**Corvinus University of Budapest Doctoral School of Business Administration and Management**

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**Ph.D. Thesis Summary**

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# The Financial Integration and Its Flipside with a Focus on Banking and Stock Markets of Central, Eastern, and Southeastern European Countries

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## CONTENTS

# 1. **BACKGROUND AND OVERVIEW OF THE RESEARCH**

As a very popular research topic, the integration among financial markets has been studied by many researchers. The integration of financial markets of countries is assumed by many scholars to have positive impacts. Many researchers supported the idea that the deregulation of domestic rules is needed especially in developing markets to increase the effectiveness of financial integration and success of economic transactions (Mc Kinnon, 1973, Shaw, 1973, Balassa, 1973). Financially integrated markets may allow higher capital flow which is especially needed in developing markets. The integration can provide an allocation of capital that increases efficiency, meanwhile, it helps to diversify risks. Also, macroeconomic discipline and higher transparency can be achieved by international organizations. On the other hand, financial integration may increase the competition while market depth is growing, while financial stability is expected to rise.

Nevertheless, recent experiences have shown us that the cost of financial integration could be heavier than the benefits in some cases. Some economies may have debt problems as some countries are losing control of economic and financial structure and independence of monetary and fiscal policies. Concentration and allocation of capital flows and difficulty of accessing may consist of a threat as well as oligopoly markets after the merger of companies. Contagion and spillovers during high volatility periods may adversely affect domestic markets. In this context, the impact of international financial integration on Central and South-Eastern European economies is examined in the thesis.

This thesis aims to investigate the effect of financial integration on European markets from another point of view. For this reason, various researches have been combined to assess the impact of financial integration on different types of financial markets. The analyses focus primarily on the CESEE region and covers Bulgaria, Croatia, the Czech Republic, Hungary, Poland, Romania, and Turkey. The countries are selected to be a sample from EU member states and EU candidates. Due to some data limitations, some of the CESEE countries are not included in the research (Albania, Bosnia and Herzegovina, Kosovo, Montenegro, North Macedonia, Serbia, Slovakia, Slovenia, Russia, and Ukraine).

## 1.1 Structure of the Thesis

This study uses and combines the results of the various research methodologies such as wavelet technique, cluster analysis, and GARCH models. After the introduction in the first chapter, research questions and hypotheses are introduced.

Chapter 2 of this thesis explains the dynamics of financial integration with a focus on Europe from different perspectives. In the first part of the chapter financial integration is explained with its pros and cons. Later, financial crises and their impact on emerging European markets have been debated. The GDP levels of economies are investigated to observe the vulnerability of markets after the integration of European markets. The second part of the chapter provides a summary of the European Union and the financial markets with a focus on Central, Eastern, and South-Eastern European Countries. This chapter enables the reader to see understand the changes in the level of market access of the CESEE in the last two decades.

In Chapter 3 of this thesis, cluster analysis is employed to observe the resemblance of banking sector ratios in Europe. The selected ratios are selected to cover the main financial activities in balance sheets and to represent the main characteristics of the banking sector. The chapter aims to provide an overview of the banking sector comparison among countries. Although it is expected that the ratios should be similar after many years of European economic integration, the impact of financial integration in Europe is observed to be limited. The banking sector clusters are existing due to geographical closeness more than the integration in the whole union. And the more developed countries clustered together as another indicator of non-convergence during the study period.

In the 4th Chapter of the thesis, the research focuses on the contagion during the Greek Debt crisis. The wavelet analysis is employed to compare the impact of crisis with non-volatile periods of integration. The analysis illustrates that the impact of the crisis is hazardous, as the positive effects of integration are very limited. The countries had an impact on other economies during higher volatility periods, unlike other times.

Chapter 5 employed the DCC-mGARCH model to investigate the market reactions against the shocks, volatility transmission, and spillover effects between Germany, the US, the UK, and stock markets of Croatia, Greece, Hungary, Poland, Romania, and Turkey in the last two decades, to examine the risk-return profile of Central and Southeastern European (CESEE) stock markets from a portfolio management viewpoint.

Central, Eastern, and South-Eastern European (CESEE) economies are traditionally in need of capital inflow to continue their growth. Therefore, the chapter aims to explain the impact of shocks from developed economies on particular markets. For this reason, a DCC-mGARCH (1,1) model is used to investigate the conditional returns and time-varying volatilities as well as potential market shocks and spillover effects. According to the results of the model, the US has a spillover effect on Central and South-Eastern European (CESEE) stock markets whereas Germany and the UK have fewer spillovers on these countries.

The last chapter (Chapter 6) combines and summarizes the results of the parts of this thesis. The impact of financial integration is evaluated in the light of the previous chapters. Lastly, further suggestions for growing markets in Europe are provided.

