

UNIVERSITY OF TARTU

Faculty of Social Sciences

School of Economics and Business Administration

Karlis Kuzma

**THE ROLE OF FINANCIAL FLOW COMPOSITION IN FINANCIAL FLOW
MOVEMENTS AND THEIR EFFECT ON REAL GDP**

Research Paper

Supervisor: Associate Professor Lenno Uusküla

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Introduction

The Great Financial Crisis and the following Great Recession have seeped into the minds of the people as one of the worst financial crisis in the history. In fact, Ben Bernanke, the former head of the Federal Reserve characterizes the crisis as follows: “*September and October of 2008 was the worst financial crisis in global history, including the Great Depression.*” (Egan, 2014). If one mentions the years 2008-2010 to an economist, and asks if anything interesting happened during that time, one would most likely hear about the Great Recession.

In the case of Baltic states, which will be investigated further in this study, the statistics are daunting. The Baltic economies suffered a drop in GDP in between 13.8 to 22.1 % with Latvia being impacted the most and Estonia the least. The unemployment rates peaking above 18%, and in case of Latvia reaching even 20.6%.

In year 2020, it seems that the Baltics have successfully recovered from the crisis with the GDP levels being above the pre-crisis levels, by taking year 2010 as basis. The unemployment levels also seem to be stabilized with the level almost as low as prior to the crisis, being about 2% higher than in 2007 (Eurostat, 2019).

However, the story is not much different when it comes to emerging economies that relied on the investments to foster their economical growth.

Despite the positive outlook due to recovery, respected economists believe that there might be another crisis at the doorstep. As former Bank of England Governor Mervyn King puts it: “*Another economic and financial crisis would be devastating to the legitimacy of a democratic market system. By sticking to the new orthodoxy of monetary policy and pretending that we have made the banking system safe, we are sleepwalking towards that crisis.*” (Egan, 2014). Overall

the predictions about new crisis approaching are nothing new, but it does raise a question about how the fiscal policies, regulation and legislation can be adjusted in the best manner, and how to best predict the possible financial shocks.

With a lot of research conducted in regards to the Great Recession, it appears that the crisis of 2008, according to many commentators, has been different than previous ones in its nature. Earlier recessions were caused by supply shocks and resulted in monetary policy shocks, however, the main causes for the last recessions were financial in nature (Guender, 2018).

This turn in underlying causes indicates the need for new information and new tools in order to predict the upcoming financial crises, identify important push and pull factors and adjust policies accordingly to minimize the impact that these economic crises might have. It is known that financial components such as foreign investments, interest rates and business cycles have an impact on the macroeconomic indicators, and in turn there are push and pull factors such as property rights, financial regulation, auditing and reporting standards and others, of which all influence the capital flows, but to what extent each of these components contribute to the outcome is still a hot topic in research with varying results.

Although the levels of the interest rates have been in center of attention in the past, lots of new research is being done on financial flows due to the undeniable effect that foreign capital flows have on the macroeconomic situation and the role it played in the formation of US housing bubble during the 2008 crisis. (Rousse & Du, 2018)

The aim of this research paper is to identify the underlying factors for the movement of financial flows before, during and after crisis and gauge their effect on countries macroeconomic situation by analyzing country specific financial flow compositions and pull factors.

The main research tasks of the paper are the following:

- Defining different types of capital flows,
- Defining different types of push and pull factors,
- Giving an overview of the previous work in the area and findings of the models,
- To collect the necessary data for conducting principal component analysis of macroeconomic data and financial flows,
- To collect the necessary data for measuring push and pull factors of the chosen countries,
- To run the tests and present the findings,
- Draw conclusions from the findings and make suggestions for the policies and further research.

The structure of the paper will include both the theoretical and empirical part. In the first part, the paper will focus on building a clear understanding of capital flow types, push and pull factors, economic crises, asset bubbles and their causes by analyzing theoretical papers and previously done research in order to put the following parts in an understandable context.

Subchapter 1.1 includes definitions of different capital flows and classification of their movements. Subchapter 1.2 explains the importance of financial flows and underlying factors for their movement. Subchapter 1.3 explains asset bubbles, factors that drive their formation and their relationship with country-specific factors. Subchapter 1.4 reviews previous studies done on financial flows in context of economic crises. Empirical part focuses on analyzing financial flows, their composition, possible pull factors that may have influenced these flows and effect they have on real GDP of the country. Subchapter 2.1 describes the sample and methodology used by author. Subchapter 2.2 includes analysis of impact that composition of financial flows

has on overall financial inflow. Subchapter 2.3 summarizes results of pull factors, while subchapter 2.4 consists of general interpretation of results.

Keywords: Financial Crisis, Push and Pull Factors, Financial flows, Asset Bubbles

1. Literature overview

1.1 Definitions of the International Capital Flow types

On the topic of the capital flows, there seems to be a consensus among the researchers and economists, that these flows can be grouped in 3 main categories: foreign debt investment, foreign portfolio investment (FPI), and foreign direct investment (FDI).

According to (Obstfeld, 2011), when it comes to international financial flows, they can be further divided into 2 categories:

- Intratemporal trade where the exchange of consumption across different states of nature occurs on the same date.
- Intertemporal trade where consumption on one date is traded for an asset, which entitles the buyer to a consumption on a future date.

K. Kirabaeva and A. Razin argue that the capital flows with features similar to equity acquisitions (FDI and FPI) are perceived to be more safe due to benefits of direct control and management. Debt flows are considered to be the most volatile. The main difference comes from the information frictions and incomplete risk sharing, because without them all the forms of capital flows would be indistinguishable. (Kirabaeva & Razin, 2010)

When international financial flows are considered, especially at national levels, they tend to move in certain ways that have been classified by different researchers that have examined capital flows throughout the history. Upon examination of literature, author has identified four different ways to qualify the movements globally. Due to the fact that not all the authors call

them the same way, I will use the terms formulated in the paper of Forbes and Warnock (2012), which are “surges”, “sudden stops”, “flights” and “retrenchments”.

Table 1

Types of International Capital Flows based on K. Kirabaeva & A. Razin

Type of investment	Definition
Foreign Debt Investment	<i>“Bank-related international investment includes deposit holdings by foreigners and loans to foreign individuals, businesses, and governments.”</i>
Foreign Direct Investment	<i>“Foreign direct investment occurs when an investor, in many cases a firm rather than an individual, gains some control over the functioning of an enterprise in another country. This typically takes place through a direct purchase of a business enterprise or when the purchaser acquires more than 10 percent of the shares of the target asset.”</i>
Foreign Portfolio Investment	<i>“Portfolio investment occurs when investors purchase noncontrolling interests in foreign companies or buy foreign corporate or government bonds, short-term securities, or notes.”</i>

Source: Kirabaeva & Razin (2010)

https://fraser.stlouisfed.org/files/docs/publications/ERP/pages/8845_2000-2004.pdf

Surges are categorized as rapid foreign capital inflows and have been examined in various contexts such as the causes and supporting factors for the surges in manufacturing and financial sectors Dell'Erba & Reinhardt (2011), tools for their identification Forbes and Warnock (2010), their behavior in comparison to reversals relatively to normal flows Qureshi & Sugawara (2018) and underlying factors for the surges to emerging economies to happen Ghosh, Qureshi, Kim, & Zalduendo (2014).

Sudden stops are characterized as sudden and unexpected foreign investment reversal. Calvo (1998) shows mechanics behind the sudden stops and their causes in contexts of both monetary and non-monetary frameworks and how those stops can induce a crisis. Adalet & Eichengreen (2007) Examined the historical implications and frequency of these shocks,

comparing gold standard era and period since 1970 and found that the frequency and size of midthese reversals were smaller, however they were just as disruptive.

Flights occur when domestic investors suddenly send large amounts of capital elsewhere instead of home country. Rothenberg & Warnock (2006) examined the subject closer and found that almost half of the previously thought sudden stop cases were actually sudden flights and that sudden stops are more bunched, while sudden flights are more dispersed. It is important to have a clear distinction between both of them, because wrong policy answers can have grave implications.

Retrenchment, as explained by Forbes and Warnock (2012) occurs when domestic investors liquidate their foreign investments and bring capital “back home”. Bremus & Fratzscher (2015) have also mentioned the effect of retrenchment following the “Great Recession” due to banks and capital “seeking” institutionally stronger countries associated with smaller risk.

Based upon the previously mentioned information, author hypothesizes that the countries with higher percentage of foreign debt investment will show a stronger reaction in macroeconomic indicators due to debt-based investments being more volatile and less controllable. Another aspect that could increase the volatility would be the involvement of foreign individuals as separate entities, which only increases the risk exposure.

1.2 Importance of financial flows and their underlying factors

Financial flows have a crucial role in the growth of businesses and economy and their absence can cause a lasting stagnation. All agents earn a wage that can be invested later, but outside finance allows entrepreneurs to develop projects that can cause a positive technology

shock, which in turn increases demand for the labor and creates a possibility to undertake more projects, which will improve the financial position of the following generation through increase in wages, allowing more of the projects to be financed, due to increase of inside finance.

(Kiyotaki & Moore, 1997).

Financial flows are directly linked with the borrowing capacity and activity of the companies, which is influenced by the underlying assets that the company has. They can be used as collateral for loans or simply as an indicator of the company's financial performance and capability to repay the loan. In a scenario where a firm in financial distress tries to liquidate its assets, it is most likely not the only one within its industry, and therefore both – the increase of supply in such assets and decrease in demand within the market will result in the fall of the price of these assets. This scenario in turn can result in lowering the debt capacity for all the firms in the industry. (Kiyotaki & Moore, 1997)

This scenario should have even greater impact in economies that are not as varied, independent or great in size. In the case of developing and highly dependent economies, both in terms of finance and prerequisites for production, the effects of such scenario would be observable in models and could be traced over time. It has been argued that the foreign financing has been important for the growth of the economies in Baltics (Eesti Pank, 2014).

