FINANCIAL LIQUIDITY, FINANCING CONSTRAINTS AND FINANCING PATTERNS

BAHADIR KARAKOÇ

BOĞAZİÇİ UNIVERSITY

2019

FINANCIAL LIQUIDITY, FINANCING CONSTRAINTS AND FINANCING PATTERNS

Thesis submitted to the

Institute for Graduate Studies in Social Sciences

in partial fulfillment of the requirements for the degree of

Doctor of Philosophy

in

Management

by

Bahadır Karakoç

Boğaziçi University

2019

Financial Liquidity, Financing Constraints and Financing Patterns

The thesis of Bahadır Karakoç

has been approved by:

Prof. Vedat Akgiray
(Thesis Advisor)

Prof. Metin Ercan

Assist. Prof. Ali Coşkun

Prof. Ali Rana Atılgan
(External Member)

Assoc. Prof. Rasim Özcan
(External Member)

April 2019

DECLARATION OF ORIGINALITY

I, Bahadır Karakoç, certify that

- I am the sole author of this thesis and that I have fully acknowledged and documented in my thesis all sources of ideas and words, including digital resources, which have been produced or published by another person or institution;
- this thesis contains no material that has been submitted or accepted for a degree or diploma in any other educational institution;
- this is a true copy of the thesis approved by my advisor and thesis committee at Boğaziçi University, including final revisions required by them.

Signature .....

Date 14.01.2019

ABSTRACT

Financial Liquidity, Financing Constraints and Financing Patterns

Separating firms into groups based on level of financing constraint proxied by size and stock market trading status, changes in financing patterns are investigated in times of high foreign capital flow and expansionary monetary policy. The study fulfills the need for analyzing the consequences of foreign capital flow at firm level and documenting its significance in addition to assessing the efficacy of contemporary monetary policy. Recent economic conditions significantly facilitated lending process, increasing credit supply and strengthening the access to conventional credit, and resulted in excessive borrowing both in the form of foreign and domestic currency. With such heavy burden of debt, the sector has become dependent on continuance of foreign capital entrance to maintain profitability and liquidity, while facing both exchange rate and the liquidity risks. The more severely a firm was previously challenged by financing limitations, the more it has borrowed once the limitations are removed, contributing to excessive debt burden of the economy in proportion to its previous financing constraints. Furthermore, significant changes in trade credit financing decisions are documented; as their access to bank loans is facilitated they reduced portion of interfirm credit, and increased bank financing and the supply of trade credit to smaller firms. Recent expansion in consumption and corporate sales may have motivated firms to supply more trade credit to promote sales and increase market share. Finally, monetary policy is found to be more effective on conventional credit channels than trade credit.

ÖZET

Finansal Likidite, Finansman Kısıtları ve Finansman Kararları

Firmalar finansal kısıtlarına ve halka açık olup olmama statülerine göre gruplara ayrılmış ve genişlemeci para politikasıyla küresel kredi likiditesinin yükseldiği bir dönemde finansal kararlarındaki değişimler incelenmiştir. Bu çalışma yabancı sermayenin reel sektör için önemini ve yabancı sermaye akışının arttığı bir dönemde izlenen para politikasının etkinliği değerlendirme noktasında var olan bir ihtiyacı karşılamaktadır. Bulgular, genişlemeci para politikasının küresel likidite ile birleşmesinin firmalarda hem yabancı para hem de yerli para cinsinden aşırı borçlanmaya neden olduğunu, bunun neticesinde de karlılık ve iç likiditeyi sürdürebilmek için sektörün yabancı para girişine bağımlı hale geldiğini göstermiştir. Bunun yanı sıra, firmaların daha önceki finansal kısıtlarıyla doğru orantılı olarak toplam borç yüküne katkı sağladıkları gözlemlenmiştir. Yerel ve küresel kredi kanallarının açılmasıyla alternatif bir finansman aracı olarak kabul edilen ticari kredi kullanımı azalmış fakat kullandırılan ticari kredilerde önemli artışlar ortaya çıkmıştır. Bunun temel nedenleri sırasıyla firmaların kredi kısıtlarındaki iyileşme ile firmaların, daha ucuz olduğu dile getirilen banka kredilerini tercih etmesi ayrıca, artan satışlar ve yoğun rekabetin ticari kredi kullandırmayı tetiklemesi olarak öngörülmüştür. İzlenen para politikasının finansal krediler üzerinde daha etkili olduğu tespit edilmiştir.

CURRICULUM VITAE

NAME: Bahadır Karakoç

DEGREES AWARDED

PhD in Management, 2019, Boğaziçi University

MS in Finance, 2005, Drexel University

BA in Teaching for Accounting and Finance, 2001, Gazi University

AREAS OF SPECIAL INTEREST

Corporate finance and financial economics

PROFESSIONAL EXPERIENCE

Research Assistant, Department of Management, Muş Alparslan University, 2013 – present

AWARDS AND HONORS

Highest Honors List, Gazi University, 2008

The Ministry of National Education Scholarship for graduate study

ACKNOWLEDGEMENTS

First and foremost, I would like to offer my sincere thanks to my advisor, Prof. Vedat Akgiray. Throughout this long process, his support, encouragement, and understanding greatly contributed to my enthusiasm and always motivated me to do better. Secondly, I express my deepest gratitude to my thesis progress committee members, Prof. Gökhan Özertan and Assist. Prof. Ali Coşkun. I would also like to thank the members of the CBRT Real Sector Statistics Directorate for their hospitality during my time there for the analysis of the study. Finally, my special thanks go to Assoc. Prof. Ömer F. Altunç and Assist. Prof. Mecit Yıldırım for productive discussions and the valuable insights they provided me with.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF APPENDIX TABLES

LIST OF FIGURES

ABBREVIATIONS

ECB : European Central Bank

EM : Emerging Markets

EME : Emerging Market Economies

CBRT : Republic of Turkish Central Bank

FDI : Foreign Direct Investment

FPI : foreign Portfolio Investment

FED : Federal Reserve Bank of America

GDP : Gross Domestic Product

IMF : International Monetary Fund

M2 : Money Supply

QE : Quantitative Easing

ROA : Return on Assets

TC : Trade Credit

USD : American Dollar

CHAPTER 1

MOTIVATION AND HYPOTHESIS DEVELOPMENT

The name "Fragile Five" has come to known as a term to label vulnerable emerging economies[1], including Turkey, whose vulnerabilities have become evident recently. It was first suggested in a research report by Morgan Stanley (2013) in which they argued that those countries have become overly dependent on continuance of foreign capital inflow for financial stability and growth. The conclusion has been reached by assessing various macro level variables such as current account deficit to GDP ratio, inflation, interest rates and delicate growth rate. They further argued that reductions in foreign capital inflow to those fragile economies would exacerbate economic indicators. Accordingly, as the advanced country monetary policies have been normalized, the vulnerabilities and risk sources in emerging markets (EM) have come to surface.

Changes in US monetary policy stance have brought an end to global liquidity and triggered a reverse capital flow, which had flown toward EM countries previously. With the foreign capital slowly withdrawn asset prices have declined, domestic currencies depreciated, inflation and interest rates have risen. Not surprisingly, some of the countries have reacted more strongly than do others, depending on their financial and economic strength. It is argued that those fragile countries, particularly five of them have heavily financed their growth with foreign capital, giving rise to current account deficit, and paving way to future vulnerabilities and economy-wide risks. Unfortunately,

---

[1] 2013 report classifies Brazil, India, Indonesia, Turkey and South Africa as the members of fragile five.

Turkey has been regarded as one of the prolonged members[2] of the group due to various reasons, including excessively high debt stock[3] of real sector which, consists of bank loans and debt securities, is adequately presented in Figure 1. It is clear that debt level of non-financial sector has reached worrying levels and requires immediate attention.

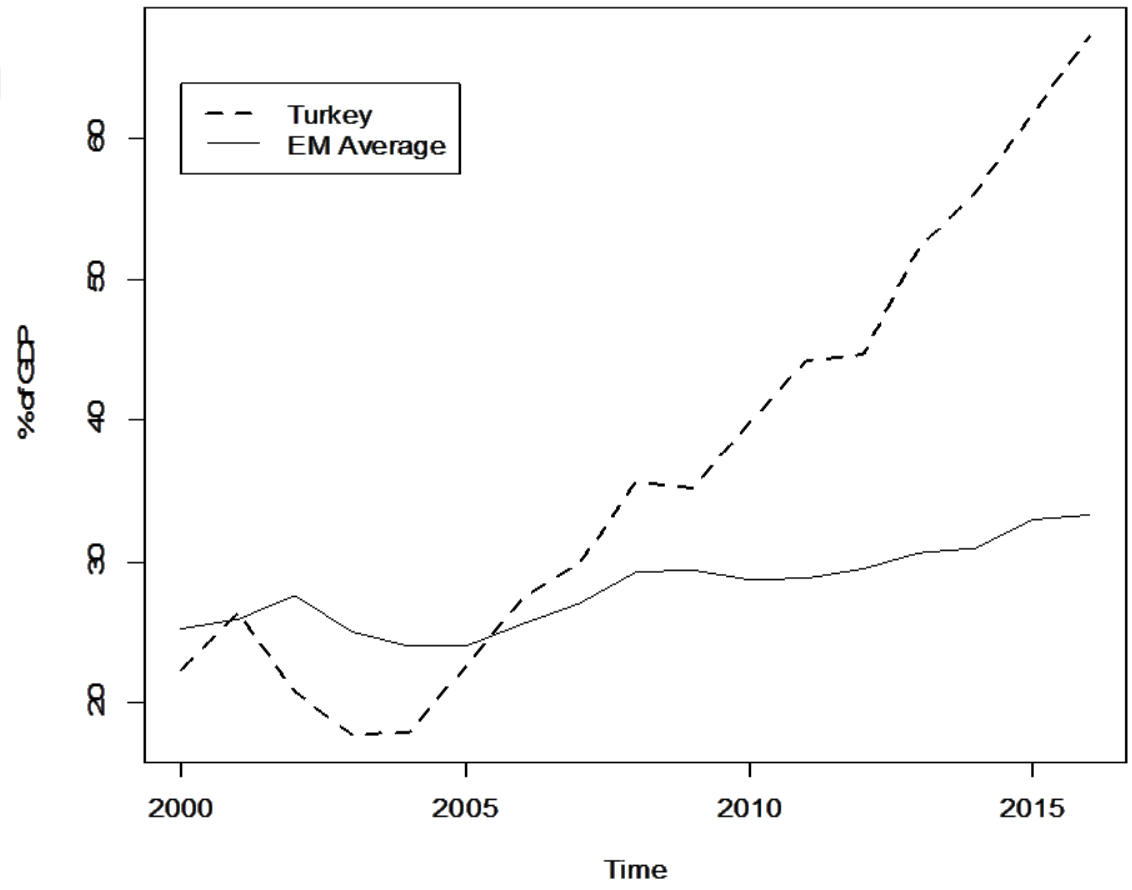

Figure 1. Real sector's debt as a percent of GDP in comparison with other EM[4]s
Data source: [IMF International Statistics, 2018]

