

269. Savva, S.C and Aslanidis, N. 2007. Modelling Stock Market Correlations between New EU Member States and the Eurozone, *Empirical Economics* 39(2), 337-351.

270. Schnabl, G. 2004. De Jure Versus De Facto Exchange Rate Stabilization in Central and Eastern Europe. *Aussenwirtschaft* 59(2) 171–90.

271. Schoenmaker, D. and Oosterloo, S. 2005. Financial Supervision in an Integrating Europe: Measuring Cross-Border Externalities, *International Finance* 8:1, 1-27.

272. Schularick, M. and Steger, T.M. 2006, Financial Integration, Investment, and Economic Growth. Evidence From Two Eras of Financial Globalization. *Review of Economics and Statistics*,

273. Schumpeter, J.A.1939. *Trade Cycles*, 207-209.

274. Sentana, E. 2000. The Score of Condionally Heteroskedastic Dynamic Regression Models with Student T Innovations, and an LM Test for Multivariate Normality. *Papers 0007*, Centro de Estudios Monetarios Y Financieros.

275. Siegel, S. 2005. Global Growth and Market Integration, *Canadian Investment Review* (Summer) 18(2).

276. Smith, A. 1776. An Inquiry into the Nature And Causes of the Wealth of Nations. Available at: [http://www.adamsmith.org/smith/won-index.htm] (27.09. 2009).

277. Solnik, B. and Roulet, B. 2000. Dispersion as Sross-sectional Correlation. *Financial Analyst Journal* (January – February) 54 - 61

278. Sontchik, S. 2003. Financial Integration of European Equity Markets, HEC University of Lausanne and FAME, mimeo.

279. Staiger, D., Stock, J.H. 1997. Instrumental Variables Regression with Weak Instruments. Econometrica. Econometric Society 65(3) 557 – 586.

280. Stavárek, D. 2005. Stock Prices and Exchange Rates in the EU and the USA: Evidence of their Mutual Interactions, *Finance a úvûr–Czech Journal of Economics and Finance* 55, pp. 141-161.

281. Stešević, I. 2008. Econometric Model of Interest Rates on Deposits in Montenegro. *Panoeconomicus* 55(3) 383-398.

282. Stiglitz, J. 2002. *Globalization and Its Discontents*, Penguin, London.

283. Stock, J., Yogo, M. 2005. Testing for Weak Instruments in IV Regression. In Identification and Inference for Econometric Models: *A Festschrift in Honor of Thomas Rothenberg*. Donald W. K. Andrews and James H.

284. Stock, J. and Watson, M. 2003. *Introduction to Econometrics*. University of Chicago Press.

285. Stučka, T. 2004. The effects of Exchange Rate Change on the Trade Balance in Croatia. *Working paper* International Monetary Fond WP/04/65.

286. Stulz, R. 1999. Globalization of Equity Markets and the Cost of Capital, *NBER Working Paper* 7021. Cambridge, MA: National Bureau of Economic Research.

287. Summers, L. H., 1998. Capital-Account Liberalization and the Role of the IMF, Should the IMF Pursue Capital-Account Convertibility?, Princeton: Princeton University, *Essays in International Finance* 207, 1-10.

288. Swenson, D. L. 2004. Overseas Assembly and Country Sourcing Choices. *Journal of International Economics, Elsevier* 66(1), 107-130 (May).

289. Syllignakis, M. and Kouretas, G. 2006. Long and Short-Run Linkages in Cee Stock Markets: Implications for Portfolio Diversification and Stock Market Integration. *William Davidson InstituteWorking Papers Series* 832.

290. Šestović, D. and Latković, M. 1998. Modeliranje volatilnosti vrijednosnica na Zagrebačkoj burzi. *Ekonomski pregled, 49*(4-5), 292-303.

291. Temple, J. 1999. The New Growth Evidence. *Journal of Economic Literature* 37 (1), 112-156.

292. Teräsvirta, T. 1998. Modelling Economic Relationships with Smooth Transition Regression, *Handbook of Applied Economic Statistics,* 507-572, New York, Marcel Dekker.

293. Thurrow, L. 1996. *The Future of Capitalism: how today's economic forces shape tomorrow's world*, William Morrow, New York.

294. Timmerman, A. 1996. Excess Volatility and Predictability of Stock Prices in Autoregressive Dividend Models with Learning, *Review of Economic Studies* 63(4), 523-557.

295. Tonchev, D. and Kim, T.H. 2004. Calendar Effects in Eastern European Financial Markets: Evidence from the Czech Republic, Slovakia and Slovenia. *Applied Financial Economic, 14*, 1035-1043.

296. Tsoukalas, D. 2003. Macroecomoic Factors and Stock Prices in the Emerging Cypriot Equity Market, *Managerial Finance* 29(4), pp. 87-92.

297. Uhde, A. and Heimeshoff, U. 2009. Consolidation in banking and financial stability in Europe: empirical evidence. *Journal of Banking & Finance* 33 (7), 1299-1311

298. Veronesi, P. 2000. How does Information Quality Affect Stock Returns? *Journal of Finance* 55(6), 807-837.

299. Vihriala, V. 1997. Banks and the Finnish credit cycle 1986-1995. Central bank of Finland Research Department, *Bank of Finland Studies* E:7, 26-33.

300. Vizek, M. and Dadić, T. 2006. Integration of Croatian, CEE and EU Equity Markets: Cointegration Approach. *Ekonomski pregled* 57 (9-10), 631-646.

301. Vukina, T. 1996. *Osnove trgovanja terminskim ugovorima i opcijama (The Bases of Futures and Options Trade)*, Zagreb, 21.

302. Western, B. 1998. Causal Heterogeneity in Comparative Research: A Bayesian Hierarchical Modelling Approach. *American Journal of Political Science* 42(4), 1233–59

303. Wooldridge, J. 2002. *Econometric Analysis of Cross Section and Panel Data.* The MIT Press.

304. White, W. R. 2004. Are Changes in Financial Structure Extending Safety Nets? Bank for International Settlements, *BIS Working Papers* 145 (January), 14-19.

305. Wu, Y. 2000. Stock Prices and Exchange Rates in a VEC Model-the Case of Singapore in the 1990s", *Journal of Economics and Finance* 24(3), pp. 260-274.

306. Wurgler, J. 2000. Financial Markets and the Allocation of Capital, *Journal of Financial Economics,* Elsevier 58(1-2), 187-214.

307. Yang J., Kolari, J.W. and Min, I. 2003. Stock Market Integration and Financial Crises: The Case of Asia. *Applied Financial Economics* 13, 477–486.

308. Yau, H.Y. and Nieh, Ch. 2006. Interrelationships Among Stock Prices of Taiwan and Japan and NTD/Yen Exchange Rate, *Journal of Asian Economics* 17, pp. 535–552.

309. Žiković, S. 2005. Implications of Actively Managing Market Risk via Value at Risk Methodology in Commercial Banks. 24th International Scientific Conference on Organizational Science Development, *Synergy of Methodologies*, Portorož, Slovenia, 1446-1454

310. Žiković, S. 2006. Implications of Measuring VaR Using Historical Simulation; An Example of Zagreb Stock Exchange Index – CROBEX. In J. Roufagalas (Ed.), *Resource allocation and institutions: Explorations in economics, finance and law,* 367-389. Athens: Athens Institute for Education and Research.

311. Žiković, S. 2010. Market Risk in Transition Countries, Value at Risk Approach. Faculty of Economics University of Rijeka. 47 – 51.

SOURCES:

1. BACA - UniCredit Bank Austria Group, 2010. *CEE Quarterly 2010.*

2. BIS - Bank for International Settlements. Available at: [htttp://www.bis.org/bcbs/basel3.htm] (26.11.2010)

3. BNR - The National Bank of Romania. Available at: [http://www.bnro.ro/] (03.07.2010)

4. BS - The Bank of Slovenia. Available at: [http://www.bsi.si/] (03.07.2010)

5. CBBH - Central Bank of Bosnia and Herzegovina. Available at: [http://www.cbbh.ba/] (03.07.2010)

6. CBCG - The Central Bank of Montenegro. Available at: [http://www.cb-mn.org/] (03.07.2010)

7. CBRB - The Central Bank of the Republic of Bulgaria. Available at: [http://www.bnb.bg/] (03.07.2010)

8. CNB - The Croatian National Bank. Available at: [http://www.hnb.hr/] (03.07.2010)

9. ECB - The European Central Bank 2005. *Review of the International Role of the Euro. Frankfurt.*

10. EC - European Commission 2010. *EU Candidate and Pre-Accession Countries Economic Quarterly 2009.*

11. Available at: http://ec.europa.eu/economy_finance/db_indicators/cpaceq/index_en.htm (13.2.2010)

12. EIPF – Ekonomski inštitut, Slovenia (internal data base).

13. Elliotwave. Ralph Nelson Elliot. Available at: [http://www.elliottwave.com/info/default.aspx] (1.11.2009)

14. FDICIA - Federal Deposit Insurance Corporation Improvement Act. Available at: [http://www.fdic.gov/regulations/laws/rules/8000-2400.html] (10.10.2009)

15. IBRD - The International Bank for Reconstruction and Development. Available at: [http://web.worldbank.org/WBSITE/EXTERNAL/EXTABOUTUS/EXTIBRD/0,, menuPK:3046081~pagePK:64168427~piPK:64168435~theSitePK:3046012,00.htm l] (5.10. 2009)

1113

16. ICSID - International Centre for Settlement of Investment Disputes. Available at: [http://icsid.worldbank.org/ICSID/Index.jsp] (5.10. 2009)

17. IDA - The International Development Association Available at: [http://web.worldbank.org/WBSITE/EXTERNAL/EXTABOUTUS/IDA/0,,content MDK:21206704~pagePK:51236175~piPK:437394~theSitePK:73154,00.html] (5.10. 2009)

18. IFC - International Financial Corporation. Available at: [http://www.ifc.org/ifcext/about.nsf/Content/Mission] (5.10. 2009)

19. *IMF* - International Monetary Fund. 2010. *World Economic Outlook*. Available at: [http://www.imf.org/external/index.htm] (4.10.2009)

20. http://www.petersoninstitute.org/staff/author_bio.cfm?author_id=15 (17.09.2009)

21. MIGA   - The Multilateral Investment Guarantee Agency. Available at*:*
*[*http://www.miga.org/*]* (5.10. 2009)

22. NBS   -   The   National   Bank   of   Serbia.   Available   at:
[http://www.nbs.rs/internet/english/] (03.07.2010)

23. OECD- Organisation for Economic Co-operation and Development2010. *Economic Outlook* (Advanced Economies).

24. Washington Concensus.
Avalilable at: http://www.petersoninstitute.org/staff/author_bio.cfm?author_id=15 [17.09.2009]

25. World Bank. Available at: [http://www.worldbank.org/] (5.10. 2009)

Apendix

Table A: – The stacionarity (Augmented Dickey-Fuller) – Bosnia and Herzegovina, Bulgaria, Croatia, Montenegro, Romania, Slovenia, UK, US.

Variable	Level	dlog(x)
Bosnia and Herzegovina		
Explanatory variables		
Capital inflow	-1.519463 (0.5169)	-7.487408 (0.0000)
Exchange rate	-2.060072 (0.2613)	-7.501354 (0.0000)
GDP	-1.841999 (0.3579)	-7.487507 (0.0000)
Government debt	-0.729311 (0.8309)	-7.799926 (0.0000)
Interest rate	-1.412194 (0.5704)	- 7.730569 (0.0000)
CPI	-1.703108 (0.4245)	-7.546126 (0.0000)
Instrumental variables		
Import	-0.681956 (0.8430)	-7.538228 (0.0000)
Export	-2.076671 (0.2546)	-7.558208 (0.0000)
Broad money	-1.320412 (0.6145)	-7.536226 (0.0000)
Capital outflow	-0.643561 (0.8523)	-7.834857 (0.0000)
Bulgaria		
Explanatory variables		
Capital inflow	-2.736568 (0.0755)	- 5.682076 (0.0000)
Exchange rate	-1.479341 (0.5352)	-6.782330 (0.0000)
GDP	-2.290735 (0.1791)	-6.675052 (0.0000)
Interest rate	0.013955 (0.9550)	-7.208205 (0.0000)
CPI	-1.012705 (0.7413)	-7.185594 (0.0000)
Instrumental variables		
Credit volume	-1.018239 (0.7393)	-7.992614 (0.0000)
Capital outflow	-1.092905 (0.7131)	-28.92508 (0.0001)
Croatia		
Explanatory variables		
Capital inflow	-0.339837 (0.9120)	-7.886450 (0.0000)
Exchange rate	-2.097463 (0.2465)	-7.941583 (0.0000)
GDP	-1.177484 (0.6786)	-7.653876 (0.0000)
Government debt	-0.325044 (0.9143)	-7.797593 (0.0000)
Interest rate	-1.120162 (0.7023)	-7.503458 (0.0000)
CPI	-1.514457 (0.5195)	-3.928294 (0.0084)
Trade balance	-3.052527 (0.0359)	-5.768902 (0.0000)
Instrumental variables		
Export	-0.423745 (0.8978)	-7.593808 (0.0000)
Import	-0.339942 (0.9120)	-7.639171 (0.0000)
Broad money	-1.181171 (0.6770)	-7.494325 (0.0000)
Credit volume	-1.198583 (0.6696)	-7.489654 (0.0000)
Capital outflow	-1.255038 (0.6446)	-7.490632 (0.0000)
Wages	-2.836835 (0.0593)	-6.722329 (0.0000)
Croatia historical		
Explanatory variables		
Capital inflow	-2.131935 (0.2327)	-11.32293 (0.0000)
Exchange rate	-2.348284 (0.1587)	-10.77217 (0.0000)
GDP	-1.004668 (0.7504)	-11.34030 (0.0000)
Government debt	-1.735485 (0.4111)	-11.31480 (0.0000)
Industrial production index	-1.973849 (0.2981)	-5.576846 (0.0000)
Interest rate	-2.323513 (0.1662)	-10.20734 (0.0000)
CPI	-1.794180 (0.3821)	-11.39157 (0.0000)
Trade balance	-3.524468 (0.0088)	-11.37155 (0.0000)
Unemployment	-0.846595 (0.8020)	-11.42784 (0.0000)
Montenegro		
Explanatory variables		
Capital inflow	-1.822104 (0.3665)	-7.617867 (0.0000)
Industrial production index	-2.149160 (0.2268)	-7.486085 (0.0000)