Moreover, an empirical study developed by Joscha Beckmann and Robert Czudaj (2017) shows that over the past decade not only there is an increase of capital flows to emerging economies and slow down of the same capital flows to developed economies, but that these inflows correlate positively with the GDP growth in emerging economies. In addition to that, their findings indicate that net portfolio investments have even a greater positive impact on GDP than net FDI flows, despite what they are associated with.

There have also been researches that yield slightly different results, where the level of development for the country does not leave a noticeable difference on the impact of financial flows. It was found that an increase of 10 dollars per capita capital flows would lead to a 0.15 point in growth, when exchange appreciation was taken into account. In addition to that, it was also found that market oriented flows such as portfolio investments and FDI instead of foreign aid furthers the instability of both output and the real exchange rate. (Combes, Kinda, Ouedraogo, & Plane, 2019)

At any rate, for financial flows to occur, it requires free resources, liquidity and when it comes to international capital flows, it also requires supporting policies.

Researchers have differentiated between two main groups of factors that influence the movement destinations and volumes of said capital flows. These factors can be segmented into push and pull factors of which push factors are mainly associated with monetary policy in developed economies and global changes in risk aversion, which in turn drives capital into developing countries, but pull factors are associated with favorable domestic conditions, that attract capital Eller , Huber , & Schuberth (2020). The role of each category and their impact on the financial situation of different economies is still a point of interest among the researchers, but there seems to be a consensus on some of the aspects of these categories. Empirical evidence in most of the author's reviewed studies seem to align with the ideas presented by Ghosh, Qureshi, Kim, & Zalduendo (2014), where global push factors seem to influence the total volume of capital flowing to developing countries, but the pull factors influence their ultimate destination. However, the view to what extent pull factors can influence the volume of capital inflow has not been unanimous. As argued by Förster, Jorra, & Tillmann (2014), Forbes & Warnock (2012) and Ghosh, Qureshi, Kim, & Zalduendo (2014), a lot of swings in capital inflows are driven by

implemented policies and other country-specific components, rather than just global factors that are beyond the control of developing economies. However, an opposing view is assumed by Huber , & Schuberth (2020), and the study emphasizes that the global factor has become even more relevant after the Great Recession.

Despite the contradicting views, various papers have examined the impact of different pull factors and provided interesting results. Bremus & Fratzscher (2015) argue that the slow down of cross-border financial claims following the Great Recession cannot only be explained as a cyclical occurrence. Reversal of cross-border banking trend, segmentation of loan markets and home bias in banks' portfolios seem to indicate to at least partially structural aspect as well. The structural trend, as argued by Houston, Lin, & Ma (2012) can be a result of different regulations faced by the banks. The looser the regulations, the more incentivized the banks are to participate in the financial market, since it allows them to use their capital more efficiently and avoid unnecessary costs. The results of their study suggest that the recipient country with lowest level of restrictions is likely to attract around 2,6% higher bank inflow than the country with highest level of regulation in a given sample, holding all the other factors constant. However, they also argue that differences in regulation are not enough, and a combination of strong institutional environment, developed property and creditor rights are what really encourages massive capital flows, since it provides additional stability. Their study has found that just one standard deviation increase in creditor rights can be accountable for 6% increase of annual growth rate for bank inflows.

Another aspect that indicates to the truth in Houston and Lin conclusions is the euro area crisis, which followed after the Great Recession. Results presented by Bremus & Fratzscher (2015) show that credit to the Euro area, which has stricter regulations and transparency

requirements, declined the most, but credit to emerging market economies, that usually have looser regulations, tended slightly upwards.

In general, international economic integration can turn into financial interdependence, which then amplifies the domestic impact of any external events greatly. Theoretically, the sheer increase of gross international positions in the recent times could represent improvement in the global allocation of income risks, but occurrence of Great Recession and its following events seem to indicate that these positions can just as easily result in countries sharing the economic shocks, while at the same time experiencing magnified effects so large and persistent current account imbalances can be used to predict following trouble. (Obstfeld, 2011)

1.3 Asset bubbles and their formation

Asset bubbles as an occurrence are nothing new and have been observed ever since the 17th and 18th century with Dutch tulip mania being one of the most widely known early occurrence. However, with world markets becoming increasingly integrated, the importance, formation capabilities and range of implications of such bubbles have become magnified.

Chang, Newman, Walters, and Wills (2016) have classified all of the economic bubbles under uncontrolled risk. That in turn is a result of trading within a system without fully accounting for the factors that should be considered, when making investment decisions.

However, situations like these, where variables and certain risks with asset trading and ownership go by unnoticed, may arise due to having two different groups of investors, where one of the groups are interested in long term profitability of investment, but other one can be called speculative investors or momentum investors, which are not interested in ownership and risks associated with the asset, due to fact that their intention is to sell it for a higher price to another investor as soon as possible. This type of trading is what fuels a sharp increase in asset's price,

because it is not tied to its earning capacity, but rather the expectation of further increase in the price and attraction of new investors. Siegel (2003) emphasizes, that, when evaluating an asset's value, one has to take in consideration all the future cash flows, which at times can be harder to determine, especially if the asset is longlived and can be expected to yield income for decades and therefore it takes at least some time to gauge the validity of asset's value. (Siegel, 2003)

That, however, indicates that one has to do the due dilligence and has to have understanding of the asset's industry, which is not always the case if the interest in it is only based on short-term yield. Consequently one can conclude that there is significant and intrinsic risk of bubble formation in widely accessible markets, where there is an expectation of high growth, yet insufficient regulation to enforce transparency, which would lead to better understanding of the true value of a given asset. In fact, the ramifications of such misrepresentation are serious enough for them to be addressed as 'emergency' in Commodity Futures Trading Comission Act of 1974: *"The term 'emergency' as used herein shall mean, in addition to threatened or actual market manipulations and corners, any act of the United States or a foreign government affecting a commodity or any other major market disturbance which prevents the market from accurately reflecting the forces of supply and demand for such commodity"*. In this particular case, the regulatory body is entrusted with directing the contract market, whenever such an emergency exists.

This in turn means, that governments and regulatory bodies should be terminating or the very least identifying the bubbles, instead of being implicit in their creation, however that has not always been the case. Chang, Newman, Walters and Wills (2016) examined 4 economic bubbles and found that government corruption had been a contributing factor in all of them.

Although the mechanics behind the roots and formation of asset bubbles are similar, globalization of the world has revealed interesting aspects of the way they relocate the capital and impact the productivity of different countries. In some ways, they even act as a substitute to financial flows due to financial integration that the world has achieved in the recent past.

Ventura (2012) argues that they even serve to improve the growth rate of the world by increasing the average efficiency of the investment. Another by-product of bubbles is the difference in volatility of economy that the countries experience due to fact that they introduce expectational shocks among investors and magnify the effects of productivity shocks. Because of that, low-productivity countries with large bubbles experience more fluctuations than high-productivity countries with small bubbles. However, author notes that the relationship observed between productivity and volatility is not linear, because countries with medium level of productivity experience more volatile, but smaller bubbles. (Ventura, 2012)

To better understand the relationship between the productivity and the formation of the bubbles, one has to understand that an asset can have different set of functions for different types of investors, depending on their capabilities and intentions. It can serve both as an instrument to finance a productive activity and as a store of value, to ensure that your capital doesn't lose value over time. (Hashimoto, Im, & Kunieda, 2020)

Ventura (2012) proposes a hypothesis, that the reason, why bubbles are larger and more volatile in less-productive countries, is that such countries can have an expected rate of return sufficiently lower than average growth rate of countries globally. In the case of asset bubbles, this difference shifts the focus of an investor from domestic investments to global investments or storing capital in an asset, that could potentially grow in value over short period of time. This however, concentrates the investments in the high-productivity countries, by making the rest of

the world really susceptible to changes in these countries. Something, that proved to be true in the case of housing bubble crash, which started in the US and echoed in the rest of the world. Theoretical framework of Ventura (2012) also implies, that productivity, size and volatility of bubbles are tightly intertwined, however, different research (Narayan, Sharma, & Phan, 2016) examining the correlation between the price bubbles and economic welfare in the case of six developed countries found that bubbles predict real GDP, which arguably is one of the best indicators of productivity, only in one of the instances. Furthermore, when authors ran a test to prove the robustness of the findings due to possibility of structural breaks in data having an impact on results, the case of Germany proved to be statistically insignificant too. This poses an interesting question of whether the results could be different, if researched countries would have been more diverse in their economical capabilities and productivity.

1.4 Results of previous studies on financial flows in context of economic crises

Economic crises as such have been studied very thoroughly over the years. Hayford and Malliaris (2011) examined the role of the U.S. monetary policy in creating the conditions for housing boom and “Great Recession”. Their findings suggest that the argument about U.S. monetary policy being the sole root for the crisis is not convincing enough, and furthermore, they argue that both capital inflows and looser U.S. mortgage lending terms and standards suggest an alternative source of funds for causing the housing boom.