---

[2] The list has been revised recently by S&P (2017) and now includes Turkey, Pakistan, Argentina, Qatar and Egypt, and Turkey has been reported to be the most fragile of all.
[3] S&P report actually refers to foreign currency debt of real sector and related risks instead of total debt stock.
[4] The average is calculated including 15 largest EM countries: South Africa, Mexico, Peru, Romania, Pakistan, Argentina, Kazakhstan, Nicaragua, Morocco, India, Czech Republic, Indonesia, Brazil, Poland and Russia.

Latest IMF data indicates that debt stock of non-financial sector is around $500 billion, approximately 50% of which , according to Central Bank of the Republic of Turkey (CBRT) data, is denominated in foreign currency (see Sections 2.1 and 3.1.2 for details), adding exchange rate risk to existing liquidity risk.

In order to demonstrate the effect of recently rising global liquidity, changes in the debt stock (bank loans and debt securities) of the real sector in 16 EM countries[5] scaled to their GDP are provided in Figure 2. For calculation, the year of 2007 is assumed to be the reference year because in 2008 and 2009 the trend suffers from the mortgage crisis and the base year better reflects the effect of foreign capital on debt ratios, considering the rise in international capital movements in the aftermath of 2008. Clearly, both expansionary monetary policies and uncontrolled foreign capital inflow are mainly responsible for the result.

Countries which suffered greatly in the early episodes of foreign capital movements (see for details Calvo,1993; Calvo et al.,1998; Reinhart Calvo & Leiderman, 1996), such as Mexico, Peru, Argentina and Nicaragua seem to have learned from the past mistakes and not allowed debt ratios to rise boundlessly. On the other hand, countries such as Turkey, Russia and China have experienced increase in the debt stock. Exceptionally however, debt stock of Turkey more than doubles, by percentage wise from 30% to 67% of GDP, from 2007 to 2016, respectively. Evidently, enlarged credit supply via foreign capital inflow and expansionary monetary policies have facilitated borrowing process.

---

[5] China is excluded from the list due to heavy percentage state owned enterprises.

Furthermore, contemporary monetary policies have accommodated significant surge in debt stock of non-financial corporate sector, building up vulnerabilities and exposure to possible shocks accompanying a sudden stop or a reverse flow of foreign capital.

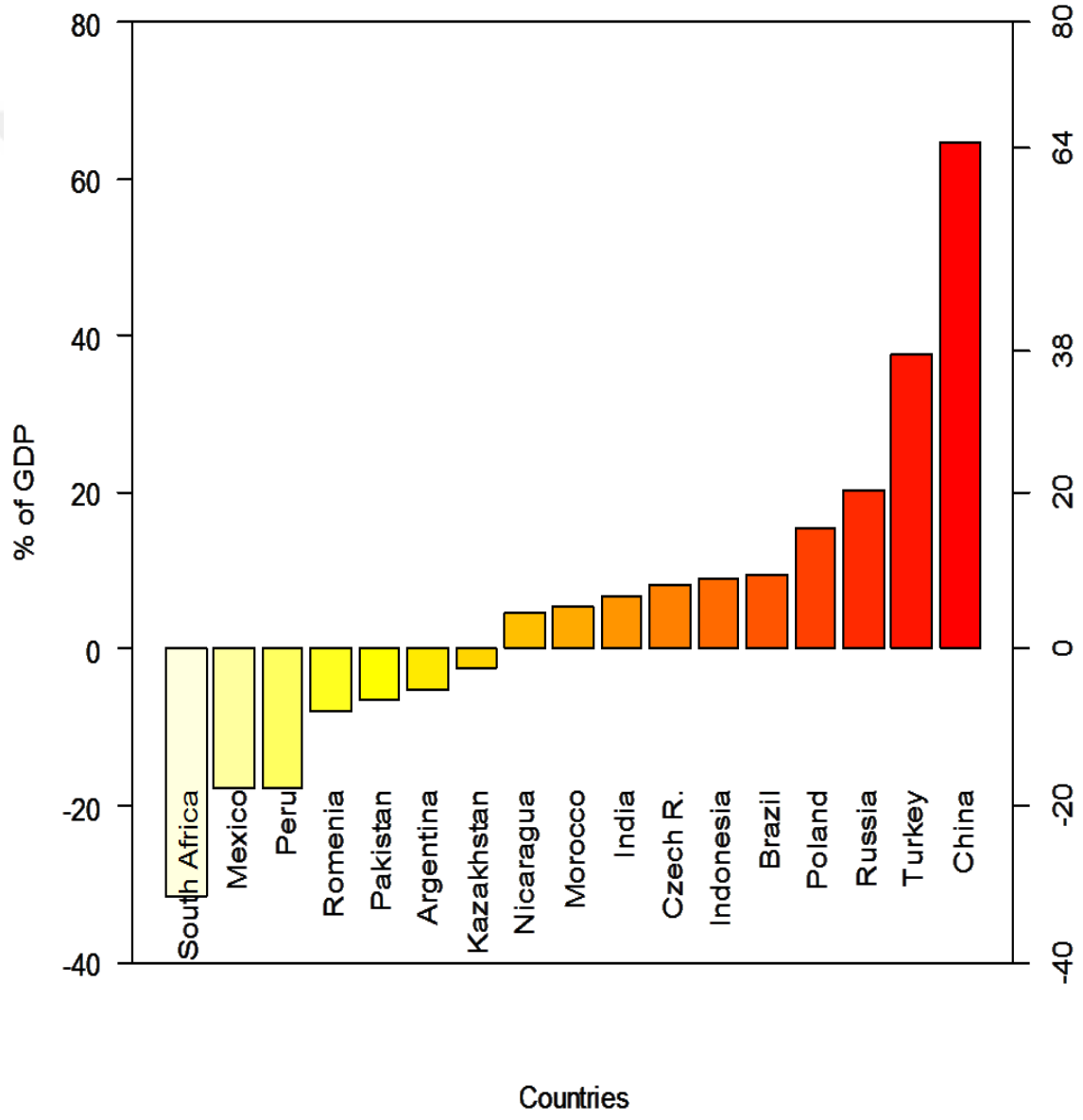

Figure 2. Changes in total debt from 2007 to 2016, as a percent of GDP

Source: [IMF International Statistics, 2018]

The CBRT data shows that in 2007, non-financial sector debt stock, both cash credits and bond issuance, financed by foreign resources was around $50 billion, which has climbed up to more than $100 billion in 2016. Similarly, the amount of foreign funds transferred by banking sector was $50 billion and it has reached up to $160 billion at the end of 2016. These statistics only reflect the amount, which consists of cash credit and debt security issuance, obtained from abroad resources, and do not include other sources of foreign currency credit. As of 2018, real sector's foreign currency denominated debt burden is $331 billion, which is more than half the total debt. Therefore, contribution of advanced country monetary policies to increasing leverage of real sector in Turkey has become a significant concern.

Not only rising global liquidity with the effect of foreign economies but also expansionary monetary policies in domestic economy have increased credit supply and facilitated borrowing process for real sector. Thus, providing the conditions for heavy borrowing and extravagant debt burden, which is so high that have become threatening to survival of excessively leveraged firms. Unlike, however, regular borrowing activity, most of the borrowing has taken place in foreign currency; consequently, non-financial sector has been facing both liquidity and exchange rate risks. A noteworthy decline in the value of domestic currency would translate into a noteworthy rise in the debt burden of real sector whose income is denominated in a currency other than his debt, i.e. debt is not the naturally hedged. Therefore, their survival has become dependent on continuance of foreign capital inflow in order to maintain certain level of profitability and liquidity for debt contracts to mature. Most privately held firms, in general, financially constraint firms in particular have increased debt stock to

historically high levels and require significant amount of cash flows to continue operations without being forced to bankruptcy. In Chapter 3 it is provided in detail that they have contributed to total debt stock in proportion to their previous financing constraints; the more financially challenged a firm previously was, the more it borrowed (measured as percentage of total assets) once the challenges are removed.

A sudden stop in foreign capital flow or a reverse flow, which would potentially trigger depreciation in currency value, and a consequent rises in interest rates and inflation, reduce the profitability of real sector, even if the borrowed funds have been channeled toward efficient investments. Thus, reduced profitability and sales volume combined with increases in the debt burden via exchange rate fluctuations would markedly jeopardize business operations and may force the companies out of business. It is important to emphasize that exchange rate related risks still pose a genuine threat in case of domestic currency borrowing. Overly vulnerable nature of the economy to foreign monetary policies has led to real sector to become exposed to liquidity risks, since maintaining uninterrupted business operations has become dependent on foreign capital.