Interest rate	-2.038036 (0.2702)	-7.575173 (0.0000)
CPI	-1.061543 (0.7252)	-7.560369 (0.0000)
Trade balance	-1.239984 (0.6514)	-7.756068 (0.0000)
	Instrumental variables	
Capital outflow	-0.568097(0.8693)	-8.548238 (0.0000)
Export	-1.596232 (0.4778)	-7.346082 (0.0000)
Import	-1.268819 (0.6384)	-7.665820 (0.0000)
Broad money	-1.887304 (0.3360)	-7.642325 (0.0000)
Credit volume	-1.553540 (0.4998)	-7.483316 (0.0000)
Wages	-1.471949 (0.5408)	-7.495584 (0.0000)
	Romania	
	Explanatory variables	
Capital inflow	-2.438796 (0.1358)	-7.490519 (0.0000)
Exchange rate	-1.700858 (0.4256)	-7.504324 (0.0000)
GDP	-2.023947 (0.2761)	-7.506694 (0.0000)
Government debt	-1.697693 (0.4272)	-7.629119 (0.0000)
Industrial production index	-2.374390 (0.1533)	-5.604936 (0.0000)
Interest rate	-2.205056 (0.2067)	-7.564535 (0.0000)
CPI	-2.326215 (0.1673)	-7.567559 (0.0000)
Trade balance	-1.742166 (0.4052)	-7.509881 (0.0000)
	Instrumental variables	
Capital outflow	-2.034335 (0.2718)	-6.918463 (0.0000)
Export	-2.018571 (0.2783)	-7.488000 (0.0000)
Import	-1.949181 (0.3081)	-7.495754 (0.0000)
Broad money	-2.163382 (0.2216)	-7.495420 (0.0000)
Credite volume	-0.744394 (0.8269)	-7.518892 (0.0000)
Wages	-2.163382 (0.2216)	-7.495420 (0.0000)
	Slovenia	
	Explanatory variables	
Government debt	-0.655269 (0.8495)	-7.764576 (0.0000)
Industrial production index	-1.529764 (0.5118)	-7.486216 (0.0000)
Interest rate	-1.612754 (0.4698)	-7.614093 (0.0000)
CPI	-2.611275 (0.0967)	-7.484535 (0.0000)
Trade balance	0.732888 (0.9918)	-6.564382 (0.0000)
	Instrumental variables	
Capital outflow	-0.703200 (0.8377)	-7.677232 (0.0000)
Broad money	-1.664467 (0.4438)	-7.510614 (0.0000)
Credite volume	-1.348877 (0.6010)	-7.713439 (0.0000)
Wages	-2.424865 (0.1394)	-7.509257 (0.0000)
	Serbia	
	Explanatory variables	
Capital inflow	-1.452391 (0.5465)	-5.916902 (0.0000)
Exchange rate	-1.826177 (0.3626)	-5.919421 (0.0000)
GDP	-0.988005 (0.7478)	-6.026810 (0.0000)
Government debt	-2.577316 (0.1064)	-6.770576 (0.0000)
Trade balance	-1.434915 (0.5592)	--7.523202 (0.0000)
	Instrumental variables	
Capital outflow	-2.557147 (01107)	-6.354348 (0.0000)
Export	-0.870225 (0.7905)	-7.164186 (0.0000)
Import	-1.605430 (0.4735)	-7.529788 (0.0000)
Broad money	-0.807850 (0.8094)	-7.561000 (0.0000)
Credit volume	-1.630387 (0.4609)	-7.693368 (0.0000)
Wages	-0.143519 (0.9392)	-7.676490 (0.0000)
	UK	
	Explanatory variables	
Capital inflow	-1.537946 (0.5076)	-7.668838 (0.0000)
Government debt	-0.347485 (0.9107)	-7.770721 (0.0000)
Interest rate	-1.150030 (0.6901)	-7.501963 (0.0000)
CPI	-1.101910 (0.7096)	-7.709727 (0.0000)
Trade balance	-2.208325 (0.2056)	-7.488406 (0.0000)
	Instrumental variables	

Capital outflow	0.798905 (0.9932)	-6.285938 (0.0000)
Export	-1.300943 (0.6236)	-6.758820 (0.0000)
Import	-1.446661 (0.5534)	-6.737773 (0.0000)
Broad money	2.351797 (0.9987)	-7.123869 (0.0000)
Wages	-1.156366 (0.6875)	-7.738844 (0.0000)
US		
Explanatory variables		
Capital inflow	-1.903570 (0.3285)	-6.873146 (0.0000)
GDP	-3.264892 (0.0211)	-6.836804 (0.0000)
Government debt	-0.170276 (0.9680)	-7.178274 (0.0000)
Industrial production index	-0.978112 (0.7550)	-9.125373 (0.0000)
CPI	-2.256955 (0.1896)	-7.002641 (0.0000)
Instrumental variables		
Capital outflow	-2.829422 (0.0603)	-7.703700 (0.0000)
Export	-1.640020 (0.4554)	-6.049594 (0.0000)
Credit volume	0.550101 (0.9871)	-7.031661 (0.0000)
Wages	0.550101 (0.9871)	-7.031661 (0.0000)

Table B: The stacionarity (ADF - Fisher Chi-square) - Panel SEE

Variable	Level	D(x)
Explanatory variables		
Capital inflow	-0.83573 (0.2017)	-13.0060 (0.0000)
Exchange rate	-0.73329 (0.2317)	-11.2958 (0.0000)
GDP	1.06189 (0.8559)	-17.0911 (0.0000)
Government debt	-0.85631 (0.1959)	-17.3783 (0.0000)
Industrial production index	0.26464 (0.6044)	-14.4609 (0.0000)
Interest rate	-1.41207 (0.0790)	-16.5338 (0.0000)
CPI	0.42386 (0.6642)	-7.73506 (0.0000)
Trade balance	0.94802 (0.1716)	-16.1381 (0.0000)
Instrumental variables		
Broad money	-0.10408 (0.4586)	-14.8523 (0.0000)
Credit volume	-0.56564 (0.2858)	-16.3736 (0.0000)
Capital outflow	-0.48148 (0.3151)	-19.5070 (0.0000)
Export	0.93711 (0.8256)	-19.8703 (0.0000)
Wages	-1.07565 (0.1410)	-10.8203 (0.0000)
Import	0.85948 (0.8050)	-19.1035 (0.0000)

Graph A: Intraday indices SBI 20 (26/10/2009)

SBI
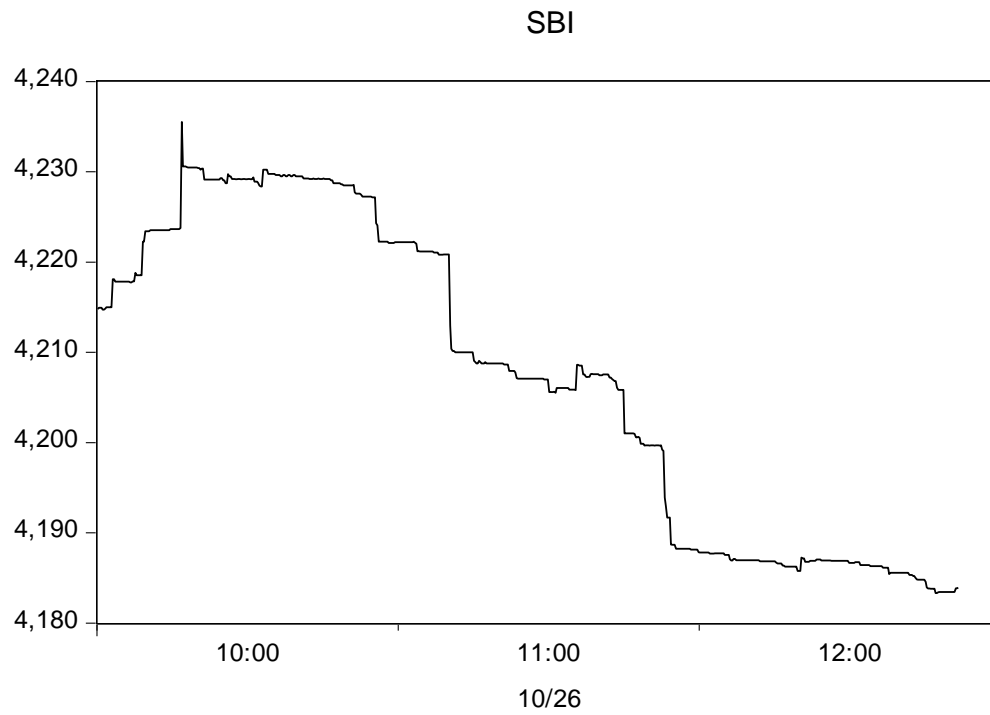
Graph B3: Intraday indices CROBEX (26/10/2009)

CROBEX
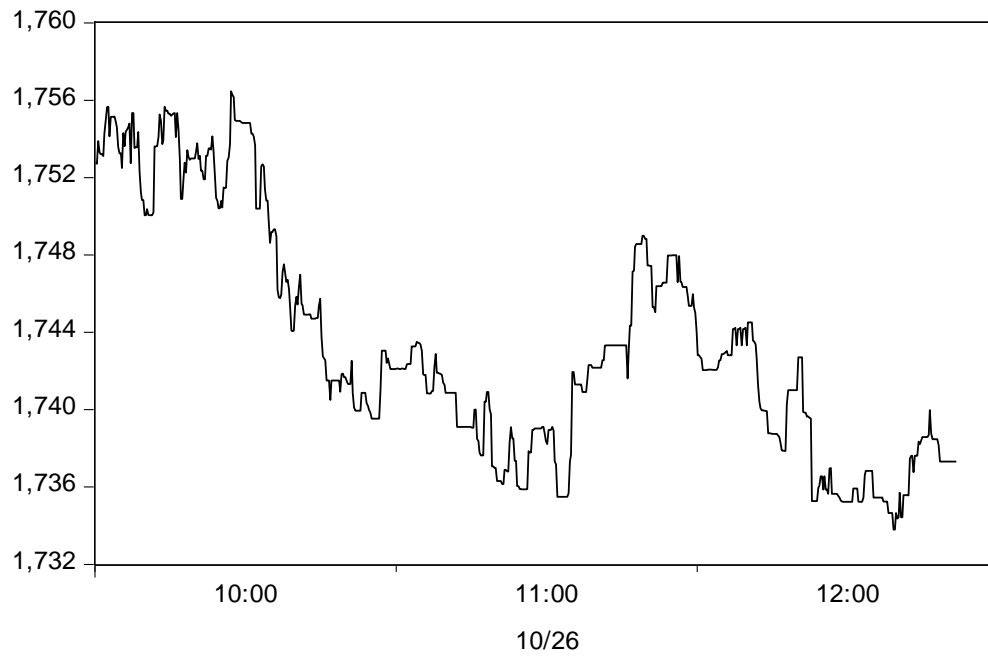
Graph C4: Intraday indices CAC40 (26/10/2009)