Farmer (2012) argues that the crisis was caused by the stock market crash of 2008. Globalization and the recent developments in outsourcing and labor market has been examined as a potential cause for the crisis as well. Due to advances in technology, citizens of emerging economies have effectively joined the workforce of developed countries such as U.S. without the need to physically relocate or change their citizenship, creating labor supply shocks

(Jagannathan, Kapoor, & Schaumburg, 2013). Stumpner (2019) examined the role of trade in the regional propagation of local shocks in the context of the U.S. Great Recession and found that the trade demand shock could explain a 2.9 percentage difference in 2007-2009 employment growth between industries. Roy and Kemme (2019) have drawn connections going further back in the history and found that the Great Recession was merely a culmination following the financial liberalization of the 1980s, large capital inflows due to failure of European exchange rate mechanism in 1990s and Asian financial crises in 1997, which caused changes in asset prices, mispricing of risk. The evidence points to different aspects as to what can cause economic crises, but overall the factors causing the crisis can repeat. But as previously mentioned, many analysis tend to have the opinion that the Great Recession has been different altogether, and instead of being caused by monetary policies or supply shocks, its roots were fundamentally financial (Bianchi, 2019). Another interesting aspect to the whole topic is not only what caused the crisis itself, but what followed right after the crisis, when it comes to financial flows. Many commentators expected deficit countries to see the reduction in capital inflows, but the outcome was different and for an example the US saw a large capital inflow between the July of 2008 and April of 2009 (Fratzscher, 2012). However, the period after 2009 is still a source of controversy about the drivers of capital flows. This has spurred an increase of the research in the topic and many interesting conclusions have been made already.

One of the biggest topics of controversy is the importance of push versus pull factors, when it comes to the financial flows. Respectively, whether the main reason for the financial flow trends are the monetary and fiscal policies in the advanced economies or the real divergences between emerging and advanced economies are the culprit.

Fratzscher (2012) has found that global shocks can be used to explain financial flow trends during the time of Great Recession. In addition, he found that during the period of crisis, an important determinant for the flow of capital was the soundness of institutions, country risk in general and macroeconomic fundamentals. It also helps to explain the reallocation of capital from many emerging economies to few advanced economies, which seems to align with previously cited study (Houston, Lin & Ma, 2012). The findings of Fratzscher (2012) align with the findings of other works (Houston, Lin & Ma, 2012; Bremus & Fratzscher, 2015) in showing how pull factors seem to be more important in the aftermath of the crisis and might have been a factor in the Eurozone crisis and financial inflow for emerging Asia and Latin America. This inflow, however, poses a different type of concern, which arises from the pressure on emerging-market currencies, which, in the case of financial flows directed towards them drying up, could create dislocations when the exchange rates come down (Ostry, Ghosh, Chamon, & Qureshi, 2012). Research also indicates that proper adjustments in pull factors can help mitigate the consequences of sudden capital inflow stop after a period of foreign credit surge (Ostry, Ghosh, Chamon, & Qureshi, 2012), but it can come at a cost of relatively more difficult access to the financing for SME's (Forbes, 2007).

There have been connections drawn in between the scope of the change in financial and macroeconomic variables and capital inflows, there have been attempts to find correlations that would help predict the economic activity and many others trying to determine how much of an impact is made by pull or push factors.

To begin, a research indicating connection between the capital flows and credit spread will be examined, to better establish argument for intertwining nature of capital flows, price of risk and volatility that can be observed in their relationship.

The work of Ding Du and Wade Rouse focuses specifically on the issue of credit spread, at the same time closer inspecting the impact that foreign capital flows have on the credit spreads. Authors had two main hypotheses, the first one being that foreign capital flows should influence the credit supply and in extension – credit spreads, but the second implies that if the first one is in fact true, then such flows could impact the corporate investment, financing and aggregate economic activities. To test the hypotheses, authors used both aggregate and firm-level data over the sample period of 1975 to 2015. They are also the first ones to really examine the impact of foreign capital flows on corporate financing and investment as well as aggregate activities, and their findings show not only that foreign capital flows drive the US risk structure of interest rates, but the impacts of these capital flows have on firm financing and investment through credit spread are significant, and they have even bigger impact when it comes to financial constrained firms, even after the exclusion of the 2008 crisis. This implies, that foreign capital flows impact the financing and investment decisions of the companies even outside of the Global Financial Crisis period. (Rouse & Du, 2018)

This leads author to believe that the impact of the foreign capital flows might have even bigger impact in the case of developing countries such as Latin America or in the case of Europe – its eastern part, due to relatively small industry and limited access to the finance in comparison to the bigger economies. The form of foreign capital investments though might vary from those of the US, partially because the stock markets in Baltics are not as big, volatile and accessible as well, and therefore it is important to distinguish, what type of investments might have bigger exogenous impacts. One could hypothesize that Foreign Direct Investments and Foreign Portfolio investments might have smaller long and short term impacts, because they are

considered less volatile than Foreign Debt Investments. That is where the next analyzed research paper helps to bring some clarity.

The paper of J. Scott Davis examines if the debt-based capital inflows have different effect than equity based capital flows, when it comes to short-run macroeconomic indicators, and in order to do that he uses structural VAR analysis. In order to get the results, he divided the capital flows into debt-based flows (portfolio debt and bank lending) and equity-based capital flows (portfolio equity and FDI). (Davis, 2015)

The empirical evidence of his research shows that the effect of each of those capital inflow types differentiate substantially and the author emphasizes that it is for the most part debt-based and not the equity based capital inflows that pose the real threat to the stability. Author also states that exogenous debt flows are around 2.5 times more volatile than exogenous equity flows. (Davis, 2015)

Taking in consideration these findings, the closer examination of the Baltics might yield really interesting results, as it is widely known that these countries predominantly rely on banks financing and are more debt-financed as opposed to equity financed, and the stock market is relatively undeveloped.

Another relevant research paper (Guender, 2018), which assesses the effects of credit spreads and quantities on the economic activity. Although the results are fairly mixed, his research paper shows that movements in the credit spread are much better than movements in the finance mix in predicting short-term changes in real economic activity. He examined ten EMU countries: Belgium, Germany, Greece, Spain, France, Italy, Netherlands, Austria, Portugal and Finland over the period of 13 years starting from the 2003. Although the forecasting performance is rather accurate, the spread failed to predict consistently across either range of monthly

economic indicators or across countries. Bond market gave the strongest evidence for the predictive ability of the credit spreads. (Guender, 2018)

This however might make it harder to apply the model for the Baltics due to the relatively small bond market it has, which would give very limited sample size.

A risk premium extracted from the corporate bond yields predicted industrial production turnover of capital goods fairly well in Southern Europe and Germany. (Guender, 2018, p. 398)

All of this leads one to believe that it would be beneficial to examine the impact of previously mentioned factors in the case of Baltics and see the differences and commonalities that might have contributed to different or similar outcomes before, during and after the crisis period. Especially due to how integrated and dependent these countries are in the global market, which makes them vulnerable to global crises like that of 2008.

2. Empirical analysis of financial flows and their underlying factors

2.1 Research process and sample

In order to achieve the aim of the paper, author conducted empirical analysis which can be further divided into three main parts. Analysis of global financial flows and their composition during the period of 1995 – 2018 and the effect the composition has on movements in pre-crisis, crisis and post crisis period, separate analysis to identify possible pull factors and finally whether similarities in financial flows and their composition translate to similarities in the GDP of the selected countries.

The aim of global financial flow analysis is to identify the movements of capital over time and therefore author has chosen to use principal component analysis, since it is variance focused approach that highlights both – the common and the unique variance, which will allow to identify both common trends and individual deviations from the norm in capital flows for the

chosen countries. To conduct analysis, author collected secondary data using databases such as IMF, IFS, BIS, OECD and EUROSTAT. After closer examination, author had to discard some of the datasets due to missing data for various countries and inconsistent reporting periods across the board, which was not optimal to conduct an adequate principal component analysis, since the aim of the paper was to examine the financial flows before, during and after the crisis. In addition to that, some of the datasets had to be discarded due to inherent problems they cause in combination with the authors chosen method. For an example, quarterly GDP datasets outside of IMF database were not seasonally adjusted, which caused analysis to produce unreadable results. Another problem that occurred while collecting data was the overall absence of reliable and consistent data on developing countries, which in turn made it impossible to examine the previously described capital flows (Forbes & Warnock, 2012) and their impact or causes in greater detail for the said countries. In some of the cases author had to change the starting point of the timeframe used for the analysis from 1995 to 2005 to compensate for the missing data. After closer examination and evaluation of data, author conducted principal component analysis with the datasets shown in Table 2.

According to previously reviewed studies, the pre-crisis period, crisis period and aftermath was experienced differently by countries due to both - their location and their economic development level, therefore the analysis could be conducted by grouping countries in accordance to both of these 2 criteria, but previously mentioned problems with missing data caused the author to sort the countries by their location.

When taking in consideration the role that institutions and regulations have as the push and pull factors (Houston, Lin, & Ma, 2012), it also seems that sorting the countries by their location and geopolitical situation would serve to make a more accurately represented common

situation or environment. It also aligns with the group classification used in other researches (Förster, Jorra, & Tillmann, 2014).

Due to differences in the quality of datasets, initial analysis was conducted for 73 countries which were pooled into 4 different groups – Latin America and Caribbean, East and the Pacific Area, Middle East and Africa and Europe. However, due to lack of data for secondary analysis, author only kept the data from 22 European countries. Secondary analysis which was aimed to examine the capital flows and their composition closer was conducted only for 22 countries, from Europe.

Table 2

Sources of secondary data used by author for financial flow analysis

Database	Type of data
BIS Locational Banking Statistics	Cross border liabilities, in millions of US dollars (Quarterly)
BIS Locational Banking Statistics	External loans vis-à-vis individual countries, in millions of US dollars (Quarterly)
International Financial Statistics	Quarterly Real Gross Domestic Product, seasonally adjusted, in domestic currency (Quarterly)
International Financial Statistics	International Investment position, Liabilities, Direct investment, Debt instruments, in millions of US dollars (Quarterly)
International Financial Statistics	International Investment position, Liabilities, Direct investment, Equity and investment fund shares, in millions of US dollars (Quarterly)
International Financial Statistics	International Investment position, Liabilities, Portfolio investment, Debt instruments, in millions of US dollars (Quarterly)

International	International Investment position, Liabilities, Portfolio investment,
Financial Statistics	Equity and investment fund shares, in millions of US dollars (Quarterly)
International	Real GDP, seasonally adjusted, in domestic currency (Quarterly)
Financial Statistics	

Source: compiled by author.