Therefore, we form the main goal of our study as to document the effect and the significance of foreign capital for real sector operations. We try to provide answers to questions such as; how important is it for financing channel? What are the risks and sources of exposures to real sector that have come with foreign capital? What are the major monetary policy dimensions that have been deployed as a response to the rise in foreign capital? Have the monetary policy decisions been effective enough to mitigate potential risks? Does it have implications for other financing channels such as trade credit?

Answers to these questions will provide insight into real sources of weaknesses embedded in the economy which also makes it vulnerable to foreign monetary policies. It may assist with identifying the needs of non-financial sector and developing relevant policies. It will also help us evaluate the success and the failure of the domestic economic policy decisions set in motion as a response to global liquidity, thus, contribute to improving and developing more effective policy responses as to reap the benefit of foreign capital while avoiding and preventing the negative consequences of it altogether.

1.1 Financing financially constrained firms

Modern capital structure theories, such as trade-off theory, suggest that corporate financing decisions, and optimal amount of liabilities, should be determined based on cost and benefit driven from debt. This notion is built upon the assumption that firms can borrow as much as they desire until the point where debt inflicts bankruptcy cost. Thus, tax shield benefit and bankruptcy cost are the main determinants of how much to borrow (Frank & Goyal, 2009). Another commonly advocated theory of capital structure is pecking order theory of Myers (1984). It proposes that external source of financing, borrowing and equity issuance, should be a secondary choice after a firm exhausts all of its internal resources. The reason for such an order is the presence of asymmetric information and resulting external finance premium. Therefore, firms should deploy internal resources, debt, and external equity in their operations, respectively. Finally, Baker and Wurgler (2002) proposed the market timing hypothesis of capital structure, arguing that when equity prices are higher firms issue

equity because the cost of equity is low, and when the prices are lower they repurchase stock and increase debt financing. This cycle is closely related to general price level in the stock market, and so thusly called “market timing”.

While capital structure studies are continuously searching for empirical evidence to (dis)prove the validity of these theoretical principles, they primarily ignore the limitations that some of the firms have to face. Firms, which are particularly small and financially constrained, as described by Campello, Graham and Harvey (2010), whose operations are, to a varying degree, affected by financial limitations. Financially constrained firms’ defining attribute is that they are either completely denied bank loan when they request one, or able to obtain less than the original amount they request or they are demanded to bear excessive costs in return. The major cause of the frictions between the banks and those financially constrained firms is the agency cost which is driven by the informational asymmetry (Bernanke, Gertler, & Gilchrist, 1994). Clearly, the agency cost arising between financially constrained firms and banks creates a barrier between firms and the credit resources, causing them to maintain a forced capital structure rather than optimal as described in modern finance capital structure theories. Fazzari, Hubbard, and Peterson (1989) investigated this issue extensively and concluded that severe financial limitations compelled firms to become strictly dependent on their internal resources. Campello et al. (2010), also point out that they accumulate cash in good times and finance their operations with those rainy day funds, considering that external financing may not be available when needed. In another branch of finance literature, namely trade credit, it is revealed that financially constrained firms turn to alternative financing options such as interfirm credit when they suffer from lack of access to credit from banks. Scholars, such as Meltzer (1960);

Nilsen (2002); Petersen and Rajan (1997), point to the substitutionary function of trade credit from supplier and document that it is highly common amongst the financially constrained firms. Bastos and Pindado (2008); Mateut, Bougheas and Mizen (2006) argue that continuing business relations among the supplier and the buyer reduce informational asymmetry and render trade credit financing viable for financially constrained firms. Therefore, capital structure of financially constrained firms can vary with their access to credit. The more severe a firm's limitations are the more sensitive its capital structure may be toward credit availability, which generally depends on the prevailing monetary policy.

1.2 Monetary cycle and financing

Theoretical ground for the limited access of financially constrained firms to credit resources have been covered at length by Bernanke and Gertler (1995); Bernanke Gertler and Gilchrist (1996); Gertler and Gilchrist (1994); Kashyap, Stein and Wilcox (1993). Common theme hypothesized in those studies is that severe agency cost arising from massive informational asymmetry between banks and bank-dependent small firms leads to financial limitations in the form of higher cost of external financing, limited or complete denial of access to funds. However, their access can be enhanced or impaired by the stance of monetary policy. Bernanke et al. (1996) argue that during monetary contractions limited credit supply in the service of non-financial sector will be directed largely toward financially solid firms, i.e. an episode of "flight to quality" will take place. They further assert that financial accelerator, that is the combined effect of reduced value in net worth and collateralizable assets in addition to lowered

revenues and reduced cash flows with increasing external finance premium in times of economic contraction, will further limit their access. As a result, financially weak small firms will be left in dry and most likely they will have to cut down on the investment and exhaust the cash stocks previously saved, as argued by Campello et al. (2010). Not surprisingly, these firms do not have large internal cash flow that could allow them to maintain a flexible capital structure, which is in fact what makes them bank-dependent in the first place.

In an empirical study, Korajczyk and Levy (2003) investigate the link between monetary policies and publicly traded US firms' capital structure decisions. Their findings are in support to theoretical ground established by Bernanke et al. (1996) and others that financially constrained firms' debt decisions are in fact pro-cyclical and unconstrained firms' debt ratios are counter-cyclical. These findings suggest that financial limitations of those firms drive them toward a capital structure that alters with credit conditions. Of course it is subtly assumed that credit conditions are mainly manipulated by the monetary policies. Expansionary monetary policies are usually accompanied by lowered cost of financing, increased credit supply and rise in economic activity. Thus, it is very reasonable to expect that those who have been previously denied funding will desire to take advantage of eased credit conditions, compared to those who have credit resources within their reach at all times. The situation may reverse in times of monetary contractions in an opposite way to what is described. The result would be that financially constrained firms have the capital structure that is highly sensitive to credit conditions, which may lean toward more debt financing in times of economic expansion and more equity financing in times of contraction.

Accordingly, as a developing economy, Turkey is identified with low savings rate, shallow and highly volatile financial markets, and large presence of bank-dependent small firms for financing (Alp & Yalçın, 2015; Özmen, Saygın, &Yalçın, 2012). In such economic environment, where credit is in short supply, financial intermediaries may direct the limited resources to large corporations, which can provide collateral and the liquidity required to secure a loan. On the other hand, illiquid small firms may not be able to obtain the amount of credit they request because of the major weaknesses in their balance sheets, which fuels agency cost occurring in a lending-borrowing relationship between a bank and the small firm. However, in times of high financial liquidity, those financially constrained firms that had been putting the spending decisions on hold due to lack of funding, may engage in high borrowing activity. Softened credit conditions may encourage them to exploit the window of opportunity today. In contrast, financially unconstrained corporations with a serious amount of internal cash flow may not inflate the demand for credit in such a particular time because they previously had to face no restrictions.

DeAngelo, DeAngelo, and Whited (2012) document empirical findings in support to this argument. They demonstrate that despite the existence of an optimal capital structure most firms issue debt to finance investment opportunities, deviating from the optimal debt ratio. They report that spikes in debt ratios and investment levels coincide; leading to the conclusion that investment may be the major driver of increasing debt ratios. Thus, this process may result in cyclicality in the capital structure of financially constrained firms. More specifically, we may observe a significant rise in the debt ratios in the periods of expansionary monetary policies, and a significant shrinkage in the contractionary periods. On the other hand, capital

structure of unconstrained firms may be less susceptible to monetary cycle, resulting in less volatile debt ratios, aggregate data seems to confirm this finding of the literature.

A different but related strand of literature has presented that trade credit (TC), which has been largely overlooked in capital structure studies, is an important source of financing particularly for SMEs (small and medium size enterprises). Studies have shown that it generally assumes a significant percentage in capital structure. For example Petersen and Rajan (1997) show that TC constitutes 15% of total financing of an average American firm. In other developed countries such as Germany, France and Italy TC ratios go up to as high as 20% and in UK it is more than 50% of total debt (Mateut et al., 2006). According to CBRT data trade credit to total assets ratio has been around 20% on average for all firms, and it is around 35% of total liabilities. Examining capital structure data overtime actually shows that TC has been mainly in the service of financially constrained firms, particularly in times of economic contractions. They seem to meet around 60% of their external financing need via interfirm credit in between 2000 and 2004 and this ratio comes down to 40% in times of expansion. Large swings in the ratio of trade credit of financially constrained firms indicate their sensitivity to economic conditions. On the other hand, ratio of trade credit to total asset is 15% for financially unconstrained firms and it is relatively more stable. Evidently, interfirm credit is an important financing instrument and deserves academics' attention.

Extensive literature shows that trade credit is an important source of financing for financially constrained small firms, even it is claimed to be an alternative to bank loans (Abdulla, Dang, & Arif, 2017; Garcia-Appendini & Montoriol-Garriga, 2013). Some of the stylized facts about TC are that it is largely utilized by small firms, which

are usually described as financially weak, and bank-dependent, and it is mostly provided by financially unconstrained large firms, which usually have the access to capital markets, and generate significant cash flows (Ng, Smith & Smith 1999; Nilsen, 2002; Petersen & Rajan, 1997). These facts suggest that small firms may be inclined to take advantage of relatively more TC because they lack the access to other sources for financing. By the same logic, because large firms have access to other financing channels and they generate high internal cash flow to finance their operations, they have financial capabilities to supply TC instead requesting it. Financial literature suggests that trade credit can substitute for traditional financing, particularly short term bank loans. This idea becomes more prominent if firms are defined as financially constrained (Love, Preve & Sarria-Allende, 2007; Meltzer, 1960; Petersen & Rajan, 1997) or when they do not have access to capital markets (Abdulla et al., 2017; Nilsen 2002).