CAC
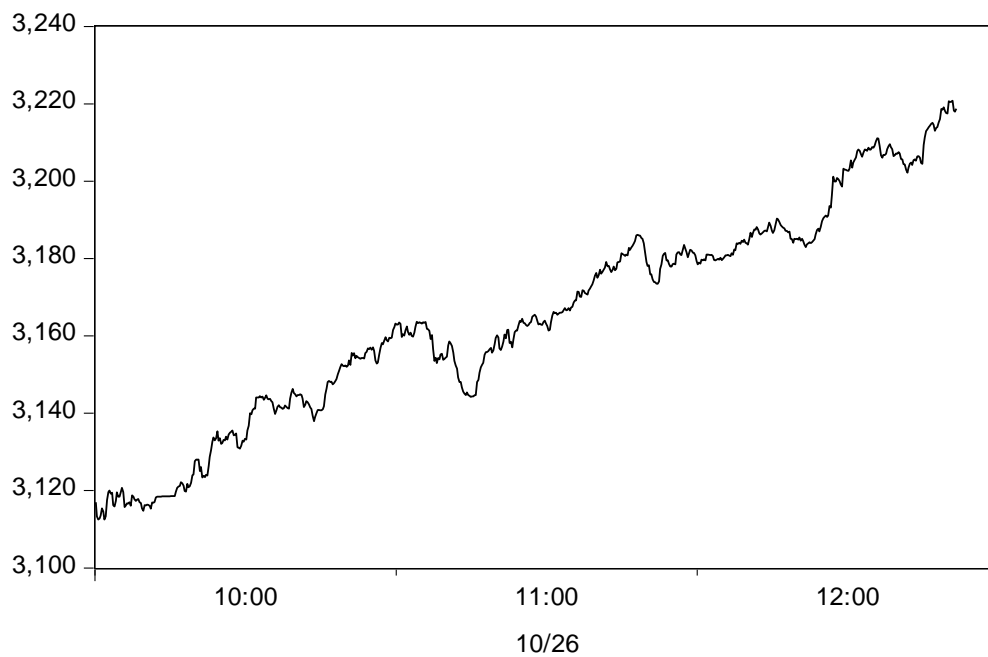
Table C: Autocorrelation of the residuals (Bosnia, Bulgaria, Croatia, Montenegro, Romania Slovenia, Serbia, UK, US)

Table D1 C1: Autocorrelation of the residuals Bosnia and Herzegovina - GARCH (Sample: 2004:1 2008:12)
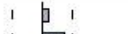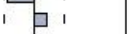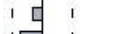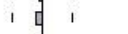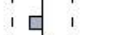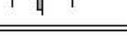
Autocorrelation	Partial Correlation		AC	PAC	Q-Stat	Prob
		1	0.075	0.075	0.2090	
		2	0.249	0.245	2.5833	0.108
		3	-0.265	-0.318	5.3591	0.069
		4	0.131	0.149	6.0631	0.109
		5	-0.066	0.052	6.2472	0.181
		6	0.254	0.125	9.0654	0.106
		7	-0.103	-0.097	9.5459	0.145
		8	-0.109	-0.241	10.107	0.183
		9	-0.257	-0.064	13.335	0.101
		10	-0.047	-0.009	13.447	0.143
		11	-0.073	-0.058	13.727	0.186
		12	-0.054	-0.158	13.887	0.239
		13	0.005	0.123	13.889	0.308
		14	-0.144	-0.098	15.166	0.297
		15	0.023	0.044	15.200	0.365
		16	-0.065	-0.028	15.487	0.417

Table CD2: Autocorrelation of the residuals Bosnia and Herzegovina - TSLS (Sample: 2004:1 2008:12)
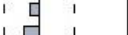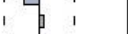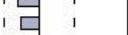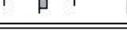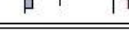
Autocorrelation	Partial Correlation		AC	PAC	Q-Stat	Prob
		1	0.030	0.030	0.0233	
		2	0.025	0.024	0.0407	0.840
		3	-0.013	-0.015	0.0459	0.977
		4	-0.050	-0.050	0.1213	0.989
		5	-0.105	-0.102	0.4728	0.976
		6	-0.182	-0.177	1.5946	0.902
		7	0.047	0.059	1.6725	0.947
		8	0.075	0.080	1.8880	0.966
		9	-0.250	-0.283	4.4486	0.815
		10	-0.222	-0.276	6.6197	0.677
		11	-0.120	-0.161	7.3086	0.696
		12	0.089	0.094	7.7244	0.738

Table CÐ3: Autocorrelation of the residuals Bulgaria - GARCH (Sample: 2004:1 2008:12)

Autocorrelation	Partial Correlation		AC	PAC	Q-Stat	Prob
		1	-0.063	-0.063	0.0991	
		2	0.140	0.137	0.6162	0.432
		3	0.022	0.039	0.6296	0.730
		4	-0.123	-0.142	1.0726	0.784
		5	-0.008	-0.033	1.0747	0.898
		6	0.244	0.294	3.0460	0.693
		7	-0.224	-0.209	4.8075	0.569
		8	0.023	-0.119	4.8268	0.681
		9	-0.047	0.030	4.9151	0.767
		10	-0.194	-0.112	6.5665	0.682
		11	-0.045	-0.142	6.6654	0.757
		12	-0.091	-0.136	7.1054	0.790

Table CÐ4: Autocorrelation of the residuals Bulgaria -TSLS (Sample: 2004:1 2008:12)

Autocorrelation	Partial Correlation		AC	PAC	Q-Stat	Prob
		1	0.089	0.089	0.2930	
		2	-0.102	-0.111	0.6932	0.405
		3	-0.097	-0.079	1.0641	0.587
		4	0.165	0.174	2.1712	0.538
		5	0.301	0.265	5.9950	0.200
		6	0.149	0.143	6.9623	0.223
		7	-0.185	-0.145	8.5093	0.203
		8	-0.018	0.042	8.5240	0.289
		9	0.099	0.013	9.0072	0.342
		10	0.100	-0.053	9.5148	0.391
		11	0.040	0.017	9.5979	0.476
		12	-0.182	-0.135	11.448	0.407
		13	-0.209	-0.200	13.983	0.302
		14	-0.047	-0.140	14.116	0.366
		15	0.137	0.089	15.331	0.356
		16	-0.008	-0.007	15.335	0.428

Table CD5: Autocorrelation of the residuals Croatia OLS (Sample: 2000:1 2010:12)

Autocorrelation	Partial Correlation		AC	PAC	Q-Stat	Prob
		1	-0.041	-0.041	0.1491	
		2	0.071	0.069	0.5928	0.441
		3	-0.034	-0.029	0.6998	0.705
		4	0.142	0.136	2.5409	0.468
		5	0.069	0.085	2.9805	0.561
		6	-0.091	-0.108	3.7582	0.585
		7	0.054	0.048	4.0397	0.671
		8	0.137	0.146	5.8483	0.558
		9	0.021	-0.006	5.8914	0.659
		10	-0.088	-0.089	6.6519	0.673
		11	0.047	0.057	6.8707	0.738
		12	-0.076	-0.122	7.4626	0.760
		13	0.198	0.177	11.473	0.489
		14	-0.202	-0.142	15.706	0.265
		15	0.121	0.077	17.259	0.243
		16	-0.112	-0.108	18.605	0.232
		17	0.048	0.016	18.856	0.276
		18	0.030	0.070	18.959	0.331
		19	-0.156	-0.155	21.689	0.246
		20	-0.009	-0.031	21.698	0.300
		21	-0.013	0.011	21.719	0.356
		22	-0.034	-0.068	21.853	0.408
		23	-0.077	-0.023	22.556	0.427
		24	-0.004	0.021	22.557	0.487
		25	-0.120	-0.125	24.340	0.442
		26	0.166	0.129	27.806	0.317
		27	-0.110	0.046	29.346	0.296
		28	0.026	-0.088	29.434	0.340
		29	0.001	0.122	29.434	0.391
		30	0.021	-0.043	29.492	0.440
		31	-0.098	-0.161	30.816	0.424
		32	-0.103	0.022	32.290	0.403
		33	0.111	0.086	34.048	0.369
		34	0.029	-0.005	34.169	0.411
		35	0.029	0.051	34.291	0.454
		36	-0.086	-0.048	35.400	0.449

Table CD6: Autocorrelation of the residuals Croatia - GARCH (Sample: 2004:01 2008:12)

Autocorrelation	Partial Correlation		AC	PAC	Q-Stat	Prob
		1	-0.089	-0.089	0.2910	0.590
		2	-0.050	-0.058	0.3860	0.824
		3	-0.049	-0.059	0.4801	0.923
		4	-0.151	-0.166	1.4054	0.843
		5	-0.052	-0.094	1.5195	0.911
		6	-0.095	-0.142	1.9109	0.928
		7	-0.099	-0.171	2.3589	0.937
		8	0.055	-0.044	2.5029	0.962
		9	-0.038	-0.119	2.5736	0.979
		10	0.183	0.100	4.2790	0.934
		11	0.088	0.058	4.6949	0.945
		12	0.064	0.084	4.9224	0.961
		13	-0.013	0.008	4.9329	0.977
		14	0.027	0.103	4.9787	0.986
		15	-0.109	-0.033	5.7416	0.984
		16	-0.068	-0.014	6.0565	0.987

Table CD7: Autocorrelation of the residuals Croatia - TSLS (Sample: 2004:01 2008:12)

Autocorrelation	Partial Correlation		AC	PAC	Q-Stat	Prob
		1	-0.144	-0.144	0.7524	0.386
		2	-0.091	-0.114	1.0576	0.589
		3	0.122	0.095	1.6345	0.652
		4	-0.102	-0.082	2.0491	0.727
		5	-0.040	-0.048	2.1150	0.833
		6	-0.073	-0.120	2.3434	0.886
		7	-0.059	-0.082	2.4962	0.927
		8	0.008	-0.034	2.4991	0.962
		9	-0.020	-0.030	2.5187	0.980
		10	0.178	0.171	4.1083	0.942
		11	0.033	0.067	4.1648	0.965
		12	0.028	0.073	4.2093	0.979
		13	0.099	0.081	4.7734	0.980
		14	-0.012	0.046	4.7828	0.989
		15	-0.081	-0.047	5.2014	0.990
		16	-0.062	-0.061	5.4605	0.993

Table CD8: Autocorrelation of the residuals Montenegro - GARCH (Sample: 2004:1 2008:12)

Autocorrelation	Partial Correlation		AC	PAC	Q-Stat	Prob
		1	-0.166	-0.166	1.4357	
		2	-0.078	-0.108	1.7572	0.185
		3	0.165	0.138	3.2285	0.199
		4	-0.059	-0.015	3.4192	0.331
		5	-0.078	-0.070	3.7664	0.439
		6	-0.064	-0.124	4.0052	0.549
		7	-0.125	-0.168	4.9286	0.553
		8	-0.155	-0.221	6.3884	0.495
		9	-0.020	-0.111	6.4132	0.601
		10	0.137	0.123	7.6161	0.573
		11	0.056	0.153	7.8221	0.646
		12	-0.056	-0.022	8.0335	0.710
		13	0.267	0.191	12.979	0.371
		14	0.016	0.020	12.997	0.448
		15	0.064	0.096	13.301	0.503
		16	-0.109	-0.185	14.193	0.511

Table CD9: Autocorrelation of the residuals Montenegro- TSLS (Sample: 2004:1 2008:12)

Autocorrelation	Partial Correlation		AC	PAC	Q-Stat	Prob
		1	-0.131	-0.131	0.5133	
		2	-0.194	-0.214	1.6865	0.194
		3	0.021	-0.040	1.7006	0.427
		4	-0.222	-0.284	3.3751	0.337
		5	0.020	-0.078	3.3899	0.495
		6	0.258	0.154	5.8735	0.319
		7	0.101	0.180	6.2713	0.393
		8	-0.091	0.001	6.6100	0.471
		9	0.030	0.100	6.6482	0.575
		10	-0.312	-0.257	11.139	0.266
		11	0.042	0.020	11.225	0.340
		12	0.075	-0.145	11.521	0.401

Table CD10: Autocorrelation of the residuals Romania - GARCH (Sample: 2004:1 2008:12)

Autocorrelation	Partial Correlation		AC	PAC	Q-Stat	Prob
		1	-0.111	-0.111	0.4820	0.488
		2	-0.026	-0.039	0.5097	0.775
		3	-0.162	-0.172	1.5968	0.660
		4	0.090	0.052	1.9409	0.747
		5	0.037	0.041	2.0002	0.849
		6	-0.094	-0.111	2.4012	0.879
		7	-0.094	-0.095	2.8157	0.902
		8	0.225	0.218	5.2954	0.726
		9	0.074	0.086	5.5738	0.782
		10	-0.202	-0.220	7.7132	0.657
		11	-0.049	0.003	7.8454	0.727
		12	-0.229	-0.269	10.844	0.542
		13	0.082	-0.107	11.245	0.590
		14	-0.158	-0.152	12.796	0.543
		15	0.164	0.157	14.545	0.485
		16	-0.042	-0.083	14.666	0.549

Table CD11: Autocorrelation of the residuals Romania- TSLS (Sample: 2004:1 2008:12)

Autocorrelation	Partial Correlation		AC	PAC	Q-Stat	Prob
		1	-0.144	-0.144	0.2964	0.586
		2	-0.040	-0.062	0.3223	0.851
		3	0.012	-0.003	0.3248	0.955
		4	-0.049	-0.051	0.3737	0.985
		5	-0.061	-0.078	0.4634	0.993
		6	-0.023	-0.052	0.4792	0.998
		7	-0.027	-0.048	0.5056	0.999
		8	-0.086	-0.109	0.8586	0.999
		9	-0.093	-0.144	1.4752	0.997
		10	0.012	-0.055	1.4965	0.999

Table CD12: Autocorrelation of the residuals Slovenia - GARCH (Sample: 2004:1 2008:12)

