THE EFFECTS OF DIFFERENT TYPES OF CREDIT GROWTH IN DEVELOPING COUNTRIES IN COMPARISON TO DEVELOPED COUNTRIES

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ABSTRACT

THE EFFECTS OF DIFFERENT TYPES OF CREDIT GROWTH IN DEVELOPING COUNTRIES IN COMPARISON TO DEVELOPED COUNTRIES

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This thesis aims to identify the relationship between credit booms and banking crises. Credit is disaggregated into credit to non-financial corporations and credit to households and non-profit institutions serving households. The analysis covers 10 developing and 10 developed countries between 1994 and 2017. Method of Mendoza and Terrones (2008) is followed in identification of booms. Signal extraction analysis is employed to identify the most appropriate smoothing parameter and threshold coefficient. 1600 is used as smoothing parameter and 1 is used as threshold coefficient. It is revealed that 60 percent of banking crises were preceded by corporate credit booms whereas 70 percent of banking crises were preceded by household credit booms. 29 percent of corporate credit booms and 34 percent of household credit booms were resulted with banking crises. 35 percent of household credit booms in developing countries and 33 percent of household credit booms in developed countries were

resulted with crises. 29 percent of corporate credit booms in developing countries and developed countries ended up with crises. Therefore, banking crises occur more frequently around household credit booms. The probability of ending up with a crisis is higher for longer and larger booms. All of credit booms continuing for more than 5 years ended up with crises in the analysis. The average duration of household credit booms is higher. Credit booms which ended up with crises were accompanied by high inflation, high interest rates and currency appreciation in developing countries and accompanied by high current account deficits, other investment levels and currency appreciation in developed countries.

Keywords: Household Credit Booms, Corporate Credit Booms, Banking Crises, Signal Extraction

ÖZ

FARKLI TİP KREDİ BÜYÜMELERİNİN GELİŞMİŞ ÜLKELERE KIYASLA GELİŞMEKTE OLAN ÜLKELER ÜZERİNDEKİ ETKİLERİ

Uçar, Ezgi
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Bu tezin amacı kredi genişlemeleri ve bankacılık krizleri arasındaki ilişkiyi belirlemektir. Kredi, finansal olmayan kurumlara verilen krediler ve hanehalklarına ve kar amacı gütmeyen kuruluşlara verilen krediler olmak üzere ikiye ayrılmıştır. 10 tane gelişmiş ülke ve 10 tane gelişmekte olan ülke 1994 ve 2017 yılları arasında incelenmektedir. Kredi genişlemelerinin belirlenmesinde Mendoza ve Terrones (2008) takip edilmiştir. Düzgünleştirme parametresi ve eşik değeri katsayısını belirlemek için sinyal yöntemi kullanılmıştır. Düzgünleştirme parametresi için 1600, eşit değeri katsayısı için 1 değerleri kullanılmıştır. Krizlerin %70'inden önce hanehalkı kredilerinde aşırı genişleme gerçekleşirken, krizlerin %60'ından önce kurumsal kredilerde aşırı genişleme gerçekleşmiştir. Ayrıca, kurumsal kredideki aşırı genişlemelerin %29'u krizle sonuçlanırken, hanehalkı kredilerindeki aşırı genişlemelerin %34'ü krizle

sonuçlanmıştır. Bu sonuçlar, krizlerin daha çok hanehalkı kredi genişlemelerinin çevresinde gerçekleştiğini göstermektedir. Gelişmiş ülkeler ve gelişmekte olan ülkeler ayrı ayrı incelendiğindeyse benzer sonuçlar ortaya çıkmaktadır. Gelişmekte olan ülkelerdeki hanehalkı kredilerindeki aşırı genişlemelerin %35'i krizle sonuçlanırken, gelişmiş ülkelerdeki hanehalkı kredilerindeki aşırı genişlemelerin %33'ü krizle sonuçlanmıştır. Ayrıca, hem gelişmiş ülkelerde hem de gelişmekte olan ülkelerde, kurumsal kredilerdeki aşırı genişlemelerin %29'u krizle sonuçlanmıştır. Daha uzun süren ve büyük kredi genişlemelerinin krizle sonuçlanma ihtimali daha yüksektir. Çalışmada, 5 yıldan uzun süren genişlemelerin tamamı krizle sonuçlanmıştır. Hanehalkı kredilerindeki aşırı genişlemelerin ortalama süresi daha uzundur. Gelişmekte olan ülkelerde krizle sonuçlanan genişleme dönemlerinde yüksek enflasyon, yüksek faiz oranları ve ulusal paranın değer kazandığı görülürken, gelişmiş ülkelerde yüksek cari açık, yüksek oranda diğer yatırımlar ve ve ulusal paranın değer kazandığı görülmüştür.

Anahtar Kelimeler: Hanehalkı Kredilerinde Aşırı Genişleme, Kurumsal Kredilerde Aşırı Genişleme, Bankacılık Krizleri, Sinyal Yöntemi

To My Family

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BIS	Bank for International Settlements
FDI	Foreign Direct Investment
GDP	Gross Domestic Product
HP	Hodrick Prescott
IMF	International Monetary Fund
US	United States

CHAPTER 1

INTRODUCTION

Credit is by far the largest source of finance for firms in developed countries and mainly in developing countries (Caviglia et al., 2002). When the importance of credits for the economies is taken into consideration, the effects of these credits on the economies should be examined carefully. While the credit might be the main source for the economic growth, it might also prompt financial crises.

While the literature mainly focused on the positive effects of credit growth on the economies in the past, the recent literature addresses this issue in many ways. The missing point in the studies (Greenwood and Jovanovic, 1990, Schumpeter, 1911 and Levine and Zervos, 1996) which claim that there is always a positive relationship between credit growth and economic growth is that they probably ignore the effects of excessive level of credit. However, most of the studies in recent years claim that although credit growth up to a certain threshold level stimulates economic growth, its effects on economic growth start to be negative after this threshold level (Arcan et al., 2012; Bezemer, 2012; Cecchetti et al. 2011; Chong et al., 2017; Rajan and Zingales, 1998). Therefore, the important point is to identify this threshold level accurately. However, there are deficiencies in the literature in this regard too. Many of the studies in the literature use aggregate measures of overall bank lending so they identify one threshold level for aggregate credit data. However, using an aggregate measure of overall bank lending might lead to overlook the fluctuations in the components of the credit. Therefore, instead of identifying one threshold level for aggregate credit data, identifying different threshold levels for different sectors would be a more accurate approach. The importance of the

differentiation among sectors which credit is provided to isalsorecognized in the literature (Beck et al., 2012, Bezemer, 2014, Büyükkarabacak and Valev 2010 and Escribano and Han, 2015). There are two main categories of credit; corporate credit and household credit. While corporate credit might increase the production capacity of the economy through its effect on investments, household credit might lead to dangerous bubbles in the economy through its effect on consumption. Therefore, their effects would not be the same. Studies in the literature disaggregate credit into different categories and analyze the effects of credit growth within these different categories. There are different classifications according to different studies. While some studies (Bezemer, 2014) claim that credit level which is more than 100% of GDP in finance, insurance and real estate sectors has negative effects on economic growth, other studies (Beck et al., 2010; Beck et al., 2012; Gine and Townsend, 2004) claim that the effect of credit to households on economic growth is negligible but the effect of credit to nonfinancial business on economic growth is strong. There are different approaches and views in the literature in this regard. However, it should be realized that threshold level for each sector must be analyzed separately. Since each sector has different characteristics, the level in which the effect of credit starts to be negative might change according to sectors. Most of the studies in the literature do not consider this. The relationship between credit booms and financial crises are also corroborated significantly after financial crises along with strong credit booms such as global financial crises and European debt crisis. However, while some of credit booms end up with financial crises, other booms do not. Macroeconomic conditions, the duration and the size of credit booms are analyzed in order to identify why only some credit booms end up with crises (Barajas et al., 2008; Dell'Ariccia et al.; 2012 and Meng and Gonzalez, 2016). The common finding in these studies is that larger and longer credit booms increase the probability of banking crises. However, since corporate credit booms and household credit booms can occur at different times, the effect of the credit booms would change according to the type of boom.

This study tries to understand why while some credit booms end up with financial crises, other credit booms do not. To be able to understand this, the main focus ofthe study would be the changes in the subcomponents of credit during credit booms. It is obvious that analyzing aggregate credit data does not reveal all of the dynamics of credit booms. The important point might be the boom in a specific subcomponent of credit. If the boom in a specific subcomponent of credit is examined instead of analyzing overall credit boom, this might reveal why some of credit booms result in financial crises. For this reason, the dynamics of different types of credit booms should be analyzed in a comprehensive manner.

Total credit to non-financial corporations and total credit to households and non-profit institutions serving households as a percent of GDP in 10 developing countries and 10 developed countries between 1994 and 2017 are analyzed in the study. Two sided Hodrick – Prescott (HP) filter is applied to find the long run trend of credit. In order to determine the most appropriate smoothing parameter for HP filter and the most appropriate threshold coefficient for identifying credit booms, signal extraction analysis is employed. The analysis reveals that smoothing parameter should be chosen as 1600 and threshold coefficient should be chosen as 1. When the credit booms are identified by these parameters, it is revealed that the ratio of household credit booms ending up with banking crises (34 percent) was higher than the ratio of corporate credit booms ending up with banking crises (29 percent). Also, it is revealed that most of the banking crises were preceded by banking crises. While 70 percent of banking crises were preceded by household credit booms, 60 percent of banking crises were preceded by corporate credit booms. The results for developing countries and developed countries are quite similar. 35 percent of household credit booms in developing countries and 33 percent of household credit booms in developed countries were resulted with banking crises. 29 percent of corporate credit booms in developing countries and developed countries were resulted with banking crises.

In order to understand the dynamics behind credit booms, credit dynamics, characteristics of credit booms and macroeconomic variables around credit booms are analyzed comprehensively in 10 developing countries and 10 developed countries. It is revealed that credit growth is very high in most of the countries in the study. The ratios of credit are higher in developed countries compared todeveloping countries. Also, the composition of credit changes from past to present, and the share of household credit in overall credit increases in most of the countries. It is also revealed that household credit booms tend to last longer and this might be one of the reasons of higher ratio of household credit booms turning into banking crises. Even if the percentage of credit booms turning into banking crises are quite similar in developing and developed countries, the average duration of credit booms ending up with banking crises in developing countries is much shorter compared to credit booms ending up with banking crises in developed countries. Therefore, it might be claimed that the relationship between credit booms and banking crises are different in developing countries and developed countries. Another striking result of the study is that all of credit booms continuing for more than 5 years ended up with banking crises in the analysis. Therefore, policymakers should pay more attention to these kinds of booms. Deviation of credit from trend is larger for credit booms ending up with banking crises. However, deviation of credit from trend is not higher for household credit booms contrary to expectations. When GDP growth, consumption, foreign direct investment, portfolio investment, inflation, current account, trade openness, interest rates and exchange rates are analyzed around credit booms, it is revealed that most of the macroeconomic variables (GDP growth, consumption, inflation, trade openness and interest rates) present much higher deviations from the trend in developing countries compared to developed countries. Even if the fluctuations in these macroeconomic variables do not explain why higher ratio of household credit booms end up with banking crises compared to corporate credit booms, some of the macroeconomic variables fluctuate significantly around credit booms ending up with banking crises regardless of the type of credit boom. Interest rates and inflation are significantly higher than the trend level during credit booms ending up with banking crises in

developing countries. On the other hand, when credit booms are not resulted with banking crises, these variables generally represent lower ratios than the trend level. Therefore, if credit boom periods coincide with high inflation levels and high interest rates, the movements in these variables should be checked carefully. The developments in current account and other investment draw attention in developed countries. While current account is generally lower than its trend level during credit booms ending up with banking crises, it is generally higher than its trend level during credit booms not ending up with banking crises. Also, other investment generally represents higher levels than the trend if a credit boom ends up with a crisis. However, this is not observed if there is not a banking crisis around a credit boom. Lastly, domestic currency appreciation is observed during credit booms turning into banking crises in both developing countries and developed countries.

Even if the literature generally uses 100 as smoothing parameter for annual data, it is shown in this study that 1600 is the most appropriate smoothing parameter for annual dataset in this analysis. One of the contributions of this study to literature is to show that 100 as a smoothing parameter for HP filter might not be the most appropriate parameter for each annual dataset. Also, the literature agrees that the duration of a credit boom is an important factor in analyzing the relationship between credit booms and banking crises. This study empirically shows that credit booms continuing for more than 5 years in our sample end up with banking crises for both corporate credit booms and household credit booms. Therefore, it is demonstrated in the study that policymakers should pay a greater attention to booms continuing for more than 5 years.

The rest of this study is organized as follows. The second chapter explains the role of credit in the economy. The third chapter identifies credit booms with signal extraction analysis. The fourth chapter analyzes the properties of credit booms and the macroeconomic indicators during credit boom periods. The last chapter brings to a conclusion.

CHAPTER 2

THE ROLE OF CREDIT IN THE ECONOMY

2.1. Introduction

The discussion about the role of credit on economic growth has always been one of the most controversial topics in economics. Since the banking sector has the capacity to access to all kinds of entities in the economy such as households, corporate entities and small and medium enterprises, its effect on the economy through credit is perceived significantly. However, its effect is not accepted along the same line.

There are studies in the literature which investigate the effects of the credit growth in the economy in many aspects. While many of the studies (Greenwood and Jovanovic, 1990 and King and Levine, 1993) only focused on the positive effects of the credit on economic growth in the past, these studies failed to notice the real effect of the credit on the economy. The reason is that they probably only focused on the effects of the credit level up to a certain point, and they ignored the threshold level which could cause negative effects on the economic growth. When credit to GDP ratios in several economies are examined, it is revealed that the relationship between credit growth and GDP growth is not positive in every country. However, the recent literature (Arcand et al., 2012, Bezemer, 2012, Cecchetti et al., 2011 and Chong et al., 2017) also showed the unfavorable effects of the credit growth. The argument is that too much credit might have damaging effects on growth. Different studies suggest different threshold levels in order to assess the effects of credit level. These studies found that economic growth increases with the credit growth up to a certain threshold level. However, after the threshold level, the effects of the credit growth start to

be negative. Even ifidentifying a threshold level could help to understand when credit growth starts to damage the economy, there are still missing points in these studies. These studies focus on aggregate credit data while identifying threshold methods. However, focusing on disaggregated credit data would reveal more accurate results.

The transmission mechanism which leads credit growth to affect economic growth operates differently for different types of credit. For this reason, the effects of different types of credit on economic growth diverge. While consumer credit affect economic growth through affecting consumption, corporate credit affects economic growth through its effect on investment. Although investment might increase the productivity of capital in the economy and lead technological innovation, these kinds of effects would not be obtained by consumption expenditures. Even, consumer credit and mortgage credit might cause dangerous bubbles in the economy. For these reasons, while credit to corporate sector might have favorable effects on economic growth, the probability of leading to unfavorable effects on economic growth might be higher for consumer credit and mortgage credit. There are also studies which support that the role of credit in the economy differentiates in accordance with the sector which credit is provided to (Beck et al., 2012, Bezemer, 2014, Büyükkarabacak and Valev 2010 and Escribano and Han, 2015). While some of the studies claim that excessive credit (more than 100% of GDP) to the finance, insurance and real estate sectors damages the economic growth, some studies make different distinctions through focusing on differences between "household credit" and "enterprise credit" or differences between "nonfinancial business and consumption credit" and "financial and real estate credit". Even if the recent literature deals with the topic in a more accurate way, there are some missing points in these studies too. For instance, it would not be true to specify one threshold level for all sectors. Since the effect of the credit growth differentiates according to different sectors, a certain threshold level should be determined for each sector. Also, instead of evaluating a group of countries together, country specific studies might reveal more reliable results.

The effects of the credit growth on financial crises are also frequently pointed out (Dell'Ariccia et al., 2012, Gorton and Ordoñez, 2016, Jordà et al., 2010, Schularick and Taylor 2009, 2012 and Mendoza and Terrones, 2008). It is claimed that while some of the credit booms lead to financial crises, other booms do not lead to crises. If overall credit is disaggregated and credit booms in corporate credit and household credit are analyzed separately, it is revealed that corporate credit booms and household credit booms can occur at different times. It shows that the boom in overall credit might be resulted from either corporate credit or household credit. Consequently, the effects of credit booms would be different on the economy. Therefore, corporate credit booms and household credit booms should be analyzed separately in order to understand the effects of credit growth on financial crises.

The first part of this section explains the dynamics between credit growth and economic growth. While, how access to credit is associated with economic growth is justified in this part, the damaging effect of too much credit on economic growth is also analyzed. It is claimed that credit growth after a certain threshold level is an obstacle for economic growth. The second part investigates the effects of credit growth on different sectors. It is revealed that the effects of credit growth on economy change in accordance with the sector which credit is provided to. The third part represents the relationship between credit booms and financial crises. The last part brings to a conclusion.

2.2 The Effects of the Credit Growth on the Economy

Hamilton (1781) claims that "the banks were the happiest engines that ever were invented" for promoting economic growth. Schumpeter (1911) also asserts that banks have an important role in stimulating innovation and following economic growth through discovering and financing productive investments. According to Schumpeter, the main argument for credit-growth nexus is the function of banking system providing liquidity for entrepreneurship. He says that "the new combinationof means of production and credit are fundamental phenomena of economic development" (Schumpeter, 1934). The importance of credit on

economic growth cannot be ignored in Schumpeter's studies. The relationship between credit growth and economic growth continued to be a much debated topic in the literature after Schumpeter's studies. Greenwood and Jovanovic (1990) found that financial institutions increase economic growth by creating better information and resource allocation. The study conducted by King and Levine (1993) on 77 developed and developing countries using cross country growth regression revealed that financial development is positively correlated with current and future economic growth. Levine and Zervos (1996) found that banking development are both positively and powerfully related with current and future rates of economic growth, productivity growth and capital accumulation even after checking for various elements linked with growth.

After assessing the positive relationship between credit and growth in the literature, the question of how access to credit is linked with economic growth comes to mind. Feijó and Galeano (2012) highlight two alternative approaches to explain credit-growth nexus in contemporary theoretical literature. According to the mainstream view, the distribution of financial resources in the economy can be improved through the role of financial system as an intermediary of accrued savings. Thus, it makes contribution to increase in the productivity of capital. If the productivity of capital is affected by the improvement in financial sector by credit, productivity of labor is also influenced because of more productive labors by the way of rise in the average capital productivity. Consequently, a connection between growth of credit and enhanced productivity can be built up. According to Keynesian view, the financial system supplies required funds to finance investment and promotes consumption through investment multiplier. Keynes (1964) developed "finance-investment-saving-funding" circuit to explain this phenomenon. It is supposed that the primary resources for the investment originated from money creation by banks so key role in finding the resources to fund investment belongs to banks. The multiplier process of demand leads to increase in income and consequently the aggregate savings while making investment. The increase in savings should be directed to financial sector and thus enhances the liquidity which was expected to sustain

the start of the investment. Therefore, the circuit explains how the primary loan promotes investment. However, the change of finance in funding in the circuit is not spontaneous and relies heavily on suitability of period and interest rates. Thus, the accessibility of credit and growth are directly associated in the wake of these lines of reasoning.[1]

Even if some of the studies in the literature only address a positive relationship between credit growth and economic growth, Figure 1 shows that relationship between credit growth and economic growth is negative in several major economies. While explaining the positive relationship between credit growth and economic growth, studies in the literature which defend that credit growth always promotes economic growth do not consider the macroeconomic instabilities originated from too much credit. Even if the credit might be an effective instrument for utilizing the resources in the economy, the dangers which might appear because of credit growth should not be ignored. There are many examples of financial crises which occurred after the periods of excessive credit growth such as global financial crisis, the crises in Korea, Thailand, Philippines and Malaysia in 1997 and 1998, the crisis in Chile in 1982, the crisis in Mexico in 1994 and the crises in Sweden, Finland, Denmark and Norway in 1990 and 1991. Even, there are countries which try to decrease the level of credit to GDP. For instance, China and Vietnam are trying to control excessive credit growth. Experts warn Vietnam that the country should decrease the level of credit growth in order to strengthen macroeconomic stability. Also, the leaders in China agree that the policies are required to decrease the level of credit in order to improve the supervision and guarantee that credit growth does not lead to speculative investments (Kärnfelt, 2018). While there are these kinds of cases, it would be a weak argument to claimthat there is always a positive relationship between credit growth and economic growth.

[1] This paragraph heavily draws on Feijo and Galeano.

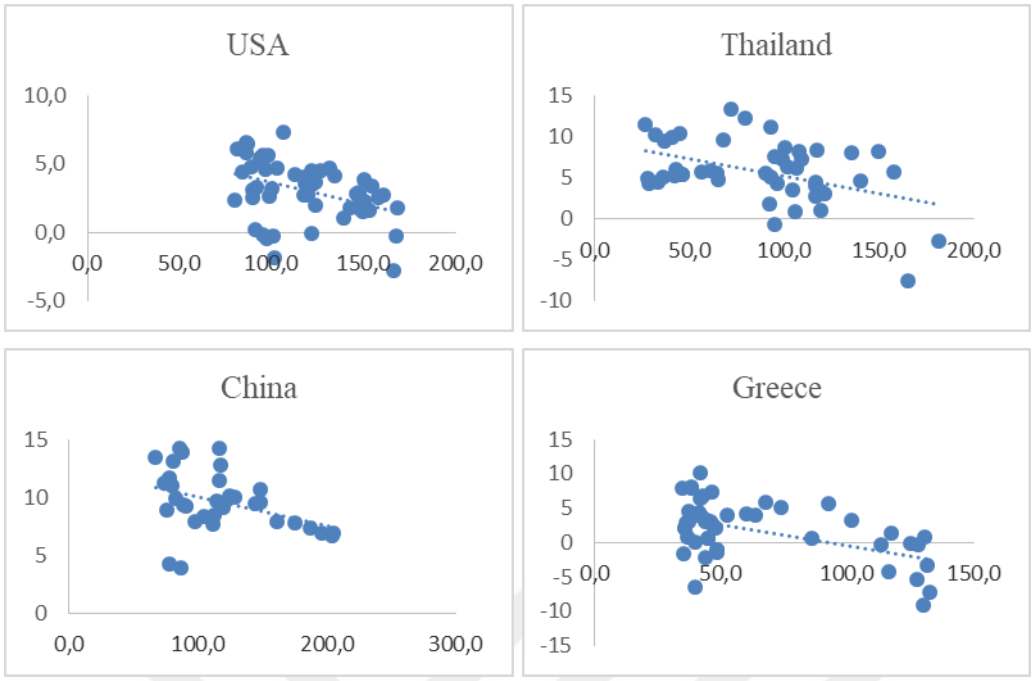


Figure 1: Relationship between Total Bank Credit to Private Non-Financial Sector (% of GDP) and GDP Growth

Source: Author's own calculations based on BIS and World Bank

While there are studies (Greenwood and Jovanovic, 1990, King and Levine, 1993 and Levine and Zervos, 1996) defending the positive effects of credit growth on economies, most of the recent studies in the literature (Arcand et al., 2012, Bezemer, 2012, Cecchetti et al., 2011 and Chong et al., 2017) defend that too much credit has negative effects on the economic growth. They argue that financial development prompts economic growth up to a certain level but after that level, more finance is considered as an obstacle on growth.[2] Too much finance gets human capital away from the productive economy, and due to created financial and macro fragility, growth in credit causes greater boom and bust which makes countries worse off. Cecchetti and Kharroubi (2012) claim that

[2]The financial development is generally indicated by the ratio of private credit to GDP in the literature. However, since the supply of credit might fluctuate significantly due to business cycles, short term fluctuations in the ratio of private credit to GDP cannot represent the differences in the development of financial markets and institutions (Beck, 2015). Therefore, attention should be paid while using this term.

financial system enters into competition with the remainder of the economy for the resources. In addition to physical capital such as computers and buildings, it also requires highly skilled people.

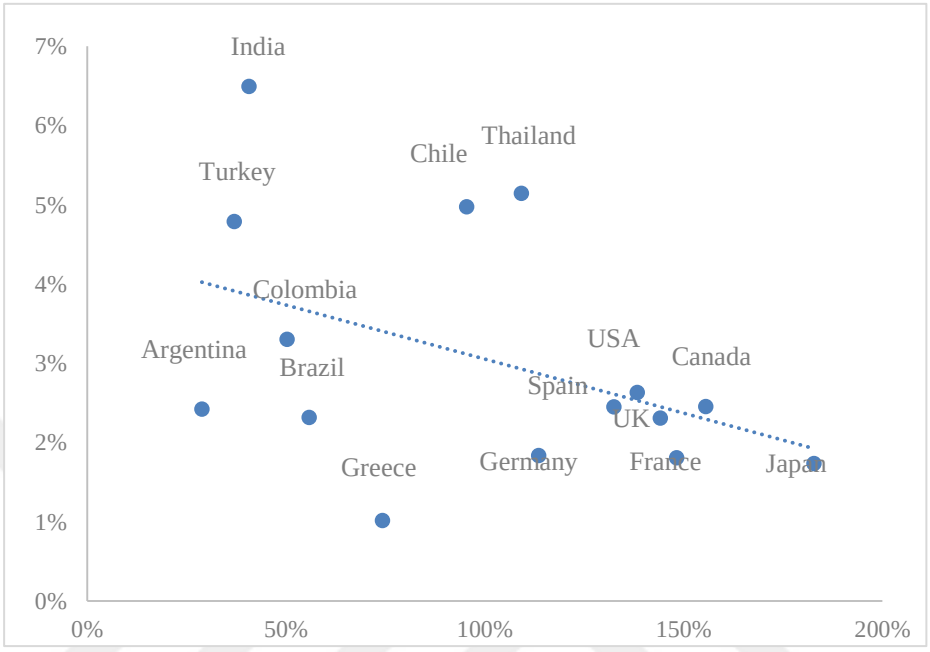


Figure 2: Average Total Credit to Private Non-Financial Sector Growth and GDP Growth Between 1990 and 2017

Source: Author's own calculations based on BIS and World Bank

Figure 2 shows the average GDP growth and credit growth between 1990 and 2017 in major economies. The figure presents that economic growth is prone to be higher in countries with moderate credit levels such as Turkey, Colombia and Argentina while it is prone to be lower in countries with very high credit levels such as Japan and Spain. Unlike the earlier studies in the literature, the recent literature points out this difference and associates only credit growth under a certain threshold level with growth in GDP. Chong et al. (2017) explain the negative relationship between credit growth and economic growth which appeared powerfully after 1990 and was especially declared in the Eurozone. They found that when it is beyond approximately 90% of GDP, the growth of credit is mostly counterproductive. This is compatible with the belief that too

much finance might undermine the potentialof economic growth.[3]However, according to their study, the growth of GDP has been in tendency to diminish even before the 90% threshold has been attained in Eurozone countries. However, this threshold level can change according to different studies. For instance, while Cecchetti et al (2011) examine that the threshold level should be approximately 85% of GDP for household and government debt, and approximately 90% of GDP for corporate debt, Bezemer (2012) states that the theoretical anticipation of the highest expansion effect of credit is approximately credit to GDP ratio of 100%. There is a possibility that the economic growth potential has been low and even diminishing. The demand for finance increased because of the decrease in potential of growth. This mechanism has been introduced by Gennaioli et al. (2014). Piketty and Zucman (2014) have reported that since the rates of savings do not usually decrease with the slowdown in growth, the increase in accumulated savings is quicker than GDP and the wealth to GDP ratio goes up. Because of the search of households to protect their wealth, the growth in this ratio induces a demand for finance. Thus, the financial system is utilized to put their savings and take on debt for consumption and buying houses. Even as economic growth maintains to decrease, the financial system becomes larger. Chong et al (2017) utilize these mechanisms to explain the negative relationship between credit ratio after a certain threshold level and growth. Arcand et al (2012) also show in their study that there can truly be too much finance through using different data sets (industry level and country level) and different estimators (cross sectional and panel regressions along with semi parametric estimators). They use simple OLS to look at country level data in cross sectional regressions and use GMM system estimator to look at country level data in panel regressions. They follow the approach of Rajan and Zingales (1998) to look at industry level data. According to their study, if credit to private sector attains 80-100 % of GDP, financial depth measured by the ratio of private credit as a percent of GDP starts to have a negative impact on economic growth.

[3]The study reveals an opposite situation for developing countries. Developing and emerging countries present credit to GDP levels less than 90 percent of GDP. Also, the increase of credit was correlated to higher growth in developing and emerging countries.

As a result, while there is positive relationship between credit growth and economic growth at intermediate rates of financial depth, more credit is related to less growth at high rates of financial depth. This proves that there is a non-monotonic relation between credit growth and economic growth. Instead of focusing on a unidirectional relationship between credit growth and economic growth, identifying a non-monotone relationship between these variable is a better approach to discover the dynamics of these variables. However, there might still be missing points in these studies. Discovering the changes in aggregate credit growth is not enough to understand this relationship. Each sector which credit is given to has different dynamics so the effects of credit growth on these sectors cannot be the same. For instance, developments in mortgage credit market were responsible from the global financial crisis so analyzing movements in the aggregate credit growth could not reveal the dynamics of the crisis. Therefore, instead of focusing on aggregate credit growth, disaggregated credit growth should be focused on.

2.3. The Effect of the Credit Growth in Different Sectors

The role of credit in the economy differentiates in accordance with the sector which credit is provided to. The important point here is that while financial sector can promote economic growth, it can also provoke crisis. Especially after the global financial crisis, economists have started to consider these incompatible effects of credit on the economy; credit and the"dark side" of credit, debt (Bezemer, 2014).

Consumer credit is short and medium term loans which are utilized in order to fund purchasing of goods and services for personal consumption or in order to refund loans taken for these kinds of things. Mortgage credit along with consumer credit can boost consumption through increasing housing prices which would lead to perception of rising wealth or loosening borrowing constraints. Figure 3 presents how the movements in household credit and movements in consumption are correlated in several countries.[4] The graphs show that there is a

[4] Household credit includes the corporate credit and mortgage credit.

high correlation between credit to households and consumption. The relationship between credit and consumption becomes evident in crisis periods. Consumption expenditures decline significantly during crisis periods. Figure 4 shows the decline in consumption expenditure in major European countries after European debt crisis. Several arguments are proposed to explain the decline in consumption expenditure in crisis countries. One of the arguments is that liquidity and credit constraints lead to decline in consumption (Aron et al., 2012). Even if permanent income does not change, consumption of households has to decline as a result of the fall in real income if the households do not have savings or access to credit. Since the banks are more risk averse during these times and tighten loan conditions, it would be difficult to attain credit for households. Therefore, consumption dynamics might be different in the period of financial crises.[5] While credit to households affects economic growth through increasing consumption, greater household debt is linked with the decline in GDP growth and higher probability of banking crises (Mian et al., 2017, Schularick et al., 2016). Global financial crisis and European debt crisis corroborated the arguments about the role of household credit in financial crises. The aggregate-demand externality together with high household debt causing a supply constrained economy can clarify the relationship between household credit and financial crisis (Eggertsson and Krugman, 2012).[6]

[5] Other arguments which are the reasons of consumption decline are the permanent income decrease (Friedman, 1957) and precautionary and buffer stock savings (Mody et al, 2012).

[6] Boom-bust cycles created by credit supply can be explained by credit driven externalities (Mian and Sufi, 2018) Households know that the if there is a positive credit supply shock, this will be temporary. However, Mian and Sufi claim that overborrowing by households is observed during these periods, and boom- bust cycles in credit and real economy are created because of the overborrowing. According to Eggertson and Krugman (2012), aggregate demand externalities is one of the reasons of the overborrowing. They claim that when credit decreases and the demand of leveraged households declines, the economy is prohibited from improvements because of the incompabilities such as lower bound on real interest rates and nominal wage rigidity. Since the impacts of the future demand falls are not internalized by them, households borrow more than its socially optimum level. Therefore, financial crises might be observed in the economy in the aftermath of high credit growth.