General conclusion implied in the trade credit and capital structure studies is that financially constrained firms are highly vulnerable to economic conditions because they suffer from the lack of access to bank loans and the supply of loans are manipulated via monetary policy. To compensate for the lack of external borrowing they tend to increase interfirm credit. Once their access is restored they gradually decline the level trade credit and increase financial debt in times of monetary expansion. However, financially unconstrained firms follow relatively more stable trend since they have better access to external financing and their internal revenues may help them absorb the effect of economic shocks. Thus, as a significant source of financing, TC seems to have an important role in determining optimal debt level of most financially constrained firms around the globe, and Turkey as well.

Understanding the financing patterns of firms requires analyzing various debt components separately while considering their ability to obtain external funding. If the financing function of trade credit is in place, some of the variables that facilitate external borrowing will negatively influence the decision of trade credit demand which can only be documented by a separate analysis. Such an approach not only reveals true significance of trade credit financing for firms but also contributes to efficiency of the results. It is clear that an insightful conclusion on firms' financing decisions requires not only assessing firm specific variables but also the inclusion of macroeconomic conditions under which firms operate. Since both interest bearing debt financing and trade credit channels seem to have been affected considerably by the macro economic variables it is necessary to consider those two set of variables together and evaluate the financing patterns controlling for the changing economic conditions.

Although, the arguments and theoretical landscape presented above generally underline the importance of monetary policies initiated by central banks, accompanying effects of an expansionary monetary policy can be achieved by a large amount of foreign capital inflow to an economy. Extant literature have provided ample evidence that international capital flow has the effects of growing GDP, increasing asset prices, appreciating reel exchange rates and significant rises in credit supply (Baks & Cramer, 1997; Borio, McCauley & McGuire, 2011; Rey, 2013). These findings become more prominent in EMEs possibly because less developed financial markets, less savings, lack of credit availability for the use of real sector, and high interest rates are major setbacks before investment and economic growth. For example Mendoza and Terrones (2012) examine both developed and developing economies and they document a more distinct and a systematic relationship between capital inflow and

credit supply in EMEs compared to developed economies, arising from possibly high level of credit supply that meets the needs of non-financial sectors in those economies.

1.3 Rise in foreign capital and financing patterns in Turkey

In line with the previous section, Turkey has been the recipient of large amount of foreign capital as a result of unconventional monetary policies implemented in major advanced countries. After 2008 mortgage crisis, the Federal Reserve Bank of USA (the FED) engaged in quantitative easing program and cut down the policy rates to as low as zero, a process resulting in injection of billions of dollars into the system. In the search of higher yield and international level diversification, most of the fund managers targeted EMEs, making investments in the forms of purchasing government bills, corporate bonds, or direct portfolio investment (Avdjiev, McCauley & McGuire, 2012; Bruno & Shin, 2015; Carabarin, Garza & Moreno., 2015; Chui, Kuruc & Turner, 2016; McCauley, McGuire, & Sushko., 2014). In the early 2000s, the amount of total foreign capital was equal to approximately 40% of GDP, in 2008 it was 47% and in 2015 it is 68% of GDP. Given that within this time period, GDP has grown four times what it was in early 2000s magnitude of the flow may become clearer. During this time period, Turkish economy has presented the symptoms of expansionary monetary policy. For example, the highest growth rate in GDP has been achieved, asset prices have risen, and policy rates came down to a historical low level of 3.5% in 2013 from 16% in 2008. Similarly, money supply has been raised systematically over the last decade. From 2004 to 2016 annual average growth rate in M2 has been around 25% (see Section 2.3 Figure 7 for details).

Thus, credit supply is increased unprecedentedly, boosting the lending-borrowing activity between financial and the real sector. Accordingly, recent monetary policies and the expansion in stock of foreign assets in domestic economy seem to have led to excessive borrowing by non-financial corporate sector, thus significant changes in the capital structures of firms have been realized. The observations appear to be consistent with what has been discussed earlier that average financially constrained firms' interest bearing debt to total asset ratio has gone up to 45% in 2015 from 25% in 2007. On the other hand, financially unconstrained firms' capital structure has gone through relatively less drastic changes. For example debt to total asset ratios of large firms have been 35%, which was 19% of total assets in 2007.

Below examples[6] which belong to 9 highly industrialized European countries, have been provided by Joove (2013) and US private firm data is obtained from Cole (2013). Similarly, Gill (2014) reports the average debt ratios for total of 20, both developed and developing European countries. Although, values for individual countries have not been reported in Gill (2014), given that developed nations are highly above the average, debt ratios in developing countries in general must be significantly below 20%. All numbers belong to non-listed private firms and indicate the ratio of interest bearing debt to total asset.

Table 1 indicates that average debt ratio of privately held Turkish firms is twice the average debt ratio of private firms in European region. Firms in countries such as Germany, Sweden, Switzerland, countries with highly developed financial systems and

---

[6] Since most studies either focuses on publicly traded firms or they consider total debt. Accordingly, interest bearing debt ratios in privately held companies have received relatively less attentions. Thus, literature review on this point has been limited.

significantly less exchange rate risks maintain average debt ratios 10% points below Turkish firms, suggesting that increasing debt stock of Turkish corporate sector compared to the rest of world, has reached excessive levels and may pose economy-wide risks. A little deeper analysis reveals that most of the borrowing belongs to financially constrained SMEs. Once their access has been enabled they borrowed heavily. On the other hand, firms with relatively better access to external funds in general, i.e. have relatively less financing constraint; they contributed less to debt stock when credit supply was in rise.

Table 1. Average Debt Ratios in Selected Countries in Comparison to Turkey

Country	Germany	France	Italy	Belgium	Finland	Portugal
Financial Debt/Total Assets	28	10	9	27	24	31
Country	Spain	Sweden	Switzerland	EUR Average[7]	USA	Turkey
Financial Debt/Total Assets	18	23	33	20.2	38	40

Starting from mid 2000s, expansionary monetary policies, which essentially encouraged lending and borrowing activity, have been prevalent in Turkish economy. Furthermore, substantial increases in money supply and historically low level of interest rates (see Section 2.3. for details) have significantly facilitated borrowing activity of non-financial sector. Thus, both foreign capital inflow and expansionary monetary policies have created a suitable economic environment for excessive borrowing.

[7] European countries included in calculation of the average value are Belgium, Bosnia-Herzegovina , Bulgaria, Croatia , Estonia , France ,United Kingdom, Germany , Iceland , Italy , Luxemburg, Norway , Poland, Portugal, Serbia, Slovak Republic, Spain, Switzerland, Netherlands, Ukraine.

It is clear that in a globalized world economies are more connected and advanced country monetary policies are easily transmitted to EMEs through capital flow (Passari & Rey, 2015; Rey, 2013). Not only the results of this study will provide valuable insight into firms' access to credit channels but also it will help us understand how advanced country monetary policies can be transmitted to real economy via non-financial sector's financing decisions. Results can be useful to policy makers and academics as well, for developing appropriate policy measures to be implemented in future episodes of foreign capital inflow in addition to determining necessary policies aiming to eliminate the influence of foreign policy decisions. However, surprisingly there has been little academic focus directed toward the micro level consequences of foreign capital. To the best of my knowledge this is the first study examining in detail the micro level economic consequences of foreign capital inflow on financing pattern of financially constrained and unconstrained firms.

Separating firms into groups based on their level of financing constraint proxied by size and stock market listing status, changes in financing patterns are investigated in times of high foreign capital flow and expansionary monetary policy. The findings can be summed up as following. Due to the lack of internal sources and limited access to external credit, financially constrained firms' capital structures are highly sensitive to general monetary conditions. Relatively weak balance sheets and limited credit availability force them to benefit from alternative financing channels such as interfirm credit. On the other hand, financially unconstrained firms maintain relatively stable capital structure because of the availability of internal and external funding. Furthermore, monetary policies and rise in foreign capital significantly facilitated lending conditions, increasing the credit supply, and strengthening firms' ability to

access to conventional credit resources. Enhancements in non-financial sector's access to bank loans ultimately led to excessive borrowing both in the form of foreign and domestic currency. With such heavy burden of debt, the sector has become dependent on continuance of foreign capital entrance to maintain profitability and liquidity, while facing both exchange rate and the liquidity risks. The more severely a firm was previously challenged by financing limitations the more it has borrowed once the limitations are removed, contributing to excessive debt burden of the economy in proportion to its financing constraint. Furthermore, significant changes in trade credit financing decisions are documented; as their access to bank loans are facilitated by the effect of foreign capital and monetary policy, they reduce portion of interfirm credit and increase bank financing. In contrast, they considerably increase the supply of trade credit to smaller firms. Recent expansion in consumption and corporate sales motivate firms to supply more trade credit to promote sales and increase their market share. Furthermore, monetary policy seems to be more effective on conventional credit channels than trade credit.

Our study fulfills the need for investigating the consequences of foreign capital flow at firm level and documenting its significance as well as assessing the efficacy of corresponding monetary policies. Results indicate that firms, particularly financially constrained ones are, to a considerable degree, dependent on foreign capital for financing. However, uncontrolled foreign capital flow leads to excessive borrowing, which can lead to catastrophic results in case of a sudden stop or a reverse flow. Monetary policy has been found to be as affective in financing decisions of constrained and unconstrained firms, similarly contributing to building up vulnerabilities of real sector through excessive leverage.