Autocorrelation	Partial Correlation		AC	PAC	Q-Stat	Prob
		1	0.045	0.045	0.0742	
		2	-0.002	-0.004	0.0744	0.785
		3	0.125	0.126	0.6961	0.706
		4	0.150	0.142	1.6202	0.655
		5	0.204	0.202	3.3734	0.497
		6	-0.038	-0.062	3.4380	0.633
		7	-0.137	-0.179	4.2835	0.638
		8	0.187	0.129	5.9212	0.549
		9	-0.168	-0.249	7.2961	0.505
		10	-0.118	-0.107	8.0107	0.533
		11	-0.206	-0.215	10.275	0.417
		12	-0.106	-0.056	10.905	0.451
		13	-0.174	-0.224	12.676	0.393
		14	-0.144	-0.004	13.937	0.378
		15	-0.053	0.116	14.115	0.441
		16	-0.005	0.078	14.117	0.517

Table CD13: Autocorrelation of the residuals Slovenia - TSLS (Sample: 2004:1 2008:12)

Date: 12/14/10   Time: 00:48
Sample: 2004M10 2007M07
Included observations: 34
Q-statistic probabilities adjusted for 1 ARMA term(s)

Autocorrelation	Partial Correlation		AC	PAC	Q-Stat	Prob
		1	0.075	0.075	0.2090	
		2	0.249	0.245	2.5833	0.108
		3	-0.265	-0.318	5.3591	0.069
		4	0.131	0.149	6.0631	0.109
		5	-0.066	0.052	6.2472	0.181
		6	0.254	0.125	9.0654	0.106
		7	-0.103	-0.097	9.5459	0.145
		8	-0.109	-0.241	10.107	0.183
		9	-0.257	-0.064	13.335	0.101
		10	-0.047	-0.009	13.447	0.143
		11	-0.073	-0.058	13.727	0.186
		12	-0.054	-0.158	13.887	0.239
		13	0.005	0.123	13.889	0.308
		14	-0.144	-0.098	15.166	0.297
		15	0.023	0.044	15.200	0.365
		16	-0.065	-0.028	15.487	0.417

Table CD14: Autocorrelation of the residuals Serbia - GARCH (Sample: 2004:1 2008:12)

Autocorrelation	Partial Correlation		AC	PAC	Q-Stat	Prob
		1	0.353	0.353	2.8854	
		2	0.143	0.021	3.3835	0.066
		3	0.148	0.104	3.9476	0.139
		4	-0.073	-0.182	4.0924	0.252
		5	-0.155	-0.102	4.7965	0.309
		6	-0.191	-0.127	5.9371	0.312
		7	-0.268	-0.148	8.3729	0.212
		8	-0.049	0.148	8.4626	0.294
		9	0.023	0.041	8.4831	0.388
		10	-0.157	-0.206	9.5713	0.386
		11	-0.063	-0.057	9.7652	0.461
		12	-0.021	-0.053	9.7905	0.549

Table CD15: Autocorrelation of the residuals Serbia - TSLS (Sample: 2004:1 2008:12)

Autocorrelation	Partial Correlation		AC	PAC	Q-Stat	Prob
		1	-0.108	-0.108	0.1881	
		2	-0.049	-0.061	0.2306	0.631
		3	0.130	0.119	0.5582	0.756
		4	0.055	0.081	0.6231	0.891
		5	-0.041	-0.014	0.6634	0.956
		6	-0.121	-0.142	1.0693	0.957
		7	-0.085	-0.143	1.3055	0.971
		8	0.041	0.009	1.3723	0.986
		9	-0.190	-0.160	3.1262	0.926
		10	-0.250	-0.271	7.1940	0.617
		11	0.075	-0.021	7.7371	0.654
		12	0.043	0.056	8.0918	0.705

Table CD16: Autocorrelation of the residuals UK - GARCH (Sample: 2004:1 2008:12)

Autocorrelation	Partial Correlation		AC	PAC	Q-Stat	Prob
		1	0.169	0.169	1.1102	
		2	-0.213	-0.249	2.9405	0.086
		3	0.069	0.171	3.1395	0.208
		4	0.184	0.087	4.5836	0.205
		5	-0.115	-0.141	5.1671	0.271
		6	-0.062	0.060	5.3450	0.375
		7	0.195	0.129	7.1300	0.309
		8	-0.022	-0.123	7.1527	0.413
		9	-0.226	-0.097	9.7351	0.284
		10	-0.103	-0.101	10.293	0.327
		11	0.009	-0.073	10.297	0.415
		12	0.030	0.107	10.349	0.499
		13	-0.003	0.009	10.349	0.585
		14	-0.068	-0.108	10.633	0.642
		15	-0.026	0.030	10.678	0.711
		16	0.013	0.005	10.690	0.774

Table CD17: Autocorrelation of the residuals UK- TSLS (Sample: 2004:1 2008:12)

Autocorrelation	Partial Correlation		AC	PAC	Q-Stat	Prob
		1	-0.042	-0.042	0.0460	
		2	-0.186	-0.188	0.9916	0.319
		3	-0.058	-0.078	1.0873	0.581
		4	0.313	0.282	4.0509	0.256
		5	-0.047	-0.047	4.1224	0.390
		6	-0.117	-0.032	4.5851	0.469
		7	0.047	0.073	4.6644	0.588
		8	-0.097	-0.237	5.0230	0.657
		9	-0.106	-0.095	5.4858	0.705
		10	-0.062	-0.071	5.6571	0.774
		11	0.104	0.006	6.1709	0.801
		12	-0.028	0.057	6.2110	0.859

Table CD18: Autocorrelation of the residuals US - GARCH (Sample: 2004:1 2008:12)

Autocorrelation	Partial Correlation		AC	PAC	Q-Stat	Prob
		1	0.115	0.115	0.4130	0.520
		2	-0.002	-0.015	0.4131	0.813
		3	-0.067	-0.066	0.5643	0.905
		4	-0.072	-0.058	0.7455	0.946
		5	-0.236	-0.227	2.7769	0.734
		6	-0.119	-0.081	3.3201	0.768
		7	-0.150	-0.156	4.2194	0.754
		8	0.040	0.029	4.2867	0.830
		9	0.252	0.222	7.1024	0.626
		10	-0.089	-0.234	7.4683	0.681
		11	-0.203	-0.263	9.5128	0.575
		12	0.062	0.068	9.7127	0.641

Table CD19: Autocorrelation of the residuals US - TSLS (Sample: 2004:1 2008:12)

Autocorrelation	Partial Correlation		AC	PAC	Q-Stat	Prob
		1	-0.157	-0.157	0.3990	0.528
		2	-0.133	-0.161	0.7124	0.700
		3	0.105	0.058	0.9268	0.819
		4	-0.175	-0.178	1.5932	0.810
		5	-0.151	-0.201	2.1456	0.829
		6	-0.080	-0.226	2.3229	0.888
		7	-0.020	-0.139	2.3364	0.939
		8	0.022	-0.100	2.3547	0.968
		9	0.039	-0.080	2.4293	0.983
		10	0.030	-0.104	2.4861	0.991
		11	0.016	-0.116	2.5116	0.996
		12	0.004	-0.116	2.5152	0.998

Table CD20: Autocorrelation of the residuals SEE –Pooled EGLS (Sample: 2004:1 2008:12)

Autocorrelation	Partial Correlation		AC	PAC	Q-Stat	Prob
		1	-0.116	-0.282	4.9619	0.291
		2	0.099	-0.116	5.3855	0.371
		3	0.207	0.164	7.3052	0.294
		4	-0.082	0.034	7.6135	0.368
		5	-0.100	-0.093	8.0928	0.424
		6	0.010	0.017	8.0974	0.524
		7	-0.102	-0.084	8.6397	0.567
		8	0.121	-0.030	9.4323	0.582
		9	0.064	0.014	9.6640	0.645
		10	-0.072	-0.031	9.9679	0.697
		11	-0.053	-0.069	10.140	0.752
		12	0.044	0.032	10.266	0.803
		13	0.018	0.077	10.287	0.851
		14	-0.074	-0.130	10.684	0.873
		15	0.107	0.007	11.548	0.870
		16	-0.085	0.005	12.133	0.880
		17	0.023	-0.009	12.181	0.910
		18	-0.007	-0.061	12.185	0.934
		19	0.067	0.087	12.639	0.943

Table CD21: Autocorrelation of the residuals SEE – Pooled TS-EGLS (Sample: 2004:1 2008:12)

```
Autocorrelation  Partial Correlation       AC     PAC    Q-Stat  Prob
   I   I          I   I          1   0.010  0.070  15.922  0.387
   I   I          I   I          2   0.177  0.191  18.065  0.320
   I   I          I   I          3  -0.144 -0.090  19.556  0.298
   I   I          I   I          4  -0.077 -0.065  20.009  0.332
   I   I          I   I          5   0.058 -0.049  20.283  0.378
   I   I          I   I          6  -0.017 -0.054  20.309  0.439
   I   I          I   I          7   0.094 -0.139  21.130  0.451
   I   I          I   I          8   0.040 -0.089  21.287  0.503
   I   I          I   I          9  -0.121  0.036  22.861  0.469
   I   I          I   I         10   0.007  0.039  22.866  0.528
   I   I          I   I         11   0.028  0.027  22.971  0.579
   I   I          I   I         12  -0.001 -0.020  22.972  0.635
   I   I          I   I         13   0.008 -0.082  22.982  0.686
   I   I          I   I         14   0.001 -0.015  22.982  0.734
   I   I          I   I         15  -0.012 -0.046  23.014  0.776
   I   I          I   I         16  -0.008 -0.069  23.029  0.814
   I   I          I   I         17   0.014 -0.056  23.095  0.846
   I   I          I   I         18  -0.012 -0.014  23.155  0.873
   I   I          I   I         19   0.004  0.104  23.165  0.898
   I   I          I   I         20   0.000 -0.022  23.165  0.920
```

Table D:E The Time Series statistics

Table DE1: The time series statistics: Bosnia and Herzegovina (Sample: 2004:1 2008:12)

	DLOG(CAP)	DLOG(EXR)	DLOG(GDP)	DLOG(GVD)	DLOG(INT)	DLOG(CPI)
-		-		-	-	-
Mean	-0.003782	-8.76E-05	-0.002302	-0.005998	-0.004922	0.040642
Median	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
Maximum	0.676340	0.006679	0.541131	0.003914	0.053992	1.568.616
Minimum	-0.887303	-0.007718	-0.479573	-0.183885	-0.164540	-1.652.923
Std. Dev.	0.164519	0.001816	0.098937	0.029992	0.027780	0.452245
Skewness	-1.146.317	-0.678433	0.763675	-5.206.713	-4.130.165	0.441181
Kurtosis	2.087.073	1.226.312	2.581.673	2.889.574	2.258.643	9.302.721
-		-		-	-	-
Jarque-Bera	7.980.219	2.154.642	1.285.550	1.915.112	1.110.825	9.956.953
Probability	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
-		-		-	-	-
Sum	-0.223144	-0.005168	-0.135802	-0.353878	-0.290374	2.397.895
Sum Sq. Dev.	1.569.864	0.000191	0.567738	0.052171	0.044762	1.186.249
-		-		-	-	-
Observations	59	59	59	59	59	59

Symbols: CAP: capital inflow expressed as percentageas percentage points of GDP; EXR: exchange rate expressed in the price of one unit of foreign currency in units of domestic currency; GVD: government debt expressed as percentage pointsof GDP; INT - interest rate in p.a.; CPI: consumer price index.

Table DE2: The time series statistics: Bulgaria (Sample: 2004:1 2008:12)

	DLOG(CAP)	DLOG(EXR)	DLOG(GDP)	DLOG(INT)	DLOG(CPI)
-	-	-	-	-	-
Mean	-0.000774	0.000430	-0.011468	0.013822	0.024466
Median	0.000000	0.000000	0.000000	0.000000	0.000000
Maximum	1.017.808	0.020203	0.342286	0.165366	0.456758
Minimum	-0.783661	0.000000	-0.664160	-0.169076	-0.020619
Std. Dev.	0.295564	0.002947	0.147844	0.049082	0.088560
Skewness	0.721329	6.634.888	-1.962.196	0.228804	3.744.653
Kurtosis	7.589.263	4.502.174	1.116.116	7.939.584	1.634.541
-	-	-	-	-	-
Jarque-Bera	4.532.093	3.802.914	1.605.938	4.819.241	4.586.216
Probability	0.000000	0.000000	0.000000	0.000000	0.000000
Sum	-0.036368	0.020203	-0.538997	0.649621	1.149.906
Sum Sq. Dev.	4.018.484	0.000399	1.005.462	0.110814	0.360768
-	-	-	-	-	-
Observations	47	47	47	47	47

Symbols: CAP: capital inflow expressed ~~as percentage~~as percentage points of GDP;   EXR: exchange rate expressed in the price of one unit of foreign currency in units of domestic currency; GDP: expressed in annual percentage change; GVD: government debt expressed as percentage points of GDP; INT - interest rate in p.a.; CPI: consumer price index.