For the purpose of secondary analysis, multiple different sets of graphs were produced in order to better analyze results. First, the initial graph produced by principal component analysis (see appendix A), divided by the standard deviation to better showcase the idiosyncratic movements, and then second graph which was only demeaned in order to better showcase the magnitude in changes of financial flows over time (see appendix B). After obtaining both sets of graphs, author used data obtained from IMF to compare the composition of financial flows of different countries and grouped them in accordance to proportions of specific financial flow types present before the crisis similarly to how other researchers have (Davis, 2015) (see Table 3).

Table 3

Categorization of countries for the composition analysis

Country	Primary Category	Subcategory
Greece	High Debt (60% <)	Very low FDI (< 20%)
Italy	High Debt (60% <)	Very low FDI (< 20%)
Germany	High Debt (60% <)	Low FDI (30-40%)
Denmark	High Debt (60% <)	Low FDI (30-40%)
Spain	Medium-High Debt (50-60%)	Low FDI (30-40%)
Austria	Medium-High Debt (50-60%)	Low FDI (30-40%)

France	Medium-High Debt (50-60%)	Very Low FDI (20-30%)
Sweden	Medium-High Debt (50-60%)	Medium FDI (40-50%)
UK	Medium-High Debt (50-60%)	Very Low FDI (20-30%)
Netherlands	Medium-Low Debt (40-50%)	FDI High (50-70%)
Portugal	Medium-Low Debt (40-50%)	FDI Low (30-40%)
Finland	Medium-Low Debt (40-50%)	FDI Very Low (20-30%)
Poland	Medium-Low Debt (40-50%)	FDI High (50-70%)
Bulgaria	Medium-Low Debt (40-50%)	FDI Very High (80-100%)
Slovenia	Medium-Low Debt (40-50%)	FDI High (50-70%)
Belgium	Low Debt (30-40%)	FDI High (65-80%)
Lithuania	Low Debt (30-40%)	FDI High (65-80%)
Latvia	Low Debt (30-40%)	FDI Very High (80-90%)
Romania	Low Debt (30-40%)	FDI Very High (80-90%)
Estonia	Very Low Debt (< 30%)	FDI Very High (80-90%)
Czech Republic	Very Low Debt (< 30%)	FDI Very High (80-90%)
Switzerland	Very Low Debt (< 30%)	FDI Unstable (30-50%)

Source: Compiled by author.

According to previously reviewed literature, different types of financial flows have different effects on overall movement of inflow, yet there is no clarification about the magnitude of effect that each of the subgroups have and thus author made smaller groups within lower percentage deviations to limit the room for error in data interpretation.

Countries included in the sample vary both in terms of physical location and development stage, thus providing additional insights into how different composition of financial inflows before the

crisis can influence changes in both the volume and composition of inflows during and after crisis, and whether the size of economy has additional effect on them and whether the effects of asset bubble were more severe in smaller or larger economies.

In addition to composition analysis, author conducted pull factors analysis for previously chosen countries to see if they correspond with differences in overall volume and form of capital flows in the case of Europe. Although there are contradicting views as to how much the country-specific components and policies can affect capital inflows, and whether it is even a meaningful amount (Huber & Schuberth, 2020), but there are also opposing ideas (Förster, Jorra, & Tillmann, 2014) and evidence (Houston, Lin, & Ma, 2012) that countries and policy makers have or at least could have (Martin & Ventura, 2015) more control over financial flows than is widely believed.

Overall, it is very interesting debate in which author, upon surveying different research papers and conducting initial data analysis believes that pull factors the very least merit a further examination. After familiarizing himself with conducted research in the field, author believes that some of the problems proving the importance of pull factors might arise from the fact, that there is very little research conducted about the impact of exact pull factors, because some of them are not as easily normalized in comparative data that can be used for quantitative analysis in a similar fashion, that a lot of push factors traditionally have been used. In addition to that, it can become increasingly difficult to compare and trace changes in capital flows to exact changes in policy or nuances in regulations, that various countries have, and then in turn draw meaningful, generally applicable conclusions out of it. However, author believes that there is a good reason to believe that pull factors might become increasingly relevant in the future due to reason that the information is steadily becoming more accessible and countries are becoming

increasingly integrated into global market both in terms of commodities and financial instruments. That, however, might result in lower levels of uncertainty and better assesment of risks for market participants and thus lower impact of investor sentiment or expectational shocks, which in turn should provide more predictable and easier managed stream of capital.

With the assumptions mentioned before, author aims to examine and indentify possible pull factors that might have influenced the capital flows before, during and after the crisis, based on previous research. In order to identify the factors that might be of interest for policy makers and researchers in the field, author compared the values of the factors during the years 2006 to 2008 and grouped the countries in accordance to them, to see if any commonalities would appear in the sets of graphs produced before. For the purpose of analysis author used secondary data in form of values of the indicators provided by Global Competitiveness report, which provides a scalable data for all of the countries in given timeframe of interest for the paper (see Table 4).

Table 4

Selected indicators to identify pull factors

Indicator	Study mentioning effect on financial flows
Strength of auditing and reporting standards	Bremus & Fratzscher (2015)
Protection of minority shareholders' interests	Houston, Lin, & Ma (2012)
Efficiency of legal framework in challenging regulations	Fratzscher (2012); Houston, Lin, & Ma (2012)
Financing through local equity market	Forbes & Warnock (2012)

Regulation of securities exchanges	Bremus & Fratzscher (2015); Houston, Lin, & Ma (2012)
Investor protection	Fratzscher (2012); Houston, Lin, & Ma (2012); Forbes & Warnock (2012)
Burden of Government regulation	Bremus & Fratzscher (2015)
Irregular payments and bribes	Can be argued, that corruption is also an additional cost, which rational investors might want to avoid
Favoritism in decisions of government officials	Fratzscher (2012)

Source: Compiled by author.

Indicators were chosen in two ways – some were picked to represent already examined pull factors by other papers (Houston, Lin, & Ma, 2012), but some were chosen by author. Altogether author selected 9 indicators.

Finally the results found in financial flow analysis were compared with results acquired from principal component analysis of real GDP to see if there are any commonalities between the build-up of financial flows, their volatility and volume, and the real GDP of the country.

2.2 Analysis of financial flows and their composition

For the purpose of presenting analysis results, author will primarily use the graphs produced, when data was only demeaned and not in addition divided by standard deviation, thus making data more readable and giving the reader a possibility to also appreciate not only the movements, but also the volume of changes. In the graphs, the red, smooth line is the individual idiosyncrasy of country, but the blue circled line represents the common component of sampled countries.

When examining graphs in accordance to grouping displayed in Table 3, some interesting commonalities can be observed, that can be explained by the findings of other authors. Primary indicator, by which the countries were grouped was debt instrument and security percentage out of total financial inflows. First group consists of four developed nations and overall debt percentage is high and similar, however the movements of financial flows over time differ quite substantially. Although there is a common factor, which is relatively smooth, non-jolting movement, Italy and Greece suffered high loss of financial inflow over time, while Germany and Denmark experienced only minor dip around the year of crisis and afterwards stabilized the inflow, with Denmark even experiencing an increase, while Germany suffered only a minor decrease (see Figure 1). When taking the graphs that were divided by the standard deviation of the sample, which is better to indicate individual idiosyncrasies, one can also notice that Greece and Italy experienced larger surge in financial flows right before the crisis, and then much sharper drop shortly after (see Appendix A). One can explain the findings with looking at the secondary group of both countries. They had much lower relative proportion of FDI than Germany and Denmark. In fact, Germany and Denmark has between 50-100% higher percentage of FDI than Greece or Italy. This goes in line with the findings of Davis (2015), where he noted that portfolio investments are associated with higher volatility than FDI. Another interesting point to mention here is that Denmark also had higher percentage of FDI and thus might have suffered a smaller drop overall in the after crisis period, however, there might be another explanation, which I will better showcase further on.

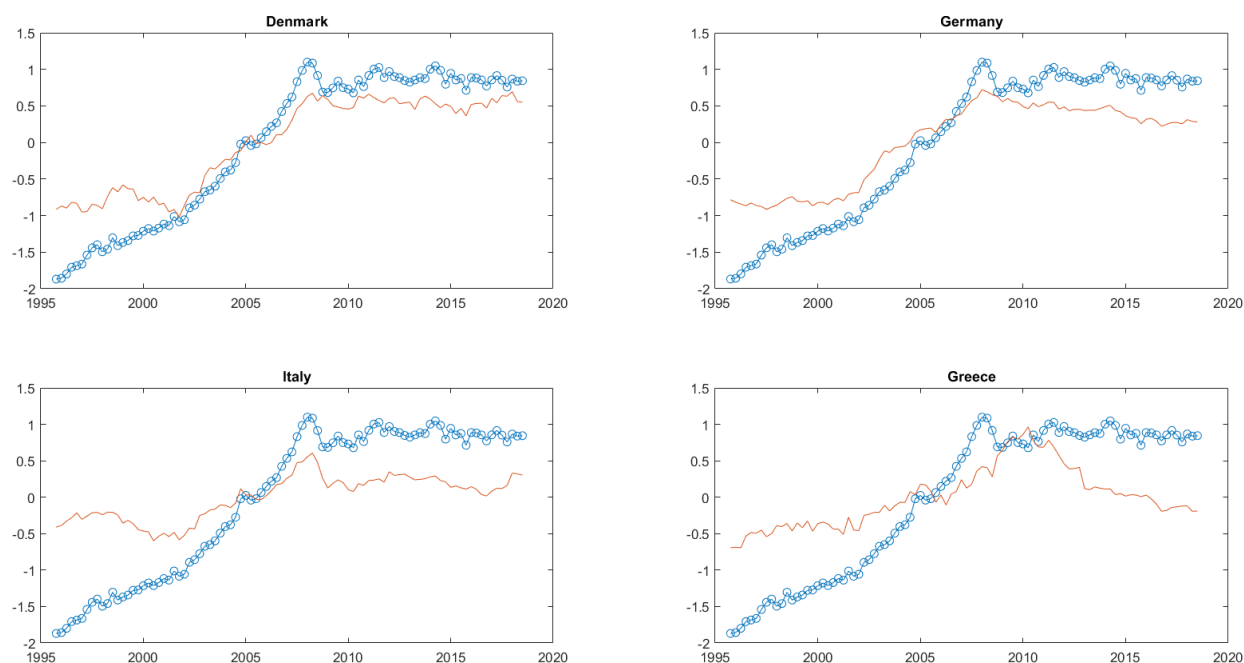


Figure 1. Graphs representing financial inflows of countries within first group.