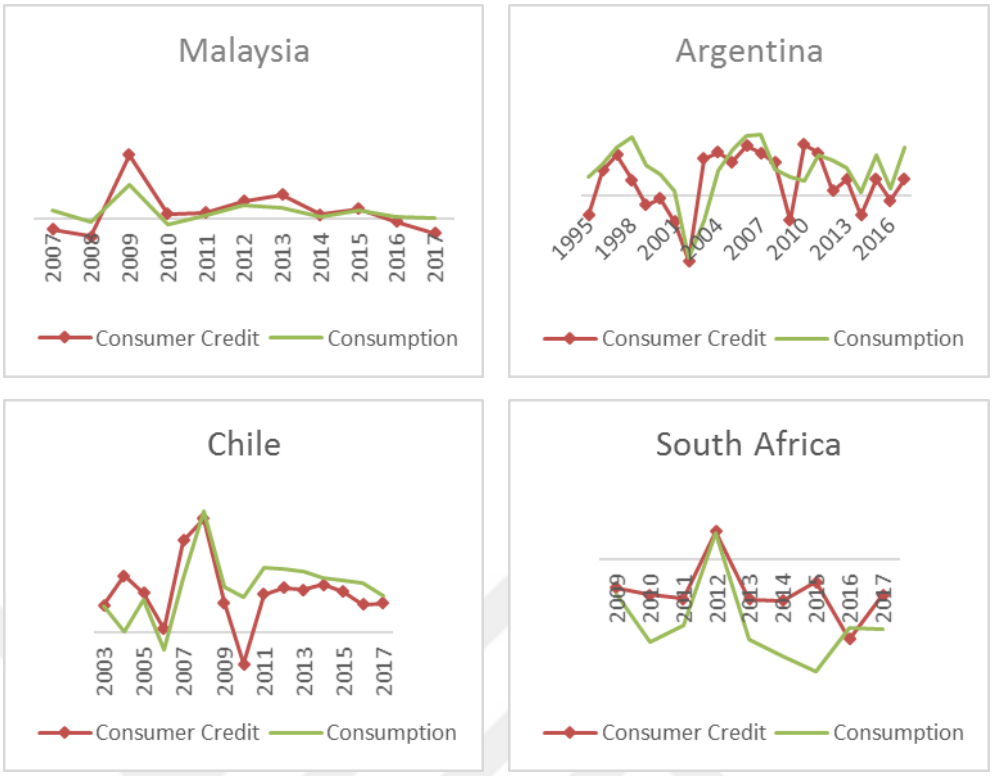


Figure 3: Consumer Credit Growth and Consumption Growth

Source: Author's own calculations based onBIS and World Bank

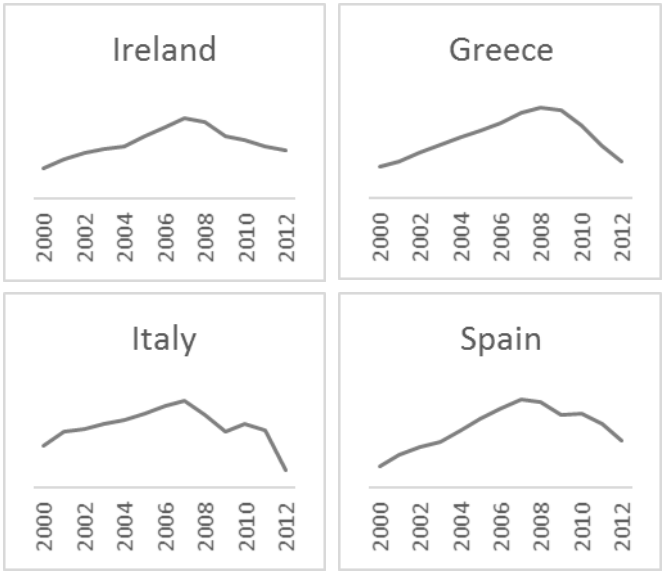


Figure 4: Real Per Capita Consumption Expenditures

Source: Author's own calculations based onWorld Bank

The relationship between credit and investment is also a highly debated topic in the literature. There are many studies (Amiti and Weinstein, 2014, Banerjee et al., 2017, Brigden and Mizen, 1999) verifying the positive effects of credit on investment. According to Modigliani-Miller theorem (1958), since the funds from external and internal sources are perfect substitutes, the finance decisions of firms do not depend on investment decisions in perfect capital markets. However, there are many circumstances causing imperfect substitution between these two types of funds in reality. Therefore, there are significant consequences of financing constraints on investment (Gómez, 2018). Corporate credit is the kind of credit which is provided to a business or an organization instead of an individual. Since the accessibility of finance is a precondition for investment, corporate credit is fundamental in starting and continuing a business. Since corporate credit makes innovation easier for entrepreneurs, it enables the increase in the production capacity of economies. Figure 5 shows the relationship between total credit to non-financial corporations and investment in several economies. It presents how these two variables move together. Therefore, consumer credit and mortgage credit affect economic growth through its effect on consumption whereas corporate credit has an effect through its effect on investment.

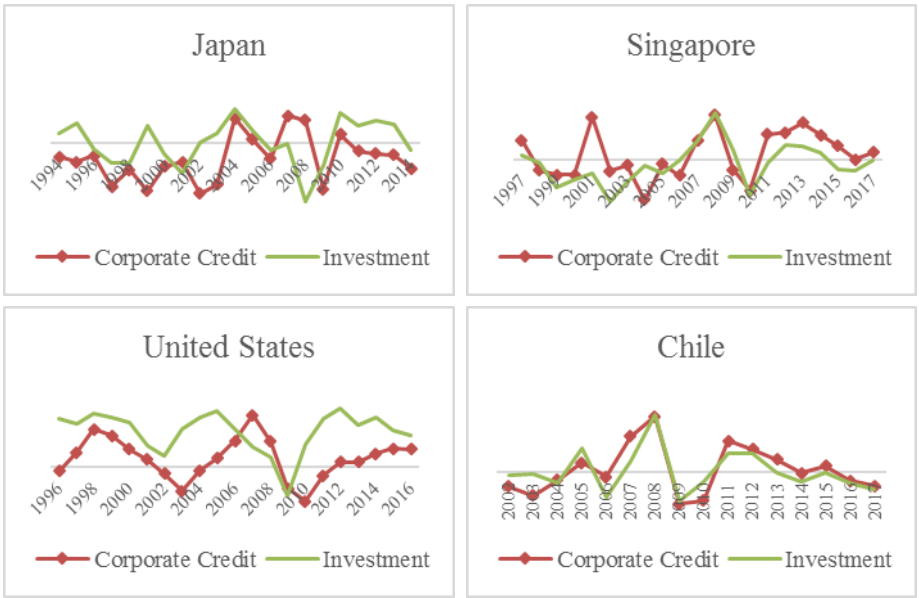


Figure 5: Corporate Credit Growth and Investment Growth

Source: Author's own calculations based onBIS and World Bank

The literature deals with this topic in different ways and contains different views regarding the effects of different kinds of credit on economic growth. Bezemer (2014) argues that while economic growth is increased by the credit to the real sector, excessive credit (more than 100% of GDP) to the finance, insurance and real estate (FIRE) sectors harms the growth. Although financial crisis is mainly considered as the harm of too much credit, it is actually just the final outcome of the excess. A study made by Bezemer on the US economy since the 1980s presents the five manners in which excessive credit to the FIRE sector harms the economy. These ways are housing-led growth, slowing investment, rise in dysfunctional stock markets, debt-financed M&A waves and inequality originated from the rise of financialization. While Bezemer focuses on the FIRE sector to assess the effects of excessive credit on economic growth, Beck et al. (2012) make a different distinction through focusing on the household credit and the enterprise credit. Cross-country regressions are run to evaluate the effects of household credit and enterprise credit on economic growth. In addition to independent effects of these different types of credit on growth, the effects on industry growth and income inequality are investigated. They also make a distinction among countries having different income levels. The study claims that there is no significant relation between household credit and GDP per capita growth regardless of GDP level of countries. However, although there is generally an important relation between bank credit to GDP and economic growth for middle income countries, the relation between enterprise credit and economic growth is notable for low, middle and some of the high income countries. Therefore, the positive effect of credits on economic growth has its source in enterprise credit instead of household credit. Why the effect of total bank credit on economic growth is insignificant in high income countries is partially explained by the rising significance of household credit in overall credit in these countries. The study comes up with the similar results for the effects of household credit and enterprise credit on industry growth and income inequality. Although the high levels of enterprise credit lead faster growth of the industries which count more on external financing, the growth rates of these industries do not change with the level of household credit. Moreover, the decrease in income

inequality is recognized through enterprise credit instead of household credit.[7] There are also other distinctions of the credit in the literature. A study done by Bezemer, Grydaki and Zhang separates the uses of credit into "nonfinancial business and consumption credit" and "financial and real estate credit" over 1990-2011 in 46 economies. Since nonfinancial business and consumption credit funds the activities in goods and services, it is claimed that there exists a direct connection to GDP growth. However, there is no such a connection for financial and real estate credit. Even if there might be an indirect connection with economic growth, GDP does not include asset transactions. As a result, according to this study, the impact of nonfinancial business and consumption credit on economic growth is higher than the impact of financial and real estate credit on economic growth. Büyükkarabacak and Valev (2010) also found that while the effects of household credit on economic growth are negligible, the effects of nonfinancial business credit on economic growth are significant. In another study, Escribano and Han (2015) investigated the effects of corporate credit, consumer credit and housing credit on GDP. They applied a cross country regression on 31 emerging market economies between 2002 and 2012 in order to identify the effects of different types of credit growth on GDP growth and the effects of different types of credit growth on investment and consumption. It is revealed that both credit growth and the composition of credit are important for growth of GDP. Also, they found that there are different transmission mechanism for corporate credit and consumption credit. While corporate credit affects GDP growth through its effect on investment, consumer credit affects GDP growth through its effect on private consumption. Even if the effect of housing credit is not significant for one third of model specifications, it also affects GDP growth positively through its effect on consumption. Also, they found that the effect of consumer credit on GDP growth is larger compared to the effect of corporate credit.

[7] Income inequality is measured by the poorest quintile's portion of income and Gini coefficient.

To summarize the existing literature about the effects of different types of credit growth on economic growth, while there are studies supporting that corporate credit has positive effects on economic growth (Beck et al, 2012; Büyükkarabacak and Valev, 2010), there are also studies supporting that consumer and housing credit have significant positive effect on economic growth (Escribano and Han, 2015). Although there are other types of classifications of credit just as in the studies of Bezemer, the literature mainly focuses on the effects of corporate credit, consumer credit and housing credit on the economy. Even if analyzing the effects of credit growth by disaggregating credit is a better approach, most of these studies in the literature do not investigate the threshold levels for different sectors. However, just like the threshold levels identified for aggregate credit growth, there should be different threshold levels for different sectors which credit is provided to. In order to be aware of the period in which the effects of credit growth turn out to be damaging, threshold levels for each sector should be identified carefully. The damaging effects of too much credit might not be limited with negative effects on economic growth. They can go further and lead to serious financial crises as well. As a result, since the transmission mechanism which credit growth affects economic growth through is different across different credit groups, the effects of credit on economic growth cannot be the same. Therefore, analyzing credit growth by disaggregating overall credit would be more appropriate in order to discover the real dynamics of credit growth.

2.4. Credit Booms and Financial Crises

Financial crisis is mostly considered as the danger of too much credit. Although it is regarded as the final outcome of too much credit, it does not take too much time to attain this outcome. The global financial crisis has strengthened this idea. Eventually, the origins of the crisis was a sudden rise of mortgage loans in the US, and the regions which encountered larger booms in the expansion period experienced larger rises in credit delinquency in the crisis period (Dell'Ariccia, Igan, and Laeven, 2008). Wolf (2009) claims that there is a problem that "instead of being a servant, finance had become the economy's master". Since the growth

of financial sector is mostly associated with the credit growth, the effect of credit growth on financial crises should not be ignored.

Figure 6 shows that there are peak years in credit growth in several economies. These figures reveal that credit growth reached to peak levels before significant financial crises in these countries. The Asian financial crisis of 1997 which began in Thailand affected many Asian countries. The figure shows that credit levels were at record levels in Asian countries before the crisis, and then, they suddenly dropped. Latin American countries also had the same experiences with Asian countries. Bank credit to private non-financial sector in Mexico increased from 9,7% in 1988 to 34,2% in 1994 when Mexico Peso crisis emerged. Also, before Argentine Great Depression between 1998 and 2002, credit ratio in Argentina increased from 9,5% in 1990 to 21,8% in 1998. The pattern was the same in the US before global financial crisis and the same in Ireland and Greece before European Debt Crisis. All of these crises are the biggest financial crises in different regions, and there is a common point in all of these crises that credit ratios increased significantly before the crisis period. This verifies that the movements in credit growth before crises should be examined carefully.

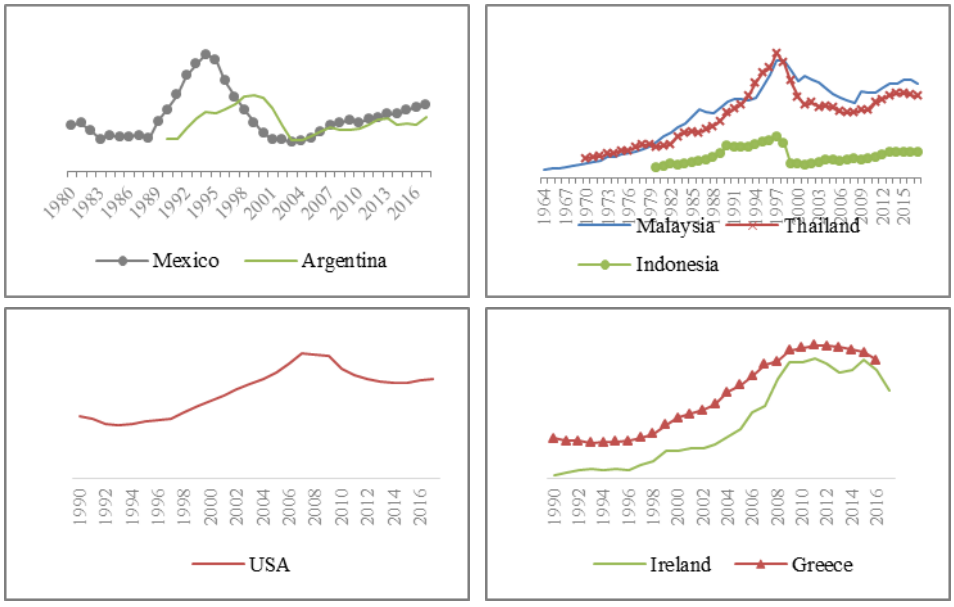


Figure 6: TheBank Credit to Private Non-Financial Sector

Source: Author's own calculations based onBank for International Settlements

There are several studies in the literature investigating the relationship between credit growth and financial crises. Jordà et al (2010) demonstrate that credit growth is the best forecaster of financial instability, using the sample of 14 developed countries throughout 140 years. They replicate the outcomes from Schularick and Taylor (2009) which use a logit model with country fixed effects and present the fluctuations in credit to GDP as the only explanatory variable, and they find that high level of credit growth during the past five years is the indicator of a rising risk of financial crisis. They claim that stability risks are revealed by high levels of credit growth together with broadening current account imbalances, and this should not be ignored by policymakers. Schularik and Taylor (2012) also prove that the credit growth is a significant forecaster of financial crises. This means that the crises occur when "credit booms gone wrong" and the credit growth is disregarded by the policymakers. Credit boom is a period in which there is a faster growth of the ratio of credit to GDP than its trend level which pursues the normal pace of credit growth in a specific country. It might cause fragilities through extreme leverage, asset price bubbles and looser lending standards.

Table 1: Dates of Credit Booms and Banking Crises

Country	Credit Boom	Banking Crisis
Mexico	1981 1993, 1994, 1995	1981 1994
Russia	1981 1993, 1994, 1995	1981 1994
USA	1986, 1987, 1988, 1989, 1990 2006, 2007, 2008, 2009	1988 2007
Thailand	1996, 1997, 1998	1997
Indonesia	1997, 1998	1997
Malaysia	1997, 1998	1997
Korea	1997, 1998	1997
Greece	2004, 2006, 2007, 2008	2008
Ireland	2004, 2005, 2006, 2007	2008
Spain	2003, 2004, 2005, 2006, 2007	2008

Source: Author's own calculations based on BIS

Note: Smoothing parameter for HP filter is set at 100 and the threshold coefficient is set 1. Banking crises is obtained from Laeven and Valencia (2018).

Table 1 shows that credit booms had stayed ahead of many of the biggest banking crises such as Mexico (1994), Russia (1994), USA (2007), Spain, Greece and Ireland (2008) and Korea, Malaysia, Indonesia, and Thailand (1997). This verifies that the pace of the credit growth is important while examining the effects of credit growth on financial crises.

Unlike earlier studies in the literature on credit booms, Mendoza and Terrones (2008) suggest that all of the credit booms do not result in crises. Therefore, just like the effects of credit growth on economic growth change in respect to the level of credit and the sectors which credit is provided to, the effects of credit growth on financial crises might change in different circumstances. Gorton and Ordoñez (2016) categorized credit booms as bad booms and good booms depending on if they are associated with financial crisis in around three years of the end of the boom.[8] While the sample consists of 34 countries in which there are 17 developed countries and 17 emerging countries between 1960 and 2010, 87 credit booms are recognized in the sample, and 34 of these booms are classified as bad booms. Dell'Ariccia et al (2012) agree with the idea that not all credit booms are bad booms. According to their study, although around a third of credit booms result in financial crises, other credit booms do not cause busts. They are followed by the prolonged periods of economic growth which is less than the trend level. However, they also claim that many of credit booms cause persistent financial deepening and promote long run economic growth. Unlike many studies in the literature which only focus on identifying good booms and bad booms, the studies of Dell'Ariccia et al. (2012) and Gorton and Ordonez (2016) investigate the reasons which cause to result in financial crises as well. While Dell'Ariccia et al. (2012) found that macroeconomic conditions, the length

[8] The definitions of Laeven and Valencia (2012) are followed in this regard.

and the magnitude of credit booms lead to financial crises, Gorton and Ordonez (2016) found that some of credit booms end up with financial crises because of the pattern of total factor productivity growth. However, while investigating these reasons, they ignore the fluctuations in the components of aggregate credit. This approach might lead to overlook the reasons behind financial crises originated from credit booms.

Table 2: Dates of Corporate Credit Booms and Household Credit Booms

Countries	Corporate Credit Booms	Household Credit Booms
Argentina	**2002, 2003**	**1998, 1999, 2000, 2001**
Brazil	1994	1994
Chile	1999, **2001**, 2008	**1996, 1997, 1998**, 1999, 2008, **2009**
Colombia	**1999, 2002**	**1996, 1997, 1998**
Malaysia	**1996**, 2005	**2003, 2004,** 2005
Mexico	1994, 1995, **1996, 2007**	1994, 1995
Korea	**1997, 1998**	**1994, 2002**
Singapore	**1997, 2001**	**2003, 2012**
Thailand	1997, 1998	**1996**, 1997, 1998
Turkey	**1997**	**1994, 2010, 2011, 2012**

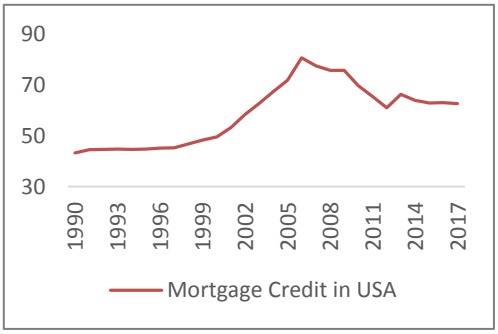
Source: Author's own calculations based onBIS, Central Bank of Chile, Central Bank of Malaysia and Federal Reserve Bank of St Louis

Note: Smoothing parameter for HP filter is set at 1600 and the threshold coefficient is set at 1. The method identifying smoothing parameter and threshold coefficient is represented in Chapter 3. Banking crises is obtained from Laeven and Valencia (2018).

Table 2 presents that if there is corporate credit boom in a country, this does not mean that there has to be household credit boom at the same time. Corporate credit booms and household credit booms can occur at different times. This means that subcategories of credit should be focused on in order to analyze credit booms correctly. Since the effects of boom in corporate credit and household

credit would be different on economies, the probability of resulting in a financial crisis changes according to different types of credit. Household credit booms might lead to consumption booms in an economy. Montiel (2000) presents how economic growth was affected before, during and after consumption booms in several countries. According to his study, 24 out of 35 consumption booms resulted in a lower GDP growth during or after consumption booms. Even, some of the countries such as Iceland and New Zealand experienced negative growth after consumption boom periods. Montiel (2000) also claims that eight consumption booms associated with a sudden credit growth ended up with financial crises (Mexico, Turkey, Malaysia, Nigeria, Chile, Bangladesh, Norway (1975-1977) and Mauritania (1982-84)). Also, the danger of housing bubbles originated from rising mortgage loans cannot be ignored. Global financial crisis showed that mutual effect of credit growth and asset price bubbles reveals big dangers to financial stability. When the unleveraged equity market booms like the United States dotcom bubble lead to financial stability risk, this might be different from financial stability risk arose from a credit funded housing boom like the housing market in the United States in the 2000s(Jordà, Schularick and Taylor, 2016). Although housing bubbles are comparatively uncommon, it is realized that the probability of emergence of a financial crisis is higher when the housing bubble bursts. Figure 7 presents the unprecedented levels of mortgage credit in USA before global financial crisis. With the burst of housing bubble, the global financial crisis revealed the dangers of housing credit booms.

Figure 7: Developments in Mortgage Credit in the United States



Source: Author's own calculations based onHousing Finance Information Network

While consumer credit and mortgage credit affects consumption, corporate credit might lead to increase in productivity of capital through its effect on investment. The reason is that entrepreneurs might invest in riskier but high-yield projects as a result of rising credit opportunities. Investments made through credit might increase productivity capacity of the economy and thus it might result in economic growth. Schumpeter (1912) and Levine (1997) claim that technological innovation can be supported by deeper credit markets through specifying, choosing and financing entrepreneurs. Even if they do not disaggregate credit, it would not be possible to attribute increasing technological innovation to the effects of consumer credit. Therefore, it might be claimed that while consumer credit and mortgage credit might increase financial fragilities in the economy, corporate credit affects economic growth through increasing productivity of capital. Since a credit boom in an economy might be resulted from a boom in corporate credit or household credit and the effects of these two types of credit booms would be different on economies, corporate credit booms and household credit booms should be analyzed separately.

2.5. Conclusion

The economic growth is substantially influenced by the credit growth. However, this does not mean that the relationship is always in the same direction. On the contrary, there is a non-monotone relationship between credit growth and economic growth. While credit growth might be the main source for the economic growth, it might also prompt financial crises. The important point is that credit growth up to a certain level is effective in increasing economic growth. After a certain level, its effects might be damaging on economic growth. Threshold level for damaging effect of credit growth should be determined carefully in order to prevent negative effects of credit growth on economies. Also, the effects of credit growth are not same along different sectors. Since each sector has different dynamics, credit growth in each sector presents different

effects on economies. While consumer credit and mortgage credit have effects on economic growth through consumption, corporate credit has effects on economic growth through investment. Different dynamics of consumption and investment lead different effects on economic growth. Credit to corporate sector might have favorable effects on economic growth through increasing productivity capacity of the economy. However, credit to households is associated with many of the banking crises. Lastly, when credit booms are disregarded by policymakers and reach to the levels which cannot be controlled, they might result in financial crises. However, different transmission mechanisms of different types of credit requires to analyze credit by focusing on subcomponents of credit in order to identify the reasons behind financial crises originated from credit booms.

CHAPTER 3

IDENTIFICATION OF CREDIT BOOMS

3.1. Introduction

Different types of credit aggregates are used in the literature in order to identify credit booms. The most preferred aggregates are real credit and credit to GDP ratio. However, both of these aggregates suffer from some drawbacks. If there is a very low credit level at the beginning of the period, real credit aggregate might be mistakenly associated with very strong credit growth. Also, real credit growth rate is very sensitive to business cycles. These might lead to misinterpret credit boom analysis. Even if credit to GDP ratio has some drawbacks too such as misleading interpretations due to fluctuations in GDP level, following same trend for credit level and GDP level and misleading fluctuations in credit to GDP ratio due to high inflation, credit to GDP ratio is used as credit aggregate in this study. Credit is disaggregated into credit to non-financial corporations and credit to households and non-profit institutions serving households. Credit booms in 10 developed and 10 developing countries between 1994 and 2017 are analyzed in the study.

Fundamental method and statistical method are two main approaches in identifying credit booms. While fundamental method investigates credit growth as a function of several macroeconomic indicators (Boissay et al., 2006, Cottarelli et al., 2005, Egert et al., 2007 and Kiss et al., 2006), statistical method analyzes the statistical characteristics of credit in order to determine credit booms (Barajas et al., 2011, Coudert and Pouvelle, 2010, Elekdag and Wu 2011, 2013, Gourinchas et al., 2001, Mendoza and Terrones, 2008 and Ottens et al., 2005 and Tornell and Westerman, 2002). Hodrick-Prescott filter is commonly utilized in

statistical method in order to identify the long term trend of credit. Therefore, the fluctuations in credit growth are revealed. The methods used by Gourinchas et al. (2001) and Mendoza and Terrones (2004) are commonly used methods in the literature. While Gourinchas et al. (2001) employ backward looking HP filter, Mendoza and Terrones (2008) apply full sample HP filter. This study follows the method of Mendoza and Terrones (2008) but applies signal extraction analysis in order to identify most appropriate smoothing parameter level and threshold coefficient level. Following Duzcay and Comert (2018), 4 different smoothing parameter (6,25, 100, 500, 1600) and 10 different threshold coefficient (0,25, 0,5, 0,75, 1, 1,25, 1,5, 1,65, 1,75, 1,9, 2) are investigated in the signal extraction analysis. In order to identify the most appropriate threshold coefficient and smoothing parameter, the combination of these variables which reveal the minimum noise to signal ratio provided that the missed crisis ratio (banking crises which are not signalled by credit booms/all banking crises) is smaller than 40% is chosen following Duzcay and Comert (2018).

Signal extraction analysis reveals that the most appropriate level of smoothing parameter is 1600 and the most appropriate level of threshold coefficient is 1 in order to identify credit booms. The results present that 100 as smoothing parameter which is mostly used for annual data in the literature might not be the most appropriate smoothing parameter for each annual dataset.When the analysis is made by these parameters, it is found that the banking crises occur more frequently around household credit booms. The results reveal that 70 percent of banking crises were preceded by household credit booms whereas 60 percent of banking crises were preceded by corporate credit booms. On the other hand, 29 percent of corporate credit booms were resulted with banking crises whereas 34 percent of household credit booms were resulted with banking crises. When the results are evaluated separately in developing countries and developed countries, they are very similar to each other. 35 percent of household credit booms in developing countries and 33 percent of household credit boom in developed countries were resulted with banking crises. Also, 29 percent of corporate credit

booms were resulted with banking crises in both developing countries and developed countries.

3.2. Data

The empirical literature focuses on different types of aggregates to identify credit booms using HP filter. These are real credit growth, nominal credit and the ratio of nominal credit to GDP. Real credit (Elekdag and Wu 2011, 2013 and Mendoza and Terrones, 2008) and credit to GDP ratio (Boissay et al, 2006, Coudert and Pouvelle, 2010 and Ottens et al, 2005) are among the most preferred aggregates. Even if these aggregates are among the most preferred aggregates, both of them have some drawbacks. When real credit growth is used as an aggregate to identify credit booms, credit growth would be very strong at the beginning of time period if the period starts with a very low credit level. This might lead to mistakenly interpret the beginning period as a credit boom period. Also, credit growth rates are very sensitive to business cycles. If there is an economic downturn period with negative credit growth rates, very low credit growth rates in the following period might be perceived as credit boom (Coudert and Pouvelle, 2000). These kinds of biases can be prevented by using credit to GDP ratios while determining credit booms. However, credit to GDP ratio have some drawbacks, too. Even if both nominal credit and nominal GDP decrease, credit to GDP ratio can increase if the decline in nominal GDP is more than the decline in nominal credit. Also, credit level and GDP level have to follow same trend while using credit to GDP ratio. Lastly, high inflation might lead misleading variations in credit to GDP ratio resulting from inappropriate price adjustments (Mendoza and Terrones, 2008). Even if both of the aggregates suffer from different drawbacks, credit to GDP ratios is used to identify credit booms in this study.

Credit is analyzed by disaggregating into total credit to non-financial corporations and total credit to households and non-profit institutions serving households in this study. Mortgage credit is included in total credit to households and non-profit institutions serving households. The data includes credit given by local banks, non-residents and all of the other sectors in the economy.The study covers 20

countries in which there are 10 developing countries and 10 developed countries between 1994 and 2017. The countries analyzed in the study are Argentina, Brazil, Chile, Colombia, Singapore, France, Germany, Greece, Hungary, Italy, Japan, Korea, Malaysia, Mexico, Netherlands, Portugal, Spain, Thailand, The United States and Turkey. Since the disaggregated credit data for many countries is quite limited, countries are chosen according to data availability. Also, there is not a long time period in the study because of the data unavailability.

3.3. Signal Extraction Analysis

There are two major methods in identifying credit booms. These are fundamentals method and statistical method. Fundamentals method analyzes credit growth as a function of different economic factors such as GDP, exchange rate and inflation (Cottarelli et al., 2005, Egert et al., 2007 and Kiss et al., 2006). Statistical characteristics of credit are utilized to identify credit booms in statistical method. There are different analyses under statistical method. The analyses made through arbitrary threshold (Barajas et al., 2011 and Tornell and Westerman, 2002) and Hodrick-Prescott filter (Boissay et al., 2006, Coudert and Pouvelle, 2010, Elekdag and Wu 2011, 2013, Gourinchas et al., 2001, Mendoza & Terrones, 2008 and Ottens et al., 2005) are the most common analyses. By using arbitrary threshold method, Barajas et al. (2011) claim that if the growth in credit to GDP ratio is more than 10%, there is credit boom during this period. However, threshold level is entirely arbitrary so different threshold levels would discover different booms in this method. Hodrick-Prescott filter is also extensively applied in identifying credit booms. The long term trend of credit and the deviation of credit from its trend are identified by HP filter. Therefore, the cyclical movement of credit growth is analyzed. The long term trend of credit is explained by "expanding trend" obtained using one sided HP filter in the study of Gourinchas et al. (2001). Expanding trend is obtained by the following method. A sample between 1960 and 1996 is used in the study and the trend starts in 1965. While the trend value of 1965 is calculated by data between 1960 and 1965, the trend value of 1966 is calculated by data between 1960 and 1966. The expanding trend is generated by maintaining this procedure for each following year. The

deviation from the expanding trend should be greater than or equal to boom threshold level in order to identify credit boom in a specific period in their study. As Mendoza and Terrones (2008) claim, one sided HP filter creates a trend which approaches to a smoothed lagged version of the original series. Therefore, this method might lead to perceive excessive fluctuations in thecredit as a part of trend. Also, even if there is a long term credit growth originated from structural transformation in the economy, this might be perceived as a credit boom. While Gourinchas et al. (2001) use backward looking HP filter, Mendoza and Terrones (2004) use full sample HP filter. Figure 8 shows that the trend of Malaysia generated by using full sample HP filter and the trend generated by using backward looking HP filter are similar to each other at the beginning of the period and at the end of the periods whereas the most of the internal periods present different trend levels especially during the excessive credit growth periods. Trend generated by backward looking HP filter imitates actual credit data and the trend is transformed into actual credit's smoothed version. There are also other differences between the method of Gourinchas et al. and the method of Mendoza and Terrones. While Gourinchas et al. use credit to output ratio as a measure of credit and universal threshold level, Mendoza and Terrones use real credit per capita as a measure of credit and country specific threshold levels in order to identify credit booms. The long run trend of credit is calculated by two sided HP filter with the smoothing parameter set at 100 in the study of Mendoza and Terrones (2008). A credit boom is identified if the deviation from the trend of log of real credit per capita is at least as large as the standard deviation of the cyclical component multiplied by threshold coefficient. The methods used by Gourinchas et al. (2001) and Mendoza and Terrones (2008) are commonly used methods in the literature. For instance, Ottens et al. (2005) identify trend by using country specific and rolling, backward looking HP filter. Elekdag and Wu (2011) employs the method of Mendoza and Terrones (2008) but they use 1.55 as threshold coefficient instead of 1.75.

This study follows the method of Mendoza and Terrones but signal extraction method is employed in order to identify smoothing parameter and threshold

coefficient. “Signals” method was initially employed by Kaminsky and Reinhart (1996) in order to examine financial and macroeconomic variables during the twin crises. The fundamental ground of the method is that there exists an exceptional systematic pattern in the economy immediately before the financial crises. This pattern is revealed in financial and macroeconomic indicators. For example, the domestic currency is overvalued on the eve of currency crises or significant decreases in asset prices are pursued by banking crises (Reinhart, Goldstein and Kaminsky, 2000). Signal extraction method is one of the most commonly used method in the literature about early warning indicators (Borio and Lowe, 2002, Borio and Drehmann, 2009, Drehmann et al., 2010, Christensen and Li, 2014 and Duzcay and Comert, 2018).

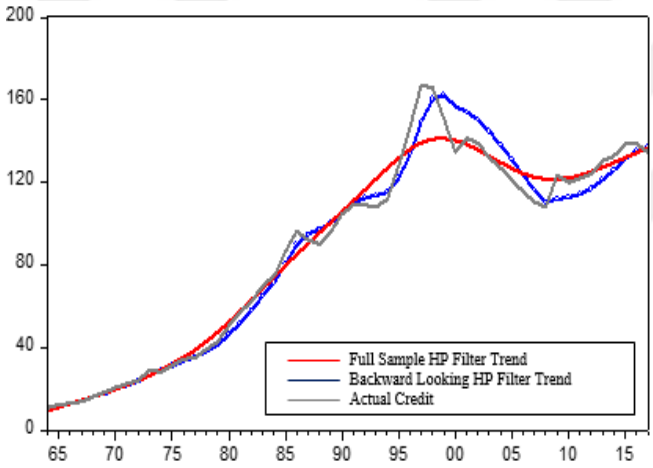


Figure 8: Trend Generated by Full Sample and Backward Looking HP Filter

Source: Author’s own calculations based on BIS

Trend of credit series is analyzed by using two sided HP filter in the study. Total credit is equal to the sum of the trend of credit and the cyclical component of the trend. If total credit is equal to or more than the sum of the trend of credit and the standard deviation of cyclical component multiplied by threshold coefficient during one or more consecutive years, then it is accepted that credit boom is observed during this period. The following equation presents the derivation of the credit boom condition;

$$\text{Total Credit} = \tau_{it} + \int_{it}$$

$$\tau_{it} + \int_{it} \geq \tau_{it} + \alpha\sigma(\int_{it})$$

$$\int_{it} \geq \alpha\sigma(\int_{it})$$

As a result, credit boom condition is $\int_{it} \geq \alpha\sigma(\int_{it})$ where α is the threshold coefficient, $\int_{it}$ is the deviation from the long run trend of credit series in country i during time t and τ_{it} is the trend of credit series in country i during time t. Therefore, a country is determined to experience a credit boom if the deviation from the long run trend ($\int_{it}$) is equal to or more than the standard deviation of deviation from the long run trend multiplied by threshold coefficient during one or more consecutive dates. The graph shows that credit boom condition was fulfilled in Thailand in 1997 and 1998. The red line in the graph shows the sum of trend of credit represented by the black line and the standard deviation of cyclical component multiplied by the threshold coefficient. Thailand is said to experience credit boom during the period in which the level of actual credit represented by the blue line is equal to or above the red line. Therefore, Thailand is said to experience acredit boom during the period in which the level of actual credit represented by the blue line is equal to or above the red line.