Table DE3: The time series statistics: Croatia (Sample: 2004:1 2008:12)

	DLOG(CAP)	DLOG(EXR)	DLOG(GDP)	DLOG(GVD)	DLOG(INT)	DLOG(CPI)	DLOG(TBR)
-	-	-	-	-	-	-	-
Mean	0.050681	-0.001009	-0.051602	-0.003380	0.003425	0.015530	-0.000506
Median	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
Maximum	1.486.084	0.022774	1.041.454	0.011377	0.301198	0.524524	0.124911
Minimum	0.000000	-0.022928	-2.079.442	-0.110388	-0.178248	-0.497403	-0.121116
Std. Dev.	0.225269	0.005810	0.349759	0.016961	0.083982	0.151456	0.031290
Skewness	5.148.263	-0.770330	-3.100.189	-5.081.849	0.647207	-0.115520	-0.129769
Kurtosis	3.067.725	1.213.331	2.209.658	2.985.038	5.926.441	6.813.614	1.094.582
-	-	-	-	-	-	-	-
Jarque-Bera	2.143.786	2.109.029	9.910.136	2.026.265	2.517.225	3.588.436	1.553.749

Probability	0.000000	0.000000	0.000000	0.000000	0.000003	0.000000	0.000000
-	-	-	-	-	-	-	-
Sum	2.990.161	-0.059558	-3.044.522	-0.199400	0.202078	0.916291	-0.029853
Sum Sq. Dev.	2.943.283	0.001958	7.095.224	0.016685	0.409072	1.330.455	0.056788
Observations	59	59	59	59	59	59	59

Symbols: CAP: capital inflow expressed ~~as percentage~~as percentage points of GDP; EXR: exchange rate expressed in the price of one unit of foreign currency in units of domestic currency; GDP: expressed in annual percentage change; GVD: government debt expressed as percentage points of GDP; INT - interest rate in p.a.; CPI: consumer price index.; TRB: trade balance expressed as percentage points of GDP.

Table DE4: The time series statistics: Croatia historical (Sample: 2000:1 2010:12)

	DLOG(CAP)	DLOG(EXR)	DLOG(GVD)	DLOG(INT)	DLOG(CPI)	DLOG(UNE)
-	-	-	-	-	-	-
Mean	-0.005837	-0.000213	-0.000230	-0.010172	-0.016893	-0.004058
Median	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
Maximum	0.924259	0.023433	0.205650	0.478490	0.524524	0.118560
Minimum	-1.252.763	-0.022928	-0.110388	-1.469.812	-1.078.810	-0.362905
Std. Dev.	0.202811	0.005484	0.023602	0.162686	0.172137	0.044576
Skewness	-2.287.440	-0.037828	4.049.795	-5.823.150	-2.815.187	-4.115.033

Kurtosis	2.490.829	1.366.188	5.018.210	5.308.147	1.832.986	3.490.901
-	-	-	-	-	-	-
Jarque-Bera	2.734.094	6.205.108	12509.15	14430.69	1.455.769	5.927.309
Probability	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
-	-	-	-	-	-	-
Sum	-0.764606	-0.027872	-0.030130	-1.332.528	-2.212.973	-0.531577
Sum Sq. Dev.	5.347.181	0.003910	0.072415	3.440.662	3.852.061	0.258310
-	-	-	-	-	-	-
Observations	131	131	131	131	131	131

Symbols: CAP: capital inflow expressed ~~as percentage~~as percentage points of GDP; EXR: exchange rate expressed in the price of one unit of foreign currency in units of domestic currency; GDP: expressed in annual percentage change; GVD: government debt expressed as percentage points of GDP; INT - interest rate in p.a.; CPI: consumer price index; UNE: unemployment expressed in percentage points of the total labour force.

Table ~~DE~~5: The time series statistics: Montenegro (Sample: 2004:1 2008:12)

	DLOG(CAP)	DLOG(IND)	DLOG(INT)	DLOG(CPI)	DLOG(TRB)
-	-	-	-	-	-
Mean	0.	-0.009241	-0.036752	0.019127	0.009339
Median	0.000000	0.000000	0.000000	0.000000	0.000000
Maximum	1.602.749	3.113.515	1.007.858	0.887303	0.143345
Minimum	-0.346871	-1.558.145	-2.176.644	-0.720546	-0.132504
Std. Dev.	0.224078	0.488621	0.338509	0.192251	0.050233
Skewness	5.930.612	3.771.263	-4.106.021	1.021.420	0.485839
Kurtosis	4.285.187	3.144.756	3.012.473	1.284.274	5.606.168
Jarque-Bera	4.250.115	2.129.294	1.974.505	2.484.214	1.901.833
Probability	0.000000	0.000000	0.000000	0.000000	0.000074
-	-	-	-	-	-
Sum	1.734.601	-0.545227	-2.168.345	1.128.465	0.550973
Sum Sq. Dev.	2.912.244	1.384.752	6.646.126	2.143.705	0.146353
-	-	-	-	-	-
Observations	59	59	59	59	59

Symbols: CAP: capital inflow expressed ~~as percentage~~as percentage points of GDP; IND: industrial production index; INT - interest rate in p.a.; CPI: consumer price index; TRB: trade balance expressed as percentage points of GDP.

Table DE6: The time series statistics: Romania (Sample: 2004:1 2008:12)

	DLOG(CAP)	DLOG(EXR)	DLOG(GDP)	DLOG(GVD)	DLOG(IND)	DLOG(INT)	DLOG(CPI)	DLOG(TRB)
-	-	-	-	-	-	-	-	-
Mean	0.005257	-0.001111	-0.012603	-0.005398	0.000151	-0.011582	-0.009207	0.004523
Median	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
Maximum	0.628609	0.084557	0.583146	0.068468	1.058.711	0.488353	0.477628	0.250503
Minimum	-0.514099	-0.074919	-1.154.493	-0.242313	-1.368.903	-0.381368	-0.297834	-0.263585
Std. Dev.	0.172394	0.021342	0.229550	0.039535	0.324444	0.113409	0.088528	0.077297
Skewness	0.627304	0.924841	-2.295.858	-4.840.693	-0.989005	0.447335	1.784.696	0.373165
Kurtosis	7.878.384	9.489.410	1.380.217	2.792.031	9.580.659	1.208.607	1.936.678	7.947.453
-	-	-	-	-	-	-	-	-
Jarque-Bera	6.237.448	1.119.372	3.386.865	1.757.097	1.160.766	2.049.195	6.898.383	6.154.265
Probability	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
-	-	-	-	-	-	-	-	-
Sum	0.310155	-0.065541	-0.743578	-0.318454	0.008889	-0.683343	-0.543207	0.266879
Sum Sq. Dev.	1.723.750	0.026419	3.056.212	0.090653	6.105.304	0.745976	0.454556	0.346543
-	-	-	-	-	-	-	-	-
Observations	59	59	59	59	59	59	59	59

Symbols: CAP: capital inflow expressed ~~as percentage~~as percentage points of GDP; EXR: exchange rate expressed in the price of one unit of foreign currency in units of domestic currency; GDP: expressed in annual percentage change; GVD: government debt expressed as percentage points of GDP; IND: industrial production index; INT - interest rate in p.a.; CPI: consumer price index; TRB: trade balance expressed as percentage points of GDP.

Table DE7: The time series statistics: Slovenia (Sample: 2004:1 2008:12)

	DLOG(GVD)	DLOG(IND)	DLOG(INT)	DLOG(CPI)
-	-	-	-	-
Mean	-0.003361	0.002031	-0.004632	-0.001583
Median	0.000000	0.000000	0.000000	0.000000
Maximum	0.000000	0.614366	0.082238	0.418345
Minimum	-0.131928	-0.510826	-0.182322	-0.598282
Std. Dev.	0.017807	0.104915	0.035805	0.126156
Skewness	-6.628.889	1.426.154	-2.892.421	-0.942507
Kurtosis	4.778.725	3.036.684	1.544.987	1.229.584
-	-	-	-	-
Jarque-Bera	5.363.264	1.861.153	4.633.065	2.211.663
Probability	0.000000	0.000000	0.000000	0.000000
-	-	-	-	-

Sum	-0.198275	0.119801	-0.273293	-0.093420
Sum Sq. Dev.	0.018391	0.638410	0.074358	0.923086
-	-	-	-	-
Observations	59	59	59	59

Symbols: GVD: government debt expressed as percentage points of GDP; IND: industrial production index; INT - interest rate in p.a.; CPI: consumer price index.

Table DE8: The time series statistics: Serbia (Sample: 2004:1 2008:12)

	DLOG(CAP)	DLOG(EXR)	DLOG(GDP)	DLOG(GVD)	DLOG(CPI)	DLOG(TRB)
-	-	-	-	-	-	-
Mean	-0.002330	0.000630	-0.019614	-0.018084	0.041762	-0.007431
Median	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
Maximum	0.892276	0.138159	0.553885	0.036368	2.106.841	0.241162
Minimum	-0.842679	-0.050940	-0.559616	-0.267347	-0.421594	-0.280554
Std. Dev.	0.203027	0.027247	0.147972	0.050808	0.370864	0.083485
Skewness	0.392821	3.140.238	0.082303	-3.520.842	4.641.682	-0.812239
Kurtosis	1.861.642	1.877.468	1.164.983	1.679.695	2.683.105	7.804.777
-	-	-	-	-	-	-
Jarque-Bera	3.871.089	4.564.508	1.185.072	3.799.067	1.035.658	4.073.094
Probability	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
-	-	-	-	-	-	-
Sum	-0.088553	0.023953	-0.745333	-0.687201	1.586.965	-0.282371
Sum Sq. Dev.	1.525.143	0.027469	0.810141	0.095514	5.088.984	0.257882
-	-	-	-	-	-	-
Observations	38	38	38	38	38	38

Symbols: CAP: capital inflow expressed as percentageas percentage points of GDP; EXR: exchange rate expressed in the price of one unit of foreign currency in units of domestic currency; GDP: expressed in annual percentage change; GVD: government debt expressed as percentage points of GDP; CPI: consumer price index; TRB: trade balance expressed as percentage points of GDP.

Table DE9: The time series statistics: UK (Sample: 2004:1 2008:12)

	DLOG(CAP)	DLOG(GVD)	DLOG(INT)	DLOG(CPI)	DLOG(TBR)
-	-	-	-	-	-
Mean	0.023944	0.004195	-0.003206	0.019016	-0.002805
Median	0.000000	0.000000	0.000000	0.000000	0.000000
Maximum	1.144.949	0.162519	0.115602	0.345335	0.339521
Minimum	-0.175045	0.000000	-0.455706	-0.351398	-0.613670

Std. Dev.	0.155692	0.021991	0.065366	0.112090	0.109407
Skewness	6.522.586	6.584.790	-5.617.450	-0.267026	-2.379.444
Kurtosis	4.727.664	4.727.639	4.056.950	7.031.379	1.949.397
-	-	-	-	-	-
Jarque-Bera	5.237.718	5.245.681	3.780.156	4.065.401	7.244.664
Probability	0.000000	0.000000	0.000000	0.000000	0.000000
-	-	-	-	-	-
Sum	1.412.692	0.247476	-0.189133	1.121.960	-0.165484
Sum Sq. Dev.	1.405.912	0.028050	0.247816	0.728715	0.694252
-	-	-	-	-	-
Observations	59	59	59	59	59

Symbols: CAP: capital inflow expressed as percentageas percentage points of GDP; GVD: government debt expressed as percentage points of GDP; INT - interest rate in p.a.; CPI: consumer price index; TRB: trade balance expressed as percentage points of GDP.

Table DE10: The time series statistics: US (Sample: 2004:1 2008:12)

	DLOG(CAP)	DLOG(GDP)	DLOG(GVD)	DLOG(IND)	DLOG(CPI)	DLOG(TBR)
Mean	0.028558	-0.012238	0.001813	-0.002122	0.017392	0.005899
Median	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
Maximum	1.533.192	3.401.197	0.069298	1.299.283	0.485508	0.110345
Minimum	-1.343.469	-2.639.057	0.000000	-1.026.086	-0.702197	-0.111855
Std. Dev.	0.321918	0.727627	0.009826	0.283112	0.167198	0.032730
Skewness	0.615018	0.993036	6.555.239	0.777689	-0.428900	0.499164
Kurtosis	1.679.035	1.394.495	4.539.851	1.418.010	1.042.402	8.095.019
-	-	-	-	-	-	-
Jarque-Bera	4.073.341	2.629.400	4.185.227	2.707.546	1.186.854	5.728.123
Probability	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
-	-	-	-	-	-	-
Sum	1.456.457	-0.624154	0.092465	-0.108214	0.886976	0.300843
Sum Sq. Dev.	5.181.576	2.647.207	0.004828	4.007.622	1.397.754	0.053564
-	-	-	-	-	-	-
Observations	51	51	51	51	51	51

Symbols: CAP: capital inflow expressed as percentageas percentage points of GDP; GDP: expressed in annual percentage change; GVD: government debt expressed as percentage points of GDP; IND: industrial production index; CPI: consumer price index; TRB: trade balance expressed as percentage points of GDP.