## 1.2 Objectives and Main Questions of the Research

Economic and financial integration may have benefits and harms as the research in the literature explains. Recent financial crises have affected developing markets and their investors severely in the last few decades. Some international organizations promote positive sides of financial integration in their publications. However, without ignoring the benefits, the harms of integration are needed to be explained for taking better measures and improving the whole system.

It is impossible in the modern world for a country to stay out of the financial integration phenomenon. Many countries have benefited from integration, as trade and financial integration is increasing rapidly over the last 50 years. However, financial instability has become an important fact that it can cause a decline in economic growth while some social problems may occur. Especially, the disruptive impact of the financial crisis in the last decades may have been linked with the high degree of financial integration.

Due to the lack of explanation in the economic theory, the relationship and the effects of financial integration on volatility is the main empirical question of this research. The harm of integration in developing European markets is the main focus of this thesis while the benefits are not neglected. Moreover, the less developed part (CESEE) of a highly integrated financial market (the EU) is studied to observe the possible leverage effect of integration on these countries. All in all, this thesis aims to identify the integrity of the financial sector in Europe, contagion and negative spillovers of financial crises, the impact of financial integration on capital market volatility, and the spillovers from developed markets on Central, Eastern, and Southeastern Europe.

### 1.2.1. Research Questions

The financial integration in international markets and its benefits and negative aspects of it is a very vast research area. This thesis, therefore, is limiting the topic to investigate the impacts on developing markets. The general question of this thesis aims to clarify the impact of financial integration for the less developed part of Europe in today's world during and after recent changes and crises. The research questions of this study are as follows:

1. Is there a cross-border and international integration of the banking sector in Europe?
2. What is the relationship between financial integration and economic volatility?

3. What are the effects of financial integration during crises in Eastern European countries?

4. Is the impact of financial integration on capital markets volatile?

5. Is the financial integration beneficial for the economies in CESEE?

### 1.2.2 Hypotheses of the Dissertation

The hypotheses of the thesis are created in line with the idea that financial integration can be both beneficial or harmful for different economies. Although the countries in this research are parts of the same union, some countries in the EU have been severely affected by the shocks while some other countries had only small stress or no harm in their domestic markets. Concerning that the Union is created by the developed countries, the rules might have been set for the favor of these economies whereas the favors for developing market are neglected. Although there would be a convergence in many aspects of social life among member countries, the fragility and the volatility of the markets are still very questionable especially in developing markets. This dynamic process needs a better observation of cases regarding economic and financial integration.

Due to the differences in the market structure of less developed parts of the EU, the impacts may differ especially during panic times. For a better understanding of the topic following hypotheses are tested.

H1: The banking sector ratios of the EU countries show similarities among neighbor countries in cooperation.

H2: There is a change in the clusters of banking sector ratios of countries after the crisis.

H3: The impact of integration is stronger especially during crises and high volatility periods

H4: There are observable negative effects of integration for selected countries in the form of contagion in the integrated region

H5: There is a spillover effect that is observable for the CESEE region coming from developed markets.

H6: The spillovers from developed markets have been impacting developing markets in the CESEE region similarly

## 2. METHOD OF THE RESEARCH

In each chapter, a detailed description of the methodology of the research is given to analyze the hypothesis outlined above. The short overview of the applied methodology in the given chapters is as follows:

For the comparison of the banking sector of countries in Europe, *a cluster analysis* has been employed. The cluster analysis allows grouping bank sector ratios during a period. Therefore, it investigates the similarity of the banking sector ratios. As the members are more integrated with each other, the convergence of the ratios and changes between groups are expected to be visible. If there is no resemblance or no clear group changes among countries during the period, this research can support the idea that financial integration for the banking sector ratios is limited.

To compare the impact of financial integration during crises and normal times (high volatility and low volatility) *a wavelet coherence analysis* has been employed. The wavelet multi-scale decomposition is an important tool to explore the complex dynamics of financial time series (Bekiros and Marcellino, 2013). In this analysis, the contagion effect of the crisis is focused on stock markets during high and low volatility periods. The comparison has been made by analyzing the co-movements of stock market data with an emphasis on South-Eastern and Central European economies.

For the spillover effect coming from developed markets, *a DCC-mGARCH method* is used. The relation between CESEE and the US, the UK, and the German stock markets has been investigated in this part of the thesis. Daily stock prices of markets have been analyzed to observe the volatility transmission and spillover effects of DAX, DJI, and FTSE on ASE, BUX, CRBEX, BETI, WIG, and XU100. The spillover effects of three developed markets from different continents on six different developing markets in CESEE are aimed to be analyzed to observe the financial integration with a comparison.