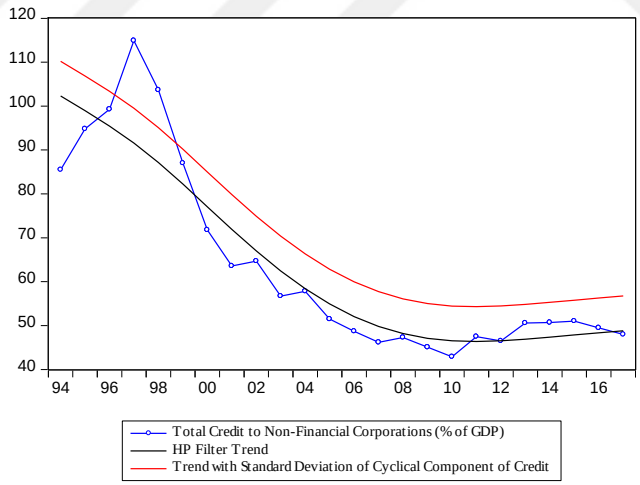


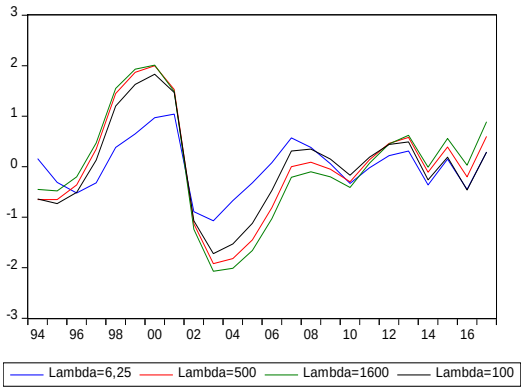
Figure 9: Boom in Total Credit to Non-Financial Corporations in Thailand [9]

Source: Author's own calculations based onBIS

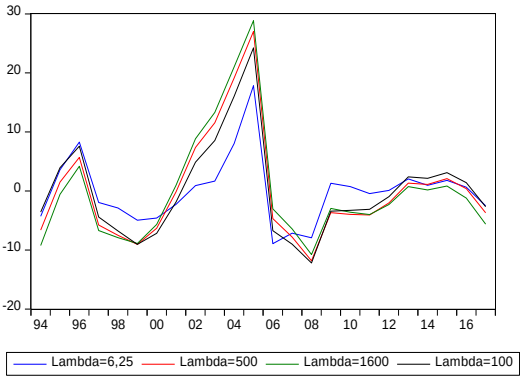
[9] Lambda is set as 100 for HP filter in order to determine trend and threshold coefficient is set as 1 in order to identify credit booms.

Following Duzcay and Comert (2018), four different smoothing parameters (6.25, 100, 500, 1600) and ten different threshold coefficients (0.25, 0.5, 0.75, 1, 1.25, 1.5, 1.65, 1.75, 1.9, 2) are investigated in the analysis. Smoothing parameter values are identified as follows: $\lambda_{1=}$6,25 is calculated when 1600 is multiplied by $[(1/4)*1]^4$; $\lambda_{2=}$100 is calculated when 1600 is multiplied by $[(1/4)*2]^4$; $\lambda_{3=}$500 is calculated when 1600 is multiplied by $[(1/4)*3]^4$; $\lambda_{4=}$1600 is calculated when 1600 is multiplied by $[(1/4)*4]^4$ where ¼ represents the adjustment coefficient since the data set is annual in the study.λ=1600 was suggested by Hodrick and Presscot for quarterly data. These four different lambda values depend on different assumptions. λ_1 assumes that credit cycles and business cycles have the same length whereas λ_2 assumes that credit cycles are two times longer than business cycles. Along the same line, λ_3 and λ_4 assume that credit cycles are three and four times longer than business cycles, respectively. Figure 10 presents how the cyclical components of household credit in Argentina, Malaysia, Germany and Italy change in respect to four smoothing parameter values. The graphs show that the volume and the duration of cycles increase as lambda value increases. Also the cycles in developing countries such as Argentina and Malaysia are much bigger than the cycles in developed countries such as Germany and Italy.

Argentina



Malaysia



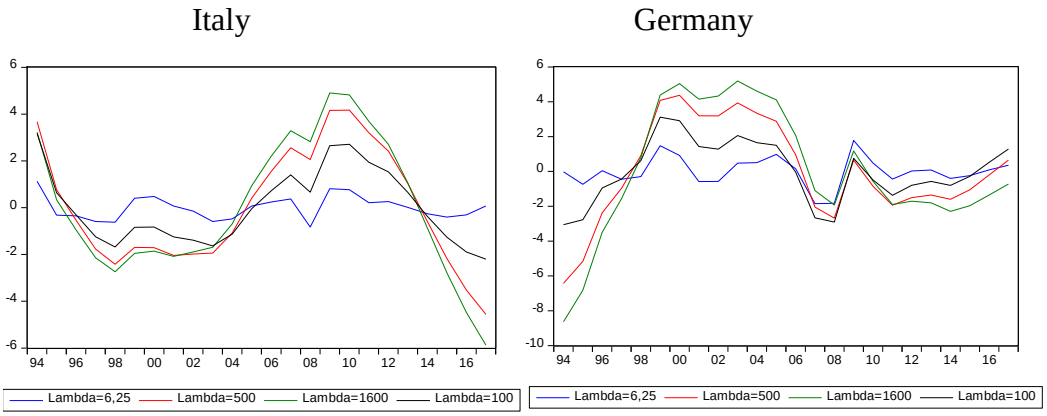


Figure 10: The Cyclical Component of Household Credit in Respect to Different Smoothing Parameter Values

Source: Author's own calculations based onBIS

In order to determine the most suitable smoothing parameter and threshold coefficient levels, signal extraction method is applied in this study. The analysis is made for each combination of four different smoothing parameter and ten different threshold coefficients for total credit to non-financial corporations and total credit to households in 20 countries between 1994 and 2017. After credit booms are identified, noise to signal ratio and missed crises ratio are calculated. If a credit boom is determined in period t and a banking crisis occurs in period between t and t+3, it is determined as a "true signal (A)". However, if a credit boom is determined in period t and there is no banking crisis in period between t and t+3, it is determined as a "noisy signal (B)". Also, if there is no credit boom in period t but a banking crisis occurs in period between t and t+3, it is determined as a "false signal (C)". However, if there is no credit boom in period t and there is no banking crisis in period between t and t+3, it is identified as a "true no crisis signal (D)".

The combination of threshold coefficient and smoothing parameter which reveals the minimum noise to signal ratio provided that the missed crisis ratio (banking crises which are not signalled by credit booms/all of the banking crises) is smaller

than 40% will be chosen as optimal levels.[10] Noise to signal ratio is summarized by type I and type II errors. Type I errors [C/(A+C)] show that there is no signal of credit boom but there is a banking crisis. Type II errors [B/(B+D)] show that there is a signal of credit boom but there is no banking crisis. Noise to signal ratio is the ratio of type II errors to one minus type I errors [(B/(B+D))/(A/(A+C))]. The trend in the latest period is predicated on existing information up to the latest period. However, the trend can fluctuate dramatically if new data for the next period comes into use so the trend for the last period becomes certain only when the data for future periods is available. For this reason, trend composition of HP filter suffers from the end point problem. Following Duzcay and Comert (2018), credit booms identified in the last fiveyears of time period is not counted as credit boom in the study in order to avoid end point problem.[11]

3.4. Results

Table 3 presents the results of signal extraction analysis. Crises are obtained from Laeven and Valencia (2018). Banking crises between 1994 and 2018 are analyzed and 18 crises are identified in the study. According to selection criteria which gives the minimum noise to signal ratio provided that the missed crisis ratio is smaller than 40%, the most appropriate level for smoothing parameter is identified as 1600 and the most appropriate threshold coefficient is identified as 1 for both total credit to non-financial corporations and total credit to households. The results of the signal extraction analysis show that even if the literature mostly uses 100 as smoothing parameter of HP filter for annual data, it might not be the optimal smoothing parameter for each annual dataset. It is shown that 1600 is the most appropriate smoothing parameter for the dataset in this analysis.Therefore,

[10] Threshold level of missed crisis ratios is chosen as 40 % following Duzcay and Comert (2018). They explain that a smaller missed crises ratio (33 %) is chosen by Drehmann et al. (2010, 2011). However, their data set includesdeveloped upper middle and high income countries.Since Duzcay and Comert (2018) work on a wider range of a countries including low income, lower middle income, upper middle income and high income countries, they chose missed crisis ratio of 40 %. Since the data set in this study covers developing countries and developed countries, the missed crisis ratio is chosen by following Duzcay and Comert (2018).

[11]It is chosen arbitrarily in Duzcay and Comert (2018) since there is no available information about the necessary time period in order to avoid end point problem.

the credit booms in developing countries and developed countries will be identified by setting smoothing parameter as 1600 and threshold coefficient as 1. The analysis shows that the most of the banking crises were preceded by banking crises but the results differ for different types of credit. While 70 percent of banking crises were preceded by household credit booms, 60 percent of banking crises were preceded by corporate credit booms. However, while 29 percent of corporate credit booms were resulted with banking crises, 34 percent of household credit booms were resulted with banking crises. The results show that banking crises occur more frequently around household credit booms. The result of this study is consistent with the results of Büyükkarabacak and Valev's study (2008). Büyükkarabacak and Valev (2008) analyze the effects of household credit and enterprise credit on banking crises in 45 developed and developing countries. Even if the dataset is unbalanced because of the unavailability of data, the dataset covers mostly the period between 1990 and 2005. They find that the likelihood of turning into banking crises is higher for household credit compared to enterprise credit. However, as they indicate, the previous literature focuses on the effect of overall credit growth on banking crises.[12] The literature focusing on the household credit and enterprise credit separately analyzes mostly the effects of these different types of credit on economic growth.[13]

The results are very similar to each other in developed countries and developing countries. While 35 percent of household credit booms in developing countries are resulted with banking crises, 33 percent of household credit booms in developed countries are resulted with banking crises. Similarly, 29 percent of corporate credit booms in developing countries end up with banking crises and 29 percent of corporate credit booms in developed countries end up with banking crises. In order to understand the dynamics behind credit booms ending up with

[12] There are different results in the literature regarding the ratio of credit booms turning into banking crises. Gorton and Ordonez (2016) state that they identified 37 booms in 34 countries between 1960 and 2010 and 39 percent of these booms are resulted with banking crises. Barajas et al. (2012) identify 135 boom in 100 countries, and banking problems of which 74 percent are resulted with systemic banking crises are preceded by 33 percent of these booms.

[13] The literature about this topic is summarized in Chapter 2 "The Role of Credit in the Economy".

banking crises, the next chapter will analyze the characteristics of credit booms and fluctuations in macroeconomic indicators around these credit booms.

Table 3: Results of Signal Extraction Analysis

CORPORATE CREDIT									
LAMBDA = 6,25									
Threshold	**Noise to Signal**	**Missed Crisis Ratio**	**Type I Error**	**Type II Error**	**Boom Signals**	**True Signal (A)**	**Noisy Signal (B)**	**False Signal (C)**	**True No Crisis Signal (D)**
0,25	0,88	0,11	0,69	0,27	131	19	112	43	304
0,50	0,81	0,28	0,76	0,20	97	15	82	47	334
0,75	0,88	0,39	0,82	0,16	76	11	65	51	351
1,00	0,78	0,39	0,84	0,13	62	10	52	52	364
1,25	0,67	0,50	0,87	0,09	44	8	36	54	380
1,50	0,72	0,61	0,92	0,06	29	5	24	57	392
1,65	0,60	0,72	0,92	0,05	25	5	20	57	396
1,75	0,51	0,72	0,92	0,04	22	5	17	57	399
1,90	0,79	0,78	0,95	0,04	19	3	16	59	400
2,00	1,12	0,83	0,97	0,04	17	2	15	60	401
LAMBDA = 100									
Threshold	**Noise to Signal**	**Missed Crisis Ratio**	**Type I Error**	**Type II Error**	**Boom Signals**	**True Signal (A)**	**Noisy Signal (B)**	**False Signal (C)**	**True No Crisis Signal (D)**
0,25	0,71	0,22	0,61	0,27	138	24	114	38	302
0,50	0,83	0,39	0,71	0,24	118	18	100	44	316
0,75	0,73	0,39	0,76	0,18	88	15	73	47	343
1,00	0,89	0,50	0,85	0,13	63	9	54	53	362
1,25	0,66	0,50	0,85	0,10	49	9	40	53	376
1,50	0,50	0,61	0,90	0,05	26	6	20	56	396
1,65	0,71	0,72	0,94	0,05	23	4	19	58	397
1,75	0,63	0,72	0,94	0,04	21	4	17	58	399
1,90	0,60	0,72	0,94	0,04	20	4	16	58	400
2,00	0,75	0,83	0,97	0,02	12	2	10	60	406
LAMBDA = 500									
Threshold	**Noise to Signal**	**Missed Crisis Ratio**	**Type I Error**	**Type II Error**	**Boom Signals**	**True Signal (A)**	**Noisy Signal (B)**	**False Signal (C)**	**True No Crisis Signal (D)**
0,25	0,60	0,11	0,55	0,27	140	28	112	34	304
0,50	0,54	0,22	0,61	0,21	111	24	87	38	329
0,75	0,54	0,28	0,68	0,17	92	20	72	42	344
1,00	0,51	0,33	0,77	0,12	62	14	48	48	368
1,25	0,58	0,50	0,85	0,08	44	9	35	53	381
1,50	0,43	0,56	0,87	0,06	31	8	23	54	393
1,65	0,51	0,67	0,92	0,04	22	5	17	57	399
1,75	0,56	0,72	0,94	0,04	19	4	15	58	401
1,90	0,60	0,78	0,95	0,03	15	3	12	59	404
2,00	0,75	0,83	0,97	0,02	12	2	10	60	406
LAMBDA = 1600									
Threshold	**Noise to Signal**	**Missed Crisis Ratio**	**Type I Error**	**Type II Error**	**Boom Signals**	**True Signal (A)**	**Noisy Signal (B)**	**False Signal (C)**	**True No Crisis Signal (D)**
0,25	0,56	0,11	0,53	0,26	137	29	108	33	308
0,50	0,48	0,11	0,58	0,20	109	26	83	36	333
0,75	0,38	0,22	0,63	0,14	82	23	59	39	357
1,00	**0,44**	**0,33**	0,74	0,11	63	16	47	46	369
1,25	0,41	0,44	0,81	0,08	45	12	33	50	383
1,50	0,39	0,56	0,87	0,05	29	8	21	54	395
1,65	0,63	0,72	0,94	0,04	21	4	17	58	399
1,75	0,52	0,72	0,94	0,03	18	4	14	58	402
1,90	0,65	0,78	0,95	0,03	16	3	13	59	403
2,00	0,52	0,83	0,97	0,02	9	2	7	60	409

Table 3 Continued: *Results of Signal Extraction Analysis*

HOUSEHOLD CREDIT									
LAMBDA = 6,25									
Threshold	**Noise to Signal Ratio**	**Missed Crisis Ratio**	**Type I Error**	**Type II Error**	**Boom Signals**	**True Signal (A)**	**Noisy Signal (B)**	**False Signal (C)**	**True No Crisis Signal (D)**
0,25	0,62	0,17	0,56	0,27	140	27	113	35	303
0,50	0,59	0,22	0,65	0,21	109	22	87	40	329
0,75	0,58	0,28	0,74	0,15	78	16	62	46	354
1,00	0,49	0,33	0,76	0,12	64	15	49	47	367
1,25	0,36	0,39	0,77	0,08	48	14	34	48	382
1,50	0,31	0,44	0,82	0,06	34	11	23	51	393
1,65	0,25	0,50	0,84	0,04	27	10	17	52	399
1,75	0,23	0,50	0,85	0,03	23	9	14	53	402
1,90	0,33	0,67	0,92	0,03	16	5	11	57	405
2,00	0,33	0,67	0,92	0,03	16	5	11	57	405
LAMBDA = 100									
Threshold	**Noise to Signal Ratio**	**Missed Crisis Ratio**	**Type I Error**	**Type II Error**	**Boom Signals**	**True Signal (A)**	**Noisy Signal (B)**	**False Signal (C)**	**True No Crisis Signal (D)**
0,25	0,48	0,11	0,39	0,30	161	38	123	24	293
0,50	0,52	0,17	0,56	0,23	121	27	94	35	322
0,75	0,52	0,17	0,65	0,19	99	22	77	40	339
1,00	0,60	0,39	0,76	0,14	75	15	60	47	356
1,25	0,57	0,44	0,82	0,10	53	11	42	51	374
1,50	0,54	0,50	0,87	0,07	37	8	29	54	387
1,65	0,63	0,67	0,92	0,05	26	5	21	57	395
1,75	0,60	0,67	0,94	0,04	20	4	16	58	400
1,90	0,50	0,72	0,95	0,02	13	3	10	59	406
2,00	0,45	0,83	0,97	0,01	8	2	6	60	410
LAMBDA = 500									
Threshold	**Noise to Signal Ratio**	**Missed Crisis Ratio**	**Type I Error**	**Type II Error**	**Boom Signals**	**True Signal (A)**	**Noisy Signal (B)**	**False Signal (C)**	**True No Crisis Signal (D)**
0,25	0,36	0,06	0,26	0,27	158	46	112	16	304
0,50	0,36	0,11	0,40	0,21	126	37	89	25	327
0,75	0,32	0,17	0,48	0,17	101	32	69	30	347
1,00	0,32	0,22	0,58	0,13	81	26	55	36	361
1,25	0,33	0,33	0,71	0,10	58	18	40	44	376
1,50	0,27	0,50	0,82	0,05	31	11	20	51	396
1,65	0,18	0,50	0,84	0,03	22	10	12	52	404
1,75	0,20	0,61	0,87	0,03	19	8	11	54	405
1,90	0,21	0,67	0,92	0,02	12	5	7	57	409
2,00	0,22	0,72	0,94	0,01	10	4	6	58	410
LAMBDA = 1600									
Threshold	**Noise to Signal Ratio**	**Missed Crisis Ratio**	**Type I Error**	**Type II Error**	**Boom Signals**	**True Signal (A)**	**Noisy Signal (B)**	**False Signal (C)**	**True No Crisis Signal (D)**
0,25	0,34	0,11	0,23	0,26	158	48	110	14	306
0,50	0,31	0,22	0,32	0,21	130	42	88	20	328
0,75	0,30	0,22	0,42	0,17	108	36	72	26	344
1,00	**0,27**	**0,22**	0,53	0,13	81	29	52	33	364
1,25	0,26	0,44	0,68	0,08	55	20	35	42	381
1,50	0,16	0,44	0,77	0,04	29	14	15	48	401
1,65	0,16	0,50	0,84	0,03	21	10	11	52	405
1,75	0,22	0,61	0,90	0,02	15	6	9	56	407
1,90	0,18	0,67	0,92	0,01	11	5	6	57	410
2,00	0,25	0,78	0,95	0,01	8	3	5	59	411

3.5. Conclusion

Real credit and credit to GDP are the most preferred aggregates in the literature in order to determine credit booms. This study employs credit to GDP ratio in order to analyze credit booms. Total credit to non-financial corporations and total credit to households and non-profit institutions serving households are analyzed for 10 developed countries and 10 developing countries between 1994 and 2017. Statistical method which investigates the statistical properties of credit growth is applied in the analysis. The method of Mendoza and Terrones (2008) which applies two sided HP filter and uses country specific threshold coefficients is followed in the study. However, unlike Mendoza and Terrones (2008), signal extraction analysis is applied in order to find the most appropriate levels of smoothing parameter and threshold coefficient by following Duzcay and Comert (2008). It is found that while 1600 is the most appropriate level for smoothing parameter, 1 is the most appropriate level of threshold coefficient. Therefore, it is shown that although the smoothing parameter is generally set as 100 for annual data in the literature, it might not be the most appropriate smoothing parameter for each annual dataset.When the analysis is made by applying 1 as threshold coefficient and applying 1600 as smoothing parameter, it is revealed that while 70 percent of banking crises were preceded by household credit booms, 60 percent of banking crises are preceded by corporate credit booms. Also, while 29 percent of corporate credit booms were resulted with banking crises, 34 percent of household credit booms were resulted with banking crises. The results are also evaluated separately for developed countries and developing countries. 35 percent of household credit booms in developing countries and 33 percent of household credit booms in developed countries were resulted with banking crises. On the other hand, 29 percent of corporate credit booms in developing countries and developed countries ended up with banking crises.

CHAPTER 4

CREDIT BOOMS AND MACROECONOMIC INDICATORS AROUND CREDIT BOOM PERIODS

4.1. Introduction

Signal extraction analysis reveals that while a minority of credit booms turns into banking crises, the most of the banking crises are preceded by credit booms. It is also revealed that household credit booms are more correlated with the banking crises compared to corporate credit booms. The literature represents different views regarding the characteristics of credit booms turning into crises. However, many studies (Barajas et al., 2008, Dell'Ariccia et al., 2012 and Meng and Gonzales, 2016) agree that credit booms ending up with banking crises are longer and larger. In order to understand the dynamics of credit booms and macroeconomic variables around these booms, credit booms in 10 developing countries and 10 developed countries are analyzed in this chapter. Firstly, credit dynamics are analyzed in these countries. Then, properties of credit booms are specified and the movements in GDP growth, consumption, inflation, foreign direct investment, portfolio investment, other investment, current account, trade openness, interest rates and exchange rates are analyzed.

Credit growth throughout the time period covered in the study is quite high in most of the countries. Higher credit ratios are observed in developed countries because of more advanced financial systems of these countries. It is also observed that the composition of credit portfolio changed from 1994 to 2017. The most striking point is that the share of household credit increased especially in developing countries. However, corporate credit has still higher share in credit portfolio in most of the countries.

When the characteristics of credit booms (the duration and the deviation from the trend) are analyzed, it is revealed that that the duration of a credit boom is an important factor while explaining why some of credit booms end up with crises. Credit booms turning into banking crises continue for longer periods. The average duration of household credit booms are longer than the average duration of corporate credit booms in developing countries and developed countries. Therefore, it might be claimed that since the average duration of household credit booms are longer, the ratio of ending up with crises is higher for household credit booms. Also, even if the percentage of credit booms turning into banking crises are similar in developing countries and developed countries, the duration of credit booms turning into banking crises in developed countries is much longer compared to credit booms turning into banking crises in developing countries. Therefore, credit booms in developing countries are resulted with banking crises in a much shorter time period compared to credit booms in developed countries. Another striking point is that all of the credit booms continuing for more than 5 years are resulted with banking crises in the analysis. Therefore, if there is a credit boom continuing for more than 5 years in an economy, the policymakers should pay attention to this credit boom. Also, the deviation of credit to GDP ratio from its trend level is higher for booms ending in banking crises in most of the time. However, even if the credit booms ending up with banking crises represent greater deviations from the trend and household credit booms are more prone to end up with crises, household credit booms do not have larger deviations compared to corporate credit booms. Therefore, the deviation of credit from the trend does not help to identify why household credit booms end up with banking crises more frequently than corporate credit booms. Nevertheless, it is revealed that the probability of ending up with a banking crisis is higher for more sustained and larger credit booms.

When GDP growth, inflation, consumption, foreign direct investment, portfolio investment, current account, trade openness[14], interest rates and exchange rates

[14] Trade openness is the summation of imports and exports dividied by GDP. The definition of Dell'Ariccia et al. (2012) is followed in this regard.

are analyzed during credit booms, it is revealed that macroeconomic variables do not represent clear patterns which can explain the higher ratio of household credit booms ending up with banking crises compared to corporate credit booms. Even if there are not patterns explaining the relationship between household credit booms and banking crises, there are significant movements in some macroeconomic variables around credit booms ending up with banking crises. The deviation from trend is much higher for developing countries in most of the macroeconomic variables (GDP growth, consumption, inflation, trade openness and interest rates). Also, the movements of inflation and interest rates in developing countries attract attention. Since the booms ending up with crises mostly coincide with high inflation levels and high interest rates compared to trend levels, the movements in these macroeconomic variables should be checked carefully during credit booms. On the other hand, the deviations in current account and other investment draw attention in developed countries. During credit booms ending up with crises, the current account is mostly lower than its trend level. Even if this type of a trend is observed for credit booms not ending up with crises, the deviations are much smaller than the deviations in crisis periods. Also, the level of other investment is mostly higher than trend level during credit booms ending up with banking crises in developed countries. Lastly, when exchange rates are examined around credit boom periods, it is revealed that domestic currency appreciated during credit booms ending up with banking crises in both developing countries and developed countries.

4.2. Credit Dynamics in Selected Countries

The changes in credit dynamics in 10 developing countries and 10 developed countries are examined in this part before analyzing credit booms and macroeconomic indicators around these booms.

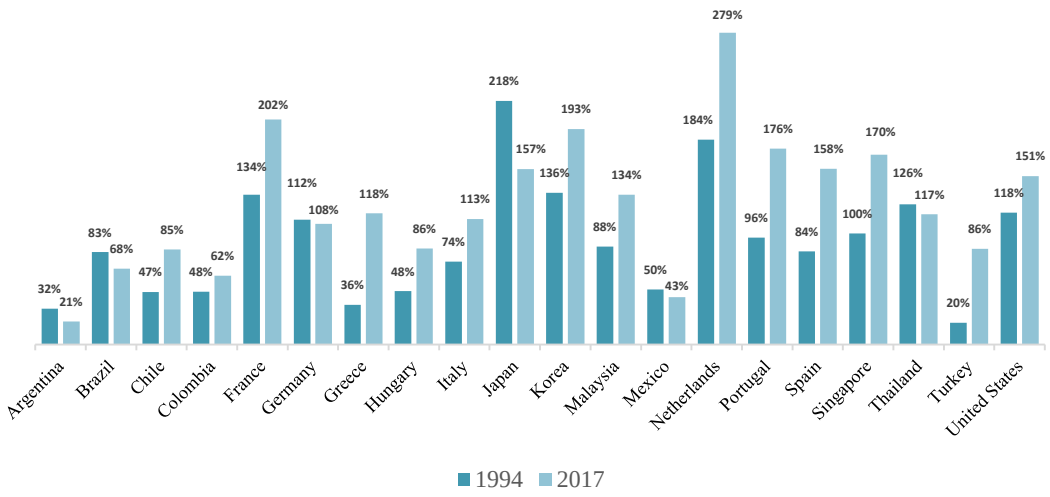


Figure 11: Total Credit to Private Non-Financial Sector as a Percent of GDP[15]

Source: Author's own calculations based on BIS, Central Bank of Chile, Central Bank of Malaysia and Federal Reserve Bank of St Louis

Figure 11 shows the change of overall credit in selected countries throughout the time period covered in the study. There are only five countries (Argentina, Brazil, Thailand, Japan and Mexico) where credit levels in 2017 declined compared to 1994.[16] Credit levels in Thailand reached to its record levels before the Asian financial crisis of 1997. However, the crisis heavily affected the credit growth in Thailand, and the credit never reached to the previous levels. 1994 Mexican peso crisis heavily affected banking sector of Mexico. Increasing interest rates imposed a heavy burden on households and companies (Kehoe and Meza, 2012). Mexican credit market was deeply affected by the crisis and its effects continued for many years. Even if the government implemented many reforms to expand credit in the later years, their effects were limited and credit growth could never reach to the ratios in the early 1990s. Credit growth in Argentina was also

[15] Because of data unavailability, credit data of Colombia does not present the data in 1994 but it presents the data in 1996.

[16] Credit in Germany also declined from 1994 to 2017 but it was a very negligible decline.

affected by withdrawal of capital inflows as a result of 1994 Mexican crisis (Choueiri et al., 2009), and credit levels could not reach to its levels in the early 1990s.Lastly, even if the credit ratio is still very high in Japan, declining credit ratio after banking crisis of Japan in 1997 could never reach to its levels in the beginning of the 1990s. On the other hand, the highest increases in credit levels are observed in Turkey and Greece. One of the reasons of high growth rates is that the initial levels of credit were very low in these countries compared to other countries. However, there was a sudden increase of credit in Turkey especially after 2003. Basci (2006) states that the most important factor of the growth was the 2003 fiscal consolidation program.[17] High credit growth in Greece in the 2000s was fuelled by the financial sector liberalization and the decline in interest rates resulting from the adoption of euro (IMF, 2008). Another remarkable point is that credit levels in developed countries are generally very high compared to credit levels in developing countries. Krieger-Boden and Nunnenkamp (2016) state that in the developed financial systems, the size of financial institutions is bigger; economic agents can easily access to financial services; financial resources are successfully intermediated by financial institutions; financial systems are not very volatile and fragile. Since financial systems in developed countries have more of these properties compared to developing countries, the higher ratios of credit are observed in developed countries.

[17]The loan to GDP decreased by approximately 12% points whereas the ratio of deposit to GDP remained approximately the same throughout the period. Thus goverment securities have been changed with mostly private credit by banks. The participation of foreign banks also increased significantly and the credit growth was positively affected by their aggressive credit policies. Taxes on financial intermediation were a major limitation on credit growth. They were also eliminated or declined. There were other developments which increased credit demand such as disinflation during the period and convergence expectations to European Union. (Basci, 2006)

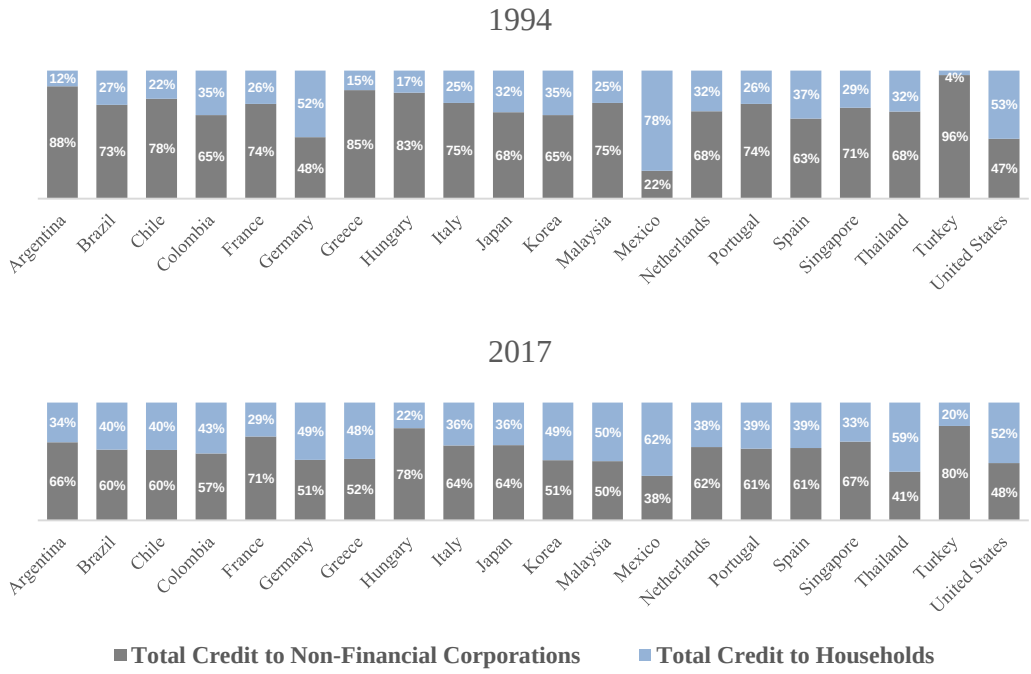


Figure 12: The Change of Composition of Credit Between 1994 and 2017[18]

Source: Author's own calculation based on BIS, Central Bank of Chile, Central Bank of Malaysia and Federal Reserve Bank of St Louis

Figure 12 shows that the composition of credit changed across different countries. While the composition of credit did not change significantly in developed countries (except Greece), the share of household credit in developing countries increased significantly (except Malaysia) throughout the time period covered in the study. Beck et al. (2008) indicate that the banking sector development accelerates the share of household credit in the economy. They also assert that the supply of credit to households can be affected by economic development through supply and demand mechanisms. While a higher share of households can overcome the lowest loan threshold for mortgage and consumer credit by increasing incomes (Beck, Demirguc-Kunt and Martinez Peria, 2007), economic

[18] Because of data unavailability, credit data of Colombia does not present the data in 1994 but it presents the data in 1996.

development also ensures the decline in the cost of credit provision (Harrison, Sussman and Zeira, 1999). Both of these trends support the expansion in the share of household credit in the overall credit. Since the economy and the banking sector in developing countries have more properties which are open for improvement compared to developed countries, the higher increase in the share of household credit in developing countries can be explained by these trends. However, the share of total credit to non-financial corporations in overall credit is still higher in most of the countries in the study.

4.3. Characteristics of Credit Booms

Credit growth in most of the countries covered in the study is quite high between 1994 and 2017. While the credit growth is an important development in these countries, the change of the composition of credit is also remarkable. Since there are significant changes in credit levels and credit composition, characteristics of household credit booms and corporate credit booms are analyzed in this part. The signal extraction analysis reveals that 29 percent of corporate credit booms and 34 percent of household credit booms are resulted with banking crises in the study. Credit booms ending up with banking crises might demonstrate different dynamics compared to credit booms which are not resulted with banking crises.

The literature has different claims regarding the reasons of banking crises succeeding credit booms. Gorton and Ordonez (2016) assert that credit booms are observed frequently and while some of them (bad booms) end up with crises, other booms (good booms) do not. They claim that each credit boom begins with a positive productivity shock. However, while this productivity shock is exhausted quite rapidly in bad booms, this is not observed in good booms. Barajas et al. (2008), claim that the duration is longer and the deviations from the trend are larger in bad booms. Also, higher inflation rates, lower growth and larger current account deficits are observed during bad booms. They also occur in less open economies and banking systems with weaker controlling. As it is indicated in many studies in the literature, Dell'Ariccia et al. (2012) also find that larger and longer credit booms have higher probability to end up with crises.

In addition to that, they claim that if a boom starts with a higher credit to GDP ratio, its probability to end up with a crisis is higher. The findings of Meng and Gonzales (2016) coincide with the findings of Dell'Ariccia et al. (2012). Larger and longer credit booms and higher initial levels of credit increase the probability of banking crises. However, they also claim that significant evidences in macroeconomic indicators are rare in order to explain differences between bad booms and good booms. They only point out inflation in this regard. If credit booms periods coincide with high inflation, it is more likely to end up with crises. They also assert that while financial and macroeconomic policies do not help to distinguish bad booms from good booms, the prudential regulations and banking supervision with higher quality can decrease the probability of credit booms transforming into banking crises.

Consequently, the literature has different ideas regarding the bad booms and good booms. However, it is agreed that credit booms ending up with banking crises exhibit different characteristics than credit booms not ending up with banking crises. In order to understand these differences, the characteristics of credit booms and the macroeconomic dynamics around credit booms are separately analyzed in developing countries and developed countries.