Table DE11: The time series statistics: SEE (Sample: 2004:1 2008:12)

Table D11a – explanatory variables

	D(CAP)	D(GDP)	D(GVD)	D(IND)	D(INT)	D(TBR)
Mean	0.127895	-0.039211	-0.219474	-0.063053	-0.075211	0.060000
Median	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
Maximum	27.70000	19.80000	4.300000	13.10000	3.400000	10.80000
Minimum	-11.30000	-20.20000	-11.80000	-9.000000	-9.380000	-7.300000
Std. Dev.	2.516156	1.687347	1.095464	1.386140	0.729019	1.651794
Skewness	3.987670	-0.418289	-5.254150	2.106746	-6.571990	0.776637
Kurtosis	47.95311	105.7054	44.35006	35.24964	81.68240	15.53959
Jarque-Bera	33002.81	167027.5	28820.65	16748.39	100758.3	2527.853
Probability	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
Sum	48.60000	-14.90000	-83.40000	-23.96000	-28.58000	22.80000
Sum Sq. Dev.	2399.464	1079.066	454.8159	728.2049	201.4265	1034.072
Observations	380	380	380	380	380	380
Cross sections	7	7	7	7	7	7

Symbols: CAP: capital inflow; GDP: gross domestic product; GVD: government debt; IND: industrial production index; INT: interest rate p.a.; TRB: trade balance.

Table D11b – instrumental variables

	D(BM)	D(CV)	D(WAG)	D(COF)	D(EXP)	D(IMP)
Mean	0.024412	0.142235	0.124706	-0.142353	0.022941	-0.028824
Median	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
Maximum	48.10000	468.5000	8.300000	2.800000	10.50000	18.00000
Minimum	-33.30000	-842.1550	-7.500000	-11.20000	-5.900000	-20.20000
Std. Dev.	4.279762	56.16575	1.293998	0.821844	1.418214	2.779634
Skewness	1.940776	-7.386115	0.201320	-7.785401	1.793831	-0.189385
Kurtosis	72.15346	169.6966	18.63747	100.5896	20.54756	26.30362
Jarque-Bera	67961.29	396751.1	3466.480	138354.4	4544.497	7695.365
Probability	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
Sum	8.300000	48.36000	42.40000	-48.40000	7.800000	-9.800000
Sum Sq. Dev.	6209.247	1069406.	567.6325	228.9701	681.8411	2619.238
Observations	340	340	340	340	340	340
Cross sections	7	7	7	7	7	7

Symbols: BM: broad money expressed in annual percentage change; CV: credit volume expressed in annual percentage change of broad money in percentage points; WAG: wages expressed as the annual change in the average wage per employee; COF: capital outflow expressed as percentage points of GDP; EXP: export of goods and services expressed as a contribution to GDP in percentage points; IMP: import of goods and services expressed as a contribution to GDP in percentage points.

Table E:D̶ Correlation of the explanatory variables

Table E1: Bosnia and Herzegovina (Sample: 2004:1 2008:12)

	CAP	EXR	GDP	GVD	IND	INT	CPI	TRB
CAP	1.000.000	0.097380	0.142001	-0.465386	-0.715962	-0.348629	-0.105389	0.267250
EXR	0.097380	1.000.000	-0.529588	0.349755	-0.387317	0.218628	-0.090604	-0.461854
GDP	0.142001	-0.529588	1.000.000	-0.451199	-0.104811	-0.367108	0.033112	0.438900
GVD	-0.465386	0.349755	-0.451199	1.000.000	0.270260	0.930974	-0.479016	-0.897659
IND	-0.715962	-0.387317	-0.104811	0.270260	1.000.000	0.316636	-0.001761	-0.222758
INT	-0.348629	0.218628	-0.367108	0.930974	0.316636	1.000.000	-0.509005	-0.918978
CPI	-0.105389	-0.090604	0.033112	-0.479016	-0.001761	-0.509005	1.000.000	0.430798
TRB	0.267250	-0.461854	0.438900	-0.897659	-0.222758	-0.918978	0.430798	1.000.000

Symbols: CAP: capital inflow expressed as percentage points of GDP; EXR: exchange rate expressed in the price of one unit of foreign currency in units of domestic currency; GDP: expressed in annual percentage change; GVD: government debt expressed as percentage points of GDP; IND: industrial production index; INT - interest rate in p.a.; CPI: consumer price index; TRB: trade balance expressed as percentage points of GDP.

Table E2: Bulgaria (Sample: 2004:1 2008:12)

	CAP	EXR	GDP	GVD	IND	INT	CPI	TRB
CAP	1.000.000	0.469957	0.254557	-0.235845	-0.322190	0.137883	0.049799	-0.457995
EXR	0.469957	1.000.000	0.292106	-0.824264	-0.685480	0.708321	0.657940	-0.701801
GDP	0.254557	0.292106	1.000.000	-0.165719	0.076259	0.121455	0.116570	-0.190362
GVD	-0.235845	-0.824264	-0.165719	1.000.000	0.792878	-0.891942	-0.901647	0.767632
IND	-0.322190	-0.685480	0.076259	0.792878	1.000.000	-0.672852	-0.813971	0.582724
INT	0.137883	0.708321	0.121455	-0.891942	-0.672852	1.000.000	0.843565	-0.707192
CPI	0.049799	0.657940	0.116570	-0.901647	-0.813971	0.843565	1.000.000	-0.672287
TRB	-0.457995	-0.701801	-0.190362	0.767632	0.582724	-0.707192	-0.672287	1.000.000

Symbols: CAP: capital inflow expressed as percentage points of GDP; EXR: exchange rate expressed in the price of one unit of foreign currency in units of domestic currency; GDP: expressed in annual percentage change; GVD: government debt expressed as percentage points of GDP; IND: industrial production index; INT - interest rate in p.a.; CPI: consumer price index; TRB: trade balance expressed as percentage points of GDP.

Table E3: Croatia (Sample: 2004:1 2008:12)

	CAP	EXR	GDP	GVD	IND	INT	CPI	TRB
CAP	1.000.000	-0.707412	-0.482805	-0.824302	-0.417527	0.414673	0.826268	0.046960
EXR	-0.707412	1.000.000	0.202438	0.696414	0.097867	-0.048714	-0.648745	0.094036
GDP	-0.482805	0.202438	1.000.000	0.165570	0.858381	-0.630129	-0.485819	-0.151051
GVD	-0.824302	0.696414	0.165570	1.000.000	0.231171	-0.231525	-0.610205	0.004782
IND	-0.417527	0.097867	0.858381	0.231171	1.000.000	-0.703875	-0.404407	-0.082332
INT	0.414673	-0.048714	-0.630129	-0.231525	-0.703875	1.000.000	0.331417	0.100264
CPI	0.826268	-0.648745	-0.485819	-0.610205	-0.404407	0.331417	1.000.000	-0.071068
TRB	0.046960	0.094036	-0.151051	0.004782	-0.082332	0.100264	-0.071068	1.000.000

Symbols: CAP: capital inflow expressed as percentage points of GDP; EXR: exchange rate expressed in the price of one unit of foreign currency in units of domestic currency; GDP: expressed in annual percentage change; GVD: government debt expressed as percentage points of GDP; IND: industrial production index; INT - interest rate in p.a.; CPI: consumer price index; TRB: trade balance expressed as percentage points of GDP.

Table E4: Croatia historical (Sample: 2000:1 2010:12)

	CAP	TRB	UNE	EXR	EXP	GDP	GVD	IMP	IND	INT	CPI
CAP	1.000.000	0.003511	0.043680	0.012357	0.514823	0.452548	-0.106356	0.434740	0.432739	0.085679	0.518381
TRB	0.003511	1.000.000	-0.113803	-0.119712	-0.226223	-0.256263	0.074185	-0.279519	-0.337782	-0.021739	0.055024
UNE	0.043680	-0.113803	1.000.000	0.745778	0.597196	0.542614	0.458736	0.521231	0.495822	0.136531	0.170105
EXR	0.012357	-0.119712	0.745778	1.000.000	0.451580	0.290383	0.559301	0.323404	0.221763	0.305138	0.147167
EXP	0.514823	-0.226223	0.597196	0.451580	1.000.000	0.869853	0.384562	0.951836	0.799298	0.073810	0.409818
GDP	0.452548	-0.256263	0.542614	0.290383	0.869853	1.000.000	0.407826	0.863553	0.960156	-0.278168	0.181720
GVD	-0.106356	0.074185	0.458736	0.559301	0.384562	0.407826	1.000.000	0.234757	0.443608	-0.211195	-0.028560
IMP	0.434740	-0.279519	0.521231	0.323404	0.951836	0.863553	0.234757	1.000.000	0.775605	-0.004955	0.308503
IND	0.432739	-0.337782	0.495822	0.221763	0.799298	0.960156	0.443608	0.775605	1.000.000	-0.357753	0.134937
INT	0.085679	-0.021739	0.136531	0.305138	0.073810	-0.278168	-0.211195	-0.004955	-0.357753	1.000.000	0.622729
CPI	0.518381	0.055024	0.170105	0.147167	0.409818	0.181720	-0.028560	0.308503	0.134937	0.622729	1.000.000

Symbols: CAP: capital inflow expressed ~~as percentage~~as percentage points of GDP; TRB: trade balance expressed as percentage points of GDP.
UNE: unemployment expressed in percentage points of the total labour force; EXR: exchange rate expressed in the price of one unit of foreign currency in units of domestic currency; EXP: export of goods and services expressed as percentage points of GDP;
GDP: expressed in annual percentage change; GVD: government debt expressed as percentage points of GDP; IMP: import of goods and services expressed as percentage points of GDP; IND: industrial production index; INT - interest rate in p.a.; CPI: consumer price indeks.

Table E5: Montenegro (Sample: 2004:1 2008:12)

	CAP	GDP	GVD	IND	INT	CPI	TRB
CAP	1.000.000	0.104719	-0.676214	-0.681538	-0.876429	0.165256	0.736089
GDP	0.104719	1.000.000	-0.239968	0.026771	-0.094768	0.321050	0.242031
GVD	-0.676214	-0.239968	1.000.000	0.443035	0.792099	-0.683596	-0.801616
IND	-0.681538	0.026771	0.443035	1.000.000	0.838998	-0.031157	-0.226368
INT	-0.876429	-0.094768	0.792099	0.838998	1.000.000	-0.391084	-0.626217
CPI	0.165256	0.321050	-0.683596	-0.031157	-0.391084	1.000.000	0.605084
TRB	0.736089	0.242031	-0.801616	-0.226368	-0.626217	0.605084	1.000.000

Symbols: CAP: capital inflow expressed as percentage points of GDP; GDP: expressed in annual percentage change; GVD: government debt expressed as percentage points of GDP; IND: industrial production index; INT - interest rate in p.a.; CPI: consumer price index; TRB: trade balance expressed as percentage points of GDP.

Table E6: Romania (Sample: 2004:1 2008:12)

	CAP	EXR	GDP	GVD	IND	INT	CPI	TRB
CAP	1.000.000	-0.204048	0.116727	-0.217970	0.127040	-0.211629	-0.269628	0.009336
EXR	-0.204048	1.000.000	0.303911	0.848531	0.677521	0.887091	0.911578	-0.600391
GDP	0.116727	0.303911	1.000.000	0.113698	0.093977	0.421803	0.100711	0.128689
GVD	-0.217970	0.848531	0.113698	1.000.000	0.531922	0.814481	0.917272	-0.690402
IND	0.127040	0.677521	0.093977	0.531922	1.000.000	0.630996	0.538277	-0.456024
INT	-0.211629	0.887091	0.421803	0.814481	0.630996	1.000.000	0.827538	-0.518181
CPI	-0.269628	0.911578	0.100711	0.917272	0.538277	0.827538	1.000.000	-0.733065
TRB	0.009336	-0.600391	0.128689	-0.690402	-0.456024	-0.518181	-0.733065	1.000.000

Symbols: CAP: capital inflow expressed as percentage points of GDP; EXR: exchange rate expressed in the price of one unit of foreign currency in units of domestic currency; GDP: expressed in annual percentage change; GVD: government debt expressed as percentage points of GDP; IND: industrial production index; INT - interest rate in p.a.; CPI: consumer price index; TRB: trade balance expressed as percentage points of GDP.

Table E7: Slovenia (Sample: 2004:1 2008:12)

	CAP	GDP	GVD	IND	INT	CPI	TRB
CAP	1.000.000	-0.288950	-0.037383	0.089051	0.194315	0.214131	0.261652
GDP	-0.288950	1.000.000	-0.141807	0.254453	-0.087173	0.049774	-0.282129
GVD	-0.037383	-0.141807	1.000.000	-0.525166	0.364496	-0.600377	-0.550157
IND	0.089051	0.254453	-0.525166	1.000.000	-0.211820	0.408979	0.296915
INT	0.194315	-0.087173	0.364496	-0.211820	1.000.000	0.302472	-0.048314
CPI	0.214131	0.049774	-0.600377	0.408979	0.302472	1.000.000	0.531790
TRB	0.261652	-0.282129	-0.550157	0.296915	-0.048314	0.531790	1.000.000

Symbols: CAP: capital inflow expressed as percentage points of GDP; GDP: expressed in annual percentage change; GVD: government debt expressed as percentage points of GDP; IND: industrial production index; INT - interest rate in p.a.; CPI: consumer price index; TRB: trade balance expressed as percentage points of GDP.