More specifically the study;

- Investigates the effect of foreign capital on financial debt while controlling for monetary policy in addition to other variables that are previously found to be effective.
- Analyzes the changes in trade credit financing decisions as a response to rising foreign capital and expansionary monetary policy.
- Focuses on the changes in the supply of trade credit from financially constrained and unconstrained firms.
- Reveals that trade credit financing function as an alternative to bank loans in difficult times of the economy and as sale-promoting instrument in other times.
- Provides evidence that foreign capital not only facilitates borrowing process of financially constrained firms but also leads to exceedingly easy financial conditions and subsequently excessive leverage.
- Finds that monetary policy is highly effective on traditional credit channel but it has limited effect on trade credit financing.
- Documents that advanced country monetary policies can be transmitted via capital movements, and financing decisions of the firms in the recipient county. Furthermore, excessive borrowing, fed by foreign capital makes real sector markedly vulnerable to foreign monetary policy decisions.

Non-financial private and public Turkish company data, which includes 27.500 firms operating in various sectors, is used. Data period covers from 1996 to 2016. The firms are separated into groups based on level of financing constraint, following Hadlock and Pierce (2010). After extensive literature review and empirical analysis they

report that size is the least endogenous criterion that reflects firms' financing challenges. Furthermore, stock market listing status has been employed as another criterion to classify firms as financially constrained and unconstrained since being publicly traded on a stock market naturally removes financing obstacles. Additionally, a series of robustness analysis are conducted to confirm the validity of the conclusion. Results show that findings are highly robust to adding relevant macro variables, re-constructing the dependent variable and reclassification of the data.

The next chapter explores the recent trend of capital flow and its impact on economies and discusses monetary policy responses. Chapter three presents theoretical ground on capital structure, empirical findings from prior studies and explores debt financing patterns of financially constrained and unconstrained firms. Chapter four focuses on trade credit decisions of financially constrained and unconstrained firms. The issue is assessed from theoretical and empirical perspective. We describe the data and methodology used in the analysis, evaluate the results and conduct robustness checks at the end of each relevant section. Finally, in chapter five a conclusion is offered, where the findings of the study are discussed and various measures for future episodes are suggested.

CHAPTER 2

FOREIGN CAPITAL INFLOW IN VARIOUS FORMS

Starting from early 2000s, low interest rates determined by advanced country monetary authorities rendered capital to move toward EMEs with potential to offer higher return. This trend has gained magnitude, and the amount that moved reached up to unprecedentedly high levels in the aftermath of 2008 (Bruno & Shin, 2014). Particularly, monetary policy decisions of the FED have been the major driver of global capital movements (Passari & Rey, 2015; Rey, 2013). In order to recover economic slowdown following 2008 mortgage crisis, the FED and following him the European Central Bank (the ECB), adopted the policy of very low interest rates, triggering large amount of capital flooding from advanced economies toward mostly emerging economies in the search of higher yield (Cerutti, Claessens, & Ratnovski, 2015; Eickmeir, Gambacorta & Hofmann 2013; Turner, 2014).

Existing research presents the recent episode of international capital movements across borders as a transmitter, through which advanced country monetary policies are transmitted to the rest of the world, as a result of such transmission asset prices, interest rates and business cycle tend to move together **(**Passari & Rey, 2015; Rey, 2013). Injection of large amount of capital denominated in foreign currency caused domestic currency to appreciate, interest rates to decline and asset prices to rise (Bhattarai, Chatterjee & Park, 2015; Magud, Reinhart & Vesperoni, 2012). Although it is a world-wide phenomenon, it mostly seems to be initiated and driven by US monetary policy decisions (Bruno & Shin, 2015; Miranda-Agrippino & Rey, 2015; Shin, 2013).

Following the mortgage crisis, the FED initiated quantitative easing program, in addition to historically low interest rates. The main objective of the program was to facilitate growth and accelerate the recovery, providing the economy with cheap liquidity. Such unconventional expansionary policy encouraged yield searching funds, hot money to move toward higher return promising financial markets of EMEs (Cerutti, Claessens & Puy, 2015; Chui et al., 2016). Accordingly, empirical studies such as Anaya, Hachula and Offermanns (2017); Rey (2013) have found that the US central bank decisions had been transmitted to the emerging markets via foreign capital flow. The impact of lowered interest rates and large asset purchase program have manifested in the form of appreciating domestic currency and increasing asset prices in EMEs.

Although the crisis is originated in the USA the rest of the world has received its share. As a result, European Central Bank also followed the FED's footsteps and decreased the policy rates further fueling the flow to locations where funds can earn higher yield (Borio et al., 2011; Turner, 2014). Thus, general rise in credit liquidity spilled over to the EM countries. Understanding what motivates international capital to depart from one location to another, which are formally called push and pull factors, has received great deal of attention from academics. Present study, on the other hand, is more interested in documenting the consequences of capital flow from the perspective of corporate financing. Therefore, next we discuss the main characteristics of various forms of capital flow instead of focusing on pull and push factors in detail.

Similar to the rest of the world, Turkey has received its share from international capital flow. Turkey carries the characteristics necessary to attract foreign capital; such as high interest rates, and high GDP growth, as suggested in (Ahmed & Zlate, 2014). Figure 3 shows various forms via which foreign capital can flow into the domestic economy. The

funds can be obtained directly from international sources by a bank or a firm. The funds can be received in the form of either foreign currency denominated security issuance or cash credit. Clearly, both channels are benefitted by financial and non-financial institutions. Borrowing channel is mainly used by banks that have access to international capital markets, and international banks that stand ready to provide credit.

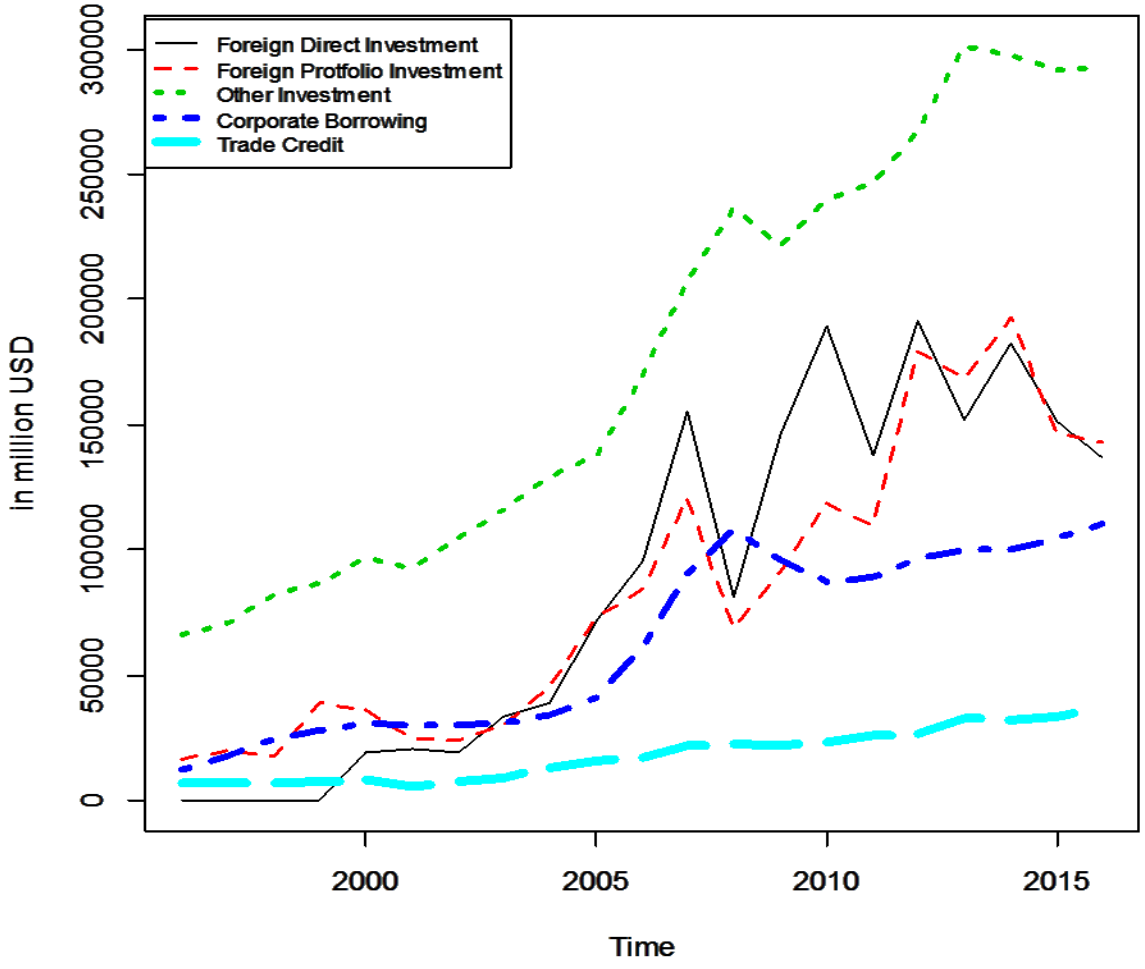

Figure 3. Stock of foreign capital
Data source: [CBRT, 2018]

Similarly, large corporations, possibly with solid credit rating, borrow from abroad in the form of cash credit or via security issuance. Ahmed and Zlate (2014); Carabarin et al. (2017) argue that the main reason behind the rising trend of international borrowing is positive gab between interest rate on local and foreign currency denominated funds. Magud et al. (2012), on the other hand, have demonstrated that less flexible exchange rate regimes encourage real sector to borrow from abroad resources in the form of foreign currency, possibly providing a mental insurance about future exchange rates and ensuring that central bank will stand ready to restore any large swings that may occur in foreign currency markets. Azis and Shin (2013) argue that increased liabilities in the balance sheets of those international financial institutions also motivate them to soften lending conditions and open credit channels further.

