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Facultatea de Ştiinţe Economice şi Gestiunea Afacerilor

HABILITATION THESIS

Contributions to investors' herding behavior and financial connectedness

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Summary

This habilitation thesis encompasses my research activity on investors' herding behavior and financial markets integration, including my main publications on these topics. The first part of the thesis is focused on my contributions to the literature on investors' herding behavior, both in emerging and developed stock markets. The second part of the thesis highlights my research work on equity markets interconnectedness at the European level. The third part details my contributions to the financial markets' connectedness and the effects of prudential toolkit on loan growth in Central and Eastern Europe (CEE). The last part of the thesis presents my future research and teaching directions.

The first part, 'Investors' herding behavior toward the market consensus', exhibits the empirical studies that I performed for detecting the presence of herding behavior in emerging and developed stock markets, under different conditions.

Chapter 1, entitled **'Herding behavior in CEE stock markets under asymmetric conditions**' is a paper published in the *Journal of Behavioral Finance* (2017), written together with Angela Maria Filip and Andreea Maria Pece. This work investigates herding behavior in ten CEE stock markets by using daily data on stock prices for 384 companies from January 2, 2003 to December 31, 2013. The study is based on the methodology developed by Chang et al. (2000), adapted to detect herding behavior under different market conditions. We use the quantile regression analysis as an estimation method and find evidence of herding behavior in all CEE countries, except for Poland and Romania. The results confirm the asymmetric effects of different market conditions on herding behavior.

Chapter 2, 'Intentional and spurious herding behavior', which is published on *SSRN network* (2021), explores investors' herding behavior toward the market consensus in the U.S. and Europe stock markets from January 5, 2006 to September 30, 2020. We find that the uncertainty triggered by the outbreak of the Covid-19 pandemic amplified the observed herding behavior. The occurrence of unconventional events induced herding for both markets and, moreover, this behavior is driven by non-fundamental information. We document strong evidence of herding during periods characterized by high sentiments. Finally, our analysis suggests that the ECB's non-standard monetary policy announcements induced both spurious and intentional herding, while the Fed's releases did not cause herding.

The second part of the thesis, **'Dynamic connectedness between the European equity markets'**, is dedicated to the investigation of equity markets co-movements and network, by using different methodologies and accounting for the effects of investors' sentiments on markets connectedness.

Chapter 3, entitled **'Time-varying dependence in European equity markets: A contagion and investor sentiment driven analysis**' is published in *Economic Modelling* (2020) and is a joint work with Mihai Nițoi. In the light of the global financial crisis and sovereign debt crisis, this study investigates the dependence patterns in 24 European equity markets. We further examine whether these stressful events triggered contagion. Given that investors tend to behave irrationally in turmoil periods, we contribute to the literature by studying the effect of investor sentiment on markets correlations. Our results reveal heterogeneity in the time-varying dependence and across markets. Contagion is confirmed in turbulent times, a spillover effect from periphery euro area being detected. We find that similar sentiments increase correlations, especially in crises, suggesting that investors' perceptions are an important channel of moving markets in the same direction. Furthermore, negative sentiments, such as fear or pessimism, amplify the linkages between markets. Our results offer useful insights to policy makers for reacting timely to financial shocks and for designing a more integrated market.

Chapter 4 'Determinants of stock market co-movements', published in the *Journal of International Money and Finance* (2019), together with Mihai Nițoi, analyses the co-movements and contagion in 24 European Union stock markets from January 5, 2004 to July 1, 2016. We apply a Dynamic Conditional Correlation - Mixed Data Sampling model to extract short and long-run correlations. We use short-term correlations to detect contagion. Finally, we employ a gravity-type regression to investigate the determinants of long-term correlations. Firstly, we find significant differences between the stock markets co-movements, which seem to depend on economic development and market deepening. Moreover, the time varying correlations emphasize different phases of development, i.e., integration, contagion, and divergence. Secondly, the contagion estimates reveal that, during some crisis episodes, the contagion is temporary, while for other periods the contagion becomes more persistent, indicating a herding behavior. Thirdly, the co-movements determinants show that global factors and economic similarities are important in explaining correlations. Finally, our findings for long-term correlations drivers in contagion times are mixed, revealing, on one hand, a pure

contagion that is not explained by fundamentals, and, on the other hand, a wake-up call in terms of cross-border bank flows.