Source: Compiled by author based on principal component analysis.

The commonalities of the next group are somewhat similar to that of first one in leadup to the crisis, however during and after crisis periods showcase belonging to sub-groups pretty accurately. Sweden is the most stable and coincidentally has the largest percentage of FDI in its inflows before the crisis period. Another interesting difference, that one can notice between Sweden and other countries within the group, is the almost consistent upwards trend that Sweden has, despite other four having either a plummet or stagnation in their flows. The main and obvious difference is the percentage of FDI, but the other quality of Sweden that seems to coincide with that of Denmark is that they both are not part of Eurozone, that upon closer examination in trends of all the Eurozone countries seem to have a definite negative impact in financial inflows starting around the year of 2014 and 2015. This observation seem to prove the other findings (Fratzcher, 2012), where author argued that changes in regulations regarding the Eurozone might have forced out the investments. It does not, however, prove the cause, but

rather a fact, that Eurozone had something to do with outflow of capital, regardless of the size of economy, which one will be able to see better further on. Another interesting outlier in the group is France, that in spite of having small proportion of FDI in its inflows remained relatively stable over the whole observation period. Furthermore, it experienced an increase, yet not as steep as Sweden (see Figure 2). Some of that might be attributed to almost identical movements in real GDP that both countries experienced, which would also point to soundness of arguments made by Jaume Ventura (Ventura, 2012) that productivity is a large factor in movement of bubbles, but the soundness of those arguments will be addressed later on.

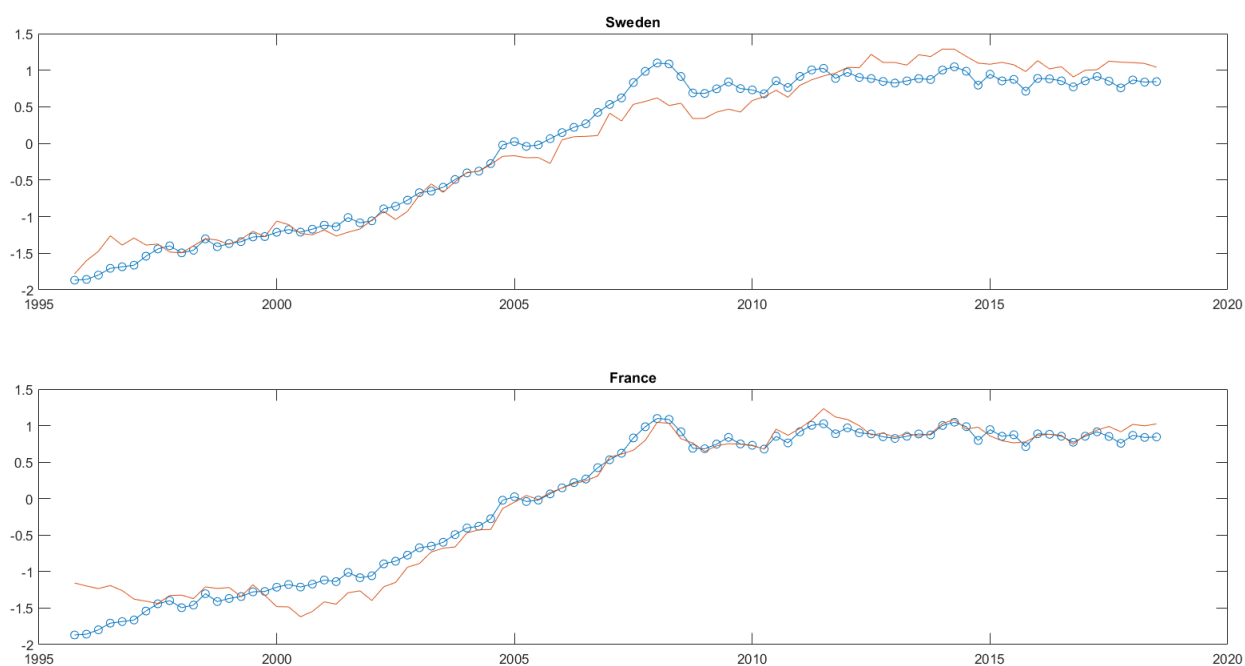


Figure 2. Graphs representing financial inflows of France and Sweden.

Source: Compiled by author based on principal component analysis.

Third group had very little commonalities and in addition, really interesting outliers too. Lot of it can be attributed to high variety in FDI and debt instrument proportion, but the size of the economy and the productivity of it seems to be playing an important role here too. Bulgaria

and Poland are similar in a sense that both of the countries end the period with trend of increase in financial flows, however, during the period of crisis Poland experienced a lot higher volatility and in addition to that, the period after the crisis was a lot more volatile too (See Figure 3). When one compares the real GDP of both countries during the period, one can notice that Bulgaria suffered one of the smallest dips, while Poland, which suffered no noticeable setbacks in the period, was lagging behind in its GDP about the time when other countries peaked (See Appendix C). Thus, applying theoretical framework proposed by Jaume Ventura (Ventura, 2012), one can speculate that high volatility around the period of global crisis experienced by Poland, combined by lagging real GDP might make Poland a good example to use when examining the rigidity of his framework in real world.

Slovenia also makes a really interesting exception due to fact, that despite being in Eurozone, it did not experience the downwards trend in financial inflows around the year 2015, something that one can see in many other Eurozone countries. When it comes to Netherlands, one can notice that overall form of movements is similar to that of subgroup, however, having lower volatility can be explained by the fact that Netherlands has substantially larger economy than two other members of the group.

Another curious case is differences between Portugal and Finland. When one observes the movements, Portugal is more volatile despite having higher percentage of FDI, which is contrary to expected. Finland also didn't experience a surge of investments despite having a spike in its real GDP during crisis. However, the overall downward trend for Portugal can be partially explained by declining real GDP, a similarity that author will try to explain when addressing overall communalities of countries across the board.

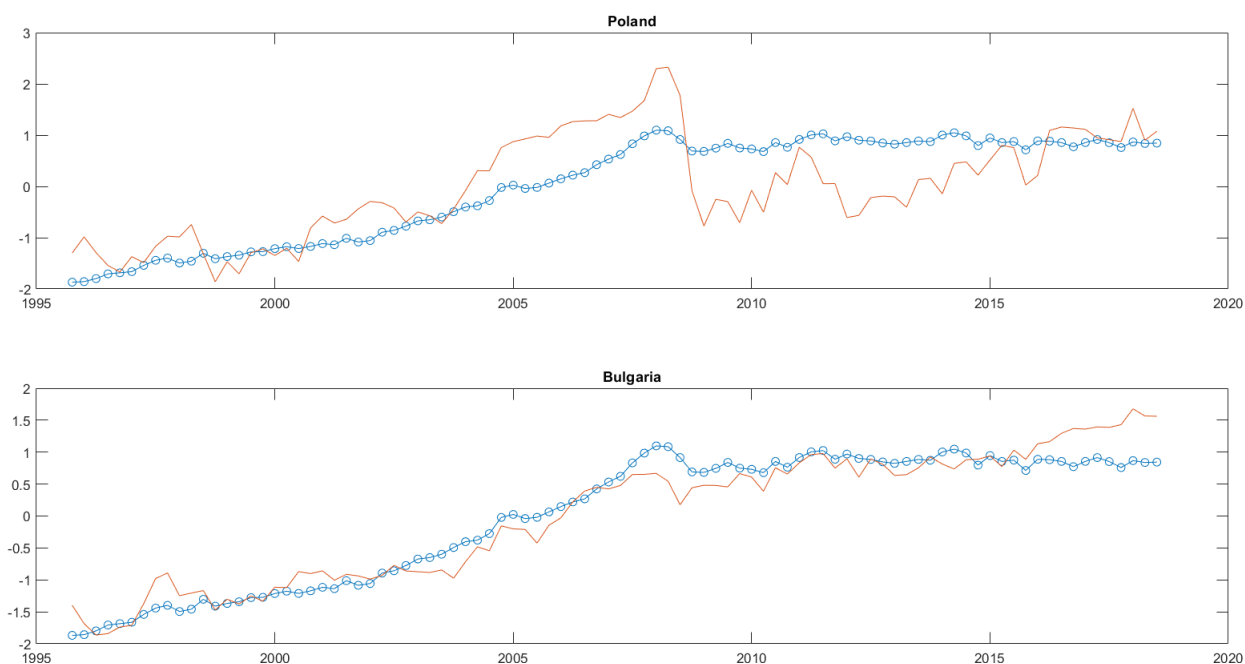


Figure 3. Graphs representing financial inflows of Poland and Bulgaria.

Source: Compiled by author based on principal component analysis.