Foreign capital can also flow into other economies in the form of foreign direct investment (FDI) and foreign portfolio investment (FPI). FDI mostly involves purchase of assets such as existing firms, land, buildings (Calvo, 1998), results in increased product capacity (Azis & Shin, 2015) and mainly affected by the host country characteristics, such as growth potential, current account balance and trade agreements (Blonigen, & Piger, 2011; Schneider & Frey, 1985). Foreign portfolio investment, on the other hand, is managed by the fund managers and its main purpose is to purchase financial assets such as bonds and stocks (Cerutti, et al., 2015; Shin, 2013). Financial literature seems to treat FDI flow as the safest way to attract foreign capital because of the fact that first of all it usually is a long term commitment and secondly it is in the form of partnership rather than debtor-creditor arrangement (BIS, 2009; Bruno & Shin, 2015; Turner, 2014). Nature of the investment prevents it from causing sudden stops or

flights out of country unexpectedly, creating disruptions for financial markets and exchange rates (Kirabaeva & Razin, 2010). On the other hand portfolio investment flow is the one form that should be closely watched by central banks. Since they provide no long term commitment, sudden stops and reversals in capital flow can disrupt financial markets and trigger defaults (Calvo et al., 1993; Calvo, 1998).

Despite the presence of an upward trend in all forms of capital flow, we see that foreign portfolio investment (FPI) and foreign direct investment (FDI) are the most volatile compared to debt flow channel. Around 2004 and 2005, almost all categories significantly increase in volume. Bruno and Shin (2014) call the period after 2009 as the bond flow intense period, since this period is characterized by high volume of portfolio investment, particularly investment in debt securities, toward most EMEs. A sudden rise in FPI after 2010 indicates that evidently Turkey is no exception. With the announcement of ending the quantitative easing program and possible increase in the FED's policy rates around late 2014, FPI and FDI seem to have been declining. Despite possible increase in the interest rates, borrowing from international sources still appears to be a viable option, particularly for non-financial corporations. This trend may be explained by the positive difference between the costs of borrowing locally and internationally in addition to central bank's commitment to exchange rate stability.

The other investment channel includes loans extended from international institutions, trade credit supplied to local firms and various deposits from non-residents. These loans are borrowed by government, banking institutions and non-financial sector. It follows steadily increasing trend over given period. Particularly financial sector contributes to the trend as it appears to be more profitable for banks to channel those foreign funds to domestic borrowers. Although we do not have the data regarding

hedging their position, they seem to contribute substantially to currency exposure and liquidity risks. On the other hand, despite a significant decrease in local interest rates from 2004 to 2014 (see Section 2.2 for the trend in interest rates), which would be effective in the cost of borrowing, non-financial sector seem to insist on borrowing from abroad, both in the form of cash credit and debt securities. Firms, the ones with the access to international money markets have slightly decreased the borrowing activity after 2008, and kept the level stable after that. The CBRT data shows that, maturity of borrowing has increased; more than 50% of debt is due in more than 2 years but still most of the borrowing took place in the form of bank loans until recently. Data also shows that debt security issuance in international capital markets is becoming more common among the firms.

The final item in the capital flow table, which belongs to non-financial corporations, is trade credit (TC) flow, listed under the other investment section and shows the amount of trade credit extended to domestic non-financial corporations. As a part of their business operations, non-financial firms may demand trade credit from their foreign partners. With the globalizing world and improving economic conditions foreign trade credit supplied to Turkish firms seems to be rising as well. As expected, it follows an upward trend and highly stable. With the improved economic conditions and steadily growing GDP, the trend is not surprising.

In sum, foreign capital can enter into an economy in either of these forms: FDI, FPI or in the form of credit, all of which Turkey has been a major recipient of since 1990s. However, foreign capital that entered the country after 2008 has reached unprecedentedly high levels. For example stock of FPI alone has increased more than twice from 2007 to 2016. As Figure 3 shows, it was around $60 billion in 2007 but

reached up to $150 billion in 2016. Similarly, pure credit granted to financial and non-financial sector has surged by 50% from $200 billion to approximately $300 billion in the same time period. Clearly, numbers indicate a significant rise in FPI and credit flow. On the other hand FDI numbers seem to indicate a reduction. Total FDI was $155 billion in 2007, which has declined to $136 billion within the given period.

Such large amount of monetary injection into Turkish financial system, particularly in the form of foreign currency will lead to significant impact that reaches to micro levels. Previous studies have documented that episodes of foreign capital flow usually result in appreciation in the value of financial assets, real estate booms, and economic growth, strengthening the value of domestic currency, and causing a decline in domestic interest rates (Anaya et al., 2017; Azis & Shin, 2013; Benigno, Converse & Fornaro, 2015; Rey, 2013; Turner, 2014). Since receiving heavy volume of foreign capital can influence the macro economy profoundly, it will also create distinguishable consequences at micro level and, for example, affect the financing decisions of real sector, which operates in the same economy. Present study aims to empirically document the economic consequences and implications of foreign capital flow at the firm level. We particularly focus on the changes in financing decisions of those who are described as financially constrained. We demonstrate, by excluding the direct borrowing of corporate sector, that foreign capital flow has significant impact on financing pattern of non-financial sector. Foreign capital injection into economic system strengthens credit channel and significantly facilitates borrowing process for financially constrained firms. However, easy financing conditions combined with expansionary monetary policies pave the way for excessive leverage and thus build up vulnerabilities against future economic shocks. On the other hand, we find that it significantly affects trade

credit financing policy of both financially constrained and unconstrained firms. Not only financial credit but also trade credit channel, as an important source of financing, found to have been sensitive to movements of foreign capital. Thus, direct evidence that excessive leverage is the product of abundant liquidity via foreign capital and compatible monetary policies is provided.

2.1 Consequences of capital flow

As the financial integration removes borders for capital, it has become much easier for fund managers to direct their capital from one location to another in the pursuit of higher yield. Despite the easiness, consequences of such movement have been very significant, because they usually target EMEs with underdeveloped financial markets that have potential to offer higher return (Calvo et al., 1993; Calvo, 1998, Cerutti et al., 2015). Thus, vulnerable economic conditions in EMEs combined with large volume of foreign capital lead to noteworthy economic consequences where they land. Not surprisingly, the rise in credit supply, domestic currency appreciation and downward pressure on interest rates can be listed among some of the immediate consequences, all of which possibly have further economic implications.

Azis and Shin (2013); Rey (2013); Turner (2014) indicate that capital flow toward emerging markets, as one of the major results of recent expansionary monetary policies followed by central banks of advanced countries, leads to rapid expansion in credit supply, a rise in asset prices, lowered interest rates, and EMs' currency appreciations. Baks and Cramer (1999) study the spillover effect amongst the financial centers. They document that increased liquidity in one center also influences another,

while lowering the cost of borrowing. Financial integration, combined with global liquidity fueled by advanced country monetary policies seem to have expansionary effect on other countries, specifically on EMEs. Increased asset prices and lowered cost of borrowing may ultimately lead to a rise in investment and economic growth. Anaya et al. (2017) examine the possible impact of enlargements in US money supply across EMEs. Their findings support the general perception that surges in the money supply contribute to the international capital flow to EMEs, and lead to expansionary monetary policy stance in their destination. For example Adrian and Shin, (2008) documented that increase in asset prices through capital flow creates additional debt capacity, which is also supported by enlarged liquidity and affordable borrowing. Özatay (2013) suggests that large amount of capital inflow immediately lowers the interest rates and expands credit level, resulting in non-financial sector heavily borrowing. Azis and Shin (2013) argue that period of high liquidity in advanced countries cause funds to flow toward international banking system. The banks, whose liabilities sides of the balance sheets have expanded, are inclined to provide credit to financial and non-financial entities of EMs and from other economies, contributing to international capital movements and domestic credit supply.

One of the most significant consequences of the recent capital flow to EMs is rapid credit expansion and in accordance with it, significant rise in the debt ratios of EM firms (Chui et al., 2016). They further claim that following the decrease in the US interest rates, particularly in 2009, expectation of future currency appreciation against USD encouraged offshore borrowing trend and the process has majorly shifted to borrowing in foreign currency denominated funds.

Bhattarai et al. (2015) examine the effect of US quantitative easing program on major emerging economies. They document that such unconventional monetary policies of the FED has caused significant rise in the value of financial assets, reduced the long term bond yields and pushed the value of domestic currency up. Furthermore, they find that some of the emerging economies, also known as "fragile five[8]", consistent with their reputation, highly vulnerable to changes in US monetary policy shocks and the mentioned results are magnified in these countries.

Existing studies have also provided empirical findings that large volume of foreign capital inflow to an economy can promote consumption, via two distinct channels. The first one is the credit channel and it is proposed that increased credit supply and lowered cost of financing facilitate household borrowing and promote consumption of various traded and non-traded goods. Particularly, the banks, in the pursuit of interest rate differential, channel foreign funds in to the domestic economy and further fuel the rising trend of consumption (Montiel & Reinhart, 1998; Shin, 2013). The second is the trade channel revived as following. Foreign capital inflow puts upward pressure on the value of domestic currency and makes the imported goods more affordable, thus ultimately leading to a rise in the consumption of foreign made goods. The validity of this channel has also been discussed and empirically documented by Calvo et al. (1993); Lopez-Meica (1999); Reinhart, Calvo and Leiderman (2005), examining the experience of Latin countries. Consequently, increased consumption and growth in GDP will be reflected in the sales numbers of corporate sector and revive the

[8] Bhattarai et al (2015) define Brazil, India, Indonesia, Turkey, and South Africa as highly fragile five emerging countries due their vulnerability to global changes in monetary conditions.

importance of trade credit financing channel as an instrument that is highly used to facilitate business transactions among non-financial firms both in Turkey and other countries as well.