Chapter 5 'Bank connectedness and investors' sentiment' is developed based on an article in press in *Finance Research Letters* (2021), co-authored with Mihai Nițoi. This study explores the connectedness based on the idiosyncratic return among the G-SIBs and O-SIIs coming from 23 European countries, and controlling for the impact of the U.S. G-SIBs. Furthermore, we propose an alternative systemic risk measure based on sentiments and we compare it with bank connectedness. The results show that banks in developed European countries form a large network, alongside the U.S. banks, while banks in European catch-up countries are gathered in their own clusters. The spillovers received by the European banks from the U.S. are higher compared to those received by the U.S. banks from the European banks. The time-varying analysis of the spillover and sentiment indices reveal that TRMI financial sentiment index could be a suitable proxy for the systemic risk.

The third part, **'Financial connectedness and the impact of prudential toolkit on loan growth in CEE'**, provides a comprehensive picture of the convergence in the region by investigating the stock markets, the sovereign risk of these economies, and the banking sector. Moreover, we offer evidence on the effects of a change in lending policy stance on loan growth in this area.

Chapter 6, entitled **'Testing financial markets convergence in CEE'**, which is published in *Economics Systems* (2016), co-written with Mihai Nițoi, investigates the financial convergence between CEE countries that are members of the European Union. The analysis covers the period 2007–2014, which accounts for the global financial crisis and the sovereign debt crisis. To examine the convergence dynamics of these financial markets, we employed the Phillips and Sul (2007) methodology, which uses a nonlinear time-varying factor model. This work provides a comprehensive picture of the financial systems within CEE by testing the convergence of their stock markets together with their credit default swap spreads, long-term government bonds, and the banking sector. The empirical findings show that the Central and Eastern European financial markets do not form a homogenous convergence club. Furthermore, in the aftermath of the global financial crisis and the sovereign debt crisis, the disparities between these financial markets have been amplified. The striking divergence revealed by our analysis emphasizes the different levels of development within the CEE financial markets. The CEE countries should implement further structural reforms in order to achieve greater financial convergence.

Chapter 7 'The impact of prudential toolkit on loan growth in CEE banking systems', published in *Economics Systems* (2021) and co-authored with Mihai Nițoi, examines the effects of prudential policy on loan growth in 11 CEE banking systems, spanning from 2000 to 2015. Based on the measures taken by the authorities from our sample countries, we build several prudential indices. Additionally, we control for the effects of several country-specific factors and bank-specific characteristics. Finally, we test the homogeneity of these effects, accounting for cycle, ownership, and bank effects. Generally, the empirical findings reveal a negative correlation between prudential toolkits and credit growth, with a conspicuous impact for tools targeting lending activity. We see that the effects of a change in the lending framework on loan growth are heterogeneous when we account for crisis and cycle patterns. Furthermore, the interaction between ownership and crisis reveals that, in normal times, foreign banks recorded higher loan growth compared to domestic banks. The opposite is true in turbulent times. The analysis of interactions between credit-based measures and bank-specific variables show that the effects of prudential actions depend on the bank size and leverage.

In the last part of the thesis, '**Career development plan**', I present my future research and teaching perspectives. The research activity will be focused on two main directions: investor' sentiment and financial literacy. With regard to the teaching activity, my future plans are related to continuously improving the courses that I teach, to coordinating students' participation in case study competitions, continuing and developing the partnerships with public institutions and private companies.

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