The next group consisting of 4 countries, with Belgium being comparatively much more economically developed. This also can be observed in graph, where Belgium has somewhat similar trend to that of other developed countries, such as Germany, Austria, Netherlands and the UK, but it experienced more financial inflow right before crisis, which could be explained by having lower level of debt instruments, which seem to have stabilizing effect on financial inflows similar to percentage of FDI, which in case of Belgium is really high. In the case of other 3 countries, they have a similar flows during pre-crisis period, however, Romania seems to have a much more significant drop in flows, which might be explained by pull factors. The main difference between Lithuania and Latvia can be observed in short-term movements of financial flows. They are much more smoother for Latvia, which has higher percentage of FDI than Lithuania, furthering the case of Davis (Davis, 2015) (See Appendix A and B).

Last group had the smallest debt instrument proportion in its financial inflows. Coincidentally, it is also the group with least similarities in trends in between its member countries. Only immediate similarity that the countries have, is sharp short-term volatility, however the amplitude is not similar. The difference between Estonia and Czech Republic might be at least three-fold. The sizes of economies are not similar, Czech Republic did not experience as significant drop in real GDP and finally, Czech Republic is not part of Euro zone, which might be a factor in loss of financial inflows, which is common for all of the Baltic Countries after the implementation of Euro. Switzerland seems to be an interesting case and might require a separate investigation altogether. It has really low levels of debt instruments, yet the movements in its graph (in terms of sharpness) resembles those of high debt countries. Before the crisis, the percentage of FDI in its inflows rose from 29 to 55 percent, and yet despite having real GDP that is almost identical to common component, it has experienced drops of inflows similar to Portugal, Greece and Italy (See Appendix A and B).

2.3 Results of Pull factor analysis

After observing the effectivity of grouping the countries by their financial flow composition and similarities, that can be observed as a result of that grouping, author has to note that results of pull factor analysis were rather disappointing in comparison.

Differences in indicators both – between countries and over time were just too small and therefore could not explain the substantial differences observed in graphs before. When conducting correlation analysis between the changes in indicators and financial flows over time, author did not find any statistically significant correlations, however, that seems to be a common problem in the research field as noted by other authors (Förster, Jorra, & Tillmann, 2014), who also failed to find pull factors that would be statistically significant.

Author believes that some of the problems might be inherent in the data, which is accessible on these pull factors.

First and foremost, the overall differences between countries and over time were just too insignificant to draw meaningful insights. All the values were presented on a scale from 1 to 7, and were based on open executive survey, that in turn might be influenced by the responders bias. To compensate for the small differences in the scale and bias that individuals might have on separate indicators, author tried to use the sum average of pre-crisis and crisis years of indicators mentioned in Table 4, however, the values acquired by modification only served to distinguish countries by their development level economically and could not help to explain differences between financial flows of either large or small economies.

This in turn indicates that there might be a need for a more unified form of reporting the status and changes of these pull factors, since according to theory they should have an effect, but in practical terms the data, that is accessible right now is not effective at showing differences between countries of the same developmental level, which makes it really hard to pinpoint exact pull factors that have an effect on financial flows.

Another explanation to this problem could be that pull factor differences happen to coincide with other factors, previously overlooked by researchers in the field.

2.4 General remarks about findings of analysis

There are multiple interesting findings that can be found by coupling analysis of financial inflows and their proportions. While it is true that author had a sample of only 22 countries, which are all comparatively advanced (when taking global situation in context), differences in economic development and financial inflow composition between them proved to be sufficient to

notice different patterns and with the help of previous research results in the field, draw conclusions about possible causes for individual idiosyncrasies.

The main and most obvious differences overall can be seen in the short-term movements of financial flows that the countries experience and it seems to align with the findings of Davis (Davis, 2015) and theoretical literature. Respectively, the lower is the percentage of FDI investments, the more volatile the graphs are. However, there are a few additions to his findings, that author observed. The proportion of FDI debt instruments seems to be the best predictor of stability with a few outliers such as Finland and United Kingdom, which had medium levels of debt instruments, yet very low proportion of FDI in financial inflows. Although the percentage of FDI and debt within both of those countries were relatively small, they had stable financial inflow over time. Inconsistencies, that at least in the case of Finland were noticed also in another paper (Guender, 2018) conducting research of credit spreads. Another factor, that was common, although in different volumes, to all of the countries of Eurozone, is decline of financial inflows around the year 2015, which might be due to reasons mentioned in one of reviewed studies (Bremus & Fratzscher, 2015), however, author can add that just having looser regulations is not necessarily a sufficient explanation for these differences and it might be the case that different exchange rate policies play a role too. For an example, Sweden, Denmark, Bulgaria and Hungary experienced increase in financial inflows oposed to Germany, Austria and even countries with looser regulations such as Latvia, Lithuania, others.

Another interesting relationship can be observed between the real GDP and financial flows over time. Author examined the question of whether it is the financial inflows, that influence the growth of GDP (Beckmann & Czudaj, 2017) by comparing movements in financial flows with the movements in real GDP over time, and whether different types of financial flows

have additional effect. Having conducted initial analysis, author found inconsistencies that were hard to explain with just the composition or volume of financial flows. A good example would be the inconsistencies between the graphs of financial flows and Real GDP of Poland, where it suffered high fluctuations in its financial flows, however, the Real GDP maintained stable growth without any setbacks (see Appendix C). Another interesting example is Romania, which experienced high-inflows in precrisis period, just a minor setback during crisis period, and then taking crisis level of inflows as a base, had a growth of inflows of 193% at third quarter of 2017, but the real GDP growth (taking crisis period as basis) is 34%, which is higher than Latvia, but lower than Poland, which experienced lower levels of inflows at the peak (right before the crisis) and had a bigger drop during crisis years, without experiencing decline in its real GDP during crisis and having higher real GDP growth after the crisis (See Figure 4).

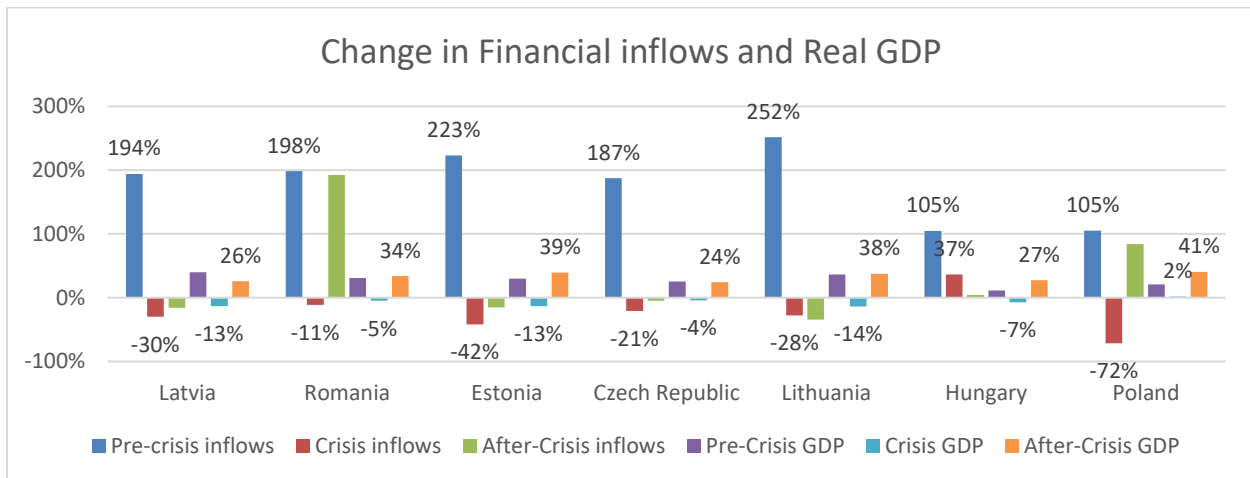


Figure 4. Graph representing the percentage changes in financial inflows and Real GDP in periods before, during and after crisis.

Source: Compiled by author based on his calculations.

Although there are discrepancies in the proportions of changes in inflows and changes in real GDP, there is a commonality, which shows that having higher volumes of financial inflows

in leadup to crisis, can lead to higher fluctuations in real GDP across all three separate periods (see Figure 4). This is a commonality that to certain degree translates to all of the sampled countries (see Appendix C), but author depicted the countries with highest volume changes in Figure 4, to make data more readable. The loss of inflow volume during the crisis does not seem to have as direct impact on real GDP during the period as there are discrepancies among all of the countries included in the graph (see Figure 4).

To better explain these inconsistencies, author used theoretical model proposed by Jaume Ventura (Ventura, 2012), where productivity is what drives the financial flows related with asset bubbles instead of the other way around.

As one can see from the real GDP graphs (see Appendix C), Lithuania, Latvia and Estonia were among the countries that experienced a very sharp increase, but Poland maintained a very stable improvement over time. Looking at financial flow graphs, one might expect a different trend altogether. Based on theoretical framework of Jaume Ventura (Ventura, 2012) and knowing that the major asset bubble around the time was housing market, author made an assumption, that instead of financial flows or their volatility, the changes in GDP might be driven by reliance on a bubbly industry. To examine assumption, author used the data available in eurostat database and compared the quarterly data for production in construction with the movements in GDP, using the year 2010 as basis period (Eurostat, 2020).

In the case of Baltics, Figure 5 (Eurostat, 2020) shows both – one of the sharpest increases and a sharp drop in the production related with construction, which in turn aligns with the real GDP graphs around the period of crisis. One can also see that Poland does not have either of those characteristics, which aligns with real GDP graph too. In addition to that, Figure 5 seems to be really useful in explaining the changes of real GDP in the case of other selected

countries too, however, the data was not as useful in explaining increase in the case of Finland (see Appendix C).