Table 4 shows the deviation of credit to GDP ratio from its trend level, the duration and the type of credit booms in several developing and developed countries. It is revealed that credit booms ending in banking crises and credit booms not ending in banking crises differ from each other. While the duration of credit booms ending in banking crises is mostly higher than the duration of booms not ending in banking crises, the deviation of credit to GDP ratio from its trend level is also higher for booms ending in banking crises in most of the time. Even if there are sometimes large deviations from the trend in credit booms not ending in banking crises, it is observed that the duration of these booms are very short. Table 4 shows that all of the credit booms continuing for more than 5 years ended up with banking crises in the analysis. Therefore, the policymakers should pay a greater attention to credit booms continuing for more than 5 years

regardless of the type of credit boom. As a result, the probability of ending up with a banking crisis is higher for more sustained and larger credit booms.

Table 4: Characteristics of Credit Booms

Credit Booms						
	Booms Ending In Banking Crises			Booms Not Ending In Banking Crises		
	Duration	Deviation of Credit From Trend	Boom Type	Duration	Deviation of Credit From Trend	Boom Type
Argentina	4	2,01%	Household	2	23,70%	Corporate
Chile	-	-	-	4	1,70%	Household
	-	-	-	2	1,01%	Household
	-	-	-	1	3,41%	Corporate
	-	-	-	1	3,79%	Corporate
	-	-	-	1	5,46%	Corporate
Thailand	3	10,61%	Household	-	-	-
	2	28,04%	Corporate	-	-	-
Turkey	1	8,76%	Corporate	3	2,60%	Household
	-	-	-	1	2,20%	Household
Colombia	3	5,83%	Household	1	6,62%	Corporate
	-	-		1	4,42%	Corporate
Malaysia	-	-	-	1	21,46%	Corporate
	-	-	-	1	18,53%	Corporate
Korea	1	4,22%	Household	1	5,92%	Household
	2	18,90%	Corporate	-	-	-
Brazil	1	9,43%	Household	-	-	-
	1	28,77%	Corporate	-	-	-
Mexico	3	2,71%	Corporate	1	1,47%	Corporate
	2	11,17%	Household			
Singapore	-	-	-	1	7,02%	Household
	-	-	-	1	4,03%	Household
	-	-	-	1	1,47%	Corporate
	-	-	-	1	12,10%	Corporate
	-	-	-	1	9,77%	Corporate
US	5	13,88%	Household	2	2,97%	Corporate
	3	5,83%	Corporate	-	-	-
Greece	5	7,93%	Household	-	-	-
	5	4,59%	Corporate	-	-	-
Spain	5	13,18%	Household	-	-	-
	6	17,47%	Corporate	-	-	-
Japan	6	17,47%	Corporate	3	3,12%	Household
France	-	-	-	1	5,39%	Household
	-	-	-	3	3,13%	Household
	-	-	-	1	4,33%	Corporate
	-	-	-	2	6,22%	Corporate
Germany	7		Household	3	5,07%	Corporate
	-	-	-	1	2,76%	Corporate
Hungary	4	12,91%	Household	-	-	-
	5	18,88%	Corporate	-	-	-
Italy	5	6,26%	Corporate	1	6,74%	Corporate
	5	3,69%	Household	1	3,23%	Household
Netherlands	1	7,63%	Household	2	8,44%	Household
	-	-	-	1	11,03%	Corporate
Portugal	4	11,88%	Household	1	10,98%	Corporate
	-	-	-	2	19,20%	Corporate

Table 5 shows that the results represent different patterns for different types of credit booms in developing countries and developed countries. In developing countries, the average duration of a corporate credit boom is 1,3 years but the average duration of a household credit boom is 2,1 years. In developed countries, a corporate credit boom continues for 2,8 years but a household credit boom continues for 3,2 years on the average. Credit booms ending up with banking crises and credit booms not ending up with banking crises also represent different characteristics. Especially for developed countries, the duration of credit booms differs significantly if they end up with crises. While corporate credit booms ending up with crises continue for 4,7 years on the average, the average duration of corporate credit booms not ending up with crises is 1,6 years. The average duration of household credit booms is 3,9 years if they end up with crises. On the other hand, it takes 2 years if they do not end up with crises. Also, corporate credit booms ending up with banking crises in developing countries continue for 1,8 years while it is 1,1 years for corporate credit booms not ending up with crises. Household credit booms in developing countries continue for 2,3 years if they end up with crises. However, it takes 2 years if they do not end up with crises. These results present that the duration of a credit boom is an important factor while explaining why some of credit booms end up with crises. Therefore, since household credit booms take longer time than the corporate credit booms, the longer duration of household credit booms might explain why household credit booms end up with banking crises more frequently than corporate credit booms. The most striking result of this table is that while the duration of credit booms not ending up with banking crises is not very different in developed countries and developing countries, there is a big time difference between developed countries and developing countries during credit booms ending up with crises. The duration of credit booms ending up with crises in developed countries is much longer than the duration of credit booms ending up with crises in developing countries. This shows that even if the percentage of credit booms turning into banking crises in developing countries and developed countries are very similar, this does not mean that the relationship between credit booms and banking crises are similar in developing countries and developed countries.

Credit booms in developing countries are resulted with banking crises in a much shorter period compared to credit booms in developed countries.

Table 5: Average Household Credit Boom Years and Corporate Credit Boom Years

	Developed Countries			Developing Countries		
	Total	No Crises	Crises	Total	No Crises	Crises
Household Credit Boom	3,2	2,0	3,9	2,1	2,0	2,3
Corporate Credit Boom	2,8	1,6	4,7	1,3	1,1	1,8

4.4. Macroeconomic Indicators Around Credit Booms

Characteristics of credit booms identified in the study reveal that the probability of ending up with a banking crisis is higher for more sustained and larger credit booms. Especially, the attention should be paid to credit booms continuing for more than 5 years. The reason is that all of the credit booms continuing for more than 5 years resulted with banking crises in the study. The average duration of household credit booms is longer than the average duration of corporate credit booms. This characteristic of household credit booms might be one of the explanations for the higher ratio of household credit booms turning into banking crises. However, macroeconomic indicators around credit booms also should be analyzed in detail in order to explain accurately why the ratio of credit booms turning into banking crises is higher for household credit booms compared to corporate credit booms. For this reason, the deviations from the trend in GDP growth, consumption, inflation, current account, trade openness, foreign direct investment, portfolio investment, other investment, interest rates and exchange rates are analyzed during pre-3 year periods of credit booms, periods of credit booms and post-3 year periods of credit booms.[19][20]

[19] Trend levels of macroeconomic variables are calculated by HP filter using lambda value equal to 1600 which is obtained in signal extraction analysis in the previous chapter.

[20] Consumption, current account, trade openness, foreign direct investment and portfolio investment are calculated as a percent of GDP. Short term interest rates obtained from OECD are used for Germany, Spain, France, Greeece, Netherlands and Portugal. Monetary Policy-Related Interest Rate obtained from IMF are used for Turkey. Lending interest rates obtained from World

The relationship between credit growth and GDP growth is one of the most debated topics in the literature. Table 6 and Table 7 show the deviations of GDP growth from its trend level around credit booms. GDP growth in developing countries is more volatile compared to GDP growth in developed countries. The deviations of GDP growth from its trend level during credit boom periods are mostly negative. Even if the booms do not coincide with banking crises, GDP growth represents negative deviations from the trend. These results conflict with the literature which claims credit growth is always positively related with GDP growth. However, there is no pattern explaining the relationship between credit booms and banking crises.

Table 6: The Deviations of GDP Growth from Trend in Developing Countries[21]

Household Credit Booms

	Booms Ending In Banking Crises			Booms Not Ending In Banking Crises		
	GDP Growth*	GDP Growth During Boom	GDP Growth**	GDP Growth*	GDP Growth During Boom	GDP Growth**
Argentina	1,0%	-3,8%	-0,5%	-	-	-
Chile	-	-	-	1,2%	-1,6%	0,6%
Thailand	3,3%	-6,0%	0,0%	-	-	-
Turkey	-	-	-	-1,7%	0,0%	2,3%
Colombia	2,3%	-1,2%	-3,2%	-	-	-
Brazil	-0,9%	2,9%	3,0%	-	-	-
Mexico	0,1%	-3,7%	3,4%	-	-	-
Malaysia	-	-	-	-0,5%	0,8%	0,6%
Korea	1,7%	1,9%	0,9%	2,5%	2,1%	-1,0%
Singapore	-	-	-	-2,0%	-1,1%	1,1%

Corporate Credit Booms

	Booms Ending In Banking Crises			Booms Not Ending In Banking Crises		
	GDP Growth*	GDP Growth During Boom	GDP Growth**	GDP Growth*	GDP Growth During Boom	GDP Growth**
Argentina	-	-	-	-5,5%	-3,8%	5,7%
Chile	-	-	-	1,0%	-2,6%	0,0%
Thailand	2,6%	-9,5%	0,0%	-	-	-
Turkey	0,0%	3,8%	-2,1%	-	-	-
Colombia	-	-	-	-1,2%	-7,5%	1,1%
Brazil	-0,9%	2,4%	0,4%	-	-	-
Mexico	0,1%	-1,2%	2,1%	1,2%	0,0%	-2,0%
Malaysia	-	-	-	1,6%	1,8%	-1,8%
Korea	0,1%	-6,2%	2,5%	-	-	-
Singapore	-	-	-	-0,2%	-2,6%	-0,9%

Source: Author's own calculations based on World Bank

Bank are used for other countries in the study. Local currency per US Dollar is used as exchange rate aggregate. For the US, US Dollar per Euro is used as exchange rate aggregate.

[21] *Average of the deviation of macroeconomic variables from its trend level during the pre-3 year period of credit booms

**Average of the deviation of macroeconomic variables from its trend level during the post-3 year period of credit booms

Table 7: The Deviations of GDP Growth from the Trend in Developed Countries

Household Credit Booms

	Booms Ending In Banking Crises			Booms Not Ending In Banking Crises		
	GDP Growth*	GDP Growth During Boom	GDP Growth**	GDP Growth*	GDP Growth During Boom	GDP Growth**
US	0,1%	-1,2%	0,4%	-	-	-
Greece	2,5%	-2,9%	-1,7%	-	-	-
Spain	0,9%	-0,7%	-3,0%	-	-	-
Japan	-	-	-	-0,2%	-0,1%	0,3%
France	-	-	-	-0,5%	-0,5%	-0,2%
Germany	0,0%	-0,3%	1,3%	-	-	-
Hungary	0,6%	-2,8%	-0,3%	-	-	-
Italy	0,9%	-0,7%	-1,5%	-1,1%	0,6%	0,6%
Portugal	-0,9%	-0,5%	-1,7%	-	-	-
Netherlands	-1,5%	0,1%	1,2%	1,2%	-2,1%	-1,1%

Corporate Credit Booms

	Booms Ending In Banking Crises			Booms Not Ending In Banking Crises		
	GDP Growth*	GDP Growth During Boom	GDP Growth**	GDP Growth*	GDP Growth During Boom	GDP Growth**
US	0,9%	-2,5%	0,4%	1,2%	-0,5%	0,1%
Greece	2,3%	-4,7%	0,9%	-	-	-
Spain	0,9%	-0,9%	-2,2%	-	-	-
Japan	-0,2%	0,7%	-0,6%	-	-	-
France	-	-	-	0,3%	0,3%	0,2%
Germany	-	-	-	1,0%	-2,6%	0,9%
Hungary	2,1%	-2,6%	-0,3%	-	-	-
Italy	-1,1%	0,6%	0,6%	1,0%	-1,6%	-0,2%
Portugal	-	-	-	0,5%	-3,4%	0,4%
Netherlands	-	-	-	-1,2%	0,1%	0,9%

Source: Author's own calculations based on World Bank

Table 8 and Table 9 show the deviation of consumption from its trend level around credit boom periods. Consumption in developing countries represents higher deviations from the trend compared to developed countries. During boom periods and post 3-year periods, the deviation from the trend is almost always positive for household credit booms which are not ending up with crises (except Malaysia and Italy). However, this trend is not observed for corporate credit booms. This kind of a trend for household credit booms also represents the relationship between household credit and consumption.[22] However, there is not a clear pattern explaining the relationship between household credit booms and banking crises.

[22] The relationship between household credit and consumption is explained in chapter 2.

Table 8: The Deviations of Consumption from Trend in Developing Countries

Household Credit Booms

	Booms Ending In Banking Crises			Booms Not Ending In Banking Crises		
	Consumption Growth*	Consumption Growth During Boom	Consumption Growth**	Consumption Growth*	Consumption Growth During Boom	Consumption Growth**
Argentina	0,9%	3,1%	-4,5%	-	-	-
Chile	-	-	-	-3,1%	0,5%	0,9%
Thailand	-1,4%	-1,1%	1,5%	-	-	-
Turkey	-	-	-	0,4%	1,2%	0,0%
Colombia	-3,7%	0,9%	2,8%	-	-	-
Brazil	-2,3%	-4,1%	3,6%	-	-	-
Mexico	2,0%	-1,5%	-2,8%	-	-	-
Malaysia	-	-	-	-0,4%	-1,4%	-3,3%
Korea	-0,6%	-0,8%	-0,4%	0,9%	2,9%	0,1%
Singapore	-	-	-	1,7%	2,3%	0,0%

Corporate Credit Booms

	Booms Ending In Banking Crises			Booms Not Ending In Banking Crises		
	Consumption Growth*	Consumption Growth During Boom	Consumption Growth**	Consumption Growth*	Consumption Growth During Boom	Consumption Growth**
Argentina	-	-	-	3,7%	-4,9%	-3,7%
Chile	-	-	-	-2,5%	1,7%	-0,5%
Thailand	-1,9%	-0,8%	1,5%	-	-	-
Turkey	0,7%	1,0%	1,5%	-	-	-
Colombia	-	-	-	0,9%	2,7%	0,5%
Brazil	-2,3%	-4,1%	3,6%	-	-	-
Mexico	2,0%	-1,9%	-2,3%	0,7%	-0,2%	-0,3%
Malaysia	2,0%	-1,0%	-3,2%	-	-	-
Korea	-1,0%	-1,4%	0,7%	-	-	-
Singapore	-	-	-	-1,3%	1,8%	2,2%

Source: Author's own calculations based on World Bank

Table 9: The Deviations of Consumption from Trend in Developed Countries

Household Credit Booms

	Booms Ending In Banking Crises			Booms Not Ending In Banking Crises		
	Consumption Growth*	Consumption Growth During Boom	Consumption Growth**	Consumption Growth*	Consumption Growth During Boom	Consumption Growth**
US	0,8%	0,8%	1,2%	-	-	-
Greece	-2,2%	1,4%	1,5%	-	-	-
Spain	-1,5%	-0,6%	1,7%	-	-	-
Japan	-	-	-	-0,5%	0,4%	0,8%
France	-	-	-	-0,3%	1,2%	0,6%
Germany	-0,2%	0,4%	-1,3%	-	-	-
Hungary	1,1%	1,0%	-0,2%	-	-	-
Italy	-0,2%	0,9%	0,6%	0,9%	0,4%	-1,2%
Portugal	0,5%	1,3%	1,2%	-	-	-
Netherlands	1,0%	-0,4%	-1,5%	-1,5%	1,1%	1,0%

Corporate Credit Booms

	Booms Ending In Banking Crises			Booms Not Ending In Banking Crises		
	Consumption Growth*	Consumption Growth During Boom	Consumption Growth**	Consumption Growth*	Consumption Growth During Boom	Consumption Growth**
US	0,0%	1,6%	1,9%	-3,3%	-1,6%	0,1%
Greece	-1,9%	2,3%	0,5%	-	-	-
Spain	-1,5%	-0,2%	1,5%	-	-	-
Japan	-1,0%	0,0%	-0,1%	-	-	-
France	-	-	-	-0,4%	0,1%	-0,1%
Germany	-	-	-	-0,8%	1,0%	0,5%
Hungary	1,4%	0,9%	-0,2%	-	-	-
Italy	-0,4%	1,1%	0,1%	0,9%	0,4%	-1,2%
Portugal	-	-	-	1,1%	1,1%	-0,4%
Netherlands	-	-	-	0,2%	0,2%	-0,3%

Table 10 and Table 11 show that while the deviation of inflation from the trend in developed countries is very small, the inflation in developing countries generally represents significant fluctuations during credit booms ending up with crises. The inflation in developing countries is always higher than its trend level during the periods of credit booms ending up with crises.[23] Even if the deviation from the trend is sometimes positive for credit booms not ending up with banking crises, the fluctuations are not usually as significant as the fluctuations in credit booms ending up with crises. Therefore, it might be claimed that high inflation is a striking development during credit booms ending up with crises in developing countries in the sample. However, a pattern explaining the relationship between household credit booms and banking crises is not observed in this macroeconomic variable.

Table 10: The Deviations of Inflation from the Trend in Developing Countries

Household Credit Booms

	Booms Ending In Banking Crises			Booms Not Ending In Banking Crises		
	Inflation*	Inflation During Boom	Inflation**	Inflation*	Inflation During Boom	Inflation**
Argentina	-1,8%	-5,2%	7,9%	-	-	-
Chile	-	-	-	1,3%	-0,2%	-1,0%
Thailand	0,0%	2,3%	-2,5%	-	-	-
Turkey	-	-	-	-14,0%	5,4%	11,1%
Colombia	3,3%	3,6%	-3,1%	-	-	-
Brazil	318,1%	1431,0%	-476,7%	-	-	-
Mexico	-4,0%	3,3%	8,4%	-	-	-
Malaysia	-	-	-	-1,1%	-0,7%	1,2%
Korea	0,6%	0,6%	-0,5%	-1,8%	-1,0%	-0,1%
Singapore	-	-	-	0,1%	0,9%	-0,7%

Corporate Credit Booms

	Booms Ending In Banking Crises			Booms Not Ending In Banking Crises		
	Inflation*	Inflation During Boom	Inflation**	Inflation*	Inflation During Boom	Inflation**
Argentina	-	-	-	-6,5%	15,5%	1,2%
Chile	-	-	-	-0,1%	-1,2%	0,0%
Thailand	0,7%	2,5%	-2,6%	-	-	-
Turkey	7,7%	13,3%	7,1%	-	-	-
Colombia	-	-	-	-2,1%	0,2%	-1,1%
Brazil	318,1%	1431,0%	-476,7%	-	-	-
Mexico	-4,0%	8,3%	3,5%	-3,7%	-2,4%	-0,3%
Malaysia	-	-	-	-0,4%	0,4%	0,9%
Korea	0,3%	1,6%	-1,6%	-	-	-
Singapore	-	-	-	-0,2%	0,1%	-1,0%

Source: Author's own calculations based on World Bank

[23] It is valid for all developing countries except Argentina.

Table 11: The Deviations of Inflation from the Trend in Developed Countries

Household Credit Booms

	Booms Ending In Banking Crises			Booms Not Ending In Banking Crises		
	Inflation*	Inflation During Boom	Inflation**	Inflation*	Inflation During Boom	Inflation**
US	-0,3%	0,4%	0,3%	-	-	-
Greece	-0,1%	1,3%	-0,8%	-	-	-
Spain	4,0%	0,2%	0,8%	-	-	-
Japan	-	-	-	0,3%	-0,9%	-0,5%
France	-	-	-	0,6%	0,0%	0,1%
Germany	-0,2%	-0,2%	0,7%	-	-	-
Hungary	-1,6%	0,7%	0,8%	-	-	-
Italy	-0,1%	0,1%	0,4%	0,7%	-0,2%	0,0%
Portugal	0,0%	-0,2%	1,1%	-	-	-
Netherlands	0,1%	-0,3%	-0,1%	-0,1%	-0,5%	0,9%

Corporate Credit Booms

	Booms Ending In Banking Crises			Booms Not Ending In Banking Crises		
	Inflation*	Inflation During Boom	Inflation**	Inflation*	Inflation During Boom	Inflation**
US	0,7%	-0,1%	3,5%	-0,6%	0,6%	-0,3%
Greece	0,2%	1,4%	-1,6%	-	-	-
Spain	0,4%	0,4%	-0,1%	-	-	-
Japan	0,9%	-0,1%	-0,5%	-	-	-
France	-	-	-	-0,2%	-0,2%	-0,1%
Germany	-	-	-	0,0%	-0,3%	0,2%
Hungary	-2,8%	1,0%	0,8%	-	-	-
Italy	-0,1%	0,8%	-0,5%	0,7%	-0,2%	0,0%
Portugal	-	-	-	0,6%	0,3%	-0,9%
Netherlands	-	-	-	0,2%	0,1%	-0,5%

Source: Author's own calculations based on World Bank

Table 12 and Table 13 show that current account does not represent a pattern around credit boom periods in developing countries. However, current account is lower than its trend level during credit booms ending up with crises in all of the developed countries except Hungary and Netherlands. This development is observed in both credit booms ending up with crises and credit booms not ending up with crises. However, the deviation from the trend is higher for credit booms ending up with crises. Therefore, it can be said that the most of the credit booms ending up with banking crises in developed countries in the sample coincide with high current account deficits. However, there is no pattern explaining the more significant relationship between household credits and banking crises.

Table 12: The Deviations of Current Account from Trend in Developing Countries

Household Credit Booms

	Booms Ending In Banking Crises			Booms Not Ending In Banking Crises		
	Current Account*	Current Account During Boom	Current Account**	Current Account*	Current Account During Boom	Current Account**
Argentina	-1,5%	-2,9%	5,6%	-	-	-
Chile	-	-	-	1,4%	-1,2%	-0,4%
Thailand	-3,1%	1,9%	6,5%	-	-	-
Turkey	-	-	-	-0,7%	-0,9%	-0,1%
Colombia	-2,8%	-3,3%	2,1%	-	-	-
Brazil	1,5%	1,0%	-1,5%	-	-	-
Mexico	-1,5%	0,3%	1,0%	-	-	-
Malaysia	-	-	-	1,3%	4,0%	6,5%
Korea	0,0%	-0,6%	-2,7%	1,1%	-0,9%	0,3%
Singapore	-	-	-	-1,3%	1,5%	0,8%

Corporate Credit Booms

	Booms Ending In Banking Crises			Booms Not Ending In Banking Crises		
	Current Account*	Current Account During Boom	Current Account**	Current Account*	Current Account During Boom	Current Account**
Argentina	-	-	-	-2,6%	7,6%	2,2%
Chile	-	-	-	0,6%	-0,8%	1,3%
Thailand	-4,8%	6,0%	6,5%	-	-	-
Turkey	0,5%	-0,1%	0,6%	-	-	-
Colombia	-	-	-	-3,3%	1,7%	-2,3%
Brazil	1,5%	1,0%	-1,5%	-	-	-
Mexico	-1,5%	1,0%	0,3%	0,8%	0,5%	0,5%
Malaysia	-	-	-	-1,7%	-0,6%	5,2%
Korea	-2,2%	3,9%	1,1%	-	-	-
Singapore	-	-	-	0,7%	-1,6%	0,4%

Source: Author's own calculations based on World Bank

Table 13: The Deviations of Current Account from Trend in Developed Countries

Household Credit Booms

	Booms Ending In Banking Crises			Booms Not Ending In Banking Crises		
	Current Account*	Current Account During Boom	Current Account**	Current Account*	Current Account During Boom	Current Account**
US	-1,2%	-1,2%	0,5%	-	-	-
Greece	-1,2%	-5,3%	3,5%	-	-	-
Spain	-1,7%	-3,8%	1,5%	-	-	-
Japan	-	-	-	-0,4%	-0,3%	0,4%
France	-	-	-	-0,8%	-0,6%	-0,1%
Germany	-0,4%	-0,8%	1,7%	-	-	-
Hungary	-3,0%	0,5%	2,3%	-	-	-
Italy	-0,6%	-2,2%	0,6%	-1,5%	0,9%	2,4%
Portugal	-1,3%	-4,1%	-0,8%	-	-	-
Netherlands	-0,4%	0,3%	-0,4%	-0,4%	-0,6%	1,9%

Corporate Credit Booms

	Booms Ending In Banking Crises			Booms Not Ending In Banking Crises		
	Current Account*	Current Account During Boom	Current Account**	Current Account*	Current Account During Boom	Current Account**
US	-2,0%	-0,5%	0,5%	0,4%	-0,7%	-1,2%
Greece	-3,9%	-3,2%	3,8%	-	-	-
Spain	-1,7%	-3,3%	2,5%	-	-	-
Japan	0,2%	-0,4%	0,0%	-	-	-
France	-	-	-	0,2%	-0,1%	0,7%
Germany	-	-	-	-0,1%	-0,7%	0,8%
Hungary	-3,1%	-0,3%	2,3%	-	-	-
Italy	-1,0%	-2,2%	1,0%	-1,5%	0,9%	2,4%
Portugal	-	-	-	-4,1%	-2,5%	4,1%
Netherlands	-	-	-	-0,2%	1,3%	1,9%

Source: Author's own calculations based on World Bank

Table 14 and Table 15 show that there is not a systematic pattern for trade openness around credit boom periods. However, the deviations from trend is higher for developing countries compared to developed countries as it is the case for many other variables.

Table 14: The Deviations of Trade Openness from Trend in Developing Countries

Household Credit Booms

	Booms Ending In Banking Crises			Booms Not Ending In Banking Crises		
	Trade Openness*	Trade Openness During Boom	Trade Openness**	Trade Openness*	Trade Openness During Boom	Trade Openness**
Argentina	-1,6%	-5,1%	10,2%	-	-	-
Chile	-	-	-	2,4%	-1,0%	1,2%
Thailand	-5,9%	-5,6%	5,9%	-	-	-
Turkey	-	-	-	-3,4%	1,0%	
Colombia	1,3%	-0,4%	1,6%	-	-	-
Brazil	0,5%	0,3%	-3,7%	-	-	-
Mexico	-3,3%	-1,8%	5,9%	-	-	-
Malaysia	-	-	-	17,7%	16,9%	12,6%
Korea	1,1%	-3,6%	-1,9%	-1,3%	-10,0%	-5,5%
Singapore	-	-	-	-2,8%	7,3%	18,6%

Corporate Credit Booms

	Booms Ending In Banking Crises			Booms Not Ending In Banking Crises		
	Trade Openness*	Trade Openness During Boom	Trade Openness**	Trade Openness*	Trade Openness During Boom	Trade Openness**
Argentina	-	-	-	-6,0%	10,7%	8,4%
Chile	-	-	-	1,5%	2,9%	2,3%
Thailand	-7,1%	-2,8%	5,9%	-	-	-
Turkey	4,7%	12,9%	-3,6%	-	-	-
Colombia	-	-	-	0,5%	-1,2%	0,4%
Brazil	0,5%	0,3%	-3,7%	-	-	-
Mexico	-3,3%	1,4%	4,4%	3,2%	-1,7%	-3,2%
Malaysia	-	-	-	1,8%	6,4%	13,2%
Korea	-2,9%	4,1%	-1,3%	-	-	-
Singapore	-	-	-	-9,7%	-15,7%	-2,2%

Source: Author's own calculations based on World Bank

Table 15: Deviations of Trade Openness from the Trend in Developed Countries

Household Credit Booms

	Booms Ending In Banking Crises			Booms Not Ending In Banking Crises		
	Trade Openness*	Trade Openness During Boom	Trade Openness**	Trade Openness*	Trade Openness During Boom	Trade Openness**
US	-1,9%	0,5%	2,0%	-	-	-
Greece	-1,2%	-1,8%	2,9%	-	-	-
Spain	-0,2%	-3,6%	-0,3%	-	-	-
Japan	-	-	-	0,1%	-2,2%	-2,0%
France	-	-	-	0,2%	-2,7%	-0,3%
Germany	-3,2%	-0,3%	6,4%	-	-	-
Hungary	4,9%	3,5%	-0,8%	-	-	-
Italy	-0,1%	-1,0%	0,0%	-2,9%	0,0%	2,0%
Portugal	-4,1%	-1,7%	-1,2%	-	-	-
Netherlands	-7,0%	-2,6%	-0,1%	-0,1%	-11,4%	5,3%

Corporate Credit Booms

	Booms Ending In Banking Crises			Booms Not Ending In Banking Crises		
	Trade Openness*	Trade Openness During Boom	Trade Openness**	Trade Openness*	Trade Openness During Boom	Trade Openness**
US	-0,1%	0,7%	2,0%	0,3%	0,1%	-1,9%
Greece	0,2%	-2,0%	2,2%	-	-	-
Spain	-0,2%	-3,2%	0,5%	-	-	-
Japan	1,6%	-0,3%	-1,6%	-	-	-
France	-	-	-	0,9%	0,0%	-0,1%
Germany	-	-	-	2,8%	-2,3%	2,7%
Hungary	-1,2%	5,1%	-0,8%	-	-	-
Italy	1,7%	-0,8%	-0,4%	-2,9%	0,0%	2,0%
Portugal	-	-	-	1,1%	-2,9%	2,6%
Netherlands	-	-	-	0,9%	-1,7%	2,1%

Source: Author's own calculations based on World Bank

Table 16, Table 17, Table 18 and Table 19 show that foreign direct investment (FDI) and portfolio investment do not represent significant deviations from the trend. There are only small deviations from the trend. Also, there is not a clear pattern around credit boom periods for these macroeconomic variables

Table 16: The Deviations of FDI from the Trend in Developing Countries

Household Credit Booms

	Booms Ending In Banking Crises			Booms Not Ending In Banking Crises		
	FDI*	FDI During Boom	FDI**	FDI*	FDI During Boom	FDI**
Argentina	-0,3%	1,0%	-0,6%	-	-	-
Chile	-	-	-	-1,1%	1,8%	0,4%
Thailand	-1,4%	0,6%	0,8%	-	-	-
Turkey	-	-	-	0,5%	-0,1%	-0,2%
Colombia	1,2%	-0,2%	0,1%	-	-	-
Brazil	-0,7%	-0,9%	-0,4%	-	-	-
Mexico	-0,7%	0,3%	0,1%	-	-	-
Malaysia	-	-	-	-1,4%	-0,6%	0,8%
Korea	-0,3%	-0,5%	-0,4%	0,8%	-0,1%	0,4%
Singapore	-	-	-	-1,4%	-0,2%	1,5%

Corporate Credit Booms

	Booms Ending In Banking Crises			Booms Not Ending In Banking Crises		
	FDI*	FDI During Boom	FDI**	FDI*	FDI During Boom	FDI**
Argentina	-	-	-	1,5%	-0,9%	0,1%
Chile	-	-	-	-0,4%	2,6%	-0,3%
Thailand	-1,7%	1,5%	0,8%	-	-	-
Turkey	0,0%	-0,2%	-0,5%	-	-	-
Colombia	-	-	-	1,6%	0,1%	-0,5%
Brazil	-0,7%	-0,9%	-0,4%	-	-	-
Mexico	-0,7%	0,2%	0,1%	0,1%	0,5%	-0,4%
Malaysia	-	-	-	0,2%	-0,3%	0,4%
Korea	-0,6%	0,0%	0,7%	-	-	-
Singapore	-	-	-	0,9%	2,9%	0,2%

Source: Author's own calculations based on World Bank

Table 17: The Deviations of FDI from the Trend in Developed Countries

Household Credit Booms

	Booms Ending In Banking Crises			Booms Not Ending In Banking Crises		
	FDI*	FDI During Boom	FDI**	FDI*	FDI During Boom	FDI**
US	-0,4%	0,0%	-0,2%	-	-	-
Greece	0,4%	-0,1%	0,0%	-	-	-
Spain	-0,5%	0,2%	-0,1%	-	-	-
Japan	-	-	-	0,0%	0,1%	0,0%
France	-	-	-	0,2%	-0,7%	-0,7%
Germany	0,4%	-0,1%	0,0%	-	-	-
Hungary	13,9%	-1,9%	-6,1%	-	-	-
Italy	0,9%	0,4%	-0,4%	-0,1%	-0,3%	-0,3%
Portugal	0,0%	-0,3%	1,6%	-	-	-
Netherlands	-9,1%	8,5%	28,4%	28,4%	-15,0%	4,9%

Corporate Credit Booms

	Booms Ending In Banking Crises			Booms Not Ending In Banking Crises		
	FDI*	FDI During Boom	FDI**	FDI*	FDI During Boom	FDI**
US	-0,1%	0,1%	-0,2%	0,6%	0,9%	-0,4%
Greece	0,2%	-0,1%	0,0%	-	-	-
Spain	-0,5%	0,1%	0,1%	-	-	-
Japan	0,0%	0,0%	0,1%	-	-	-
France	-	-	-	0,1%	0,0%	-0,1%
Germany	-	-	-	1,4%	0,2%	-0,2%
Hungary	13,9%	-1,9%	-6,1%	-	-	-
Italy	1,6%	-0,6%	-0,2%	-0,1%	-0,3%	-0,3%
Portugal	-	-	-	0,2%	1,2%	-0,7%
Netherlands	-	-	-	1,3%	-2,0%	-4,3%

Source: Author's own calculations based on World Bank

Table 18: The Deviations of Portfolio Investment from the Trend in Developing Countries

Household Credit Booms

	Booms Ending In Banking Crises			Booms Not Ending In Banking Crises		
	Portfolio Investment*	Portfolio Investment During Boom	Portfolio Investment **	Portfolio Investment*	Portfolio Investment During Boom	Portfolio Investment **
Argentina	0,6%	-1,2%	0,1%	-	-	-
Chile	-	-	-	0,1%	0,2%	-0,1%
Thailand	-0,3%	0,0%	-0,5%	-	-	-
Turkey	-	-	-	-0,4%	0,0%	0,2%
Ukraine	0,2%	0,0%	-0,2%	-	-	-
Colombia	0,1%	0,7%	-0,1%	-	-	-
Mexico	0,7%	-0,4%	-0,2%	-	-	-
Malaysia						
Korea	-0,2%	-0,2%	-0,2%	1,4%	-0,7%	0,6%
Singapore	-	-	-	1,2%	9,8%	0,0%

Corporate Credit Booms

	Booms Ending In Banking Crises			Booms Not Ending In Banking Crises		
	Portfolio Investment*	Portfolio Investment During Boom	Portfolio Investment **	Portfolio Investment*	Portfolio Investment During Boom	Portfolio Investment **
Argentina	-	-	-	-1,5%	0,1%	0,2%
Chile	-	-	-	0,2%	-0,1%	-0,2%
Thailand	-0,6%	0,3%	-0,4%	-	-	-
Turkey	0,1%	-0,2%	-0,2%	-	-	-
Colombia	-	-	-	0,0%	-0,2%	-0,1%
Brazil	0,1%	0,7%	-0,1%	-	-	-
Mexico	0,7%	-0,3%	-0,2%	-0,1%	-0,2%	-0,1%
Malaysia						
Korea	-0,3%	-0,3%	1,3%	-	-	-
Singapore	-	-	-	-1,2%	7,9%	0,4%

Table 19: The Deviations of Portfolio Investment from the Trend in Developed Countries

Household Credit Booms

	Booms Ending In Banking Crises			Booms Not Ending In Banking Crises		
	Portfolio Investment*	Portfolio Investment During Boom	Portfolio Investment **	Portfolio Investment*	Portfolio Investment During Boom	Portfolio Investment **
US	-0,4%	0,4%	0,5%	-	-	-
Greece	1,3%	-0,9%	0,5%	-	-	-
Spain	-1,2%	-0,7%	0,6%	-	-	-
Japan	-	-	-	-0,3%	0,1%	0,2%
France	-	-	-	1,0%	-0,6%	0,1%
Germany	0,4%	0,1%	0,0%	-	-	-
Hungary	-1,1%	0,0%	0,2%	-	-	-
Italy	0,6%	-0,2%	0,5%	-0,1%	-0,4%	0,3%
Portugal	2,8%	0,8%	-3,4%	-	-	-
Netherlands	-1,1%	10,9%	-5,8%	-5,8%	0,6%	-0,9%

Corporate Credit Booms

	Booms Ending In Banking Crises			Booms Not Ending In Banking Crises		
	Portfolio Investment*	Portfolio Investment During Boom	Portfolio Investment **	Portfolio Investment*	Portfolio Investment During Boom	Portfolio Investment **
US	-0,1%	0,7%	0,5%	0,1%	0,7%	-0,4%
Greece	1,8%	-1,6%	1,8%	-	-	-
Spain	-0,7%	-0,9%	0,6%	-	-	-
Japan	-0,2%	0,0%	-0,1%	-	-	-
France	-	-	-	0,6%	-0,5%	-0,4%
Germany	-	-	-	0,0%	0,9%	-0,2%
Hungary	0,5%	-0,7%	0,2%	-	-	-
Italy	0,0%	-0,3%	0,3%	-0,1%	-0,4%	0,3%
Portugal	-	-	-	0,8%	-2,7%	0,5%
Netherlands	-	-	-	-0,4%	-1,1%	-0,7%

Source: Author's own calculations based on World Bank

Table 20 and Table 21 show that the fluctuations in other investment represent different characteristics if credit booms end up with banking crises in developed countries. Other investment is always above the trend level during corporate credit boom periods in developed countries if the booms end up with crises. However, it is generally below the trend level for corporate credit booms not ending up with crises. Even if this pattern is also observed in most of household credit booms, it is not observed during household credit booms in Portugal and Netherlands. Therefore, it might be claimed that credit boom periods which end up with banking crises mostly coincide with high other investment levels in developed countries. This kind of a pattern is not observed during credit booms in developing countries.