The primary monetary link among developed and developing economies, which is international capital movement, allows monetary policy to be transmitted and policy choices to become more sensitive to one another. After advanced country central banks have decided to cut down the interest rates to historically low levels, EM interest rates, not only long term rates but also short term rates have become sensitive to decreased term premium (Filardo, Mohanty & Moreno, 2012; Miyajima, Mohanty & Chan., 2012;). Miyajima, Mohanty and Yetman (2014); Takáts and Vela (2014) analyze EM and advanced country long term rates, and report that after 2008 they became much more sensitive to global long term rates. The main drivers of the linkage between EMs interest rates and advanced country rates seem to be primarily international bond market yields and domestic money and bond markets yields. They are deeply affected by the sizable foreign capital inflow. For example Mohanty (2014) documents that in some of the emerging countries, including Turkey; more than 20% of government bonds have been purchased by non-residents. As a result of this abroad originated demand for debt securities, we observe EMs firms engaging in international bond issuance to take advantage of those favorable interest rates (Filardo et al., 2012; Miyajima et al., 2012; Sobrun & Turner, 2015). Similarly, the data indicates that after 2008 Turkish firms issued Eurobonds in international bond markets at unprecedentedly high levels. The amount of issuance has gone up, by almost 100%, to $11 billion from $6 billion in year 2013 just before the FED announcing the end of quantitative easing program.

In sum, academic literature points to a few major consequences stemming from large amount of foreign capital inflow: expansion in credit supply, decline in interest rates, and appreciation in the value of local currency, a rise in asset prices, intense borrowing activity, economic growth and integration with the global economies. Although these outcomes are initially welcomed by EMs it is highly likely that a sudden stop in capital inflow or a reverse flow may create financial instability in those countries. As the history has repeatedly shown, each episode of capital inflow is subject to stops and reversals, that can, at worst, lead to financial crisis unless the process is managed properly. The side effects accompanied by sudden stop and/or reverse flow of hot money, and the benefits that came with it have been interest to a large body of literature. For example, Calvo et al. (1993); Calvo (1998) draw attention to Latin Countries', particularly Mexico and Chile, experience with capital inflow and reverse flow during 1980s and 1990s. The studies documented that the capital outflow had led to economic turmoil and prolonged negative consequences on economic growth, consumption and employment. They argue that heavy dependence on foreign capital in borrowing and financing, and maintaining value of domestic currency, result in economy-wide vulnerabilities. Therefore, not taking necessary measures can lead to domestic currency to depreciate drastically, interest rates to rise historically, and finally defaults in financial and non-financial sectors when sudden stops and retraction of hot money take place. They further argue that foreign capital that comes in the form of FPI and credit can be exceptionally harmful, as it has the potential to create both currency and maturity mismatch when it suddenly leaves the economy. It is clear that there can be serious consequences if global economic atmosphere changes in the opposite direction and

foreign capital starts reverse flowing. Shin (2013) discusses the issue at length and argues that reverse fund flow to be triggered via tight monetary policy of advanced economies can cause;

- Steeper yield curve,
- Strong depreciation in local currency further hammering firms' capacity to pay off dollar denominated credits,
- Due to higher cost of financing lower level of investment and thereby lower growth.

These listed consequences point to an immediate contractionary environment in the recipient economy. More importantly, reverse capital flow will reduce the funds that are available to the small firms that cannot borrow internationally. Since the supply side unexpectedly shrinks while the demand is constant, high agency cost associated with small firms may launch an episode of flight to quality (Bernanke et al., 1996).

Tong and Wei (2009) analyze the impact of reverse capital flow on firms during the period of 2007-09. Their results indicate that the firms that are hit hardest the ones that are more dependent on external financing for working capital. Those firms rely on short term financing to carry on operations and in the event of a credit crunch stemming from reverse flow of capital they will have difficulty obtaining necessary financing to continue, as a result their operations will be impaired. Even if those firms do not borrow directly from international banks, since the local credit liquidity is partially financed by international banks by extending credit to local banks, once the global liquidity contracts, local banks' ability to supply loans will naturally be impaired, as well.

2.1.1 Capital flow and credit supply rise

In order to remedy economic slowdown in the aftermath of the mortgage crisis central banks in major advanced economies such as the FED and the ECB, adopted the policy of very low interest rates, triggering large volume of capital flooding from advanced economies toward mostly emerging economies in the search of higher yield and diversification (Bruno & Shin, 2015; Cerutti et al., 2015; Eickmeir, 2013; Turner, 2014). Evidently, capital flow of this magnitude that world has never experienced before will have to have macroeconomic and micro level consequences. Not only the immediate results of inflow but also the likely consequences of reverse flow require attention of academics and policy makers as to develop appropriate policy measures for similar trends that may occur in the future. Prior research has documented ample evidence that international capital flow has the effect of growing GDP, increasing asset prices, appreciating real exchange rates, and sudden rises in credit supply (Baks and Cramer, 1997; Bhattarai, et al., 2015; Borio et al., 2011; Rey, 2013). These findings become more prominent in EMEs possibly because less developed financial markets, less savings, lack of credit availability for the use of non-financial sector, and high interest rates are major setbacks before investment and the economic growth. In a recent study, Mendoza and Terrones (2012) examine both developed and developing economies and they document systematic relationship between capital flow and credit supply. They argue that this relationship becomes more distinct for emerging economies. Foreign capital inflow, by providing cheap capital into the economy can improve credit conditions and lower the cost of financing. Better access to credit channels and lowered

cost of financing lead to higher investment and faster economic growth. However, one of the most immediate results may be the rise in credit supply. Magud, Reinhart, and Vesperoni (2012) examine the effect of capital inflow on 25 emerging economies. They document that increase in credit supply, lowered interest rates and currency appreciation are the most distinguished results. Therefore, we mostly focus on its impact on credit supply.

Separating the flow into its variations is important to properly comprehend the phenomena itself, identify the results of it, determine macro and micro level implications, and develop appropriate policies for the future (Tong & Wei, 2009). Although debt and investment channel both may seem to generate similar result of rising credit supply but empirical findings reported show that it is not the case. For example Igan and Tan (2015) argue that only non FDI flow positively influences the credit supply while Lane and McQuade (2013) find international capital movements to be as affective in determining the credit growth. They further report that only debt channel of capital flow has contributed to the credit expansion and capital flow in the form of equity investment has no statistically significant effect on the credit level. Calderon and Cubota (2012) focus on broader period and examine the capital flow episodes between 1975 and 2010. Their data set cover 70 countries and they find that foreign capital inflow causes a rise in credit level. They also consider the composition of the inflow and document that the other investment channel (direct borrowing by financial and non-financial sector) is more likely to cause credit booms. Furthermore, they report that it is highly likely that credit booms will have more severe consequences if a large portion of it is hoarded by the other investment channel.

Magud et al. (2012) examine the effect of the recent foreign capital episode on 18 emerging economies, while accounting for their exchange rate policies. They find that capital flows do lead to expansion in credit supply. However, countries with less flexible exchange rate experience more significant rise in debt channel through which financial institutions channel foreign funds to domestic borrowers. Similar results are reported by Ghosh, Kim, Qureshi, and Zalduendo (2012) that economies with flexible exchange rate regimes are less subject to rise in capital flow compared to rest of the EMEs.

Blanchard et al. (2015) separate the capital movements based on the channel via which it is transferred and suggest that if the capital comes through a bond-financing channel then it creates contractionary impact, if it comes in the form of portfolio investment or through purchase of other assets it is expansionary. However, literature cites challenging empirical findings. For example Carabarin et al. (2015) draw attention to increasing trend of international bond financing among Mexican firms. They argue that as a result of rising foreign capital supply, firms that have no access to such markets are able benefit from domestic credit channels. They conclude that large firms were able to meet their financing need through international bond markets and the amount they did not demand in domestic system left available to smaller firms. The end result was that debt ratios of all firms in general have gone up. Similar result have been documented by Igan and Tan (2015), using a comprehensive data set that encompasses 33 countries they report that credit expansion is significantly driven by non-FDI and the impact is also significant both on non-financial sector and the household credit data. As the capital inflow increases the credit extended to households and non-financial sector rises. On the other hand net FDI flow does not seem to affect credit supply.

Shin (2013); Turner (2014) and others focus on global credit liquidity caused via capital flow from advanced countries toward emerging economies. They argue that due to low interest rates in advanced economies such as the US and Europe, in the pursuit of higher yield, investors direct funds toward emerging markets. Fund flow decreases long term cost of financing and soften credit conditions in the recipient countries. Since fund managers are constantly in pursuit of better return yielding investment opportunities, hot money is highly mobile across borders and money supply can rise and decline in cycles, influencing the interest rates to move in cycles as well. As a result, increased liquidity in a particular financial center can also influence asset prices and interest rates in another financial center, creating liquidity spillover across borders (Baks & Kramer, 1999). Accordingly, the cost of borrowing in emerging markets has been decreasing significantly following the trend in advanced economies. Low yields in advanced countries push capital toward emerging economies with relatively higher yield, resulting in higher level of capital supply and downward pressured cost of borrowing. Furthermore, low interest rates on foreign currency funds encourage firms to borrow from international money markets, usually in dollar rather than local currency of their own (Miyajima, et al., 2012; Turner, 2014). There is a positive gap between local rates and global rates which is large enough to compensate firms for the risk of borrowing in foreign currency. Thus, they will have the economic motivation to prefer outside financing resources, and transfer those funds to local system. This process ultimately influences the credit availability in the service of financially constrained firms, and contributes to reducing the cost of borrowing while simultaneously increasing the real sector's exposure to exchange rate risk. Another variable that is significant in driving global liquidity cycle is investors' perception of risk measured by VIX (Cerutti et al.,

2015; Passari & Rey, 2015; Rey, 2013). These studies show that because risk perception of investors change with the global events, particularly portfolio investment flow is very volatile and vulnerable to global events, as a result it moves creating capital flow cycle.