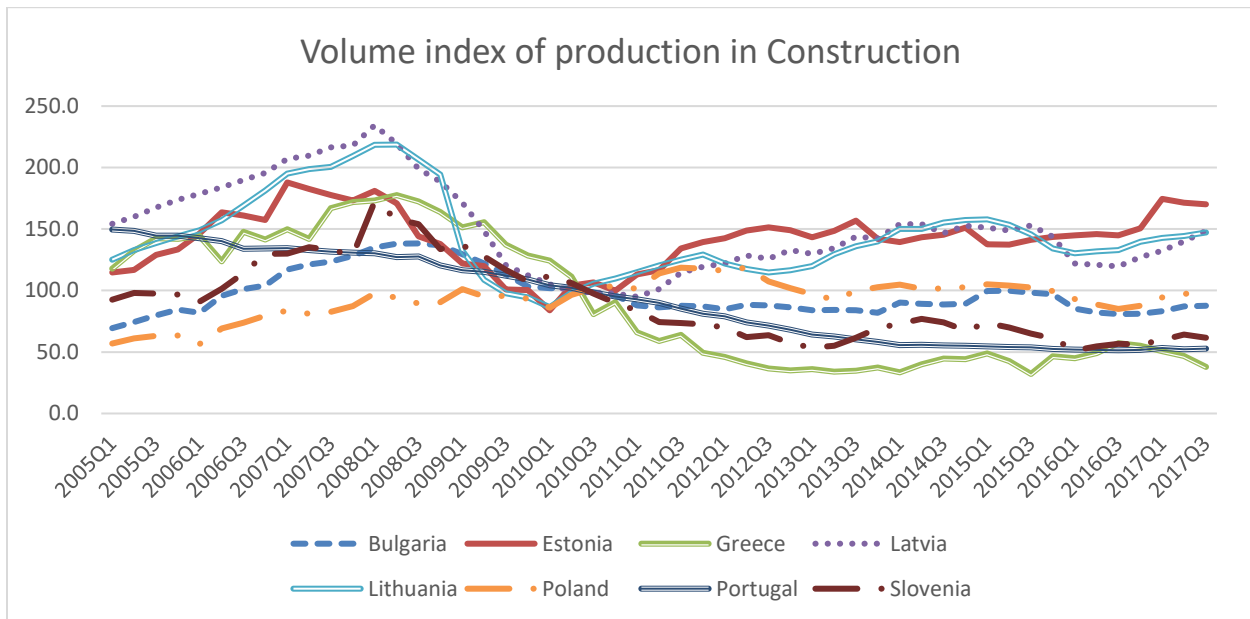


Figure 5. Graph representing the volume index of production for selected countries.

Source: Eurostat short-term business statistics, production in construction – quarterly data.

This in turn helps to further the validity of theoretical model mentioned before (Ventura, 2012), since the higher is the productivity, the smaller the bubble will be, and thus one should not expect to see the same occurrences happening in between Finland and Baltics.

Nonetheless, these details are interesting. So far researchers have struggled to find an indicator, that would have a statistical significance in explaining meaningful amounts in the movement of idiosyncratic financial flows (Förster, Jorra, & Tillmann, 2014), although country specific component has been noted as important. However, this example paired with theoretical framework (Ventura, 2012) could point researchers to new direction in identifying and finding such factors. As noted in another research (Förster, Jorra, & Tillmann, 2014) some of the problems finding such factors might arise due to different sample compositions, however, author believes that using the aforementioned model would help to guide researchers in building the

sample and then identifying the bubbly assets driving the growth in GDP would help to explain the changes in productivity, which in author's opinion is what drives the financial inflows, with composition of those inflows dictating the overall short-term volatility. Author also conducted a test to see whether correlations were significant and found that in 3 out of 6 tested countries correlation was significant at 0.01 level, but in 1 out of 6 it was significant at 0.05 level (See Appendix D to J).

3. Conclusion

Economic crises and asset bubbles have been around since the 17th of century, but the Great Recession has been the first of its kind, decimating welfare of countries world-wide and thus starting a heated debate on its causes, underlying factors and magnifiers. One of the circumstances, that seems to have made this crisis different, has been the global integration of financial and asset markets. Something that from one side has allowed world to develop faster, through increased access to funds, partnerships, more efficient allocation of capital, but from other – made us interreliant. A risk that passed under the radar till the occurrence of Great Recession, which brought more attention, scrutiny and caution to financial flows, their underlying factors and effects on different countries. Ever since then, it has become a field of debate, controversy and interesting discoveries.

In order to better understand and identify the different types of financial flows, their movements, underlying factors and how they affect development of country, author examined available literature on the subject. Although the topic in general is still under debate, there are some certain aspects of it, that have been widely agreed upon. Financial flows are most commonly divided between foreign direct investment and portfolio investments and sudden movements in financial flows occur in four forms that have been categorized as sudden stops, retrenchments, flights and surges. In addition, these movements are influenced by two types of factors that can be categorized as push (global factors) and pull (country-specific factors). Beyond that, there is a lot of uncertainty and contradicting opinions about the importance of push versus pull factors, what exact factors drive the changes in flows and what methods could help in predicting these movements in future. However, various researchers have linked the movements of financial flows to the welfare and productivity of country with differentiating opinions both in

the nature of this relationship and in the effect of this relationship – whether it is ultimately beneficial or the opposite.

In order to draw conclusions and contribute to the ongoing debate, author conducted empirical analysis which can be divided into three segments – principal component analysis of global financial flows and their composition, identification of pull factors based on commonalities, graph analysis between financial inflows and real GDP. Author collected secondary data for 23 countries and divided periods into pre-crisis, crisis and after-crisis period.

Following analysis, author found out that different compositions of financial inflows not only translate to different dynamics in these movements, but also that similar compositions across countries resulted in commonalities of movement amplitudes and general trends. In addition to that, author found that countries within Eurozone suffered a loss of inflows not only during the crisis, but also around the year 2015, which might indicate that foreign exchange policies might play a role in financial flow movements, because differences in regulation alone are not sufficient explanation. Commonalities across the board revealed that there is a general rule of FDI debt instrument inflows providing more stable and reliable financial inflow, while portfolio equity investments were in general coupled with increase in volatility. There were also differences within the groups that in some cases could have been explained by the differences in economic development, which can be expected according to theoretical works in the field, however, there were also some differences that needed additional explanation. After conducting comparative analysis between changes in real GDP and financial inflows author found that increased amounts of financial inflows before the crisis can be associated with increased volatility in real GDP over the period. However, there were some discrepancies that were hard to explain and taking in consideration a theoretical framework proposed by Jaume Ventura,

possible explanation was identified, but requires further research to be validated. Explanation proposed by author, could provide an additional explanation as to how differences in economic development are relevant for financial inflows too.

Overall, although the sample size was limited and the generalizations might not translate over to different regions of the world, paper's contribution to the research field is two-fold – through empirical analysis author revealed the soundness of papers written by other authors and in addition to that, author found a relationship between real GDP, asset bubbles and financial flows that might be of interest to other researchers and could be tested by increasing the sample size and constructing a sound method of either proving or disproving the importance of said relationship, which if proven relevant, could provide a new perspective in how to predict and explain the financial flows. If proven true, this would also be of interest to policy makers as this framework allows for countries to have some certain degree of control over capital flows they experience. In addition to that, author also found that having higher amounts of financial inflows in leadup to crisis translates to having higher volatility in real GDP. This might be of interest for policy makers to limit sudden surges of financial flows if they are based around bubbly industry, which if losing perceived value could lead to sudden loss of growth.

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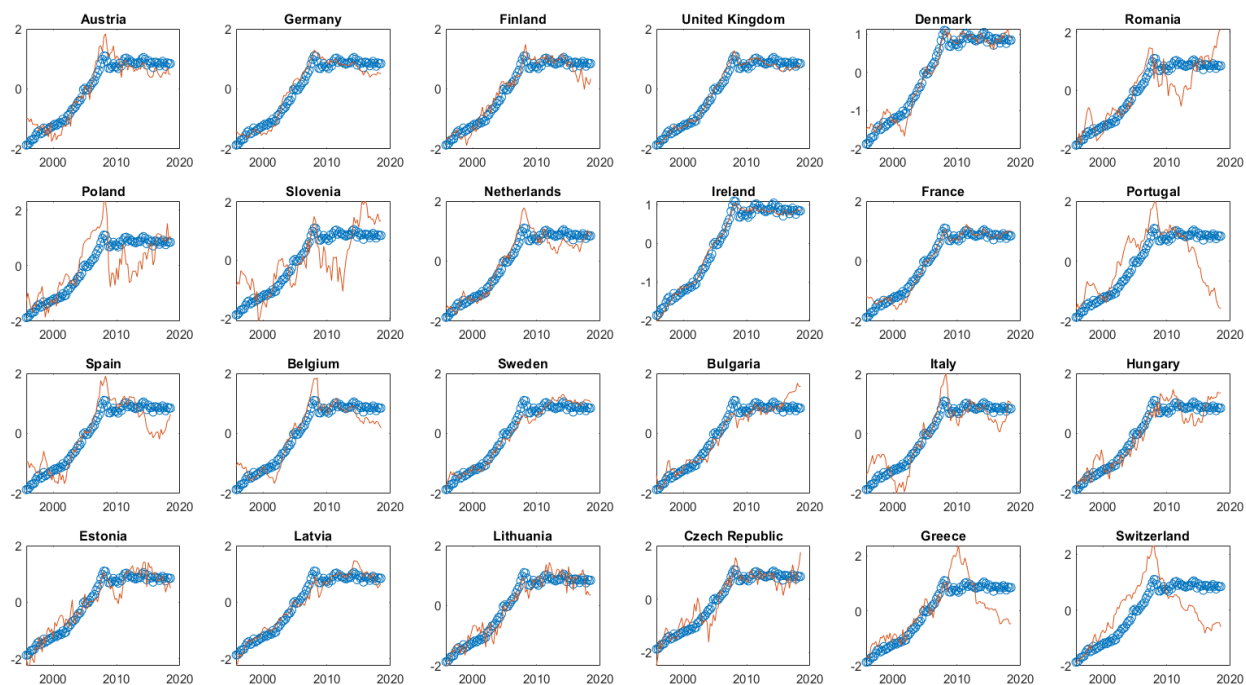
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Appendices