Table 20: The Deviations of Other Investment from the Trend in Developing Countries

Household Credit Booms

	Booms Ending In Banking Crises			Booms Not Ending In Banking Crises		
	Other Investment*	Other Investment During Boom	Other Investment**	Other Investment*	Other Investment During Boom	Other Investment**
Argentina	2,6%	0,9%	-4,6%	-	-	-
Chile	-	-	-	0,7%	0,9%	-0,2%
Thailand	6,5%	-6,8%	-7,2%	-	-	-
Turkey	-	-	-	0,7%	-1,6%	0,9%
Colombia	-1,6%	1,5%	1,4%	-	-	-
Brazil	0,7%	-4,9%	1,8%	-	-	-
Mexico	0,6%	-0,6%	-0,1%	-	-	-
Malaysia	-	-	-	-0,6%	-0,2%	-2,0%
Korea	-0,4%	1,7%	1,9%	-2,4%	0,0%	-0,6%
Singapore	-	-	-	-7,8%	-10,3%	5,8%

Corporate Credit Booms

	Booms Ending In Banking Crises			Booms Not Ending In Banking Crises		
	Other Investment*	Other Investment During Boom	Other Investment**	Other Investment*	Other Investment During Boom	Other Investment**
Argentina	-	-	-	0,4%	-6,3%	-0,9%
Chile	-	-	-	0,8%	-0,2%	-0,1%
Thailand	7,5%	-13,3%	-7,2%	-	-	-
Turkey	-1,6%	2,2%	0,9%	-	-	-
Colombia	-	-	-	1,4%	-1,6%	-0,6%
Brazil	0,7%	-4,9%	1,8%	-	-	-
Mexico	0,6%	-0,7%	-0,1%	-0,2%	0,8%	0,7%
Malaysia	-	-	-	-0,2%	-1,7%	-1,4%
Korea	2,5%	-1,4%	-2,4%	-	-	-
Singapore	-	-	-	-10,9%	43,8%	-17,2%

Source: Author's own calculations based on International Monetary Fund

Table 21: The Deviations of Other Investment from the Trend in Developed Countries

Household Credit Booms

	Booms Ending In Banking Crises			Booms Not Ending In Banking Crises		
	Other Investment*	Other Investment During Boom	Other Investment**	Other Investment*	Other Investment During Boom	Other Investment**
US	0,9%	0,0%	-0,3%	-	-	-
Greece	-1,5%	7,1%	4,0%	-	-	-
Spain	0,7%	1,0%	-2,8%	-	-	-
Japan	-	-	-	1,0%	-1,6%	1,0%
France	-	-	-	3,2%	-5,0%	-2,6%
Germany	1,5%	0,3%	1,5%	-	-	-
Hungary	5,8%	2,2%	-6,1%	-	-	-
Italy	1,5%	2,3%	-3,5%	0,7%	-1,5%	-0,7%
Portugal	1,1%	-0,5%	2,7%	-	-	-
Netherlands	0,4%	-1,8%	10,3%	10,3%	-9,9%	-4,3%

Corporate Credit Booms

	Booms Ending In Banking Crises			Booms Not Ending In Banking Crises		
	Other Investment*	Other Investment During Boom	Other Investment**	Other Investment*	Other Investment During Boom	Other Investment**
US	-0,1%	0,3%	0,9%	2,1%	0,3%	0,9%
Greece	2,9%	13,2%	-4,7%	-	-	-
Spain	0,7%	2,0%	-6,0%	-	-	-
Japan		1,1%	-2,0%	-	-	-
France	-	-	-	-0,9%	-0,1%	-0,5%
Germany	-	-	-	2,3%	-2,5%	1,2%
Hungary	3,3%	3,6%	-6,1%	-	-	-
Italy	3,5%	0,2%	-3,3%	0,7%	-1,5%	-0,7%
Portugal	-	-	-	0,3%	-1,4%	-6,7%
Netherlands	-	-	-	-3,1%	-5,6%	-0,5%

Source: Author's own calculations based on International Monetary Fund

Table 22 and Table 23 represent the deviations of interest rates from the trend level around credit boom periods in developing countries and developed countries. Developing countries represent higher fluctuations from the trend level compared to developed countries. Also, interest rates are higher compared to trend level during all of credit booms ending up with banking crises in developing countries (except household credit boom in Korea). Therefore, the higher interest rates during boom periods are associated with banking crises in developing counties. However, the fluctuations in this variable also do not explain why higher ratio of household credit booms end up with crises. Also, there is not a clear pattern in developed countries.

Table 22: The Deviations of Interest Rates from Trend in Developing Countries

Household Credit Booms

	Booms Ending In Banking Crises			Booms Not Ending In Banking Crises		
	Interest Rate*	Interest Rate During Boom	Interest Rate**	Interest Rate*	Interest Rate During Boom	Interest Rate**
Argentina	-0,6%	0,5%	9,9%	-	-	-
Chile	-	-	-	-0,5%	0,6%	-0,4%
Thailand	-0,4%	3,2%	-1,0%	-	-	-
Turkey	-	-	-	-17,4%	-4,3%	7,2%
Colombia	2,1%	7,4%	-3,7%			
Brazil						
Mexico	-12,3%	11,2%	4,2%	-	-	-
Malaysia	-	-	-	-0,7%	-0,8%	0,2%
Korea	-1,3%	-1,8%	1,5%	-0,1%	-1,2%	-1,5%
Singapore	-	-	-	-0,1%	-0,1%	-0,1%

Corporate Credit Booms

	Booms Ending In Banking Crises			Booms Not Ending In Banking Crises		
	Interest Rate*	Interest Rate During Boom	Interest Rate**	Interest Rate*	Interest Rate During Boom	Interest Rate**
Argentina	-	-	-	1,8%	19,6%	-9,5%
Chile	-	-	-	-0,5%	0,4%	-2,9%
Thailand	0,8%	3,7%	-1,0%	-	-	-
Turkey	11,8%	6,0%	46,5%	-	-	-
Colombia	-	-	-	7,4%	-2,9%	-5,4%
Brazil						
Mexico	-12,3%	11,1%	1,7%	-3,8%	-2,0%	-0,5%
Malaysia	-	-	-	-0,7%	0,0%	1,0%
Korea	0,1%	4,2%	-0,1%	-	-	-
Singapore	-	-	-	0,2%	0,1%	0,0%

Table 23: The Deviations of Interest Rates from Trend in Developed Countries

Household Credit Booms

	Booms Ending In Banking Crises			Booms Not Ending In Banking Crises		
	Interest Rate*	Interest Rate During Boom	Interest Rate**	Interest Rate*	Interest Rate During Boom	Interest Rate**
US	-1,8%	0,9%	-1,0%	-	-	-
Greece	-2,2%	0,3%	0,4%	-	-	-
Spain	-1,3%	0,8%	0,1%	-	-	-
Japan	-	-	-	-0,9%	-0,7%	-0,4%
France	-	-	-	1,9%	-0,4%	-0,7%
Germany	-1,6%	-0,4%	1,8%	-	-	-
Hungary	-2,3%	1,7%	2,1%	-	-	-
Italy	-1,1%	-0,1%	1,1%	1,6%	-0,4%	1,1%
Portugal	-1,5%	1,2%	0,2%	-	-	-
Netherlands	-0,6%	-0,5%	1,9%	1,9%	-0,5%	-0,1%

Corporate Credit Booms

	Booms Ending In Banking Crises			Booms Not Ending In Banking Crises		
	Interest Rate*	Interest Rate During Boom	Interest Rate**	Interest Rate*	Interest Rate During Boom	Interest Rate**
US	0,5%	0,5%	-1,0%	1,1%	1,4%	-1,8%
Greece	-0,8%	0,1%	0,7%	-	-	-
Spain	-1,3%	0,8%	0,1%	-	-	-
Japan	1,5%	-0,6%	-0,8%	-	-	-
France	-	-	-	0,4%	-0,1%	-1,3%
Germany	-	-	-	0,6%	-0,2%	-0,2%
Hungary	-2,0%	1,2%	2,1%	-	-	-
Italy	-0,4%	0,2%	1,0%	1,6%	-0,4%	1,1%
Portugal	-	-	-	1,7%	0,2%	0,4%
Netherlands	-	-	-	1,8%	-0,8%	-1,7%

Source: Author's own calculations based on World Bank, IMF and OECD

Table 24 and Table 25 represent the deviations of exchange rates from the trend around credit boom periods in developing countries and developed countries. It is shown that domestic currency appreciated in all developing countries except Thailand during household credit booms ending up with banking crises. Also, there is appreciation in domestic currency during most of the corporate credit booms ending up with banking crises in developing countries (except Thailand and Korea). The same trend is observed during almost all of credit booms ending up with banking crises in developed countries (except household credit booms in the US and Germany). However, this kind of a trend is not observed during credit booms not ending up with banking crises. As a result, it might be claimed that domestic currency appreciation is a common characteristic of credit booms ending up with banking crises in both developing countries and developed countries. However, there is not a clear pattern explaining the relationship between household credit booms and banking crises.

Table 24: The Deviations of Exchange Rate from Trend in Developing Countries

Household Credit Booms

	Booms Ending In Banking Crises			Booms Not Ending In Banking Crises		
	Exchange Rate*	Exchange Rate During Boom	Exchange Rate**	Exchange Rate*	Exchange Rate During Boom	Exchange Rate**
Argentina	0,29	-0,54	0,36	-	-	-
Chile	-	-	-	-18,32	-24,20	11,09
Thailand	-5,14	0,08	6,28			
Turkey	-	-	-	-0,05	-0,27	-0,16
Colombia	-241,60	-220,65	343,42	-	-	-
Brazil	-0,47	-0,11	-0,06	-	-	-
Mexico	-1,03	-0,63	1,31	-	-	-
Malaysia	-	-	-	0,46	0,34	-0,06
Korea	-86,94	-106,11	-115,87	162,09	178,68	26,11
Singapore	-	-	-	0,05	0,01	0,02

Corporate Credit Booms

	Booms Ending In Banking Crises			Booms Not Ending In Banking Crises		
	Exchange Rate*	Exchange Rate During Boom	Exchange Rate**	Exchange Rate*	Exchange Rate During Boom	Exchange Rate**
Argentina	-	-	-	-0,67	0,55	-0,40
Chile	-	-	-	-26,24	31,85	38,28
Thailand	-5,94	3,38	6,28			
Turkey	-0,12	-0,24	-0,18	-	-	-
Colombia	-	-	-	-220,65	387,46	605,01
Brazil	-0,47	-0,11	-0,06	-	-	-
Mexico	-1,03	-0,01	1,43	0,12	-0,91	-0,36
Malaysia	-	-	-	0,01	-0,12	0,14
Korea	-141,06	183,58	162,09	-	-	-
Singapore	-	-	-	-0,05	0,03	0,13

Source: Author's own calculations based on World Bank

Table 25: The Deviations of Exchange Rate from Trend in Developed Countries

Household Credit Booms

	Booms Ending In Banking Crises			Booms Not Ending In Banking Crises		
	Exchange Rate*	Exchange Rate During Boom	Exchange Rate**	Exchange Rate*	Exchange Rate During Boom	Exchange Rate**
US	-0,03	0,13	0,07	-	-	-
Greece	-0,07	-0,10	-0,03	-	-	-
Spain	-0,05	-0,09	-0,05	-	-	-
Japan	-	-	-	5,21	1,73	6,38
France	-	-	-	-0,05	-0,06	-0,01
Germany		0,04	-0,11	-	-	-
Hungary	-19,88	-34,74	-17,21	-	-	-
Italy	-0,07	-0,09	-0,03			
Portugal	-0,05	-0,10	-0,05	-	-	-
Netherlands	-0,02	-0,07	-0,11	-0,11	-0,08	-0,05

Corporate Credit Booms

	Booms Ending In Banking Crises			Booms Not Ending In Banking Crises		
	Exchange Rate*	Exchange Rate During Boom	Exchange Rate**	Exchange Rate*	Exchange Rate During Boom	Exchange Rate**
US	0,01	-0,18	-0,03	0,01	-0,18	-0,03
Greece	-0,08	-0,08	0,02	-	-	-
Spain	-0,05	-0,09	-0,03	-	-	-
Japan	5,08	-9,68	4,06	-	-	-
France	-	-	-	0,05	0,18	0,02
Germany	-	-	-	-0,04	0,05	-0,06
Hungary	-9,68	-35,35	-17,21	-	-	-
Italy	-0,08	-0,08	0,02			
Portugal	-	-	-	-0,11	-0,07	0,02
Netherlands	-	-	-			

Source: Author's own calculations based on World Bank

4.5. Robustness Check

The deviations of macroeconomic variables from mean and median values are also analyzed for robustness check.[24] Robustness check confirms that the fluctuations in macroeconomic variables do not provide an explanation for higher ratio of household credit booms turning into banking crises. However, there are some patterns around credit boom periods ending up with crises.

When the deviations from the mean and median values of GDP growth, consumption, foreign direct investment, portfolio investment and trade openness are analyzed, the fluctuations in these variables do not represent significant

[24] Since the signal extraction analysis covers the period between 1994 and 2017, the deviations of macroeconomic variables from the trend are calculated by using data between 1994 and 2017. However, mean and median analysis cover the data between 1980 and 2017 for macroeconomic variables except portfolio investment, interest rates and exchange rates.

patterns explaining the relationship between credit booms and banking crises. Also, the pattern found by trend analysis in consumption fluctuations which presents that the trend is generally positive for household credit booms which are not ending up with crises is not confirmed by mean and median analyses. However, the fluctuations in inflation, interest rates current account, other investment and exchange rates confirm the patterns found in the trend analysis.

The fluctuation in inflation is one of the most striking developments around credit booms in developing countries. The inflation is higher than its trend level for credit booms ending up with banking crises during credit boom periods in developing countries. On the other hand, the inflation is generally lower than its trend level for credit booms not ending up with banking crises. The same pattern is also observed in the deviations from the median values of inflation and the deviations from the median values of inflation.[25]

The fluctuations in interest rates in developing countries also draw attention in trend analysis. It is revealed by trend analysis that interest rates are very high during credit booms ending up with banking crises in developing countries except household credit boom in Korea. This pattern is also confirmed by mean and median analyses. Even, this pattern is observed during household credit booms in Korea, too. The results show that if credit boom periods coincide with high inflation levels and high interest rates, the movements in these variables should be checked carefully.

The fluctuation in current account is a striking development around credit booms in developed countries. Current account is lower than the trend level during credit boom periods in developed countries. This development is also confirmed by median analysis during credit boom periods in developed countries[26]. Even if this development is observed in both credit booms ending up with crises and credit booms not ending up with crises, the deviations in credit booms ending up with

[25] These results are valid for all developing countries except Argentina in trend analysis, mean analysis and median analysis.

[26] These results are valid for countries except Hungary and Netherlands.

crises are much higher compared to deviations in credit booms not ending up with crises. However, mean analysis does not confirm this pattern in current account. Even if the mean analysis does not confirm the pattern in current account, both trend analysis and median analysis show that credit booms are accompanied with high current account deficits in developed countries.

The pattern in other investment observed by trend analysis is also observed by mean and median analyses. It is confirmed that other investment is generally high during credit boom periods in developed countries. While this is not valid for household credit booms in Netherlands and Portugal in trend analysis, this kind of a trend is also observed in household credit booms in Netherlands and Portugal by mean and median analyses.[27]

The pattern in exchange rate observed by trend analysis is also revealed by mean and median analyses. It is confirmed that domestic currency mostly appreciated during credit booms ending up with banking crises in both developing countries and developed countries in the sample.

4.6. Conclusion

The results of the signal extraction analysis reveal that the higher ratio of household credit booms transform into banking crises compared to corporate credit booms. In order to understand the reasons behind this result, characteristics of credit booms and the fluctuations in several macroeconomic variables around credit booms are analyzed in this chapter. The analysis of credit dynamics in 20 countries present that credit levels in developed countries are very high compared to credit levels in developing countries. The credit levels increased in most of the countries throughout the time period covered in the study. The composition of credit also changed from 1994 to 2017. Even if corporate credit has higher share in most of the countries in both of the time periods, the share of household credit increased significantly especially in developing countries. When the

[27] It is not observed by median analysis in the US. However, it is only 0,1 percent point less than the median value.

characteristics of credit booms are analyzed, it is revealed that more sustained and larger credit booms prone to end up with banking crises. Especially, credit booms continuing for more than 5 years requires are worthy of notice since all of them ended up with banking crises in the analysis. Even if larger deviations from the trend are not observed in household credit booms, the average duration of household credit booms are longer in both developed and developing countries. Therefore, the duration of household credit booms might explain the higher ratio of banking crises associated with household credit booms. Also, credit booms in developing countries are resulted with banking crises in a much shorter time period compared to credit booms in developed countries. Macroeconomic variables do not represent significant patterns explaining the relationship between household credit booms and banking crises. However, there are significant fluctuations in some of the macroeconomic variables around credit booms ending up with crises. Most of the macroeconomic variables (GDP growth, consumption, inflation, trade openness and interest rates) represent much higher deviations from the trend in developing countries. While GDP growth, consumption, trade openness, foreign direct investment and portfolio investment do not represent significant patterns, the deviations in inflation, interest rates and exchange rates in developing countries and the deviations in current account, other investment and exchange rates in developed countries draw the attention. Interest rates and inflation are mostly higher compared to trend level during credit booms ending up with banking crises in developing countries so an attention should be paid to the boom period, if it is accompanied by high inflation and high interest rates in developing countries[28]. Current account is lower than its trend level during credit booms ending up with crises in developed countries. Also, credit booms ending up with crises are accompanied with high levels of other investment in developed countries. Therefore, it might be claimed that credit boom periods which resulted with crises are accompanied with high levels of current account deficit and other investment in developed countries in our sample. Lastly, it is revealed that there

[28]The mechanism which leads to these results should be analyzed carefully. In order to explain the relationship of credit booms with inflation and interest rates, the changes of exchange rates during boom periods should be analyzed.

is appreciation in domestic currency during credit booms ending up with banking crises in both developing countries and developed countries.

CHAPTER 5

CONCLUSION

When the importance of credit for economies is taken into consideration, the effects of these credits on economies should be examined carefully. While some of the early studies in the literature only mention about the positive effects of credit growth on economic growth, the real effects of credit growth might be ignored in these studies. When the relationship between credit growth and economic growth is analyzed, it is revealed that the relationship is not positive in every country. Even, there are many examples of the crises which occurred after high credit growth such as the crises in Korea, Thailand, Philippines and Malaysia in 1997 and 1998, the crisis in Chile in 1982, the crisis in Mexico in 1994 and the crises in Sweden, Finland, Denmark and Norway in 1990 and 1991. Most of the studies in the recent literature claim that especially after a certain threshold level, credit growth might have negative effects on the economic growth. Therefore, this threshold level should be identified carefully in order to understand when the credit growth starts to have a negative effect on economic growth. While most of the studies in the literature focus on the aggregate credit data, the credit should be disaggregated into subcategories in order to properly identify the effects of credit growth on the economy. Since the transmission mechanisms of corporate credit and household credit are different, their effects on the economy would not be the same. Corporate credit might expand the production capacity of the economy through its effect on investment, whereas the effects of household credit might lead to fragilities in the economies by its effect on consumption. For this reason, corporate credit growth and household credit growth should be analyzed separately. The relationship between credit booms and financial crises is also frequently highlighted in the literature. Even if credit is

one of the main sources for the economic growth, it might also cause financial crises in the economies. While some of credit booms end up with crises, other booms do not. There are different views regarding the dynamics behind the credit booms ending up with crises. While some studies claim that the macroeconomic conditions, the duration and the size of credit booms might be the reasons of crises originated from credit booms, other studies claim that the soundness of the banking system and prudential regulations might explain the dynamics behind the credit booms originated from banking crises. However, since corporate credit booms and household credit booms can occur at different times, credit boom in a country might be resulted from a boom in corporate credit or a boom in household credit. Since the effects of corporate credit booms and household credit booms would be different on the economies, credit booms should be identified by disaggregating credit into its subcategories.

This study aims to identify why some of credit booms end up with banking crises. In order to understand this, the changes in the subcomponents of credit are analyzed. For this reason, total credit to non-financial corporations and total credit to households and non-profit institutions serving households as a percent of GDP are analyzed for 10 developed countries and 10 developing countries between 1994 and 2017. These countries are Argentina, Brazil, Chile, Colombia, Singapore, France, Germany, Greece, Hungary, Italy, Japan, Korea, Malaysia, Mexico, Netherlands, Portugal, Spain, Thailand, The United States and Turkey. Following the method of Mendoza and Terrones (2008), two sided HP filter is applied in order to identify the trend levels of credit. Signal extraction analysis is applied in order to find the most appropriate levels of lambda and threshold coefficient to identify credit booms. Following Duzcay and Comert (2018), the combination of 4 different smoothing parameters (6,25, 100, 500 and 1600) and 10 different threshold coefficient (0,25, 0,5, 0,75, 1, 1,25, 1,5, 1,65, 1,75, 1,9 and 2) are analyzed by signal extraction analysis. It reveals that 1600 is the most appropriate level for smoothing parameter and 1 is the most appropriate level of threshold coefficient. These results present that even if the literature mostly uses 100 as smoothing parameter for annual data, it might not be the most appropriate

smoothing parameter for each annual dataset. A country is determined to experience a credit boom if the deviation from the long run trend is equal to or more than the standard deviation of the cyclical component multiplied by threshold coefficient. When credit booms are identified by optimal parameters, it is revealed that 60 percent of banking crises were preceded by corporate credit booms whereas 70 percent of banking crises were preceded by household credit booms. Also, while 29 percent of corporate credit booms were resulted with banking crises, 34 percent of household credit booms were resulted with banking crises. When the results are also evaluated separately for developed countries and developing countries, 35 percent of household credit booms in developing countries and 33 percent of household credit booms in developed countries were resulted with banking crises. On the other hand, 29 percent of corporate credit booms in developing countries and developed countries ended up with banking crises. The results show that household credit booms are more correlated with banking crises compared to corporate credit booms.

The analysis of credit dynamics in 20 countries reveals that credit growth is quite high in most of the countries covered in the study between 1994 and 2017. Also, the composition of credit portfolio changed from 1994 to 2017 and the most striking point is that the share of household credit increased especially in developing countries. However, the share of corporate credit is still higher in most of the countries. In order to understand the relationship between credit booms and banking crises, the characteristics of credit booms and macroeconomic variables around these booms are analyzed in the study. When the duration of credit booms and the deviation of credit from the trend are analyzed, it is revealed that the probability of ending up with a crisis is higher for more sustained and larger booms. Also, the average duration of household credit booms is longer than the average duration of corporate credit booms. This might be one of the reasons of higher ratio of household credit booms turning into banking crises compared to corporate credit booms. Even if the percentage of credit booms turning into banking crises in developing countries and developed countries are very similar, the duration of credit booms reveals that the

relationship between credit booms and banking crises in developing countries and developed countries are quite different. Credit booms in developing countries are resulted with a banking crisis in much shorter time period compared to credit booms in developed countries. Another striking point is that all of credit booms continuing for more than 5 years ended up with banking crises in the analysis. Therefore, the policymakers should pay a greater attention to credit booms continuing for more than 5 years regardless of the type of credit boom. In order to understand how macroeconomic variables change around credit booms, the deviations of GDP growth, consumption, trade openness, current account foreign direct investment, portfolio investment, other investment, inflation, interest rates and exchange rates from the trend are analyzed. Also, the deviations of these macroeconomic variables from the mean and median values are examined for robustness check. The results show that the fluctuations in macroeconomic variables do not explain why higher ratio of household credit booms turning into banking crises compared to corporate credit booms. However, there are still significant fluctuations around credit booms ending up with banking crises. The deviation from the trend is much higher for developing countries in GDP growth, consumption, inflation, trade openness and interest rates. Credit boom periods which ended up with crises were accompanied by high inflation and high interest rates in developing countries. On the other hand, credit boom periods which ended up with crises were accompanied by high current account deficits and other investment levels in developed countries. Also, domestic currency appreciation is observed during credit booms turning into banking crises in both developing countries and developed countries.

The data unavailability for disaggregated credit data was an important limitation for the study. Since the disaggregated credit data for many countries is quite limited, countries are chosen according to data availability. Also, there is not a long time period in the study because of this reason. If there would not be such a limitation, it would be better to cover the period after the 1980s in order to show the effects of financialization. Also, since mortgage credit has a significant share in consumer credit and its damaging effects on the economies are revealed by the

subprime mortgage crisis in the United States, mortgage credit should have been analyzed separately if the data would be available for all the countries in the study. Even if the results of the study show that the higher percentage of household credit booms are resulted with banking crises compared to corporate credit boom, the fluctuations in macroeconomic variables around these credit booms could not explain the reason of this result. Banking sector indicators around credit booms might be analyzed in future studies in order to explain why higher percentage of household credit booms end up with banking crises.

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APPENDICES

A. TABLES OF MEAN ANALYSIS

Table 1: Deviations of GDP Growth from Mean in Developing Countries

Household Credit Booms

	Booms Ending In Banking Crises			Booms Not Ending In Banking Crises		
	GDP Growth*	GDP Growth During Boom	GDP Growth**	GDP Growth*	GDP Growth During Boom	GDP Growth**
Argentina	1,5%	-3,3%	0,2%	-	-	-
Chile	-	-	-	1,9%	-1,0%	0,4%
Thailand	2,9%	-6,8%	-1,1%	-	-	-
Turkey	-	-	-	-2,2%	0,3%	2,5%
Colombia	2,0%	-1,5%	-3,4%	-	-	-
Brazil	-0,6%	2,9%	0,9%	-	-	-
Mexico	0,7%	-3,3%	3,7%	-	-	-
Malaysia	-	-	-	-1,0%	0,1%	-0,3%
Korea	1,6%	3,1%	1,6%	2,1%	1,3%	-2,2%
Singapore	-	-	-	-1,0%	-2,3%	-0,3%

Corporate Credit Booms

	Booms Ending In Banking Crises			Booms Not Ending In Banking Crises		
	GDP Growth*	GDP Growth During Boom	GDP Growth**	GDP Growth*	GDP Growth During Boom	GDP Growth**
Argentina	-	-	-	-5,0%	-3,2%	6,5%
Chile	-	-	-	1,5%	-2,3%	-0,3%
Thailand	2,0%	-10,4%	-1,1%	-	-	-
Turkey	-1,1%	3,0%	-2,8%	-	-	-
Colombia	-	-	-	-1,5%	-4,4%	1,2%
Brazil	-0,6%	2,9%	0,9%	-	-	-
Mexico	0,7%	-0,8%	2,3%	1,0%	-0,3%	-2,3%
Malaysia	-	-	-	1,9%	1,8%	-2,1%
Korea	2,6%	-5,9%	2,1%	-	-	-
Singapore	-	-	-	-0,1%	-2,8%	-1,4%

Source: Author's own calculations based on World Bank

Table 2: Deviations of GDP Growth from Mean in Developed Countries

Household Credit Booms

	Booms Ending In Banking Crises			Booms Not Ending In Banking Crises		
	GDP Growth*	GDP Growth During Boom	GDP Growth**	GDP Growth*	GDP Growth During Boom	GDP Growth**
US	0,2%	-1,7%	-0,5%	-	-	-
Greece	2,9%	-4,1%	-4,1%	-	-	-
Spain	1,1%	-1,2%	-4,2%	-	-	-
Japan	-	-	-	-1,0%	-1,0%	-0,7%
France	-	-	-	-0,6%	-0,9%	-0,5%
Germany	-0,2%	-0,6%	0,9%	-	-	-
Hungary	0,9%	-2,9%	-0,5%	-	-	-
Italy	0,3%	-1,7%	-2,7%	-0,7%	0,9%	0,8%
Portugal	-1,4%	-1,6%	-3,3%	-	-	-
Netherlands	-0,8%	0,1%	0,9%	0,9%	-2,7%	-2,0%

Corporate Credit Booms

	Booms Ending In Banking Crises			Booms Not Ending In Banking Crises		
	GDP Growth*	GDP Growth During Boom	GDP Growth**	GDP Growth*	GDP Growth During Boom	GDP Growth**
US	1,9%	-0,1%	0,2%	0,6%	-0,1%	0,2%
Greece	2,3%	-6,2%	-1,8%	-	-	-
Spain	1,1%	-1,6%	-3,4%	-	-	-
Japan	-0,7%	0,0%	-1,5%	-	-	-
France	-	-	-	0,3%	0,4%	0,2%
Germany	-	-	-	0,7%	-2,9%	0,5%
Hungary	2,4%	-2,6%	-0,5%	-	-	-
Italy	0,2%	-2,7%	-1,5%	-0,7%	0,9%	0,8%
Portugal	-	-	-	-0,5%	-4,9%	-1,4%
Netherlands	-	-	-	-0,3%	0,9%	1,6%

Source: Author's own calculations based on World Bank

Table 3: Deviations of Consumption from Mean in Developing Countries

Household Credit Booms

	Booms Ending In Banking Crises			Booms Not Ending In Banking Crises		
	Consumption*	Consumption During Boom	Consumption**	Consumption*	Consumption During Boom	Consumption**
Argentina	1,7%	3,1%	-5,0%	-	-	-
Chile	-	-	-	-4,8%	-1,3%	-1,3%
Thailand	-5,9%	-4,4%	-0,8%	-	-	-
Turkey	-	-	-	3,6%	2,4%	1,7%
Colombia	-0,7%	3,5%	5,2%	-	-	-
Brazil	-1,4%	-3,0%	4,8%	-	-	-
Mexico	3,9%	0,3%	-1,1%	-	-	-
Malaysia	-	-	-	-5,5%	-5,5%	-6,0%
Korea	-3,6%	-3,2%	-2,2%	0,2%	2,7%	0,3%
Singapore	-	-	-	-0,4%	-0,4%	-3,3%

Corporate Credit Booms

	Booms Ending In Banking Crises			Booms Not Ending In Banking Crises		
	Consumption*	Consumption During Boom	Consumption**	Consumption*	Consumption During Boom	Consumption**
Argentina	-	-	-	3,6%	-5,4%	-4,3%
Chile	-	-	-	-4,6%	-0,6%	-3,0%
Thailand	-5,7%	-3,8%	-0,8%	-	-	-
Turkey	4,6%	4,4%	2,0%	-	-	-
Colombia	-	-	-	3,5%	5,0%	2,2%
Brazil	-1,4%	-3,0%	4,8%	-	-	-
Mexico	3,9%	-0,2%	-0,6%	2,4%	1,4%	1,4%
Malaysia	-	-	-	-3,6%	-5,7%	-7,4%
Korea	-2,7%	-2,5%	0,2%	-	-	-
Singapore	-	-	-	-1,5%	1,3%	1,4%

Table 4: Deviations of Consumption from Mean in Developed Countries

Household Credit Booms

	Booms Ending In Banking Crises			Booms Not Ending In Banking Crises		
	Consumption*	Consumption During Boom	Consumption**	Consumption*	Consumption During Boom	Consumption**
US	1,7%	2,3%	3,5%	-	-	-
Greece	-0,2%	4,8%	6,3%	-	-	-
Spain	-2,6%	-1,6%	0,9%	-	-	-
Japan	-	-	-	-2,0%	0,6%	2,7%
France	-	-	-	-0,5%	1,2%	0,6%
Germany	-0,2%	-0,2%	-2,6%	-	-	-
Hungary	0,3%	-1,0%	-3,5%	-	-	-
Italy	0,2%	2,0%	2,2%	-0,2%	-0,5%	-1,9%
Portugal	1,7%	2,9%	3,1%	-	-	-
Netherlands	-0,9%	-0,7%	-2,1%	-2,1%	-0,1%	-0,4%