Table E8: Serbia (Sample: 2004:1 2008:12)

	CAP	EXR	GDP	GVD	IND	INT	CPI	TRB
CAP	1.000.000	0.337009	-0.241723	0.470771	0.419164	0.736932	0.554126	-0.247372
EXR	0.337009	1.000.000	-0.365457	0.457159	-0.089628	0.554124	0.272487	0.369066
GDP	-0.241723	-0.365457	1.000.000	-0.015467	0.687006	-0.103686	-0.219524	-0.083118
GVD	0.470771	0.457159	-0.015467	1.000.000	0.360366	0.898445	-0.219951	0.481430
IND	0.419164	-0.089628	0.687006	0.360366	1.000.000	0.460760	0.198636	-0.129183
INT	0.736932	0.554124	-0.103686	0.898445	0.460760	1.000.000	0.164461	0.311075
CPI	0.554126	0.272487	-0.219524	-0.219951	0.198636	0.164461	1.000.000	-0.334759
TRB	-0.247372	0.369066	-0.083118	0.481430	-0.129183	0.311075	-0.334759	1.000.000

Symbols: CAP: capital inflow expressed as percentage points of GDP; EXR: exchange rate expressed in the price of one unit of foreign currency in units of domestic currency; GDP: expressed in annual percentage change; GVD: government debt expressed as percentage points of GDP; IND: industrial production index; INT - interest rate in p.a.; CPI: consumer price index; TRB: trade balance expressed as percentage points of GDP.

Table E9: UK (Sample: 2004:1 2008:12)

	CAP	EXR	GDP	GVD	IND	INT	CPI	TRB
CAP	1.000.000	-0.629263	-0.672173	0.789448	-0.455869	0.330110	0.756549	0.435951
EXR	-0.629263	1.000.000	0.788817	-0.917543	0.517338	0.154649	-0.735413	0.141899
GDP	-0.672173	0.788817	1.000.000	-0.801372	0.536180	0.141537	-0.864392	0.085870
GVD	0.789448	-0.917543	-0.801372	1.000.000	-0.376946	0.083906	0.805452	0.089933
IND	-0.455869	0.517338	0.536180	-0.376946	1.000.000	0.390770	-0.525761	-0.047748
INT	0.330110	0.154649	0.141537	0.083906	0.390770	1.000.000	-0.004523	0.748144
CPI	0.756549	-0.735413	-0.864392	0.805452	-0.525761	-0.004523	1.000.000	0.191906
TRB	0.435951	0.141899	0.085870	0.089933	-0.047748	0.748144	0.191906	1.000.000

Symbols: CAP: capital inflow expressed as percentage points of GDP; EXR: exchange rate expressed in the price of one unit of foreign currency in units of domestic currency; GDP: expressed in annual percentage change; GVD: government debt expressed as percentage points of GDP; IND: industrial production index; INT - interest rate in p.a.; CPI: consumer price index; TRB: trade balance expressed as percentage points of GDP.

Table E10: US (Sample: 2004:1 2008:12)

	CAP	EXR	GDP	GVD	IND	INT	CPI	TRB
CAP	1.000.000	0.581143	-0.014946	0.406745	-0.365203	0.492674	0.096243	0.328945
EXR	0.581143	1.000.000	-0.316144	0.811454	-0.426019	0.121449	0.243846	0.086008
GDP	-0.014946	-0.316144	1.000.000	-0.407202	0.404181	-0.144214	-0.207265	-0.275470
GVD	0.406745	0.811454	-0.407202	1.000.000	-0.440348	0.106805	0.423229	0.295425
IND	-0.365203	-0.426019	0.404181	-0.440348	1.000.000	-0.359469	-0.013734	-0.188127
INT	0.492674	0.121449	-0.144214	0.106805	-0.359469	1.000.000	0.049946	0.741519
CPI	0.096243	0.243846	-0.207265	0.423229	-0.013734	0.049946	1.000.000	0.543381
TRB	0.328945	0.086008	-0.275470	0.295425	-0.188127	0.741519	0.543381	1.000.000
Symbols: CAP: capital inflow expressed as percentage points of GDP; EXR: exchange rate expressed in the price of one unit of foreign currency in units of domestic currency; GDP: expressed in annual percentage change; GVD: government debt expressed as percentage points of GDP; IND: industrial production index; INT - interest rate in p.a.; CPI: consumer price index; TRB: trade balance expressed as percentage points of GDP.								

Table F: Test of cointegration

Table F1: Test of cointegration - Bosnia and Herzegovina (Sample: 2004:1 2008:12)

Date: 03/11/11   Time: 22:18
Sample (adjusted): 2004M03 2008M12
Included observations: 58 after adjustments
Trend assumption: Linear deterministic trend
Series: H_X1 H_X2 H_X3 H_X4 H_X6 H_X7
Lags interval (in first differences): 1 to 1

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None	0.476628	90.52460	95.75366	0.1085
At most 1	0.305987	52.97179	69.81889	0.5064
At most 2	0.259384	31.78644	47.85613	0.6239
At most 3	0.139569	14.37058	29.79707	0.8192
At most 4	0.092275	5.651882	15.49471	0.7362
At most 5	0.000632	0.036653	3.841466	0.8481

 Trace test indicates no cointegration at the 0.05 level
 * denotes rejection of the hypothesis at the 0.05 level
 **MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None	0.476628	37.55281	40.07757	0.0937
At most 1	0.305987	21.18535	33.87687	0.6702
At most 2	0.259384	17.41586	27.58434	0.5444
At most 3	0.139569	8.718695	21.13162	0.8545
At most 4	0.092275	5.615229	14.26460	0.6629
At most 5	0.000632	0.036653	3.841466	0.8481

 Max-eigenvalue test indicates no cointegration at the 0.05 level
 * denotes rejection of the hypothesis at the 0.05 level
 **MacKinnon-Haug-Michelis (1999) p-values

Table F2: Test of cointegration - Bulgaria (Sample: 2004:1 2008:12)

Date: 03/11/11   Time: 22:20
Sample (adjusted): 2005M03 2008M12
Included observations: 46 after adjustments
Trend assumption: Linear deterministic trend
Series: B_X1 B_X2 B_X3 B_X6 B_X7
Lags interval (in first differences): 1 to 1

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None	0.375445	55.97882	69.81889	0.3788
At most 1	0.308119	34.32587	47.85613	0.4841
At most 2	0.174022	17.38214	29.79707	0.6118
At most 3	0.154156	8.587558	15.49471	0.4049
At most 4	0.019082	0.886235	3.841466	0.3465

 Trace test indicates no cointegration at the 0.05 level
 * denotes rejection of the hypothesis at the 0.05 level
 **MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None	0.375445	21.65295	33.87687	0.6345
At most 1	0.308119	16.94373	27.58434	0.5848
At most 2	0.174022	8.794581	21.13162	0.8486
At most 3	0.154156	7.701323	14.26460	0.4099
At most 4	0.019082	0.886235	3.841466	0.3465

 Max-eigenvalue test indicates no cointegration at the 0.05 level
 * denotes rejection of the hypothesis at the 0.05 level
 **MacKinnon-Haug-Michelis (1999) p-values

Table F3: Test of cointegration - Croatia (Sample: 2004:1 2008:12)

Date: 03/11/11   Time: 22:22
Sample (adjusted): 2004M03 2008M12
Included observations: 58 after adjustments
Trend assumption: Linear deterministic trend
Series: C_X1 C_X2 C_X3 C_X4 C_X6 C_X7 C_X8
Lags interval (in first differences): 1 to 1

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None	0.386598	100.0761	125.6154	0.5994
At most 1	0.364013	71.72955	95.75366	0.6630
At most 2	0.267142	45.48006	69.81889	0.8152
At most 3	0.176040	27.45348	47.85613	0.8365
At most 4	0.136781	16.22275	29.79707	0.6965
At most 5	0.113617	7.691737	15.49471	0.4989
At most 6	0.011938	0.696571	3.841466	0.4039

 Trace test indicates no cointegration at the 0.05 level
 * denotes rejection of the hypothesis at the 0.05 level
 **MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None	0.386598	28.34659	46.23142	0.8640
At most 1	0.364013	26.24950	40.07757	0.6854
At most 2	0.267142	18.02657	33.87687	0.8763
At most 3	0.176040	11.23073	27.58434	0.9592
At most 4	0.136781	8.531011	21.13162	0.8683
At most 5	0.113617	6.995167	14.26460	0.4897
At most 6	0.011938	0.696571	3.841466	0.4039

 Max-eigenvalue test indicates no cointegration at the 0.05 level
 * denotes rejection of the hypothesis at the 0.05 level
 **MacKinnon-Haug-Michelis (1999) p-values

Table F4: Test of cointegration - Croatia (Sample: 2000:1 2010:12)

Date: 03/11/11   Time: 22:10
Sample (adjusted): 2000M06 2010M12
Included observations: 127 after adjustments
Trend assumption: Linear deterministic trend
Series: X1 X10 X11 X2 X3 X4 X5 X6 X7 X8 X9
Lags interval (in first differences): 1 to 4

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.466348	366.6478	285.1425	0.0000
At most 1 *	0.428390	286.8903	239.2354	0.0000
At most 2 *	0.336732	215.8594	197.3709	0.0042
At most 3 *	0.267674	163.7162	159.5297	0.0289
At most 4	0.245279	124.1519	125.6154	0.0612
At most 5	0.182902	88.41328	95.75366	0.1438
At most 6	0.140721	62.75973	69.81889	0.1606
At most 7	0.131796	43.49869	47.85613	0.1209
At most 8	0.107952	25.54989	29.79707	0.1427
At most 9	0.076953	11.04196	15.49471	0.2089
At most 10	0.006846	0.872412	3.841466	0.3503

Trace test indicates 4 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.466348	79.75755	70.53513	0.0057
At most 1 *	0.428390	71.03086	64.50472	0.0106
At most 2	0.336732	52.14320	58.43354	0.1823
At most 3	0.267674	39.56429	52.36261	0.5224
At most 4	0.245279	35.73863	46.23142	0.4138
At most 5	0.182902	25.65355	40.07757	0.7255
At most 6	0.140721	19.26104	33.87687	0.8057
At most 7	0.131796	17.94880	27.58434	0.4994
At most 8	0.107952	14.50793	21.13162	0.3248
At most 9	0.076953	10.16955	14.26460	0.2010
At most 10	0.006846	0.872412	3.841466	0.3503

Max-eigenvalue test indicates 2 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Table F5: Test of cointegration - Montenegro (Sample: 2004:1 2008:12)

Date: 03/11/11   Time: 22:24
Sample (adjusted): 2004M03 2008M12
Included observations: 58 after adjustments
Trend assumption: Linear deterministic trend
Series: M_X1 M_X5 M_X6 M_X7
Lags interval (in first differences): 1 to 1

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None	0.165118	24.66525	47.85613	0.9273
At most 1	0.119159	14.19832	29.79707	0.8293
At most 2	0.077630	6.839386	15.49471	0.5964
At most 3	0.036432	2.152500	3.841466	0.1423

 Trace test indicates no cointegration at the 0.05 level
 * denotes rejection of the hypothesis at the 0.05 level
 **MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None	0.165118	10.46694	27.58434	0.9773
At most 1	0.119159	7.358929	21.13162	0.9384
At most 2	0.077630	4.686886	14.26460	0.7807
At most 3	0.036432	2.152500	3.841466	0.1423

 Max-eigenvalue test indicates no cointegration at the 0.05 level
 * denotes rejection of the hypothesis at the 0.05 level
 **MacKinnon-Haug-Michelis (1999) p-values

Table F6: Test of cointegration - Romania (Sample: 2004:1 2008:12)

Date: 03/11/11   Time: 22:25
Sample (adjusted): 2004M03 2008M12
Included observations: 58 after adjustments
Trend assumption: Linear deterministic trend
Series: R_X1 R_X2 R_X3 R_X4 R_X5 R_X6 R_X7 R_X8
Lags interval (in first differences): 1 to 1

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None	0.460929	137.0314	159.5297	0.4236
At most 1	0.387212	101.1928	125.6154	0.5640
At most 2	0.307248	72.78809	95.75366	0.6250
At most 3	0.275956	51.49725	69.81889	0.5717
At most 4	0.205635	32.76884	47.85613	0.5696
At most 5	0.183965	19.41653	29.79707	0.4633
At most 6	0.080924	7.625251	15.49471	0.5063
At most 7	0.045993	2.730865	3.841466	0.0984

 Trace test indicates no cointegration at the 0.05 level
 * denotes rejection of the hypothesis at the 0.05 level
 **MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None	0.460929	35.83863	52.36261	0.7498
At most 1	0.387212	28.40467	46.23142	0.8614
At most 2	0.307248	21.29084	40.07757	0.9398
At most 3	0.275956	18.72841	33.87687	0.8381
At most 4	0.205635	13.35231	27.58434	0.8646
At most 5	0.183965	11.79128	21.13162	0.5684
At most 6	0.080924	4.894386	14.26460	0.7551
At most 7	0.045993	2.730865	3.841466	0.0984

 Max-eigenvalue test indicates no cointegration at the 0.05 level
 * denotes rejection of the hypothesis at the 0.05 level
 **MacKinnon-Haug-Michelis (1999) p-values

Table F7: Test of cointegration - Slovenia (Sample: 2004:1 2008:12)

Date: 03/11/11   Time: 22:26
Sample (adjusted): 2004M03 2008M12
Included observations: 58 after adjustments
Trend assumption: Linear deterministic trend
Series: S_X4 S_X5 S_X6 S_X7
Lags interval (in first differences): 1 to 1