## 3. RESULTS OF THE RESEARCH, CONTRIBUTION OF THE THESIS

Financial integration has been studied by many scholars over the years. Some of these analyses resulted that increased financial integration of developing economies has an adverse impact on macroeconomic volatility. And some studies claimed that there is a negative relation between volatility and growth.

This thesis aims to contribute to the existing literature by filling the gap regarding associations between financial integration and market volatility in Europe, with the help of different methodologies and the most recent data after the crisis. This study contributes to the literature on financial integration and its impacts by analyzing the changes during and after crisis and combining the results of different methods. This thesis has also focused on CESEE region to observe the leverage effect and the contagion spread from developed parts.

The first major contribution of the thesis is the detection of some basic patterns and trends in banking and observing the integration in the banking sector by employing a well-known technique. As financial integration is getting higher, there should be convergence in the banking system ratios. It is eminent to understand how the banking system getting closer to each other during the last decade. The differences in the ratios may consist of a problem in the integration and avoid the existence of a single market. Cluster analysis allows to classify mixed population into more homogenous groups (Murtagh F and Contreras P, 2012; Blasius J and Greenacre M, 2014). The use of cluster analysis does not have any restriction or a training stage based on a collection of data to identify the complex relationships. Therefore, cluster analysis is an appropriate tool to compare banking sector ratios because of the complex nature of data. According to the results of the analysis, transitions between clusters are not very common for countries. A homogenous structure of a single banking market is not observed and this can lead to unfair competition, especially for the developing countries' markets. Although financial integration is expected to create a market where the conditions are similar, the financial ratios of the developing countries' banks do not converge to the developed rivals. This doesn’t bring advantages of the convergence even after joining the union

This thesis contributes to the literature also by analyzing the effects of contagion among stock markets by using the wavelet method. This analysis is contributing to the literature by employing a new technique to explain and visualize the imbalances and impacts of shocks in financial time series data. As the wavelet tool displays the leverage effect by comparing crisis and non-crisis periods, the study can be used to support the idea that integration is adversely affecting the connected markets. According to the results of the analysis, the contagion is high especially during a crisis within European financial markets. whereas positive improvements have less impact on markets. Therefore, the gains from integration have been observed to be less than the downturns. This can be called a leverage effect which means the negative movement in volatility is stronger than the positive one. These results are valid only for the observed period and observed variables in studied stock exchange markets. Therefore, for the analyzed period and countries in CESEE, financial integration is observed to be more disruptive than beneficial.

Lastly, an analysis investigates the volatility spillovers in the CESEE by using the mGARCH methodology. Therefore, this part of the thesis provides a new vision for financial integration and explains the risks for developing countries. According to the results of the analysis, the spillover effect of FTSE on CESEE is insignificant, whereas Dow Jones Industrial Average Index has an impact with a lag on all markets analyzed in this study. On the other hand, DAX has only significant spillover on BETI and BUX. The coefficients are significant in the model, and it proves that the GARCH (1,1) effect is observable.

As a combination of the results of the chapters, it can be concluded that financial integration in banking and stock markets of CESEE countries is limited. However, it would be expected for a union to be more integrated. The results of studies show that integration can be volatile from one country to another and from one period to another period. The results illustrate that observed countries can show similarities during the crisis, whereas the integration is difficult to diagnose during normal period especially. The analyses in the thesis are supporting each other by asserting that integration of banking and stock markets of CESEE and the western part of Europe is limited or it is not always in favor of CESEE economies.

## 4. REFERENCES


Balassa, B., (1973). Just How Misleading are Official Exchange Rate Conversions? A Comment. The Economic Journal, 1258–1267.

Bekiros, S. and Marcellino, M. (2013). The multiscale causal dynamics of foreign exchange markets. Journal of International Money and Finance. 33, 282–305.

Blasius J. and Greenacre, M. (2014) Visualization and Verbalization of Data. Boca Raton: Chapman and Hall/CRC.

Mc Kinnon, R. (1973). Money and Capital in Economic Development, Brooking Inst Washington.

Murtagh, F. and Contreras, P. (2012). Algorithms for hierarchical clustering: an overview. WIREs Data Mining Knowl Discov 2. 86–97.

Shaw, E. S. (1973). Financial Deepening in Economic Development New York, Oxford University Press.

## 5. THE PUBLICATIONS OF THE AUTHOR OF THE TOPIC

Ercan, H. and Karahanoğlu, I. (2019). A Wavelet Coherence Analysis: Contagion in Emerging Countries Stock Markets. Periodica Polytechnica Social and Management Sciences, 27(2), 99–107.

Ercan, H. and Sayaseng, S. (2016): The cluster analysis of the banking sector in Europe. Economics and Management of Global Value Chains. University of Szeged, Doctoral School in Economics, Szeged, 111–127.