Corporate Credit Booms

	Booms Ending In Banking Crises			Booms Not Ending In Banking Crises		
	Consumption*	Consumption During Boom	Consumption**	Consumption*	Consumption During Boom	Consumption**
US	-1,8%	-0,1%	1,7%	1,4%	-0,1%	1,7%
Greece	0,5%	6,1%	5,7%	-	-	-
Spain	-2,6%	-1,2%	0,8%	-	-	-
Japan	-5,5%	-2,4%	-0,4%	-	-	-
France	-	-	-	-0,7%	0,3%	-0,4%
Germany	-	-	-	-1,5%	0,2%	-1,0%
Hungary	0,8%	-0,9%	-3,5%	-	-	-
Italy	0,2%	2,3%	1,8%	-0,2%	-0,5%	-1,9%
Portugal	-	-	-	2,7%	2,9%	1,6%
Netherlands	-	-	-	0,2%	0,1%	-0,5%

Source: Author's own calculations based on World Bank

Table 5: Deviations of Inflation from Mean in Developing Countries

Household Credit Booms

	Booms Ending In Banking Crises			Booms Not Ending In Banking Crises		
	Inflation*	Inflation During Boom	Inflation**	Inflation*	Inflation During Boom	Inflation**
Argentina	-241,4%	-242,9%	-225,1%	-	-	-
Chile	-	-	-	-3,0%	-5,1%	-7,3%
Thailand	0,9%	2,6%	-2,7%	-	-	-
Turkey	-	-	-	-3,1%	-8,7%	5,5%
Colombia	7,6%	4,9%	-5,1%	-	-	-
Brazil	786,7%	1758,5%	-287,8%	-	-	-
Mexico	-9,8%	4,7%	-2,1%	-	-	-
Malaysia	-	-	-	-1,4%	-1,2%	0,7%
Korea	1,8%	1,3%	-0,3%	-2,6%	-2,2%	-1,7%
Singapore	-	-	-	-0,3%	0,5%	-1,1%

Corporate Credit Booms

	Booms Ending In Banking Crises			Booms Not Ending In Banking Crises		
	Inflation*	Inflation During Boom	Inflation**	Inflation*	Inflation During Boom	Inflation**
Argentina	-	-	-	-243,4%	-219,7%	-232,6%
Chile	-	-	-	-5,3%	-5,0%	-8,3%
Thailand	1,7%	3,0%	-2,7%	-	-	-
Turkey	50,6%	44,7%	27,1%	-	-	-
Colombia	-	-	-	4,9%	-5,8%	-8,4%
Brazil	786,7%	1758,5%	-287,8%	-	-	-
Mexico	-9,8%	0,3%	-8,0%	-21,6%	-21,8%	-20,9%
Malaysia	-	-	-	-0,7%	0,2%	0,6%
Korea	0,3%	1,0%	-2,6%	-	-	-
Singapore	-	-	-	-0,8%	-0,5%	-1,6%

Source: Author's own calculations based on World Bank

Table 6: Deviations of Inflation from Mean in Developed Countries

Household Credit Booms

	Booms Ending In Banking Crises			Booms Not Ending In Banking Crises		
	Inflation*	Inflation During Boom	Inflation**	Inflation*	Inflation During Boom	Inflation**
US	-1,1%	-0,7%	-1,0%	-	-	-
Greece	-5,8%	-5,8%	-9,3%	-	-	-
Spain	-1,7%	-2,5%	-2,5%	-	-	-
Japan	-	-	-	-0,2%	-1,6%	-1,4%
France	-	-	-	-0,8%	-1,8%	-1,7%
Germany	-0,7%	-0,7%	0,0%	-	-	-
Hungary	-5,2%	-5,6%	-7,9%	-	-	-
Italy	-2,8%	-3,2%	-3,4%	0,5%	-0,9%	-1,1%
Portugal	-4,5%	-5,3%	-4,5%	-	-	-
Netherlands	-0,6%	-0,6%	-0,5%	-0,5%	-1,0%	0,2%

Corporate Credit Booms

	Booms Ending In Banking Crises			Booms Not Ending In Banking Crises		
	Inflation*	Inflation During Boom	Inflation**	Inflation*	Inflation During Boom	Inflation**
US	-1,3%	-0,2%	-1,1%	-0,2%	-0,2%	-1,1%
Greece	-5,8%	-6,1%	-10,4%	-	-	-
Spain	-1,7%	-2,3%	-3,6%	-	-	-
Japan	1,1%	-0,4%	-1,1%	-	-	-
France	-	-	-	-1,3%	-1,4%	-1,4%
Germany	-	-	-	-0,5%	-0,9%	-0,5%
Hungary	-5,6%	-4,9%	-7,9%	-	-	-
Italy	-2,9%	-2,6%	-4,4%	0,5%	-0,9%	-1,1%
Portugal	-	-	-	-4,4%	-5,3%	-7,0%
Netherlands	-	-	-	0,7%	0,5%	-0,2%

Source: Author's own calculations based on World Bank

Table 7: Deviations of Current Account from Mean in Developing Countries

Household Credit Booms

	Booms Ending In Banking Crises			Booms Not Ending In Banking Crises		
	Current Account*	Current Account During Boom	Current Account**	Current Account*	Current Account During Boom	Current Account**
Argentina	-1,6%	-2,1%	7,0%	-	-	-
Chile	-	-	-	2,8%	0,2%	1,4%
Thailand	-6,2%	0,8%	7,1%	-	-	-
Turkey	-	-	-	-0,1%	-1,9%	-0,6%
Colombia	-1,7%	-2,6%	2,7%	-	-	-
Brazil	2,2%	1,5%	-1,1%	-	-	-
Mexico	-3,5%	-1,2%	0,1%	-	-	-
Malaysia	-	-	-	4,7%	9,4%	12,8%
Korea	-2,0%	-2,1%	-3,6%	1,2%	-0,3%	1,3%
Singapore	-	-	-	4,8%	7,9%	7,5%

Corporate Credit Booms

	Booms Ending In Banking Crises			Booms Not Ending In Banking Crises		
	Current Account*	Current Account During Boom	Current Account**	Current Account*	Current Account During Boom	Current Account**
Argentina	-	-	-	-1,7%	8,9%	3,7%
Chile	-	-	-	2,2%	1,0%	3,2%
Thailand	-7,3%	5,2%	7,1%	-	-	-
Turkey	2,4%	1,2%	1,5%	-	-	-
Colombia	-	-	-	-2,6%	2,2%	1,5%
Brazil	2,2%	1,5%	-1,1%	-	-	-
Mexico	-3,5%	-0,4%	-0,4%	1,1%	0,9%	0,9%
Malaysia	-	-	-	-0,2%	1,5%	8,7%
Korea	-3,3%	3,4%	1,2%	-	-	-
Singapore	-	-	-	4,2%	2,8%	5,5%

Source: Author's own calculations based on World Bank

Table 8: Deviations of Current Account from Mean in Developed Countries

Household Credit Booms

	Booms Ending In Banking Crises			Booms Not Ending In Banking Crises		
	Current Account*	Current Account During Boom	Current Account**	Current Account*	Current Account During Boom	Current Account**
US	-2,1%	-2,2%	-0,2%	-	-	-
Greece	-3,1%	-7,1%	2,8%	-	-	-
Spain	-3,3%	-4,9%	1,7%	-	-	-
Japan	-	-	-	-0,6%	-0,4%	0,4%
France	-	-	-	-0,2%	-0,6%	0,2%
Germany	-3,3%	-1,4%	3,4%	-	-	-
Hungary	-3,7%	1,7%	5,7%	-	-	-
Italy	-0,7%	-2,2%	1,1%	-0,9%	1,5%	2,9%
Portugal	-3,9%	-6,2%	-1,4%	-	-	-
Netherlands	2,3%	1,3%	1,1%	1,1%	1,7%	5,0%

Corporate Credit Booms

	Booms Ending In Banking Crises			Booms Not Ending In Banking Crises		
	Current Account*	Current Account During Boom	Current Account**	Current Account*	Current Account During Boom	Current Account**
US	0,2%	-1,3%	-2,1%	-3,0%	-1,3%	-2,1%
Greece	-5,9%	-4,8%	3,3%	-	-	-
Spain	-3,3%	-4,2%	3,1%	-	-	-
Japan	-0,1%	-1,9%	-0,1%	-	-	-
France	-	-	-	1,2%	0,6%	1,4%
Germany	-	-	-	-0,3%	-0,5%	3,0%
Hungary	-4,2%	0,6%	5,7%	-	-	-
Italy	-1,0%	-2,0%	1,7%	-0,9%	1,5%	2,9%
Portugal	-	-	-	-6,3%	-1,5%	5,2%
Netherlands	-	-	-	-2,2%	-0,2%	0,7%

Source: Author's own calculations based on World Bank

Table 9: Deviations of Trade Openness from Mean in Developing Countries

Household Credit Booms

	Booms Ending In Banking Crises			Booms Not Ending In Banking Crises		
	Trade Openness*	Trade Openness During Boom	Trade Openness**	Trade Openness*	Trade Openness During Boom	Trade Openness**
Argentina	-3,1%	-2,3%	16,4%	-	-	-
Chile	-	-	-	4,4%	1,7%	6,5%
Thailand	-14,7%	-4,5%	16,4%	-	-	-
Turkey	-	-	-	-1,4%	7,0%	8,8%
Colombia	1,8%	1,8%	0,2%	-	-	-
Brazil	-3,0%	-2,1%	-5,1%	-	-	-
Mexico	-14,0%	-8,5%	3,1%	-	-	-
Malaysia	-	-	-	49,3%	44,4%	32,2%
Korea	-20,3%	-20,6%	-14,5%	-5,0%	-9,3%	-0,3%
Singapore	-	-	-	9,2%	20,6%	31,5%

Corporate Credit Booms

	Booms Ending In Banking Crises			Booms Not Ending In Banking Crises		
	Trade Openness*	Trade Openness During Boom	Trade Openness**	Trade Openness*	Trade Openness During Boom	Trade Openness**
Argentina	-	-	-	-2,7%	16,6%	15,9%
Chile	-	-	-	4,8%	7,0%	8,4%
Thailand	-12,6%	0,0%	16,4%	-	-	-
Turkey	4,0%	13,8%	-1,3%	-	-	-
Colombia	-	-	-	1,8%	0,5%	2,6%
Brazil	-3,0%	-2,1%	-5,1%	-	-	-
Mexico	-14,0%	-4,5%	3,1%	11,9%	9,8%	11,2%
Malaysia	-	-	-	36,8%	34,4%	39,0%
Korea	-17,7%	-5,1%	-5,0%	-	-	-
Singapore	-	-	-	-17,7%	-16,0%	4,3%

Source: Author's own calculations based on World Bank

Table 10: Deviations of Trade Openness from Mean in Developed Countries

Household Credit Booms

	Booms Ending In Banking Crises			Booms Not Ending In Banking Crises		
	Trade Openness*	Trade Openness During Boom	Trade Openness**	Trade Openness*	Trade Openness During Boom	Trade Openness**
US	-0,1%	3,9%	6,7%	-	-	-
Greece	2,8%	6,6%	15,7%	-	-	-
Spain	5,3%	5,0%	11,2%	-	-	-
Japan	-	-	-	-5,1%	-5,1%	-2,3%
France	-	-	-	-1,0%	1,3%	2,5%
Germany	-11,1%	2,4%	19,3%	-	-	-
Hungary	18,2%	31,5%	40,8%	-	-	-
Italy	3,8%	5,9%	9,5%	-10,6%	-5,7%	-1,8%
Portugal	-2,9%	2,9%	7,2%	-	-	-
Netherlands	16,1%	4,1%	11,1%	11,1%	5,5%	28,4%

Corporate Credit Booms

	Booms Ending In Banking Crises			Booms Not Ending In Banking Crises		
	Trade Openness*	Trade Openness During Boom	Trade Openness**	Trade Openness*	Trade Openness During Boom	Trade Openness**
US	0,0%	0,8%	-0,1%	2,5%	0,8%	-0,1%
Greece	5,3%	7,5%	16,1%	-	-	-
Spain	5,3%	5,7%	12,8%	-	-	-
Japan	-7,3%	-6,6%	-5,3%	-	-	-
France	-	-	-	-3,5%	-7,4%	-0,5%
Germany	-	-	-	7,5%	3,9%	17,4%
Hungary	7,4%	31,1%	40,8%	-	-	-
Italy	6,4%	6,6%	9,8%	-10,6%	-5,7%	-1,8%
Portugal	-	-	-	5,1%	5,1%	14,6%
Netherlands	-	-	-	-16,7%	-15,8%	-8,4%

Source: Author's own calculations based on World Bank

Table 11: Deviations of FDI from Mean in Developing Countries

Household Credit Booms

	Booms Ending In Banking Crises			Booms Not Ending In Banking Crises		
	FDI*	FDI During Boom	FDI**	FDI*	FDI During Boom	FDI**
Argentina	0,8%	2,0%	0,2%	-	-	-
Chile	-	-	-	-0,1%	3,0%	2,3%
Thailand	-1,1%	1,2%	1,6%	-	-	-
Turkey	-	-	-	0,5%	0,4%	0,1%
Colombia	-1,2%	1,1%	-0,4%	-	-	-
Brazil	-1,7%	-1,5%	-0,7%	-	-	-
Mexico	-0,9%	0,3%	0,3%	-	-	-
Malaysia	-	-	-	-1,3%	-0,9%	0,3%
Korea	-0,5%	-0,5%	-0,3%	1,0%	0,2%	0,7%
Singapore	-	-	-	1,2%	3,6%	6,4%

Corporate Credit Booms

	Booms Ending In Banking Crises			Booms Not Ending In Banking Crises		
	FDI*	FDI During Boom	FDI**	FDI*	FDI During Boom	FDI**
Argentina	-	-	-	2,5%	-0,1%	0,7%
Chile	-	-	-	1,1%	4,3%	1,8%
Thailand	-1,1%	2,2%	1,6%	-	-	-
Turkey	-0,5%	-0,5%	-0,6%	-	-	-
Colombia	-	-	-	1,1%	-0,7%	1,2%
Brazil	-1,7%	-1,5%	-0,7%	-	-	-
Mexico	-0,9%	0,2%	0,3%	0,7%	1,1%	0,3%
Malaysia	-	-	-	0,1%	-0,1%	0,3%
Korea	-0,4%	0,3%	1,0%	-	-	-
Singapore	-	-	-	-1,4%	1,8%	0,3%

Source: Author's own calculations based on World Bank

Table 12: Deviations of FDI from Mean in Developed Countries

Household Credit Booms

	Booms Ending In Banking Crises			Booms Not Ending In Banking Crises		
	FDI*	FDI During Boom	FDI**	FDI*	FDI During Boom	FDI**
US	-0,1%	0,5%	0,3%	-	-	-
Greece	0,2%	-0,1%	0,2%	-	-	-
Spain	0,3%	0,9%	0,3%	-	-	-
Japan	-	-	-	-0,1%	0,1%	0,1%
France	-	-	-	0,6%	-0,4%	-0,4%
Germany	-0,7%	2,2%	0,4%	-	-	-
Hungary	15,4%	-0,1%	-4,4%	-	-	-
Italy	1,3%	0,7%	-0,1%	-0,4%	-0,5%	-0,4%
Portugal	0,6%	0,8%	3,2%	-	-	-
Netherlands	13,9%	16,9%	39,1%	39,1%	-1,3%	20,5%

Corporate Credit Booms

	Booms Ending In Banking Crises			Booms Not Ending In Banking Crises		
	FDI*	FDI During Boom	FDI**	FDI*	FDI During Boom	FDI**
US	0,7%	1,2%	-0,1%	0,3%	1,2%	-0,1%
Greece	0,1%	-0,1%	0,2%	-	-	-
Spain	0,3%	0,7%	0,4%	-	-	-
Japan	-0,1%	-0,1%	0,1%	-	-	-
France	-	-	-	0,5%	-0,3%	0,5%
Germany	-	-	-	2,2%	1,1%	0,5%
Hungary	0,1%	8,1%	-4,4%	-	-	-
Italy	1,9%	-0,2%	0,1%	-0,4%	-0,5%	-0,4%
Portugal	-	-	-	1,3%	2,8%	1,2%
Netherlands	-	-	-	-12,0%	-11,8%	-10,7%

Source: Author's own calculations based on World Bank

Table 13: Deviations of Portfolio Investment from Mean in Developing Countries

Household Credit Booms

	Booms Ending In Banking Crises			Booms Not Ending In Banking Crises		
	Portfolio Investment*	Portfolio Investment During Boom	Portfolio Investment**	Portfolio Investment*	Portfolio Investment During Boom	Portfolio Investment**
Argentina	0,6%	-1,2%	0,0%	-	-	-
Chile	-	-	-	0,1%	0,2%	-0,1%
Thailand	0,4%	0,5%	0,0%	-	-	-
Turkey	-	-	-	0,1%	0,2%	-0,2%
Colombia	0,2%	0,0%	-0,2%	-	-	-
Brazil	0,0%	0,7%	-0,1%	-	-	-
Mexico	1,4%	0,1%	0,0%	-	-	-
Malaysia	-	-	-	-0,4%	1,0%	-1,5%
Korea	0,2%	0,1%	0,1%	1,6%	-0,6%	0,6%
Singapore	-	-	-	1,2%	9,6%	-0,3%

Corporate Credit Booms

	Booms Ending In Banking Crises			Booms Not Ending In Banking Crises		
	Portfolio Investment*	Portfolio Investment During Boom	Portfolio Investment**	Portfolio Investment*	Portfolio Investment During Boom	Portfolio Investment**
Argentina	-	-	-	-1,6%	0,0%	0,1%
Chile	-	-	-	0,2%	-0,2%	-0,2%
Thailand	0,0%	0,9%	0,0%	-	-	-
Turkey	0,1%	-0,3%	-0,2%	-	-	-
Colombia	-	-	-	0,0%	-0,2%	-0,2%
Brazil	0,0%	0,7%	-0,1%	-	-	-
Mexico	1,4%	0,1%	0,0%	-0,3%	-0,5%	-0,3%
Malaysia	-	-	-	1,2%	-1,2%	-1,5%
Korea	0,2%	0,1%	1,6%	-	-	-
Singapore	-	-	-	-0,4%	8,5%	0,8%

Table 14: Deviations of Portfolio Investment from Mean in Developed Countries

Household Credit Booms

	Booms Ending In Banking Crises			Booms Not Ending In Banking Crises		
	Portfolio Investment*	Portfolio Investment During Boom	Portfolio Investment**	Portfolio Investment*	Portfolio Investment During Boom	Portfolio Investment**
US	-0,2%	0,5%	0,5%	-	-	-
Greece	1,2%	-0,8%	0,9%	-	-	-
Spain	-0,9%	-0,9%	0,2%	-	-	-
Japan	-	-	-	-0,1%	0,2%	0,4%
France	-	-	-	-0,2%	-0,3%	-0,2%
Germany	0,7%	0,3%	0,0%	-	-	-
Hungary	-1,2%	-0,2%	-0,1%	-	-	-
Italy	0,6%	-0,2%	0,6%	-0,3%	-0,6%	0,2%
Portugal	3,3%	0,8%	-4,0%	-	-	-
Netherlands	0,0%	10,9%	-5,7%	-5,7%	0,8%	-0,4%

Corporate Credit Booms

	Booms Ending In Banking Crises			Booms Not Ending In Banking Crises		
	Portfolio Investment*	Portfolio Investment During Boom	Portfolio Investment**	Portfolio Investment*	Portfolio Investment During Boom	Portfolio Investment**
US	0,1%	0,8%	-0,2%	0,1%	0,8%	-0,2%
Greece	1,8%	-1,5%	2,1%	-	-	-
Spain	-0,9%	-0,9%	0,9%	-	-	-
Japan	-0,2%	0,1%	0,1%	-	-	-
France	-	-	-	0,6%	-0,7%	-0,2%
Germany	-	-	-	0,1%	1,0%	-0,3%
Hungary	0,5%	-0,9%	-0,1%	-	-	-
Italy	0,0%	-0,2%	0,5%	-0,3%	-0,6%	0,2%
Portugal	-	-	-	0,9%	-3,3%	-0,6%
Netherlands	-	-	-	-1,4%	-1,8%	-1,2%

Source: Author's own calculations based on World Bank

Table 15: Deviations of Other Investment from Mean in Developing Countries

Household Credit Booms

	Booms Ending In Banking Crises			Booms Not Ending In Banking Crises		
	Other Investment*	Other Investment During Boom	Other Investment**	Other Investment*	Other Investment During Boom	Other Investment**
Argentina	2,6%	0,8%	-4,6%	-	-	-
Chile	-	-	-	2,2%	2,4%	1,0%
Thailand	6,8%	-8,2%	-9,7%	-	-	-
Turkey	-	-	-	0,6%	-1,1%	1,2%
Colombia	1,1%	0,9%	-2,1%	-	-	-
Brazil	-0,5%	-5,9%	1,0%	-	-	-
Mexico	0,5%	-0,8%	-0,4%	-	-	-
Malaysia	-	-	-	-0,9%	-0,8%	-2,8%
Korea	0,1%	2,0%	2,0%	-2,8%	-0,6%	-1,2%
Singapore	-	-	-	-5,1%	-8,1%	7,4%

Corporate Credit Booms

	Booms Ending In Banking Crises			Booms Not Ending In Banking Crises		
	Other Investment*	Other Investment During Boom	Other Investment**	Other Investment*	Other Investment During Boom	Other Investment**
Argentina	-	-	-	0,3%	-6,4%	-0,8%
Chile	-	-	-	2,3%	1,2%	1,1%
Thailand	7,2%	-14,9%	-9,7%	-	-	-
Turkey	-2,3%	1,8%	0,8%	-	-	-
Colombia	-	-	-	0,9%	-2,2%	-1,2%
Brazil	-0,5%	-5,9%	1,0%	-	-	-
Mexico	0,5%	-0,9%	-0,4%	-0,6%	0,3%	0,3%
Malaysia	-	-	-	-0,2%	-1,7%	-1,7%
Korea	2,7%	-1,6%	-2,8%	-	-	-
Singapore	-	-	-	-8,1%	47,1%	-13,7%

Source: Author's own calculations based on International Monetary Fund

Table 16: Deviations of Other Investment from Mean in Developed Countries

Household Credit Booms

	Booms Ending In Banking Crises			Booms Not Ending In Banking Crises		
	Other Investment*	Other Investment During Boom	Other Investment**	Other Investment*	Other Investment During Boom	Other Investment**
US	1,2%	0,1%	-0,7%	-	-	-
Greece	0,0%	9,5%	6,1%	-	-	-
Spain	2,3%	2,1%	-2,3%	-	-	-
Japan	-	-	-	-0,7%	-2,8%	0,3%
France	-	-	-	2,7%	-4,8%	-2,7%
Germany	2,5%	1,1%	1,8%	-	-	-
Hungary	7,2%	2,7%	-7,0%	-	-	-
Italy	1,3%	2,4%	-3,2%	-0,6%	-2,7%	-1,8%
Portugal	3,8%	0,8%	2,1%	-	-	-
Netherland	0,4%	0,6%	11,9%	11,9%	-9,6%	-5,3%

Corporate Credit Booms

	Booms Ending In Banking Crises			Booms Not Ending In Banking Crises		
	Other Investment*	Other Investment During Boom	Other Investment**	Other Investment*	Other Investment During Boom	Other Investment**
US	0,3%	0,7%	1,2%	2,3%	0,7%	1,2%
Greece	4,8%	15,7%	-2,9%	-	-	-
Spain	2,3%	3,0%	-5,7%	-	-	-
Japan		0,2%	-3,5%	-	-	-
France	-	-	-	-1,8%	-1,2%	-0,3%
Germany	-	-	-	2,9%	-1,8%	1,4%
Hungary	4,8%	4,2%	-7,0%	-	-	-
Italy	3,4%	0,3%	-2,9%	-0,6%	-2,7%	-1,8%
Portugal	-	-	-	1,8%	-1,8%	-9,0%
Netherland	-	-	-	-2,9%	-4,6%	1,2%

Source: Author's own calculations based on International Monetary Fund

Table 17: Deviations of Interest Rates from Mean in Developing Countries

Household Credit Booms

	Booms Ending In Banking Crises			Booms Not Ending In Banking Crises		
	Interest Rate*	Interest Rate During Boom	Interest Rate**	Interest Rate*	Interest Rate During Boom	Interest Rate**
Argentina	-2,4%	-3,6%	18,8%	-	-	-
Chile	-	-	-	2,6%	3,4%	-2,1%
Thailand	3,5%	5,5%	2,5%	-	-	-
Turkey	-	-	-	-6,9%	-21,5%	5,8%
Colombia	15,4%	17,2%	7,8%	-	-	-
Brazil						
Mexico		5,3%	25,8%	-	-	-
Malaysia	-	-	-	0,8%	-0,7%	-0,7%
Korea	2,7%	1,3%	2,9%	3,7%	0,4%	-1,0%
Singapore	-	-	-	-0,1%	-0,3%	-0,4%

Corporate Credit Booms

	Booms Ending In Banking Crises			Booms Not Ending In Banking Crises		
	Interest Rate*	Interest Rate During Boom	Interest Rate**	Interest Rate*	Interest Rate During Boom	Interest Rate**
Argentina	-	-	-	2,5%	21,3%	-6,9%
Chile	-	-	-	0,6%	0,5%	-5,5%
Thailand	4,6%	6,1%	0,1%	-	-	-
Turkey	48,5%	35,8%	68,5%	-	-	-
Colombia	-	-	-	-8,1%	-7,3%	-11,4%
Brazil						
Mexico		24,9%	10,6%	-5,3%	-5,9%	-6,4%
Malaysia	-	-	-	0,7%	0,9%	1,4%
Korea	2,9%	6,3%	1,2%	-	-	-
Singapore	-	-	-	0,6%	0,3%	0,1%

Source: Author's own calculations based on World Bank, IMF and OECD

Table 18: Deviations of Interest Rates from Mean in Developed Countries

Household Credit Booms

	Booms Ending In Banking Crises			Booms Not Ending In Banking Crises		
	Interest Rate*	Interest Rate During Boom	Interest Rate**	Interest Rate*	Interest Rate During Boom	Interest Rate**
US	-0,6%	0,5%	-2,5%	-	-	-
Greece	-2,4%	-1,8%	-3,8%	-	-	-
Spain	-1,5%	-1,0%	-3,2%	-	-	-
Japan	-	-	-	0,5%	-0,2%	-0,5%
France	-	-	-	2,6%	0,5%	-0,2%
Germany	0,6%	0,2%	0,1%	-	-	-
Hungary	-4,4%	-4,8%	-6,4%	-	-	-
Italy	-2,0%	-2,3%	-2,6%	8,0%	7,0%	5,1%
Portugal	-2,0%	-1,0%	-3,4%	-	-	-
Netherlands	0,3%	-0,9%	0,1%	0,1%	-0,1%	-2,1%

Corporate Credit Booms

	Booms Ending In Banking Crises			Booms Not Ending In Banking Crises		
	Interest Rate*	Interest Rate During Boom	Interest Rate**	Interest Rate*	Interest Rate During Boom	Interest Rate**
US	0,4%	-0,3%	-2,5%	2,5%	2,3%	-1,4%
Greece	-1,4%	-2,8%	-4,4%	-	-	-
Spain	-1,9%	-1,5%	-3,7%	-	-	-
Japan	3,8%	0,8%	-0,2%	-	-	-
France	-	-	-	3,3%	2,3%	-0,2%
Germany	-	-	-	0,7%	-0,3%	-1,4%
Hungary	-4,4%	-5,0%	-7,7%	-	-	-
Italy	-1,8%	-2,5%	-2,9%	7,7%	4,4%	4,6%
Portugal	-	-	-	-0,6%	-3,5%	-4,4%
Netherlands	-	-	-	5,4%	2,1%	0,5%

Source: Author's own calculations based on World Bank, IMF and OECD

Table 19: Deviations of Exchange Rates from Mean in Developing Countries

Household Credit Booms

	Booms Ending In Banking Crises			Booms Not Ending In Banking Crises		
	Exchange Rate*	Exchange Rate During Boom	Exchange Rate**	Exchange Rate*	Exchange Rate During Boom	Exchange Rate**
Argentina	-2,79	-2,79	-0,83	-	-	-
Chile	-	-	-	-50,68	-42,29	34,36
Thailand	-8,63	-1,07	7,02	-	-	-
Turkey	-	-	-	-0,51	0,04	-0,03
Colombia	-1008,60	-680,95	165,75	-	-	-
Brazil	-1,84	-1,19	-0,85	-	-	-
Mexico	-7,25	-5,43	-2,11	-	-	-
Malaysia	-	-	-	0,43	0,43	0,11
Korea	-283,15	-251,93	-213,04	148,21	195,71	64,97
Singapore	-	-	-	0,04	-0,03	-0,05

Corporate Credit Booms

	Booms Ending In Banking Crises			Booms Not Ending In Banking Crises		
	Exchange Rate*	Exchange Rate During Boom	Exchange Rate**	Exchange Rate*	Exchange Rate During Boom	Exchange Rate**
Argentina	-	-	-	-2,79	-0,81	-0,83
Chile	-	-	-	-38,89	32,44	67,82
Thailand	-8,63	2,60	7,02	-	-	-
Turkey	-1,16	-1,06	-0,78	-	-	-
Colombia	-	-	-	-680,95	248,06	726,86
Brazil	-1,84	-1,19	-0,85	-	-	-
Mexico	-7,25	-4,53	-1,46	0,70	0,60	2,10
Malaysia	-	-	-	-0,18	-0,22	0,13
Korea	-262,32	120,99	148,21	-	-	-
Singapore	-	-	-	0,05	0,12	0,20

Source: Author's own calculations based on World Bank

Table 20: Deviations of Exchange Rates from Mean in Developed Countries

Household Credit Booms

	Booms Ending In Banking Crises			Booms Not Ending In Banking Crises		
	Exchange Rate*	Exchange Rate During Boom	Exchange Rate**	Exchange Rate*	Exchange Rate During Boom	Exchange Rate**
US	-0,10	0,14	0,13	-	-	-
Greece	-0,04	-0,12	-0,08	-	-	-
Spain	-0,01	-0,11	-0,10	-	-	-
Japan	-	-	-	10,73	4,91	7,01
France	-	-	-	-0,11	-0,12	-0,08
Germany		0,11	-0,11	-	-	-
Hungary	-2,68	-4,69	26,58	-	-	-
Italy	-0,04	-0,12	-0,08			
Portugal	-0,01	-0,11	-0,10	-	-	-
Netherlands	-0,04	-0,04	-0,11	-0,11	-0,11	-0,10

Corporate Credit Booms

	Booms Ending In Banking Crises			Booms Not Ending In Banking Crises		
	Exchange Rate*	Exchange Rate During Boom	Exchange Rate**	Exchange Rate*	Exchange Rate During Boom	Exchange Rate**
US	-0,14	-0,30	-0,10	-0,14	-0,30	-0,10
Greece	-0,07	-0,12	-0,04	-	-	-
Spain	-0,01	-0,11	-0,08	-	-	-
Japan	14,69	-2,98	8,03	-	-	-
France	-	-	-	0,17	0,27	0,07
Germany	-	-	-	0,00	0,10	-0,07
Hungary	3,69	-7,13	26,58	-	-	-
Italy	-0,07	-0,12	-0,04			
Portugal	-	-	-	-0,11	-0,11	-0,04
Netherlands	-	-	-			

Source: Author's own calculations based on World Bank

B. TABLES OF MEDIAN ANALYSIS

Table 1: Deviations of GDP Growth from Median in Developing Countries

Household Credit Booms						
	Booms Ending In Banking Crises			Booms Not Ending In Banking Crises		
	GDP Growth*	GDP Growth During Boom	GDP Growth**	GDP Growth*	GDP Growth During Boom	GDP Growth**
Argentina	0,9%	-3,9%	-0,4%	-	-	-
Chile	-	-	-	1,0%	-1,8%	-0,3%
Thailand	2,6%	-7,1%	-1,3%	-	-	-
Turkey	-	-	-	-3,0%	-0,5%	1,7%
Colombia	1,8%	-1,6%	-3,5%	-	-	-
Brazil	-1,1%	2,3%	0,3%	-	-	-
Mexico	0,4%	-3,5%	3,4%	-	-	-
Malaysia	-	-	-	-1,1%	-0,1%	-0,5%
Korea	1,5%	2,9%	1,4%	1,9%	1,1%	-2,4%
Singapore	-	-	-	-1,6%	-2,9%	-1,0%
Corporate Credit Booms						
	Booms Ending In Banking Crises			Booms Not Ending In Banking Crises		
	GDP Growth*	GDP Growth During Boom	GDP Growth**	GDP Growth*	GDP Growth During Boom	GDP Growth**
Argentina	-	-	-	-5,5%	-3,7%	6,0%
Chile	-	-	-	0,7%	-3,0%	-1,0%
Thailand	1,8%	-10,7%	-1,3%	-	-	-
Turkey	-1,9%	2,2%	-3,5%	-	-	-
Colombia	-	-	-	-1,6%	-4,5%	1,0%
Brazil	-1,1%	2,3%	0,3%	-	-	-
Mexico	0,4%	-1,1%	2,1%	0,7%	-0,6%	-2,5%
Malaysia	-	-	-	1,7%	1,6%	-2,3%
Korea	2,5%	-6,1%	1,9%	-	-	-
Singapore	-	-	-	-0,8%	-3,5%	-2,0%

Source: Author's own calculations based on World Bank

Table 2: Deviations of GDP Growth from Median in Developed Countries

Household Credit Booms

	Booms Ending In Banking Crises			Booms Not Ending In Banking Crises		
	GDP Growth*	GDP Growth During Boom	GDP Growth**	GDP Growth*	GDP Growth During Boom	GDP Growth**
US	0,0%	-1,9%	-0,6%	-	-	-
Greece	2,6%	-4,3%	-4,4%	-	-	-
Spain	0,5%	-1,7%	-4,7%	-	-	-
Japan	-	-	-	-0,8%	-0,8%	-0,5%
France	-	-	-	-0,6%	-0,9%	-0,5%
Germany	-0,3%	-0,8%	0,8%	-	-	-
Hungary	-0,2%	-3,9%	-1,5%	-	-	-
Italy	0,0%	-2,0%	-3,0%	-1,0%	0,6%	0,5%
Portugal	-1,4%	-1,6%	-3,2%	-	-	-
Netherland	-0,9%	0,0%	0,8%	0,8%	-2,7%	-2,1%