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None	0.113771	17.14854	47.85613	0.9988
At most 1	0.090564	10.14330	29.79707	0.9781
At most 2	0.065604	4.637347	15.49471	0.8461
At most 3	0.012026	0.701731	3.841466	0.4022

 Trace test indicates no cointegration at the 0.05 level
 * denotes rejection of the hypothesis at the 0.05 level
 **MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None	0.113771	7.005239	27.58434	0.9998
At most 1	0.090564	5.505953	21.13162	0.9908
At most 2	0.065604	3.935616	14.26460	0.8661
At most 3	0.012026	0.701731	3.841466	0.4022

 Max-eigenvalue test indicates no cointegration at the 0.05 level
 * denotes rejection of the hypothesis at the 0.05 level
 **MacKinnon-Haug-Michelis (1999) p-values

Table F8: Test of cointegration - Serbia (Sample: 2004:1 2008:12)

Date: 03/11/11   Time: 22:27

Sample (adjusted): 2005M12 2008M12
Included observations: 37 after adjustments
Trend assumption: Linear deterministic trend
Series: SR_X1 SR_X2 SR_X3 SR_X4 SR_X7 SR_X8
Lags interval (in first differences): 1 to 1

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None	0.493698	70.30019	95.75366	0.7125
At most 1	0.328091	45.11716	69.81889	0.8271
At most 2	0.312351	30.40474	47.85613	0.6981
At most 3	0.255771	16.54912	29.79707	0.6731
At most 4	0.126426	5.619088	15.49471	0.7400
At most 5	0.016566	0.618089	3.841466	0.4318

 Trace test indicates no cointegration at the 0.05 level
 * denotes rejection of the hypothesis at the 0.05 level
 **MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None	0.493698	25.18303	40.07757	0.7560
At most 1	0.328091	14.71241	33.87687	0.9804
At most 2	0.312351	13.85562	27.58434	0.8325
At most 3	0.255771	10.93003	21.13162	0.6543
At most 4	0.126426	5.001000	14.26460	0.7417
At most 5	0.016566	0.618089	3.841466	0.4318

 Max-eigenvalue test indicates no cointegration at the 0.05 level
 * denotes rejection of the hypothesis at the 0.05 level
 **MacKinnon-Haug-Michelis (1999) p-values

Table F9: Test of cointegration - UK (Sample: 2004:1 2008:12)

Date: 03/11/11   Time: 22:23

Sample (adjusted): 2004M03 2008M12
Included observations: 58 after adjustments
Trend assumption: Linear deterministic trend
Series: GX1 GX4 GX6 GX7 GX8
Lags interval (in first differences): 1 to 1

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None	0.351473	60.49772	69.81889	0.2204
At most 1	0.237925	35.38074	47.85613	0.4281
At most 2	0.157863	19.62153	29.79707	0.4489
At most 3	0.101341	9.656403	15.49471	0.3081
At most 4	0.057894	3.458995	3.841466	0.0629

 Trace test indicates no cointegration at the 0.05 level
 * denotes rejection of the hypothesis at the 0.05 level
 **MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None	0.351473	25.11698	33.87687	0.3771
At most 1	0.237925	15.75920	27.58434	0.6861
At most 2	0.157863	9.965131	21.13162	0.7480
At most 3	0.101341	6.197408	14.26460	0.5880
At most 4	0.057894	3.458995	3.841466	0.0629

 Max-eigenvalue test indicates no cointegration at the 0.05 level
 * denotes rejection of the hypothesis at the 0.05 level
 **MacKinnon-Haug-Michelis (1999) p-values

Table F10: Test of cointegration - US (Sample: 2004:1 2008:12)

Date: 03/11/11   Time: 22:28
Sample (adjusted): 2004M03 2008M04
Included observations: 50 after adjustments
Trend assumption: Linear deterministic trend
Series: UX1 UX3 UX4 UX5 UX7 UX8
Lags interval (in first differences): 1 to 1

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None	0.392390	84.78936	95.75366	0.2232
At most 1	0.358215	59.87826	69.81889	0.2391
At most 2	0.301887	37.70318	47.85613	0.3151
At most 3	0.195966	19.73445	29.79707	0.4410
At most 4	0.133928	8.828749	15.49471	0.3815
At most 5	0.032256	1.639410	3.841466	0.2004

 Trace test indicates no cointegration at the 0.05 level
 * denotes rejection of the hypothesis at the 0.05 level
 **MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None	0.392390	24.91110	40.07757	0.7730
At most 1	0.358215	22.17507	33.87687	0.5941
At most 2	0.301887	17.96873	27.58434	0.4978
At most 3	0.195966	10.90570	21.13162	0.6567
At most 4	0.133928	7.189339	14.26460	0.4670
At most 5	0.032256	1.639410	3.841466	0.2004

 Max-eigenvalue test indicates no cointegration at the 0.05 level
 * denotes rejection of the hypothesis at the 0.05 level
 **MacKinnon-Haug-Michelis (1999) p-values

Table F11: Test of cointegration - SEE (Sample: 2004:1 2008:12)

Johansen Fisher Panel Cointegration Test

Series: ?_X1 ?_X3 ?_X4 ?_X5 ?_X6 ?_X8

Date: 03/11/11   Time: 22:30

Sample: 2004M01 2008M12

Included observations: 60

Trend assumption: Linear deterministic trend

Lags interval (in first differences): 1 1

Unrestricted Cointegration Rank Test (Trace and Maximum Eigenvalue)

Hypothesized No. of CE(s)	Fisher Stat.* (from trace test)	Prob.	Fisher Stat.* (from max-eigen test)	Prob.
None	18.26	0.1952	10.13	0.7528
At most 1	12.17	0.5929	10.20	0.7477
At most 2	8.313	0.8724	4.654	0.9901
At most 3	7.515	0.9130	6.050	0.9652
At most 4	7.912	0.8939	6.052	0.9652
At most 5	16.38	0.2909	16.38	0.2909

* Probabilities are computed using asymptotic Chi-square distribution.

Resume

Anita (Radman) Peša
Address: Ive Senjanina 10f, 23000 Zadar, Croatia
Phone: ++385(0)98 911 3480
e-mail: anita.pesa@unizd.hr

Date and place of birth: 25th March 1969, Zagreb, Croatia

Professional experience:

2008 – ongoing

University of Zadar, Department of Economy, Zadar

Assistant Professor

2004 – 2008
KLETT Verlag, Zagreb – international publishing company with headquarters in Stuttgart, Germany

Function: Deputy Managing Director and Editor-in-Chief

Responsibilities: start-up activities and business development, accounting responsibilities, development and implementation of various marketing and communication projects and campaigns, editor for different kinds of publications and the monthly National Geographic Junior (under licence from the American National Geographic Kids), coordination of journalists and assistants, etc.

2001 – 2004
GCI Zagreb (Public Relations/Public Affairs); department of **Grey Worldwide US**
Function: Strategic Planning and Business Development
Responsibilities: business development, accounting responsibilities, development and implementation of various marketing communication projects and campaigns, strategic planning, maintaining internal and external relations, public relations, media relations, strategies, consulting.

Client experience: Mars, Mayo Clinic, Dresdner Bank, Podravska Bank, Turboconsult - IT, Hausbrandt, Jansen Cilag etc.

2000 – 2001
Blitz Film & Video Distribution, leader in film and video/DVD distribution in Croatia, Slovenia and Bosnia and Herzegovina
Function: Executive manager of Marketing and PR
Responsibilities: business development, development and implementation of various marketing communication projects and campaigns, organization of events and promotional campaigns for different projects (movies), supervision of graphical design materials, PR materials and web site contents.
Special projects:

1. Development of the web site project with date base, e-shopping and press club for journalists
2. Development of internal communication between Blitz companies (Zagreb-Ljubljana-Sarajevo-Beograd)

1998 – 2000
Croatia Airlines, Zagreb
Function: Public Relations Officer
Responsibilities: corporate PR, press monitoring, production of press materials, organization of press conferences, media relations, cooperation in editing of the Croatia Airlines In-Flight Magazine, writing for the In-Flight Magazine, internal PR, co-editing and writing for the Croatia Airlines Internal Magazine

1987 – 1998
Various media (magazine Svijet, Radio 101, Večernji list – business supplement Poslovni svijet, Jutarnji list, Slobodna Dalmacija, etc.)
Function: Freelance journalist

Education:

2008 – ongoing
- PhD Candidate, Faculty of Economy, University of Maribor, Slovenia

2002 – 2005
- **Masters Degree** in International Relations, Faculty of Political Sciences, University of Zagreb, Croatia; thesis – Meaning of Business Intelligence in International Relations

1988 - 1993
- **Faculty of Philosophy – Philosophy and Information Science,** University of Zagreb, Croatia
- **Diploma in 1993**; thesis – Artificial Intelligence

Languages:
- Proficiency in English
- Passive: German

Computer skills:

- **PC**; Microsoft Office (Microsoft Word, Excel), Power Point, Adobe, Outlook Express, Internet Explorer
- **Macintosh** – Quark X-Press, Adobe Photoshop, PageMaker, Claris

Papers:

Radman Peša, A., Festić, M. (2011), Testing the "EU Announcement Effect" on Stock Market Indices and Macroeconomic Variables in Croatia between 2000 and 2010, Prague Economic Paper, Accepted for publishing 29/11/2011.

Radman Peša, A., Festić, M. (2011), TSLS Estimation of Stock Market Indices in South-Eastern European Countries, as Compared with World Stock Exchange Centres in the Financial Crisis, Journal of Economic Computation and Economic Cybernetics Studies and Research 4/2011.

Radman Peša, A., Belak, S., Belak, A., (2010), Sustainable Corporate Responsitibity and Social Responsible Investment in South Eastern Europe: Global Economy: Challenges and Perspectives, 11th International Conference, Nitra, Slovakia Date: 26-28th May (2010).

Belak S., Radman Peša A., Belak B. (2008), Stilometry – Definition and Development, Intelligent Manufacturing & Automation: Focus on Next Generation of *Intelligent Systems and Solutions 19th DAAAM International Symposium*, MTF STU, Trnava, Slovakia. Date: 22nd - 25th October 2008.

Radman Peša, A., Belak, S., Belak, A. (2008), The Impact of Globalization on the Increased Necessity for Work Force Flexibility in Croatia and in Other South-Eastern Transition Countries, *Proceedings of the 3rd International Conference MIBES*, http://mibes.teilar.gr,/ Larisa, Greece.

Belak, S., Radman Peša, A., Belak, B. (2008), Future of Business Intelligence Systems Regarding the Protection of Privacy of Individuals, Organizations, Companies and Society as a Whole, *Proceedings of the 3rd International Conference MIBES*, http://mibes.teilar.gr,/ Larisa, Greece.

Radman Peša, A. (2003) If you have hired PR experts to carry out your projects, trust them. (Ako ste već angažirali PR stručnjake da provedu zadani projekt, vjerujte im.), Poslovni magazin,6, p 32.

Radman Peša, A.,(2003) Lack of Internal Communication ruins company reputation (Nedostatak interne komunikacije ruši ugled tvrtke), Poslovni magazine 1 , pp 49 – 50.

Radman Peša, A. (2002), Company reputation – can it be measured? (Može li se izmjeriti reputacija tvrtke), Poslovni magazin 12, pp 34 - 36.

Peša R.A. (2002), Crisis communication – skill to learn (Krizno komuniciranje – vještina koja se uči), Poslovni magazin 10, pp 38 – 40.

Business Projects:

HVB Group, Splitska banka and Cap Gemini (2003) – project of change management procesMedicine School University of Zagreb (2003) – Communication strategy of the Medicine School for foreign students.

Carnet, Croatian Academic and Research Network, (2002 - 2003) - communication strategy of '10 years of Internet in Croatia'.

Mayo clinic (2002), communication strategy for patient from Croatia.

Oracle, Croatia (2002), communication strategy for the management of the company and event management.

Podravska banka (2002), communication strategy for the new financial product.

Masterfood campaign (2001-2002), event manegement and communication strategy for Croatia.

Dresdner Bank (2001), event management and communication strategy in Croatia.

Janssen Cilag (2001), communication support for clinical trials in Croatia.

Awards:

2001 – 1st award for the best web site in the category for film by Vidi (the most eminent web portal and IT magazine in Croatia)

1995 – 2nd award for the promotional slogan for Croatian tourism: "Croatia – the Decoration of the World" by Croatian National Tourist Board

External cooperation:

Editor and Head of Projects:
Verbum, Publishing House, Split
Mediatrener, Zagreb – Head of Educational Projects - Public Relations.

UNIVERZA V MARIBORU

Ekonomsko-poslovna fakulteta

IZJAVA DOKTORSKEGA KANDIDATA

Podpisani-a Anita Radman Peša, vpisna številka 83044957

izjavljam,

da je doktorska disertacija z naslovom

Testing Procyclicality of Stock Market Indices in South Eastern European Countries in Transition as Compared to World Stock Exchange Centres

- rezultat lastnega raziskovalnega dela,
- da predložena disertacija v celoti ali v delih ni bila predložena za pridobitev kakršnekoli izobrazbe po študijskem programu druge fakultete ali univerze,
- da so rezultati korektno navedeni in
- da nisem kršil-a avtorskih pravic in intelektualne lastnine drugih.

Podpis doktorskega-e kandidata-ke:

_____