Appendix A

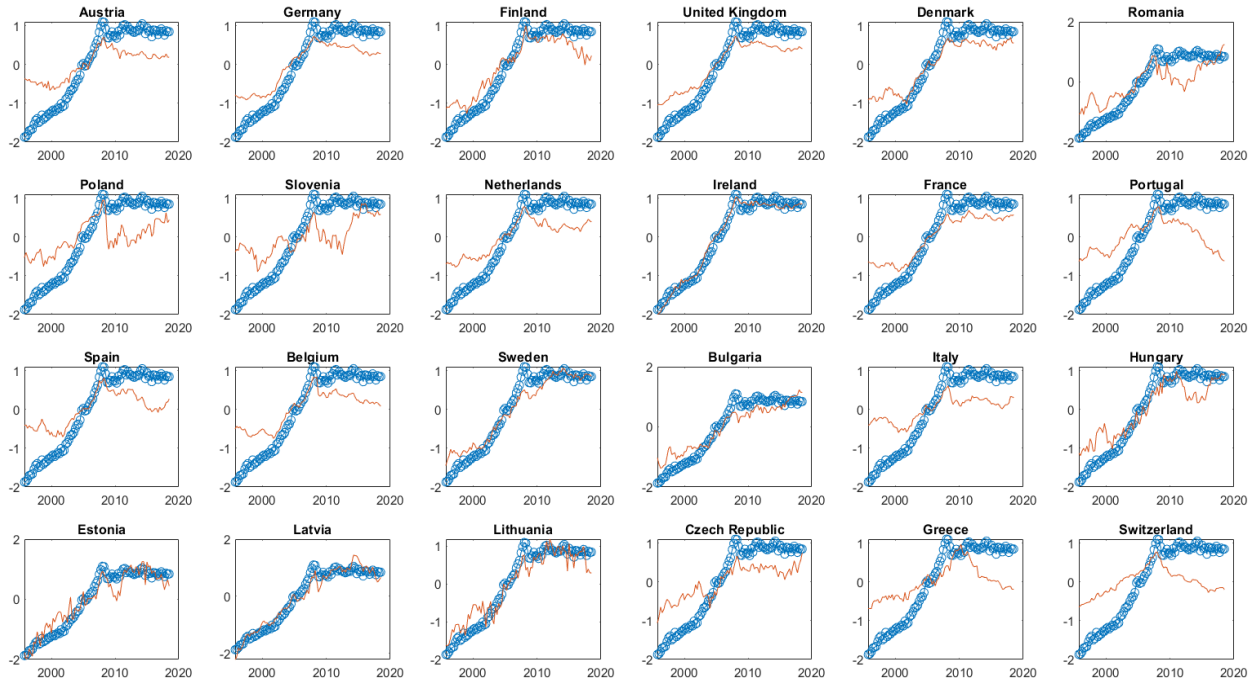
Output of principal component analysis for financial inflows of selected European countries divided by standard deviation



Source: Compiled by author based on results of principal component analysis.

Appendix B

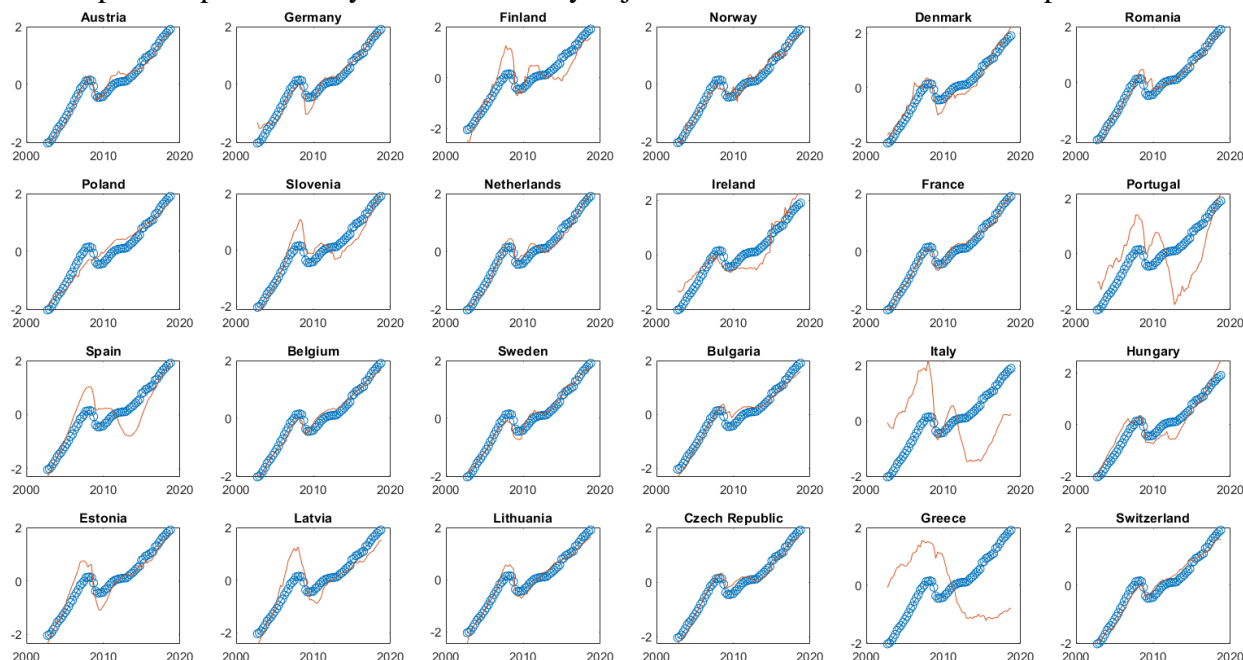
Demeaned output of principal component analysis for financial inflows of selected European countries



Source: Compiled by author based on results of principal component analysis.

Appendix C

Principal component analysis for seasonally adjusted real GDP of selected European countries



Source: Compiled by author based on results of principal component analysis.

Appendix D

Results of correlation analysis for production in construction and financial inflows in case of Bulgaria

Variables		Bulgaria construction	Liabilities Bulgaria
Bulgaria construction	Pearson Correlation	1	-.480**
	Sig. (2-tailed)		.001
	N	48	48
Liabilities Bulgaria	Pearson Correlation	-.480**	1
	Sig. (2-tailed)	.001	
	N	48	48

Notes. **. Correlation is significant at the 0.01 level (2-tailed).

Source: Compiled by author based on correlation analysis

Appendix E

Results of correlation analysis for production in construction and financial inflows in case of Estonia

Variables		Estonia construction	Liabilities Estonia
Estonia construction	Pearson Correlation	1	.199
	Sig. (2-tailed)		.175
	N	48	48
Liabilities Estonia	Pearson Correlation	.199	1
	Sig. (2-tailed)	.175	
	N	48	48

Source: Compiled by author based on correlation analysis

Appendix F

Results of correlation analysis for production in construction and financial inflows in case of Greece

Variables		Greece construction	Liabilities Greece
Greece construction	Pearson Correlation	1	.295*
	Sig. (2-tailed)		.042
	N	48	48
Liabilities Greece	Pearson Correlation	.295*	1
	Sig. (2-tailed)	.042	
	N	48	48

Notes. *. Correlation is significant at the 0.05 level (2-tailed).

Source: Compiled by author based on correlation analysis

Appendix G

Results of correlation analysis for production in construction and financial inflows in case of Slovenia

Variables		Slovenia construction	Liabilities Slovenia
Slovenia construction	Pearson Correlation	1	-.215
	Sig. (2-tailed)		.142
	N	48	48
Liabilities Slovenia	Pearson Correlation	-.215	1
	Sig. (2-tailed)	.142	
	N	48	48

Source: Compiled by author based on correlation analysis

Appendix H

Results of correlation analysis for production in construction and financial inflows in case of Slovenia

Variables		Liabilities Lithuania	Lithuania construction
Liabilities Lithuania	Pearson Correlation	1	-.381**
	Sig. (2-tailed)		.008
	N	48	48
Lithuania construction	Pearson Correlation	-.381**	1
	Sig. (2-tailed)	.008	
	N	48	48

Notes. **. Correlation is significant at the 0.01 level (2-tailed).

Source: Compiled by author based on correlation analysis

Appendix I

Results of correlation analysis for production in construction and financial inflows in case of Poland

Variables		Poland construction	Liabilities Poland
Poland construction	Pearson Correlation	1	-.471**
	Sig. (2-tailed)		.001
	N	48	48
Liabilities Poland	Pearson Correlation	-.471**	1
	Sig. (2-tailed)	.001	
	N	48	48

Notes. **. Correlation is significant at the 0.01 level (2-tailed).

Source: Compiled by author based on correlation analysis

Appendix J

Results of correlation analysis for production in construction and financial inflows in case of Poland

Variables		Latvia construction	Liabilities Latvia
Latvia construction	Pearson Correlation	1	-.417**
	Sig. (2-tailed)		.003
	N	48	48
Liabilities Latvia	Pearson Correlation	-.417**	1
	Sig. (2-tailed)	.003	
	N	48	48

Notes. **. Correlation is significant at the 0.01 level (2-tailed).

Source: Compiled by author based on correlation analysis

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11/08/2020