Corporate Credit Booms

	Booms Ending In Banking Crises			Booms Not Ending In Banking Crises		
	GDP Growth*	GDP Growth During Boom	GDP Growth**	GDP Growth*	GDP Growth During Boom	GDP Growth**
US	1,7%	-0,3%	0,0%	0,5%	-0,3%	0,0%
Greece	2,1%	-6,4%	-2,1%	-	-	-
Spain	0,5%	-2,1%	-3,9%	-	-	-
Japan	-0,5%	0,2%	-1,3%	-	-	-
France	-	-	-	0,3%	0,4%	0,2%
Germany	-	-	-	0,6%	-3,0%	0,4%
Hungary	1,3%	-3,7%	-1,5%	-	-	-
Italy	-0,1%	-3,0%	-1,8%	-1,0%	0,6%	0,5%
Portugal	-	-	-	-0,5%	-4,9%	-1,4%
Netherland	-	-	-	-0,4%	0,8%	1,5%

Source: Author's own calculations based on World Bank

Figure 3: Deviations of Consumption from Median in Developing Countries

Household Credit Booms

	Booms Ending In Banking Crises			Booms Not Ending In Banking Crises		
	Consumption*	Consumption During Boom	Consumption**	Consumption*	Consumption During Boom	Consumption**
Argentina	1,2%	2,7%	-5,5%	-	-	-
Chile	-	-	-	-4,4%	-0,9%	-0,9%
Thailand	-5,2%	-3,7%	-0,1%	-	-	-
Turkey	-	-	-	3,2%	2,0%	1,3%
Colombia	-0,6%	3,6%	3,6%	-	-	-
Brazil	-0,9%	-2,5%	5,3%	-	-	-
Mexico	2,6%	-1,1%	-2,5%	-	-	-
Malaysia	-	-	-	-5,8%	-5,9%	-6,3%
Korea	-3,6%	-3,2%	-2,2%	0,2%	2,7%	0,3%
Singapore	-	-	-	-0,2%	-0,2%	-3,1%

Corporate Credit Booms

	Booms Ending In Banking Crises			Booms Not Ending In Banking Crises		
	Consumption*	Consumption During Boom	Consumption**	Consumption*	Consumption During Boom	Consumption**
Argentina	-	-	-	3,1%	-5,8%	-4,8%
Chile	-	-	-	-4,2%	-0,2%	-2,6%
Thailand	-5,1%	-3,1%	-0,1%	-	-	-
Turkey	4,3%	4,0%	1,6%	-	-	-
Colombia	-	-	-	3,6%	5,1%	2,3%
Brazil	-0,9%	-2,5%	5,3%	-	-	-
Mexico	2,6%	-1,6%	-2,0%	1,0%	0,1%	0,0%
Malaysia	-	-	-	-3,9%	-6,1%	-7,7%
Korea	-2,7%	-2,4%	0,2%	-	-	-
Singapore	-	-	-	-1,3%	1,5%	1,6%

Table 4: Deviations of Consumption from Median in Developed Countries

Household Credit Booms

	Booms Ending In Banking Crises			Booms Not Ending In Banking Crises		
	Consumption*	Consumption During Boom	Consumption**	Consumption*	Consumption During Boom	Consumption**
US	2,0%	2,7%	3,9%	-	-	-
Greece	0,0%	5,0%	6,5%	-	-	-
Spain	-2,8%	-1,8%	0,6%	-	-	-
Japan	-	-	-	-1,3%	1,3%	3,4%
France	-	-	-	-0,5%	1,2%	0,5%
Germany	0,1%	0,2%	-2,3%	-	-	-
Hungary	0,7%	-0,6%	-3,1%	-	-	-
Italy	0,6%	2,4%	2,6%	0,2%	-0,2%	-1,5%
Portugal	1,8%	3,0%	3,2%	-	-	-
Netherlands	-0,7%	-0,5%	-1,9%	-1,9%	0,1%	-0,2%

Corporate Credit Booms

	Booms Ending In Banking Crises			Booms Not Ending In Banking Crises		
	Consumption*	Consumption During Boom	Consumption**	Consumption*	Consumption During Boom	Consumption**
US	-1,5%	0,2%	2,0%	1,8%	0,2%	2,0%
Greece	0,7%	6,3%	5,9%	-	-	-
Spain	-2,8%	-1,4%	0,6%	-	-	-
Japan	-4,8%	-1,7%	0,3%	-	-	-
France	-	-	-	-0,8%	0,3%	-0,5%
Germany	-	-	-	-1,2%	0,5%	-0,7%
Hungary	1,3%	-0,5%	-3,1%	-	-	-
Italy	0,6%	2,7%	2,1%	0,2%	-0,2%	-1,5%
Portugal	-	-	-	2,7%	3,0%	1,7%
Netherlands	-	-	-	0,4%	0,3%	-0,3%

Source: Author's own calculations based on World Bank

Table 5: Deviations of Inflation from Median in Developing Countries

Household Credit Booms

	Booms Ending In Banking Crises			Booms Not Ending In Banking Crises		
	Inflation*	Inflation During Boom	Inflation**	Inflation*	Inflation During Boom	Inflation**
Argentina	-10,9%	-12,4%	5,3%	-	-	-
Chile	-	-	-	1,6%	-0,5%	-2,7%
Thailand	1,4%	3,2%	-2,1%	-	-	-
Turkey	-	-	-	-0,3%	-5,9%	8,3%
Colombia	8,4%	5,7%	-4,3%	-	-	-
Brazil	1095,3%	2067,1%	20,8%	-	-	-
Mexico	6,4%	11,4%	14,0%	-	-	-
Malaysia	-	-	-	-1,2%	-1,0%	0,9%
Korea	3,3%	2,8%	1,1%	-1,1%	-0,7%	-0,2%
Singapore	-	-	-	0,2%	0,9%	-0,6%

Corporate Credit Booms

	Booms Ending In Banking Crises			Booms Not Ending In Banking Crises		
	Inflation*	Inflation During Boom	Inflation**	Inflation*	Inflation During Boom	Inflation**
Argentina	-	-	-	-12,9%	10,7%	-2,2%
Chile	-	-	-	-0,7%	-0,4%	-3,7%
Thailand	2,3%	3,5%	-2,1%	-	-	-
Turkey	53,3%	47,4%	29,9%	-	-	-
Colombia	-	-	-	5,7%	-5,0%	-7,6%
Brazil	1095,3%	2067,1%	20,8%	-	-	-
Mexico	6,4%	15,8%	8,1%	-5,5%	-5,7%	-4,8%
Malaysia	-	-	-	-0,5%	0,5%	0,8%
Korea	1,8%	2,5%	-1,1%	-	-	-
Singapore	-	-	-	-0,4%	-0,1%	-1,1%

Source: Author's own calculations based on World Bank

Table 6: Deviations of Inflation from Median in Developed Countries

Household Credit Booms

	Booms Ending In Banking Crises			Booms Not Ending In Banking Crises		
	Inflation*	Inflation During Boom	Inflation**	Inflation*	Inflation During Boom	Inflation**
US	-0,7%	-0,3%	-0,6%	-	-	-
Greece	-1,5%	-1,5%	-5,0%	-	-	-
Spain	-0,4%	-1,2%	-1,2%	-	-	-
Japan	-	-	-	0,3%	-1,1%	-0,9%
France	-	-	-	0,3%	-0,6%	-0,6%
Germany	-0,3%	-0,3%	0,5%	-	-	-
Hungary	-2,0%	-2,4%	-4,7%	-	-	-
Italy	-0,8%	-1,2%	-1,4%	2,5%	1,1%	0,8%
Portugal	-0,8%	-1,6%	-0,8%	-	-	-
Netherlands	-0,5%	-0,4%	-0,4%	-0,4%	-0,9%	0,3%

Corporate Credit Booms

	Booms Ending In Banking Crises			Booms Not Ending In Banking Crises		
	Inflation*	Inflation During Boom	Inflation**	Inflation*	Inflation During Boom	Inflation**
US	-0,9%	0,2%	-0,7%	0,2%	0,2%	-0,7%
Greece	-1,5%	-1,8%	-6,1%	-	-	-
Spain	-0,4%	-1,0%	-2,3%	-	-	-
Japan	1,6%	0,1%	-0,7%	-	-	-
France	-	-	-	-0,2%	-0,2%	-0,3%
Germany	-	-	-	-0,1%	-0,5%	0,0%
Hungary	-2,4%	-1,7%	-4,7%	-	-	-
Italy	-0,9%	-0,6%	-2,4%	2,5%	1,1%	0,8%
Portugal	-	-	-	-0,7%	-1,5%	-3,2%
Netherlands	-	-	-	0,8%	0,7%	-0,1%

Source: Author's own calculations based on World Bank

Table 7: Deviations of Current Account from Median in Developing

Household Credit Booms

	Booms Ending In Banking Crises			Booms Not Ending In Banking Crises		
	Current Account*	Current Account During Boom	Current Account**	Current Account*	Current Account During Boom	Current Account**
Argentina	-0,7%	-1,2%	7,9%	-	-	-
Chile	-	-	-	2,2%	-0,4%	0,8%
Thailand	-5,6%	1,4%	7,7%	-	-	-
Turkey	-	-	-	-0,3%	-2,1%	-0,8%
Colombia	-1,2%	-2,1%	3,1%	-	-	-
Brazil	2,0%	1,4%	-1,3%	-	-	-
Mexico	-3,8%	-1,4%	-0,1%	-	-	-
Malaysia	-	-	-	4,7%	9,5%	12,9%
Korea	-2,1%	-2,2%	-3,8%	1,1%	-0,5%	1,1%
Singapore	-	-	-	1,7%	4,8%	4,4%

Corporate Credit Booms

	Booms Ending In Banking Crises			Booms Not Ending In Banking Crises		
	Current Account*	Current Account During Boom	Current Account**	Current Account*	Current Account During Boom	Current Account**
Argentina	-	-	-	-0,8%	9,8%	4,6%
Chile	-	-	-	1,7%	0,4%	2,7%
Thailand	-6,6%	5,8%	7,7%	-	-	-
Turkey	2,2%	1,0%	1,3%	-	-	-
Colombia	-	-	-	-2,1%	2,7%	1,9%
Brazil	2,0%	1,4%	-1,3%	-	-	-
Mexico	-3,8%	-0,6%	-0,7%	0,8%	0,7%	0,6%
Malaysia	-	-	-	-0,2%	1,5%	8,7%
Korea	-3,5%	3,2%	1,1%	-	-	-
Singapore	-	-	-	1,1%	-0,3%	2,4%

Table 8: Deviations of Current Account from Median in Developed Countries

Household Credit Booms

	Booms Ending In Banking Crises			Booms Not Ending In Banking Crises		
	Current Account*	Current Account During Boom	Current Account**	Current Account*	Current Account During Boom	Current Account**
US	-2,3%	-2,4%	-0,4%	-	-	-
Greece	-4,3%	-8,3%	1,6%	-	-	-
Spain	-3,3%	-4,9%	1,7%	-	-	-
Japan	-	-	-	-0,7%	-0,4%	0,4%
France	-	-	-	0,2%	-0,2%	0,5%
Germany	-3,2%	-1,3%	3,6%	-	-	-
Hungary	-2,9%	2,5%	6,4%	-	-	-
Italy	-0,6%	-2,1%	1,2%	-0,8%	1,6%	3,0%
Portugal	-4,9%	-7,2%	-2,4%	-	-	-
Netherlands	2,9%	1,8%	1,7%	1,7%	2,3%	5,5%

Corporate Credit Booms

	Booms Ending In Banking Crises			Booms Not Ending In Banking Crises		
	Current Account*	Current Account During Boom	Current Account**	Current Account*	Current Account During Boom	Current Account**
US	0,0%	-1,5%	-2,3%	-3,2%	-1,5%	-2,3%
Greece	-7,1%	-6,0%	2,1%	-	-	-
Spain	-3,3%	-4,2%	3,1%	-	-	-
Japan	-0,2%	-0,7%	-0,1%	-	-	-
France	-	-	-	1,6%	1,0%	1,8%
Germany	-	-	-	-0,1%	-0,3%	3,1%
Hungary	-3,4%	1,4%	6,4%	-	-	-
Italy	-0,9%	-1,9%	1,8%	-0,8%	1,6%	3,0%
Portugal	-	-	-	-7,3%	-2,5%	4,2%
Netherlands	-	-	-	-1,6%	0,3%	1,2%

Source: Author's own calculations based on World Bank

Table 9: Deviations of Trade Openness from Median in Developing Countries

Household Credit Booms

	Booms Ending In Banking Crises			Booms Not Ending In Banking Crises		
	Trade Openness*	Trade Openness During Boom	Trade Openness**	Trade Openness*	Trade Openness During Boom	Trade Openness**
Argentina	-0,6%	0,1%	18,9%	-	-	-
Chile	-	-	-	5,5%	2,8%	7,6%
Thailand	-17,6%	-7,3%	13,6%	-	-	-
Turkey	-	-	-	-5,1%	3,3%	5,1%
Colombia	0,5%	0,5%	-1,1%	-	-	-
Brazil	-2,7%	-1,9%	-4,8%	-	-	-
Mexico	-16,4%	-11,0%	0,6%	-	-	-
Malaysia	-	-	-	51,3%	46,4%	34,1%
Korea	-14,5%	-14,8%	-8,7%	0,8%	-3,5%	5,5%
Singapore	-	-	-	13,3%	24,8%	35,6%

Corporate Credit Booms

	Booms Ending In Banking Crises			Booms Not Ending In Banking Crises		
	Trade Openness*	Trade Openness During Boom	Trade Openness**	Trade Openness*	Trade Openness During Boom	Trade Openness**
Argentina	-	-	-	-0,2%	19,0%	18,4%
Chile	-	-	-	5,9%	8,2%	9,6%
Thailand	-15,4%	-2,8%	13,6%	-	-	-
Turkey	0,3%	10,1%	-4,9%	-	-	-
Colombia	-	-	-	0,5%	-0,8%	1,3%
Brazil	-2,7%	-1,9%	-4,8%	-	-	-
Mexico	-16,4%	-7,0%	0,6%	9,5%	7,3%	8,7%
Malaysia	-	-	-	38,7%	36,4%	41,0%
Korea	-11,9%	0,7%	0,8%	-	-	-
Singapore	-	-	-	-13,5%	-11,9%	8,5%

Source: Author's own calculations based on World Bank

Table 10: Deviations of Trade Openness from Median in Developed Countries

Household Credit Booms

	Booms Ending In Banking Crises			Booms Not Ending In Banking Crises		
	Trade Openness*	Trade Openness During Boom	Trade Openness**	Trade Openness*	Trade Openness During Boom	Trade Openness**
US	0,2%	4,2%	7,0%	-	-	-
Greece	4,0%	7,8%	16,9%	-	-	-
Spain	2,1%	1,7%	7,9%	-	-	-
Japan	-	-	-	-4,9%	-4,9%	-2,1%
France	-	-	-	-0,5%	1,9%	3,0%
Germany	-3,7%	9,7%	26,7%	-	-	-
Hungary	13,2%	26,5%	35,8%	-	-	-
Italy	4,6%	6,7%	10,3%	-9,9%	-4,9%	-1,0%
Portugal	-1,1%	4,7%	9,1%	-	-	-
Netherlands	20,9%	8,9%	15,9%	15,9%	10,3%	33,2%

Corporate Credit Booms

	Booms Ending In Banking Crises			Booms Not Ending In Banking Crises		
	Trade Openness*	Trade Openness During Boom	Trade Openness**	Trade Openness*	Trade Openness During Boom	Trade Openness**
US	0,4%	1,2%	0,2%	2,8%	1,2%	0,2%
Greece	6,5%	8,7%	17,3%	-	-	-
Spain	2,1%	2,5%	9,6%	-	-	-
Japan	-7,1%	-6,4%	-5,1%	-	-	-
France	-	-	-	-3,0%	-6,9%	0,0%
Germany	-	-	-	14,8%	11,3%	24,7%
Hungary	2,4%	26,1%	35,8%	-	-	-
Italy	7,1%	7,4%	10,5%	-9,9%	-4,9%	-1,0%
Portugal	-	-	-	6,9%	7,0%	16,4%
Netherlands	-	-	-	-11,9%	-10,9%	-3,6%

Source: Author's own calculations based on World Bank

Table 11: Deviations of FDI from Median in Developing Countries

Household Credit Booms

	Booms Ending In Banking Crises			Booms Not Ending In Banking Crises		
	FDI*	FDI During Boom	FDI**	FDI*	FDI During Boom	FDI**
Argentina	1,0%	2,2%	0,4%	-	-	-
Chile	-	-	-	0,0%	3,1%	2,5%
Thailand	-1,0%	1,3%	1,8%	-	-	-
Turkey	-	-	-	0,9%	0,8%	0,5%
Colombia	-0,9%	1,4%	-0,1%	-	-	-
Brazil	-1,5%	-1,2%	-0,4%	-	-	-
Mexico	-0,9%	0,2%	0,3%	-	-	-
Malaysia	-	-	-	-1,3%	-0,9%	0,3%
Korea	-0,3%	-0,4%	-0,2%	1,1%	0,3%	0,8%
Singapore	-	-	-	2,1%	4,5%	7,3%

Corporate Credit Booms

	Booms Ending In Banking Crises			Booms Not Ending In Banking Crises		
	FDI*	FDI During Boom	FDI**	FDI*	FDI During Boom	FDI**
Argentina	-	-	-	2,7%	0,2%	0,9%
Chile	-	-	-	1,3%	4,4%	1,9%
Thailand	-1,0%	2,4%	1,8%	-	-	-
Turkey	-0,1%	-0,1%	-0,2%	-	-	-
Colombia	-	-	-	1,4%	-0,4%	1,5%
Brazil	-1,5%	-1,2%	-0,4%	-	-	-
Mexico	-0,9%	0,2%	0,3%	0,6%	1,0%	0,2%
Malaysia	-	-	-	0,1%	0,0%	0,4%
Korea	-0,3%	0,4%	1,1%	-	-	-
Singapore	-	-	-	-0,5%	2,7%	1,2%

Table 12: Deviations of FDI from Median in Developed Countries

Household Credit Booms

	Booms Ending In Banking Crises			Booms Not Ending In Banking Crises		
	FDI*	FDI During Boom	FDI**	FDI*	FDI During Boom	FDI**
US	0,1%	0,7%	0,5%	-	-	-
Greece	0,2%	-0,2%	0,1%	-	-	-
Spain	0,6%	1,1%	0,5%	-	-	-
Japan	-	-	-	0,0%	0,1%	0,1%
France	-	-	-	0,7%	-0,3%	-0,3%
Germany	0,1%	3,0%	1,2%	-	-	-
Hungary	18,0%	2,4%	-1,8%	-	-	-
Italy	1,5%	1,0%	0,1%	-0,2%	-0,3%	-0,1%
Portugal	1,1%	1,4%	3,8%	-	-	-
Netherlands	23,1%	26,1%	48,2%	48,2%	7,8%	29,7%

Corporate Credit Booms

	Booms Ending In Banking Crises			Booms Not Ending In Banking Crises		
	FDI*	FDI During Boom	FDI**	FDI*	FDI During Boom	FDI**
US	0,9%	1,4%	0,1%	0,5%	1,4%	0,1%
Greece	0,1%	-0,2%	0,1%	-	-	-
Spain	0,6%	0,9%	0,6%	-	-	-
Japan	0,0%	0,0%	0,1%	-	-	-
France	-	-	-	0,6%	-0,2%	0,6%
Germany	-	-	-	3,0%	1,9%	1,3%
Hungary	2,6%	10,7%	-1,8%	-	-	-
Italy	2,2%	0,0%	0,3%	-0,2%	-0,3%	-0,1%
Portugal	-	-	-	1,8%	3,4%	1,8%
Netherlands	-	-	-	-2,8%	-2,7%	-1,5%

Source: Author's own calculations based on World Bank

Table 13: DeviationsofPortfolio Investment from Median in Developing Countries

Household Credit Booms

	Booms Ending In Banking Crises			Booms Not Ending In Banking Crises		
	Portfolio Investment*	Portfolio Investment During Boom	Portfolio Investment**	Portfolio Investment*	Portfolio Investment During Boom	Portfolio Investment**
Argentina	0,5%	-1,3%	-0,1%	-	-	-
Chile	-	-	-	0,2%	0,3%	0,0%
Thailand	0,5%	0,6%	0,1%	-	-	-
Turkey	-	-	-	0,1%	0,3%	-0,1%
Colombia	0,3%	0,1%	-0,2%	-	-	-
Brazil	0,2%	0,8%	0,1%	-	-	-
Mexico	1,5%	0,2%	0,1%	-	-	-
Malaysia	-	-	-	-0,3%	1,1%	-1,4%
Korea	0,1%	0,0%	0,0%	1,5%	-0,7%	0,5%
Singapore	-	-	-	0,1%	8,6%	-1,3%

Corporate Credit Booms

	Booms Ending In Banking Crises			Booms Not Ending In Banking Crises		
	Portfolio Investment*	Portfolio Investment During Boom	Portfolio Investment**	Portfolio Investment*	Portfolio Investment During Boom	Portfolio Investment**
Argentina	-	-	-	-1,7%	-0,1%	0,0%
Chile	-	-	-	0,2%	-0,1%	-0,1%
Thailand	0,1%	0,9%	0,1%	-	-	-
Turkey	0,2%	-0,2%	-0,1%	-	-	-
Colombia	-	-	-	0,1%	-0,1%	-0,1%
Brazil	0,2%	0,8%	0,1%	-	-	-
Mexico	1,5%	0,2%	0,1%	-0,2%	-0,4%	-0,2%
Malaysia	-	-	-	1,4%	-1,0%	-1,4%
Korea	0,1%	0,0%	1,5%	-	-	-
Singapore	-	-	-	-1,5%	7,5%	-0,2%

Table 14: Deviations of Portfolio Investment from Median in Developed Countries

Household Credit Booms

	Booms Ending In Banking Crises			Booms Not Ending In Banking Crises		
	Portfolio Investment*	Portfolio Investment During Boom	Portfolio Investment**	Portfolio Investment*	Portfolio Investment During Boom	Portfolio Investment**
US	-0,2%	0,5%	0,5%	-	-	-
Greece	1,2%	-0,8%	0,9%	-	-	-
Spain	-0,9%	-0,9%	0,2%	-	-	-
Japan	-	-	-	-0,1%	0,2%	0,4%
France	-	-	-	-0,2%	-0,3%	-0,2%
Germany	0,7%	0,3%	0,0%	-	-	-
Hungary	-1,2%	-0,2%	-0,1%	-	-	-
Italy	0,6%	-0,2%	0,6%	-0,3%	-0,6%	0,2%
Portugal	3,3%	0,8%	-4,0%	-	-	-
Netherlands	0,0%	10,9%	-5,7%	-5,7%	0,8%	-0,4%

Corporate Credit Booms

	Booms Ending In Banking Crises			Booms Not Ending In Banking Crises		
	Portfolio Investment*	Portfolio Investment During Boom	Portfolio Investment**	Portfolio Investment*	Portfolio Investment During Boom	Portfolio Investment**
US	0,1%	0,8%	-0,2%	0,1%	0,8%	-0,2%
Greece	1,8%	-1,5%	2,1%	-	-	-
Spain	-0,9%	-0,9%	0,9%	-	-	-
Japan	-0,2%	0,1%	0,1%	-	-	-
France	-	-	-	0,6%	-0,7%	-0,2%
Germany	-	-	-	0,1%	1,0%	-0,3%
Hungary	0,5%	-0,9%	-0,1%	-	-	-
Italy	0,0%	-0,2%	0,5%	-0,3%	-0,6%	0,2%
Portugal	-	-	-	0,9%	-3,3%	-0,6%
Netherlands	-	-	-	-1,4%	-1,8%	-1,2%

Source: Author's own calculations based on World Bank

Table 15: Deviations of Other Investment from Median in Developing Countries

Household Credit Booms

	Booms Ending In Banking Crises			Booms Not Ending In Banking Crises		
	Other Investment*	Other Investment During Boom	Other Investment**	Other Investment*	Other Investment During Boom	Other Investment**
Argentina	1,8%	0,0%	-5,4%	-	-	-
Chile	-	-	-	1,2%	1,4%	0,0%
Thailand	5,9%	-9,1%	-10,6%	-	-	-
Turkey	-	-	-	0,2%	-1,4%	0,8%
Colombia	1,3%	1,2%	-1,8%	-	-	-
Brazil	-0,5%	-5,9%	1,0%	-	-	-
Mexico	1,1%	-0,2%	0,2%	-	-	-
Malaysia	-	-	-	-0,6%	-0,4%	-2,5%
Korea	0,9%	2,8%	2,8%	-2,0%	0,2%	-0,4%
Singapore	-	-	-	0,2%	-2,8%	12,7%

Corporate Credit Booms

	Booms Ending In Banking Crises			Booms Not Ending In Banking Crises		
	Other Investment*	Other Investment During Boom	Other Investment**	Other Investment*	Other Investment During Boom	Other Investment**
Argentina	-	-	-	-0,5%	-7,2%	-1,6%
Chile	-	-	-	1,3%	0,3%	0,1%
Thailand	6,2%	-15,9%	-10,6%	-	-	-
Turkey	-2,6%	1,4%	0,4%	-	-	-
Colombia				1,2%	-1,9%	-1,0%
Brazil	-0,5%	-5,9%	1,0%	-	-	-
Mexico	1,1%	-0,3%	0,2%	0,0%	0,9%	0,8%
Malaysia	-	-	-	0,2%	-1,4%	-1,3%
Korea	3,5%	-0,8%	-2,0%	-	-	-
Singapore	-	-	-	-2,8%	52,3%	-8,4%

Table 16: Deviations of Other Investment from Median in Developed Countries

Household Credit Booms

	Booms Ending In Banking Crises			Booms Not Ending In Banking Crises		
	Other Investment*	Other Investment During Boom	Other Investment**	Other Investment*	Other Investment During Boom	Other Investment**
US	1,0%	-0,1%	-0,9%	-	-	-
Greece	1,2%	10,7%	7,2%	-	-	-
Spain	2,7%	2,6%	-1,9%	-	-	-
Japan	-	-	-	-0,9%	-3,0%	0,1%
France	-	-	-	3,6%	-4,0%	-1,9%
Germany	2,7%	1,3%	2,0%	-	-	-
Hungary	8,5%	4,0%	-5,7%	-	-	-
Italy	1,5%	2,5%	-3,0%	-0,5%	-2,6%	-1,6%
Portugal	3,8%	0,7%	2,0%	-	-	-
Netherlands	1,0%	1,1%	12,5%	12,5%	-9,0%	-4,7%

Corporate Credit Booms

	Booms Ending In Banking Crises			Booms Not Ending In Banking Crises		
	Other Investment*	Other Investment During Boom	Other Investment**	Other Investment*	Other Investment During Boom	Other Investment**
US	0,1%	0,5%	1,0%	2,1%	0,5%	1,0%
Greece	5,9%	16,8%	-1,7%	-	-	-
Spain	2,7%	3,5%	-5,3%	-	-	-
Japan		0,1%	-3,6%	-	-	-
France	-	-	-	-0,9%	-0,3%	0,5%
Germany	-	-	-	3,1%	-1,6%	1,6%
Hungary	6,1%	5,5%	-5,7%	-	-	-
Italy	3,6%	0,5%	-2,8%	-0,5%	-2,6%	-1,6%
Portugal	-	-	-	1,7%	-1,9%	-9,1%
Netherlands	-	-	-	-2,4%	-4,1%	1,7%

Source: Author's own calculations based on International Monetary Fund

Table 17: Deviations of Interest Rates from Median in Developing Countries

Household Credit Booms

	Booms Ending In Banking Crises			Booms Not Ending In Banking Crises		
	Interest Rate*	Interest Rate During Boom	Interest Rate**	Interest Rate*	Interest Rate During Boom	Interest Rate**
Argentina	-1,5%	1,0%	11,8%	-	-	-
Chile	-	-	-	5,1%	5,1%	0,5%
Thailand	5,7%	7,8%	2,0%	-	-	-
Turkey	-	-	-	21,2%	7,9%	28,1%
Colombia	24,3%	24,1%	7,7%	-	-	-
Brazil						
Mexico		31,8%	20,7%	-	-	-
Malaysia	-	-	-	0,7%	-0,3%	-0,1%
Korea	3,0%	1,9%	4,8%	2,0%	0,2%	-0,6%
Singapore	-	-	-	0,1%	0,0%	0,0%

Corporate Credit Booms

	Booms Ending In Banking Crises			Booms Not Ending In Banking Crises		
	Interest Rate*	Interest Rate During Boom	Interest Rate**	Interest Rate*	Interest Rate During Boom	Interest Rate**
Argentina	-	-	-	2,5%	21,3%	-6,9%
Chile	-	-	-	3,5%	3,3%	-2,6%
Thailand	6,5%	8,0%	2,0%	-	-	-
Turkey	72,8%	60,0%	92,7%	-	-	-
Colombia	-	-	-	-1,1%	-0,3%	-4,3%
Brazil						
Mexico		30,8%	16,5%	0,7%	0,0%	-0,5%
Malaysia	-	-	-	1,3%	1,5%	2,0%
Korea	3,7%	7,0%	2,0%	-	-	-
Singapore	-	-	-	0,9%	0,6%	0,5%

Source: Author's own calculations based on World Bank, IMF and OECD

Table 18: DeviationsofInterest Rates from Median in Developed Countries

Household Credit Booms

	Booms Ending In Banking Crises			Booms Not Ending In Banking Crises		
	Interest Rate*	Interest Rate During Boom	Interest Rate**	Interest Rate*	Interest Rate During Boom	Interest Rate**
US	-1,6%	0,1%	-2,8%	-	-	-
Greece	0,1%	0,1%	-2,0%	-	-	-
Spain	-0,9%	-0,3%	-2,4%	-	-	-
Japan	-	-	-	0,6%	0,2%	0,0%
France	-	-	-	3,7%	-0,8%	-0,6%
Germany	0,3%	0,0%	0,9%	-	-	-
Hungary	-1,6%	-0,9%	-3,6%	-	-	-
Italy	-0,9%	-1,4%	-1,3%	8,9%	5,6%	5,9%
Portugal	-0,9%	0,2%	-2,2%	-	-	-
Netherlands	-0,4%	-0,8%	1,0%	1,0%	-2,0%	-2,3%

Corporate Credit Booms

	Booms Ending In Banking Crises			Booms Not Ending In Banking Crises		
	Interest Rate*	Interest Rate During Boom	Interest Rate**	Interest Rate*	Interest Rate During Boom	Interest Rate**
US	0,2%	-0,5%	-2,8%	2,3%	2,1%	-1,6%
Greece	0,9%	-0,6%	-2,2%	-	-	-
Spain	-0,9%	-0,5%	-2,7%	-	-	-
Japan	4,4%	1,3%	0,3%	-	-	-
France	-	-	-	3,5%	2,5%	0,0%
Germany	-	-	-	0,7%	-0,3%	-1,4%
Hungary	-0,4%	-0,9%	-3,6%	-	-	-
Italy	-0,6%	-1,2%	-1,6%	8,9%	5,6%	5,9%
Portugal	-	-	-	0,9%	-2,0%	-2,9%
Netherlands	-	-	-	5,5%	2,2%	0,6%

Source: Author's own calculations based on World Bank, IMF and OECD

Table 19: Deviations of Exchange Rates from Median in Developing Countries

Household Credit Booms

	Booms Ending In Banking Crises			Booms Not Ending In Banking Crises		
	Exchange Rate*	Exchange Rate During Boom	Exchange Rate**	Exchange Rate*	Exchange Rate During Boom	Exchange Rate**
Argentina						
Chile	-	-	-	-50,19	-41,80	34,85
Thailand						
Turkey	-	-	-	-0,65	-0,09	-0,16
Colombia	-1094,14	-766,48	80,21	-	-	-
Brazil	-1,93	-1,28	-0,95	-	-	-
Mexico	-7,82	-6,00	-2,68	-	-	-
Malaysia	-	-	-	0,36	0,36	0,04
Korea	-336,07	-304,85	-265,95	95,30	142,80	12,06
Singapore	-	-	-	0,06	-0,01	-0,03

Corporate Credit Booms

	Booms Ending In Banking Crises			Booms Not Ending In Banking Crises		
	Exchange Rate*	Exchange Rate During Boom	Exchange Rate**	Exchange Rate*	Exchange Rate During Boom	Exchange Rate**
Argentina						
Chile	-	-	-	-38,40	32,93	68,31
Thailand						
Turkey	-1,29	-1,19	-0,91	-	-	-
Colombia	-	-	-	-766,48	162,52	641,32
Brazil	-1,93	-1,28	-0,95	-	-	-
Mexico	-7,82	-5,10	-2,03	0,13	0,03	1,53
Malaysia	-	-	-	-0,25	-0,29	0,06
Korea	-320,43	68,07	95,30	-	-	-
Singapore	-	-	-	0,07	0,13	0,21

Source: Author's own calculations based on World Bank

Table 20: Deviations of Exchange Rates from Median in Developed Countries

Household Credit Booms

	Booms Ending In Banking Crises			Booms Not Ending In Banking Crises		
	Exchange Rate*	Exchange Rate During Boom	Exchange Rate**	Exchange Rate*	Exchange Rate During Boom	Exchange Rate**
US	-0,14	0,10	0,09	-	-	-
Greece	0,00	-0,08	-0,04	-	-	-
Spain	0,03	-0,07	-0,05	-	-	-
Japan	-	-	-	10,01	4,18	6,29
France	-	-	-	-0,07	-0,07	-0,04
Germany		0,15	-0,07	-	-	-
Hungary	-10,08	-12,08	19,19	-	-	-
Italy	0,00	-0,07	-0,04			
Portugal	0,03	-0,07	-0,05	-	-	-
Netherlands	0,00	0,00	-0,07	-0,07	-0,07	-0,05

Corporate Credit Booms

	Booms Ending In Banking Crises			Booms Not Ending In Banking Crises		
	Exchange Rate*	Exchange Rate During Boom	Exchange Rate**	Exchange Rate*	Exchange Rate During Boom	Exchange Rate**
US	-0,18	-0,34	-0,14	-0,18	-0,34	-0,14
Greece	-0,03	-0,07	0,00	-	-	-
Spain	0,03	-0,07	-0,04	-	-	-
Japan	13,97	-3,71	7,31	-	-	-
France	-	-	-	0,21	0,31	0,11
Germany	-	-	-	0,04	0,14	-0,03
Hungary	-3,70	-14,53	19,19	-	-	-
Italy	-0,03	-0,07	0,00			
Portugal	-	-	-	-0,07	-0,06	0,00
Netherlands	-	-	-			

Source: Author's own calculations based on World Bank

C. TURKISH SUMMARY/ TÜRKÇE ÖZET

Kredi, gelişmiş ülkeler ve özellikle gelişmekte olan ülkeler için temel finansman kaynaklarından biridir (Caviglia v.d., 2002). Kredilerin ekonomiler üzerindeki etkisi göz önünde bulundurulduğunda, etkileri dikkatli bir şekilde incelenmelidir. Kredi bir yandan ekonomik büyümenin temel kaynaklarından biri iken diğer bir yandan da finansal krizlere sebep olabilmektedir.

Kredilerin ekonomideki rolü literatürdeki tartışmalı konulardan biri olmuştur. Bununla birlikte, kredilerin ekonomi üzerindeki etkisi çalışmadan çalışmaya farklılık göstermektedir. Geçmişteki birçok çalışma (Greenwood ve Jovanovic, 1990 ve King ve Levine, 1993) kredilerin sadece ekonomik büyüme üzerindeki pozitif etkilerine odaklanırken, bu çalışmalar kredilerin gerçek etkilerini ortaya çıkarmakta yetersiz kalmıştır. Belirli ülkelerde kredilerin gayri safi yurt içi hasılaya oranı incelendiğinde kredi büyümesi ve ekonomik büyüme arasındaki ilişkinin her zaman pozitif olmadığı gözlemlenmiştir. Kredi, ekonomideki kaynakların etkin kullanımını sağlayan önemli araçlardan birisi olsa da kredi büyümesinden dolayı ortaya çıkabilecek tehlikeler gözardı edilmemelidir. Geçmişte, aşırı kredi büyümesi sonrası yaşanan krizlerin birçok örneği bulunmaktadır. Küresel finansal kriz, 1997 ve 1998 yıllarında Kore, Tayland, ve Malezya'da yaşanan krizler, 1982 Şili krizi, 1994 Meksika krizi ve 1990 ve 19991 yıllarında İsveç, Finlandiya, Danimarka ve Norveç'te yaşanan krizler bu duruma örnek olarak gösterilmektedir. Ayrıca, Viyetnam ve Çin gibi aşırı kredi büyümesini kontrol altına almaya çalışan ülkeler de bulunmaktadır. Bu örnekler ışığında, kredi büyümesi ve ekonomik büyüme arasındaki ilişkinin her zaman pozitif yönlü olduğunu iddia etmek zayıf bir argüman olacaktır. Literatürde son dönemlerdeki araştırmalar (Arcand v.d., 2012, Bezemer, 2012, Cecchetti v.d., 2011 ve Chong v.d., 2017) aşırı kredi büyümesinin ekonomik büyüme üzerinde negatif etkileri olduğunu savunmaktadır. Bu çalışmalar, finansal kalkınmanın ekonomik büyümeyi

belirli bir noktaya kadar arttırdığını fakat belirli bir eşik değerinden sonra büyüme üzerinde bir engel oluşturduğunu iddia etmektedir. Bu eşik değer, çalışmalara göre farklılık göstermektedir. Cecchetti v.d. (2011), hanehalkı ve kamu borcu için eşik değeri GSYİH'nın yaklaşık % 85'i olarak belirlerken kurumsal borç için bu oran % 90 olarak belirlenmiştir. Bir başka çalışmada Arcand v.d. (2012), özel sektöre verilen kredilerin gayri safi yurt içi hasılanın % 80-100'ünün üzerinde olduğu durumlarda kredi büyümesinin ekonomik büyümeye zarar verici bir etkisinin olduğunu göstermiştir. Bu çalışmalar, kredi büyümesi ve ekonomik büyüme arasında tek yönlü bir ilişki olmadığını göstermektedir. Kredi büyümesi ve ekonomik büyüme arasındaki ilişkiye bu şekilde odaklanmak daha doğru bir yaklaşım olsa da bu çalışmalarda da bazı eksik noktalar bulunmaktadır. Krediyi bir bütün olarak incelemektense kategorilerine ayırıp incelemek daha doğru bir yaklaşım olacaktır. Kredilerin verildiği sektörler farklı dinamiklere sahip olduğundan, kredilerin ekonomik büyüme üzerindeki etkisi, kredinin türüne göre farklılaşacaktır.

Tüketici kredisi kişisel tüketimde kullanılan mal ve hizmetlerin satın alımını finanse etmek için veya bu gibi amaçlarla alınan borçların yeniden finansmanı için verilen kısa ve orta vadeli borçlardır. Tüketici kredisinin ekonomik büyümeye etkisi tüketim harcamaları üzerinden olmaktadır. Bununla birlikte artan oranlardaki hanehalkı kredileri ekonomik büyümede düşüş ve artan kriz olasılığı ile bağdaştırılmaktadır (Mian v.d., 2017, Schularick v.d., 2016). Küresel finansal kriz ve Avrupa borç krizi, hanehalkı kredilerinin finansal krizler üzerindeki olumsuz etkisiyle ilgili savları destekleyici örnekler olmuştur.

Krediler ve yatırım harcamaları arasındaki ilişki de literatürde çokça tartışılmaktadır. Kredilerin yatırımlar üzerinde pozitif etkisi olduğunu savunan birçok çalışma bulunmaktadır (Amiti ve Weinstein, 2014, Banerjee v.d., 2017, Brigden ve Mizen, 1999). Kurumsal kredi, hanehalkları yerine işletme sahipleri için verilen kredilerdir. Kurumsal krediler, yatırımcılar için inovasyonu daha kolay hale getirdiğinden, ekonomilerin üretim kapasitesinin arttırılmasına olanak sağlayabilmektedir. Sonuç olarak, hanehalkı kredileri

ekonomik büyümeyi tüketim harcamaları üzerinden etkilerken, kurumsal krediler yatırım harcamaları üzerinden etkilemektedir.

Literatür farklı tip kredilerin ekonomik büyüme üzerindeki etkilerini farklı yönlerden ele almaktadır. Bezemer (2014), ekonomik büyümenin reel sektöre verilen krediler aracılığıyla arttırılırken, finans, sigorta ve gayrimenkul sektörlerine verilen kredilerle olumsuz etkileneceğini savunmaktadır. Beck v.d. (2012), Bezemer (2014)'den farklı bir sınıflandırma yaparak hanehalkı kredilerine ve kurumsal kredilere odaklanmaktadır. Beck v.d. (2012), çalışmasında kredilerin ekonomik büyüme üzerindeki olumlu etkilerinin hanehalkı kredileri aracılığıyla değil, kurumsal krediler aracılığıyla olacağını savunmuştur. Bununla birlikte Escribano ve Han (2015), 31 tane gelişmekte olan ülke üzerinde 2002 ve 2012 yılları arasında yaptığı çalışmada, kurumsal kredilerin ekonomik büyüme üzerindeki olumlu etkisinin hanehalkı kredilerinin etkisinden daha az olduğunu göstermiştir. Aktarım mekanizmalarının da ayrı olduğunu; kurumsal kredilerin ekonomik büyümeyi yatırımlar aracılığıyla, tüketici kredilerininse tüketim harcamaları aracılığıyla etkilediğini belirtmişlerdir. Ayrıca, konut kredilerinin de ekonomik büyüme üzerinde, tüketim harcamaları aracılığıyla pozitif bir etkisi olduğu belirtilmiştir. Sonuç olarak literatürdeki bazı çalışmalar kurumsal kredilerin ekonomik büyüme üzerinde olumlu etkilerinin olduğunu savunurken başka çalışmalar da hanehalkı kredilerinin ekonomik büyüme üzerindeki olumlu etkilerini göstermiştir.

Finansal krizler ve kredi büyümeleri arasındaki ilişki de literatürün tartışmalı konuları arasında yer almaktadır. 1997 Asya krizi, Meksika Peso krizi, Avrupa borç krizi ve küresel finansal kriz gibi farklı bölgelerdeki önemli finansal krizlerden önce kredi büyümelerinin bu ülkelerde ciddi şekilde arttığı görülmektedir. Çalışmada, Meksika, Rusya, Amerika Birleşik Devletleri, Tayland, Endonezya, Malezya, Kore, Yunanistan, İrlanda ve İspanya'da gerçekleşen bankacılık krizlerinden önceki dönemler incelendiğinde, krizlerden hemen önceki yıllarda "aşırı kredi genişlemesi" dönemlerinin yaşandığı gözlenmektedir. Gorton ve Ordonez (2016), aşırı kredi

genişlemelerini, krizle sonuçlanıp sonuçlanmamasına göre iyi genişleme ve kötü genişleme olarak ikiye ayırmaktadır. 17 gelişmiş ülkenin ve 17 gelişmekte olan ülkenin 1960 ve 2010 yılları arasında incelendiği çalışmada, 87 tane aşırı kredi genişlemesi belirlenmiş ve bunların 34 tanesi kötü genişleme olarak sınıflandırılmıştır. Dell'Ariccia v.d. (2012)'nin yapmış olduğu çalışmada ise aşırı kredi genişlemelerinin üçte biri finansal krizle sonuçlanırken kalan genişlemelerde buna rastlanmamıştır. Bununla birlikte, birçok genişlemenin finansal derinleşmeye katkıda bulunduğunu ve uzun dönemli ekonomik büyümeyi desteklediğini iddia etmektedirler. Dell'Ariccia v.d. (2012), kredi büyümelerinin süresinin, büyüklüğünün ve makroekonomik gelişmelerin finansal krizlere sebep olabileceğini öne sürerken, Gorton ve Ordonez (2016)'e göre bazı genişlemelerin krizle sonuçlanmasındaki sebep toplam faktör verimliliğindeki değişimlerdir. Bu çalışmalarda kredilerin alt kategorilerindeki değişimler göz ardı edilip, toplam kredi büyümesindeki değişimlere odaklanılmıştır. Fakat, kurumsal krediledeki aşırı genişlemeler ve hanehalkı kredilerindeki aşırı genişlemeler farklı zamanlarda meydana gelebilmektedir. Böylece bir ülkede gerçekleşen aşırı kredi genişlemesi, kurumsal kredilerde gerçekleşen bir genişlemeden ya da hanehalkı kredilerinde gerçekleşen bir genişlemeden kaynaklabilmektedir. Bu sebeple aşırı kredi genişlemelerini doğru bir şekilde analiz edebilmek için kredinin alt kategorilerine odaklanılmalıdır.

Literatürde aşırı kredi genişlemelerini belirlemek için farklı tip kredi değişkenleri kullanılmaktadır. Bunlar arasında en çok tercih edilenler, reel kredi ve kredinin GSYİH'ya oranıdır. Her iki değişkenin de aşırı kredi genişlemelerinin belirlenmesinde bazı dezavantajları bulunmaktadır. Reel kredinin kullanıldığı durumlarda, başlangıç döneminde kredi seviyesi çok düşükse küçük oranlardaki artışlar bile güçlü kredi büyümesi olarak algılanabilmektedir. Ayrıca, reel kredi büyümesi konjonktür dalgalanmalarından kolayca etkilenmektedir. Kredinin GSYİH'ya oranının kullanıldığı durumlarda da bazı dezavantajların (GSYİH büyümesinin kredi büyümesinden yüksek olduğu durumlarda kredinin GSYİH'ya oranının

düşmesi, kredi ve GSYİH'nın aynı trendi takip etmesi ve yüksek enflasyonun neden olduğu yanıltıcı dalgalanmalar) olmasına rağmen bu çalışmada kredinin GSYİH'ya oranı kredi değişkeni olarak kullanılmıştır. Kredi, finansal olmayan kurumlara verilen krediler ve hanehalklarına ve kar amacı gütmeyen kuruluşlara verilen krediler olmak üzere ikiye ayrılmıştır. Çalışmada, 10 tane gelişmiş ülke ve 10 tane gelişmekte olan ülke 1994 ve 2017 yılları arasında incelenmektedir. Bu ülkeler, Arjantin, Brezilya, Şili, Kolombiya, Singapur, Fransa, Almanya, Yunanistan, Macaristan, İtalya, Japonya, Kore, Malezya, Meksika, Hollanda, Portekiz, İspanya, Tayland, Amerika Birleşik Devletleri ve Türkiye'dir. Özellikle gelişmekte olan ülkelerde, kredinin alt kırılımlarının datası kısıtlı olduğundan dolayı bu ülkeler ve bu dönem seçilmiştir.

Aşırı kredi genişlemelerinin belirlenmesinde literatürde iki temel yöntem bulunmaktadır. Bu yöntemlerin ilkinde, kredi büyümesi GSYİH, döviz kuru ve enflasyon gibi çeşitli ekonomik değişkenlerin bir fonksiyonu olarak analiz edilmektedir (Cottarelli v.d., 2005, Egert v.d., 2007, ve Kiss v.d., 2006). Bir diğer yöntem olan istatistiksel metodda ise kredi büyümelerinin istatistiksel özellikleri analiz edilmektedir. İstatiksel metod için kullanılan çeşitli analizler bulunmaktadır. Bunlardan en yaygın olanları, eşik değeri (Barajas v.d., 2011 ve Tornell ve Westerman, 2002) ve Hodrick Prescott filtresi (Boissay v.d., 2006, Coudert ve Pouvelle, 2010, Elekdag ve Wu, 2011, Gourinchas v.d., 2001, Mendoza ve Terrones , 2008 ve Ottens v.d., 2005) ile yapılan analizlerdir. Eşik değeri ile yapılan analizde eşik değeri tamamen rastlantısal olduğu için farklı eşik değerleri farklı sonuçlar ortaya çıkaracaktır. Hodrick Prescott filtresi ile kredilerin uzun dönemli trendi ve bu trendden sapmalar belirlenebilmektedir. Bu çalışmada aşırı kredi genişlemelerinin belirlenmesinde Mendoza ve Terrones (2008)'in yöntemi uygulanmaktadır. Mendoza ve Terrones (2008), çalışmasında kredinin trendini iki yanlı HP filtresi kullanarak belirlemektedir. Mendoza ve Terrones'e göre trendden sapma, trendden sapmanın standard sapmasının eşik değeri katsayısı ile çarpımından büyükse aşırı kredi genişlemesi oluşmaktadır. Çalışmada, aşırı kredi genişlemelerini belirlerken Mendoza ve Terrones (2008)'in yöntemi

uygulansa da HP filtresi için kullanılan düzgünleştirme parametresini ve aşırı kredi genişlemelerini belirlerken kullanılan eşik değeri katsayısını belirlemek için sinyal yöntemi (signal extraction) uygulanmaktadır. Bu yöntem ilk kez Kaminsky ve Reinhart (1996) tarafından ikiz krizler süresince finansal ve makroekonomik değişkenleri incelemek amacıyla kullanılmıştır. Sinyal yöntemi literatürde erken uyarı göstergeleri ile ilgili çalışmalarda sıklıkla kullanılan yöntemlerden birisidir (Borio ve Lowe, 2002, Borio ve Drehmann, 2009, Drehmann v.d., 2010, Christensen v Li, 2014 ve Duzcay ve Comert, 2018).

Bu çalışmada iki yanlı HP filtresi, kredi gruplarındaki trendin belirlenmesi için kullanılmaktadır. Kredinin trendi ve trendden sapma toplam krediyi oluşturmaktadır. Toplam kredi, trend ve trendin sapmasının standard sapmasının eşik değeri katsayısı ile çarpımının toplamına eşit veya toplamından büyükse o periyodda aşırı kredi genişlemesi olduğu tespit edilmektedir. Böylece, aşırı kredi genişlemesinin koşulu $\int it \geq \alpha\sigma(\int it)$ olmaktadır ($\int it$, i ülkesinde t zamanında uzun dönemli trendden ne kadarlık bir sapma olduğunu gösterirken; α, eşik değeri katsayısını göstermektedir). Düzcay ve Cömert (2018)'i takip ederek bu çalışmada dört tane düzgünleştirme parametresi (6,25, 100, 500, 1600) ve on tane eşik değeri katsayısı (0,25, 0,5, 0,75, 1, 1,25, 1,5, 1,65, 1,75, 1,9, 2), sinyal yöntemi kapsamında incelenmiştir. Bu analiz kapsamında en uygun düzgünleştirme parametresi ve eşik değeri katsayısı kombinasyonu bulunmaya çalışılmıştır. Analiz, 4 düzgünleştirme parametresi ve 10 eşik değeri katsayısının her kombinasyonu için yapılmıştır. Eğer t zamanında aşırı kredi genişlemesi belirlenir ve t ve t+3 periyodunda da bankacılık krizi varsa bu "doğru sinyal" (A) olarak belirlenmektedir. Eğer t zamanında aşırı kredi genişlemesi belirlenir ve t ve t+3 periyodunda bankacılık krizi gerçekleşmezse bu "gürültü sinyal" (B) olarak belirlenmektedir. Eğer t zamanında aşırı kredi genişlemesi belirlenmez ve t ve t+3 periyodunda bankacılık krizi gerçekleşirse bu "yanlış sinyal" (C) olarak belirlenmektedir. Eğer, t zamanında aşırı kredi genişlemesi

belirlenmez ve t ve t+3 periyodunda bankacılık krizi gerçekleşmezse bu "doğru kriz yok sinyali" (D) olarak belirlenmektedir.

Kaçırılan krizler (missed crises) oranının %40'ı geçmediği durumlarda en düşük gürültü sinyal oranını (noise to signal ratio) veren düzgünleştirme parametresi ve eşik değeri kombinasyonu en uygun değerler olarak belirlenmektedir.[29] Gürültü sinyal oranı, 1. Tip Hata [C/(A+C)] ve 2. Tip Hata [B/(B+D)] ile özetlenmektedir. Bu oran, 2. Tip Hatanın, 1 eksi 1. Tip Hataya oranı ile belirlenmektedir [(B/(B+D))/(A/(A+C))]. Hodrick Prescott filtresinin kullanıldığı çalışmalarda, dönem sonundaki trend, ileriki yılların veri setine dahil edilmesi ile değişebileceği için Düzcay ve Cömert (2018)'i takip ederek veri setinde son 5 yılda meydana gelen aşırı kredi genişlemeleri hesaplamalara dahil edilmemiştir.

Yapılan analizin sonucunda, düzgünleştirme parametresi için en uygun değerin 1600, eşik değeri katsayısı için en uygun değerin 1 olduğu ortaya çıkmıştır. Bu değerler kullanılarak belirlenen aşırı kredi genişlemelerinin bankacılık krizleri ile ilişkisine bakıldığında birçok krizden önce aşırı kredi genişlemesinin gerçekleştiği gözlemlenmiştir. Krizlerin %70'inden önce hanehalkı kredilerinde aşırı genişlemesi gerçekleşirken, krizlerin %60'ından önce kurumsal kredilerde aşırı genişleme gerçekleşmiştir. Ayrıca, kurumsal kredideki aşırı genişlemelerin %29'u krizle sonuçlanırken, hanehalkı kredisindeki aşırı genişlemelerin %34'ü krizle sonuçlanmıştır. Bu sonuçlar, krizlerin daha çok hanehalkı kredi genişlemelerinin çevresinde gerçekleştiğini göstermektedir. Gelişmiş ülkeler ve gelişmekte olan ülkeler ayrı ayrı incelendiğindeyse benzer sonuçlar ortaya çıkmaktadır. Gelişmekte olan ülkelerdeki hanehalkı kredilerindeki aşırı genişlemelerin %35'i krizle sonuçlanırken, gelişmiş ülkelerdeki hanehalkı kredilerindeki aşırı genişlemelerin %33'ü krizle sonuçlanmıştır. Ayrıca, hem gelişmiş ülkelerde hem de gelişmekte olan ülkelerde, kurumsal kredilerdeki aşırı genişlemelerin %29'u krizle sonuçlanmıştır. Krizle sonuçlanmış olan kredi genişlemelerinin

[29] %40 oranı Duzcay ve Cömert (2018) makalesinden alınmıştır.

dinamiklerini daha iyi anlamak için bu genişlemelerin özellikleri ve genişlemeler çevresinde makroekonomik göstergelerin nasıl değiştiği çalışmada ayrıntılı bir şekilde incelenmektedir.

Aşırı kredi genişlemeleri ve bunların etrafındaki makroekonomik göstergelerdeki değişimlerden önce 20 ülkedeki kredi dinamiklerindeki değişimler incelenmiştir. Çalışmada incelenen dönem süresince birçok ülkede yüksek oranda kredi büyümeleri gözlemlenmiştir. Ayrıca, gelişmiş ülkelerdeki kredi oranlarının gelişmekte olan ülkelerden çok daha yüksek olduğu görülmektedir. Bir diğer dikkat çekici gelişme ise farklı tip kredilerin toplam kredi içindeki oranının, 1994 ve 2017 yılları arasında göstermiş olduğu değişimdir. Özellikle gelişmiş olan ülkelerde hanehalkı kredilerinin toplam kredi içindeki payında artış görülmüştür.

Aşırı kredi genişlemeleri süresince oluşan sapmalar ve aşırı kredi genişlemelerinin süreleri incelendiğinde krizle sonuçlanan aşırı kredi genişlemeleri ve krizle sonuçlanmayan aşırı kredi genişlemeleri arasında farklılıklar olduğu göze çarpmaktadır. Krizle sonuçlanan aşırı kredi genişlemeleri çoğunlukla krizle sonuçlanmayan aşırı kredi genişlemelerinden daha uzun sürerken, trendden sapmaların da krizle sonuçlanan aşırı kredi genişlemelerinde daha yüksek olduğu görülmektedir. Bazı durumlarda krizle sonuçlanmayan aşırı kredi genişlemelerinde de trendden yüksek sapmalar görülse de bu genişlemelerin genellikle kısa süreli olduğu saptanmıştır. Ayrıca, çalışmada belirlenen 5 yıldan uzun süren aşırı kredi genişlemelerinin tamamı krizle sonuçlanmıştır. Bu sebeple, 5 yıldan uzun süreli oluşan genişlemelere dikkat edilmesi gerekmektedir. Sonuç olarak, aşırı kredi genişlemelerinin krizle sonuçlanma ihtimali genişlemenin süresi ve büyüklüğüyle doğru orantılı olarak artmaktadır.

Gelişmiş ülkeler ve gelişmekte olan ülkelerdeki farklı tip kredi genişlemeleri incelendiğinde ise bu genişlemelerin farklılıklar gösterdiği ortaya çıkmaktadır. Gelişmekte olan ülkelerde kurumsal kredilerdeki aşırı genişlemelerin ortalama süresi 1,3 yıl iken, hanehalkı kredilerinde bu süre 2,1 yıldır. Gelişmiş

ülkelerde kurumsal kredilerdeki aşırı genişlemelerin ortalama süresi 2,8 yıl iken, hanehalkı kredilerindeki aşırı genişlemelerin ortalama süresi 3,2 yıldır. Krizle sonuçlanan kredi genişlemeleri ve krizle sonuçlanmayan kredi genişlemeleri de farklılıklar göstermektedir. Özellikle gelişmiş ülkelerde krizle sonuçlanan aşırı kredi genişlemelerinin süresi krizle sonuçlanmayan aşırı kredi genişlemelerinden çok daha yüksektir. Krizle sonuçlanan bir kurumsal kredi genişlemesinin ortalama süresi 4,7 yılken, krizle sonuçlanmayan bir kurumsal kredi genişlemesinin ortalama süresi 1,6 yıldır. Hanehalkı kredi genişlemesi krizle sonuçlanıyorsa ortalama 3,9 yıl sürüyor iken, krizle sonuçlanmayan bir hanehalkı kredi genişlemesi ortalama 2 yıl sürmektedir. Gelişmekte olan ülkelerde ise krizle sonuçlanan kurumsal kredi genişlemeleri ortalama 1,8 yıl boyunca devam ederken, krizle sonuçlanmayan kurumsal kredi genişlemeleri ortalama 1,1 yıl boyunca devam etmektedir. Bununla birlikte, hanehalkı kredi genişlemeleri krizle sonuçlanıyorsa ortalama 2,3 yıl sürerken, krizle sonuçlanmıyorsa ortalama 2 yıl sürmektedir. Bu sonuçlar aşırı kredi genişelemelerinin süresinin, neden bazı genişlemelerin krizle sonuçlandığını açıklamada önemli bir faktör olduğunu göstermektedir. Hanehalkı kredi genişlemeleri kurumsal kredi genişlemelerinden daha uzun sürdüğü için, hanehalkı kredi genişlemelerinin süresi neden krizle sonuçlanma oranlarının kurumsal kredi genişlemelerine kıyasla daha yüksek olduğunu açıklamada yardımcı olabilir. Bu sonuçlardan ortaya çıkan bir diğer önemli bulgu ise krizle sonuçlanmayan aşırı kredi genişlemelerinin süresi gelişmiş ülkelerde ve gelişmekte olan ülkelerde büyük farklılıklar göstermezken, krizle sonuçlanan aşırı kredi genişlemelerinin süresi gelişmiş ülkelerde gelişmekte olan ülkelere kıyasla çok daha yüksektir. Aşırı kredi genişlemelerinin krizle sonuçlanma oranları gelişmiş ülkelerde ve gelişmekte olan ülkelerde benzerlik gösterse de kredi genişlemeleri ve krizler arasındaki ilişkinin gelişmiş ülkelerde ve gelişmekte olan ülkelerde farklı olduğu ortaya çıkmaktadır. Gelişmiş ülkelerdeki kredi genişlemeslerinin krizle sonuçlanması için, gelişmekte olan ülkelerdeki kredi genişlemelerine kıyasla çok daha fazla zaman geçmesi gerekmektedir. Sonuç olarak, gelişmekte olan ülkelerde aşırı kredi

genişlemeleri kısa sürelerde krizlere sebep olurken, gelişmiş ülkelerde bu durum farklılık göstermektedir.

Hanehalkı kredi genişmelerinin neden kurumsal kredi genişlemelerine kıyasla daha çok krizle sonuçlandığını açıklayabilmek için aşırı kredi genişlemesi dönemleri çevresinde makroekonomik değişkenler incelenmelidir. Bu sebeple, GSYİH büyümesi, tüketim, enflasyon, cari hesap, ticaret açıklığı, doğrudan yabancı yatırımlar, portfolyo yatırımları, diğer yatırımlar, faiz oranları ve döviz kurlarındaki trendden sapmalar, aşırı kredi genişlemesinden önceki 3 yıl boyunca, kredi genişlemeleri süresince ve kredi genişlemelerinden sonraki 3 yıl boyunca analiz edilmiştir. Trendden sapmalar incelenirken krizle sonuçlanan aşırı kredi genişlemeleri ve krizle sonuçlanmayan aşırı kredi genişlemeleri ayrı ayrı ele alınmıştır.

GSYİH büyümesindeki dalgalanmaların gelişmekte olan ülkelerde gelişmiş ülkelere kıyasla çok daha yüksek olduğu görülmektedir. Fakat, bu değişkendeki değişimler kredi genişlemeleri ve krizler arasındaki ilişkiyi açıklamaya yardımcı olmamıştır. Tüketim harcamalarındaki değişimler incelendiğindeyse bu değişkende de dalgalanmaların gelişmekte olan ülkelerde, gelişmiş ülkelere kıyasla çok daha yüksek olduğu görülmektedir. Ayrıca, krizle sonuçlanmayan hanehalkı kredi genişlemeleri süresince ve sonraki 3 yıl boyunca tüketim harcamaları neredeyse her zaman trendin üzerinde seyretmiştir. Fakat, böyle bir durum kurumsal kredi genişlemelerinde görülmemiştir. Hanehalkı kredilerindeki aşırı genişlemelerde görülen bu trend, hanehalkı kredisi ve tüketim harcamaları arasındaki ilişkiyi ortaya koymaktadır. Fakat, bu değişkende de aşırı kredi genişlemeleri ve krizler arasındaki ilişkiyi açıklayacak dalgalanmalar gözlemlenmemiştir. Enflasyondaki değişimler incelendiğindeyse gelişmiş ülkelerde trendden sapmanın çok küçük olduğu gözlemlenirken, gelişmekte olan ülkelerde trendden ciddi sapmalar olduğu belirlenmiştir. Ayrıca, gelişmekte olan ülkelerde krizle sonuçlanan aşırı kredi genişlemeleri boyunca enflasyonun trendin üzerinde seyrettiği görülmüştür. Bu sebeple, gelişmekte olan ülkelerde, yüksek enflasyonun krizle sonuçlanan aşırı kredi genişlemesi döneminde öne

çıkan gelişmelerden biri olduğu iddia edilebilmektedir. Fakat bu değişkendeki değişimler ile de krizler ve hanehalkı kredilerindeki aşırı genişlemeler arasındaki ilişki açıklanamamıştır. Cari hesap ise gelişmekte olan ülkelerde sistematik değişimler göstermezken, gelişmiş ülkelerde kredi genişlemeleri süresince genelde cari açık gözlenmiştir. Bu durum hem krizle sonuçlanan kredi genişlemelerinde hem de krizle sonuçlanmayan kredi genişlemerinde görülse de krizle sonuçlanan genişlemelerde trendden sapmanın daha yüksek olduğu görülmüştür. Bu yüzden, gelişmiş ülkelerde krizle sonuçlanan birçok genişleme süresince yüksek cari açığa rastlandığı söylenenibilir. Fakat bu değişkende de krizlerle olan ilişkiyi açıklayabilecek dalganlanmalar görülmemiştir. Ticaret açıklığına bakıldığında da sistematik bir dalgalanmaya rastlanmasa da diğer birçok değişkende olduğu gibi bunda da gelişmekte olan ülkelerde daha büyük sapmalar meydana gelmiştir. Doğrudan yabancı yatırımlar ve portfolyo yatırımlarında da sistematik bir dalgalanmaya rastlanmamıştır. Diğer yatırımlar incelendiğinde ise gelişmiş ülkelerde krizle sonuçlanan genişlemeler süresince bu yatırımların trendin üzerinde seyrettiği görülmüştür. Faiz oranları incelendiğinde, gelişmekte olan ülkelerdeki dalgalanmaların gelişmiş ülkelere kıyasla çok daha yüksek olduğu görülmüştür. Ayrıca, gelişmekte olan ülkelerdeki krizle sonuçlanan aşırı kredi genişlemeleri boyunca trendin üzerinde faiz oranlarına rastlanmıştır. Bu yüzden, gelişmekte olan ülkelerde aşırı kredi genişlemesi dönemlerinde gerçekleşen yüksek faiz oranları krizlerle ilişkilendirilebilmektedir. Fakat, hanehalkı kredilerindeki aşırı genişlemelerin daha fazla oranda krizle sonuçlanmasının sebebini açıklayacak bir dalgalanmaya rastlanmamıştır. Son olarak, döviz kurları incelendiğinde, hem gelişmiş ülkelerde hem de gelişmekte olan ülkelerde krizle sonuçlanan aşırı kredi genişlemelerinin birçoğunun gerçekleştiği dönemde ülkelerin ulusal para birimlerinin değer kazandığı görülmüştür.

Sağlamlık kontrolü (robustness check) için makroekonomik değişkenlerin ortalamadan ve medyandan ne kadar saptığı da incelenmiştir. Trend analizinde bulunan gelişmekte olan ülkelerde faiz oranları, enflasyon ve döviz kurunda,

gelişmiş ülkelerde ise diğer yatırımlar, cari açık ve döviz kurunda görülen dalgalanmalar sağlamlık kontrolü ile de teyit edilmiştir.

Sonuç olarak, bu çalışmada bulunan sonuçlar aşağıdaki gibi sıralanmaktadır;

- Bankacılık krizlerinin, kurumsal kredilerdeki aşırı genişlemeler ile kıyaslandığında daha çok hanehalkı kredilerindeki aşırı genişlemelerin çevresinde gerçekleştiği görülmektedir.
- Gelişmiş ülkelerde bir kredi genişlemesinin krizle sonuçlanması için gelişmekte olan ülkedeki bir genişlemeye göre çok daha fazla zaman geçmesi gerekmektedir. Yani, gelişmekte olan ülkelerde aşırı kredi genişlemeleri kısa sürelerde krizlere sebep olurken, gelişmiş ülkelerde bu durum farklılık göstermektedir.
- Daha uzun süren ve daha büyük kredi genişlemelerinin krizle sonuçlanma ihtimali daha yüksektir.
- Çalışmada belirlenen 5 yıldan uzun süren aşırı kredi genişlemelerinin tamamı krizle sonuçlanmıştır. Bu sebeple, bir ekonomide 5 yıldan uzun süren bir aşırı kredi genişlemesi var ise bu genişlemeye dikkat edilmelidir.
- Hanehalkı kredi genişlemelerinin ortalama süresi kurumsal kredi genişlemelerinden daha yüksektir. Bu durum hanehalkı kredi genişlemelerinin daha yüksek oranda krizle sonuçlanmasının sebeplerinden biri olabilir.
- Gelişmekte olan ülkelerde, krizle sonuçlanan aşırı kredi genişlemeleri süresince yüksek enflasyona ve yüksek faiz oranlarına rastlanmıştır.
- Gelişmiş ülkelerde, krizle sonuçlanan aşırı kredi genişlemeleri süresince yüksek cari açığa ve diğer yatırım oranlarına rastlanmıştır.
- Hem gelişmiş ülkelerde hem de gelişmekte olan ülkelerde krizle sonuçlanan aşırı kredi genişlemeleri süresince yerel para birimlerinin değer kazandığı görülmüştür.
- Makroekonomik göstergelerdeki dalgalanmalar, hanehalkı kredilerindeki aşırı genişlemelerin daha yüksek oranda krizle sonuçlanmasının sebebini açıklamaya yardımcı olmamıştır.

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