Recent trend of financing through global suppliers is also documented in Turner (2014). He shows that from 2009 to end of 2013 annual amount raised by non-financial corporate sector through international money market has surged by more than 50%. The same number has increased around 45% for financial sector. These numbers imply that firms with access to international capital markets took advantage of easy financing conditions abroad, and financial institutions also received their share from the conjuncture. The fact that large firms were able to satisfy their financing need through such an option pushed the banks toward targeting smaller firms as primary costumer. Not only domestic credit supply became available to smaller firms but also the banks were able transfer substantial amount of funding from international capital markets to domestic credit pool, making it much easier for them to borrow more (Carabarin et al., 2017). In a recent study McCauley et al. (2015) examine offshore foreign currency credit demand. Their findings indicate that the demand for bank loans increases as the spread between borrower's home country policy rate and the FED funds rate grows larger. They further find that the difference between borrower's home country long term rates and ten year US treasury rate is highly significant in the decision of offshore bond issuance. Economic indicators such as interest rate differential also seem to contribute to the credit expansion by encouraging local firms to take advantage of the interest rate differential. Once the easy financial conditions fully satisfy large EM companies' financing needs, local banks have to channel their service to small, young and financially constrained firms, softening the lending conditions. Process may result in

highly enhanced access to lines of credit by those that cannot reach to international bond markets. Thus, it is well established by a large body of literature that various forms of capital flow can significantly contribute to credit expansion and influence borrowing activity of non-financial sector. This process is supported not only by borrowing from international resources but also benefitting from the funds transferred into domestic system. Furthermore, as large firms borrow from abroad channels, domestic credit reserves are left available to the use of smaller firms, and credit conditions become more tolerable by SMEs.

2.2 Capital flow and dollarization

Focusing alone on growth in credit supply occurred within national borders maybe misleading in understanding and revealing true riskiness attached to foreign capital movements. Large portion of the flow consists of banks and corporate borrowing from international resources and is denominated in foreign currency. Therefore, increase in the flow of debt from abroad resources poses both currency mismatch and liquidity risk to EMEs (Chui et al., 2016; Hoggarth, Jung & Reinhardt, 2016; Turner, 2014). Accumulation of foreign currency debt builds up vulnerabilities to future monetary policies of advanced countries and therefore, creates a threat to stability of the economy (Avdjiev et al., 2012; Brzoza-Brzezina, Chmielewski, & Niedźwiedzińska, 2010). As a result implications and policy challenges for financial soundness, in an episode of sudden stop or flight, require comprehensive analysis and appropriate measures.

Accordingly, increasing leverage denominated both in domestic and foreign currency is received attention from academics. Azis and Shin (2013) identify the period

after 2008 as the second phase of global liquidity which actually started in early 2000s. With the decision of low interest rates by advanced country central banks global capital started to move toward higher yield offering emerging economies. Most of the capital has moved through banking system in the form of credit to financial and non-financial sectors. In the aftermath of 2008, in order to put the economy back on track, the FED pulled down interest rates to the lowest level and implemented quantitative easing program which resulted in injecting billions of dollars into capital markets. In the pursuit of higher yield, asset managers channeled massive amount of capital to emerging economies (McCauley et al., 2014; Turner, 2014).

The more advanced country interest rates decline the more capital may flow toward high interest offering EMs, activating the credit channel. Increasing supply of foreign currency denominated funds provide EM financial and non-financial firms with easier access to affordable credit. Thus, the availability of such affordable funding and the presence of various customers in need of borrowing lead to intense dollarization in the borrowing process (Alp & Yalçın, 2015; Chui et al., 2016; Özatay, 2013). They propose that underlying motivations must be the favorable cost of financing, to hedge against dollar denominated revenues, or expectation that local currency appreciation in future. Similarly, Magud et al. (2012) have substantiated that less flexible exchange rates do motivate borrowing in foreign currency, which may be the result of the expectations that monetary authorities will continue intervening in future in case it is needed.

Brzoza-Brzezina et al. (2010) examine the changes in the trend of foreign currency borrowing in East European countries as a reaction to central bank monetary policy decisions. They argue that inflation targeting monetary policies and accompanying high policy rates lead to higher percentage of foreign credit in the total

credit supply. Foreign credit constitutes a substitute for domestic currency credits and the central bank can only influence the cost of domestic credits. Inflation targeting policies induce policy rates to be relatively higher and therefore, demand for foreign currency denominated loans is in rise.

Borio et al. (2011) document the sudden and significant rise in demand for dollar and euro denominated credit, which is triggered by unprecedentedly low interest rates. Particularly, low interest rates give rise to credit supply that is directed toward emerging economies. In their descriptive study they raise concerns regarding long term impact that foreign currency denominated credit, particularly dollar and euro denominated loans, may have on small economies. They emphasize that tight monetary policies followed by some emerging countries, and recently implemented expansionary monetary policies by the US and European central banks lead to EM borrowers to obtain low cost credits either directly from abroad or from local banks. Interest rate differential creates advantage in the cost of borrowing from abroad. They further argue that advanced country monetary policies are mainly responsible for increasing foreign currency denominated leverage. Similar studies also documented the consequences of the recent episode of capital flow and found that recent trend have provided EM firms with improved access to foreign currency funds. Easy credit conditions and relatively cheaper financing options created by advanced economies provide a funding option to the firms and financial institutions. At first glance, exploring different financial sources and taking advantage of cheaper options may seem innocent but in fact large volume of debt in foreign currency obtained in such a way may create serious economic consequences and have deeper policy implications (Avdjiev et al., 2012; Bruno & Shin, 2015; Carabarin et al., 2015; Chui et al., 2016; McCauley et al., 2014).

Expansionary monetary policies have created the most suitable environment for hot money to move across the globe. As a result large volume of capital moved to a variety of destinations where higher return is offered. Such heavy volume of capital moved across borders in various forms, reshaping the macroeconomic atmosphere fundamentally where they landed. At the end of 2014, estimated total amount of dollar denominated bond issuance by non-financial sector went up to $9.2 trillion, this number was around $6 trillion in 2010 (McCauley et al., 2015). Rey (2013) empirically documents that investment flow to other countries is majorly affected by advanced country interest rates and perception of general risk level measured by VIX index. She continues arguing that this flow is so effective that around 20% of variation in asset prices in EMEs can be explained by foreign capital flow. Clearly not only favorable interest rates encouraged firms to borrow from international funds at a high level but also higher return in EMEs attracted foreign funds, paving the way for advanced economies' monetary policy transmission. Such a transmission would translate into that advanced economies can actually be effective in driving the business cycle in an economy which is subject to foreign capital inflow. Furthermore, Bruno and Shin (2015) argue that the borrowing conditions are so favorable that emerging market corporations have engaged in carry trade[9] activity. It is important to emphasize that most of this borrowing takes places in a foreign currency, usually in US dollar, which gives rise to exchange rate risk, as well. Turner (2014) points out that such an exchange rate risk is fueled by not only companies but also banks that borrow from outside. The difference between interest rates on high

[9] Carry trade is defined as that a nonfinancial institution involves in financial activities such as borrowing and lending.

local and low international funds spurs the banks' appetite to take advantage of the discrepancy. Thus, they significantly increase their borrowing activity and transfer those funds into local markets.

A report on the subject published by Bank for International Settlements (2009) shows that a similar episode of international capital movement took place in the late 1980s and early 1990s. They demonstrate the similarities that exist between current and previous episodes. They argue that main motivation, which motivated them both, is the fact that high yield promising emerging markets had become potentially attractive for yield searching investors. Report continues stating that monetary expansion in advanced economies increased the supply of low cost capital through international banking system. Issued debt securities are largely denominated in US dollar, passing the currency risk to the borrower. Furthermore, local banks and businesses channeled the funds to domestic economy. Mexican crisis in early 1990s and Asian crisis in late 1990s put an end to whole cycle and left the countries with thin capital markets and weak banking system near bankruptcy. Local banks borrowed from international banks, mostly in short terms and transferred those funds to the local businesses, carrying both currency and maturity mismatch risks. Presence of underdeveloped capital markets and the lack of financial instruments to facilitate long term borrowing in local currency actually made the short term borrowing in foreign currency inevitable.

A currency mismatch occurs whenever debt and the revenues are in different currencies and as a result net debt is sensitive to the changes in exchange rate. Near zero interest rates and the injection of billions of dollar into the economic system has created a new era of currency mismatch in recipient countries. Easy borrowing conditions and

lower cost of dollar denominated funds have been appealing to EM corporations, thus they have been borrowing in foreign currency and pushing the leverage ratios up. Combination of high leverage and currency mismatch risk make them overly vulnerable to exchange rate movements. Most of the borrowing takes place through issuance of dollar denominated debt securities, maturity ranging from short to medium term. In case of sudden stops in capital flow or a trend of reverse flow can jeopardize not only the companies that are markedly leveraged but also whole economies (Chui et al., 2016).

Prolonged period of foreign capital flow into an economy eventually lowers interest rates, and strengthens domestic currency. Lowered cost of borrowing and stable exchange rate against foreign currency may encourage borrowing in foreign currency (Özatay, 2013). Consistent with arguments presented, Figure 4 below shows Turkish non-financial firms' foreign currency denominated assets and liabilities, which consists of bank loans, debt securities and trade credits. It is clear that liabilities follow steep rising trend despite stable level of assets. The gap between the series seems to have become particularly wider after 2010, in the midst of a period of expansionary monetary policies implemented by the FED and the ECB. This striking difference between foreign currency denominated assets and liabilities severely contributes to currency risk and creates exposure to the future policy changes. In Section 1 debt stock of non-financial sector has been shown to be around 67% of GDP, which suggests that almost more than half the debt is in foreign currency whereas non-financial sector has revenue stream in foreign currency as much as about less than 30% of the foreign currency debt stock. As discussed above long term domestic currency appreciation and low cost of foreign funds appear to motivate borrowing in foreign currency. True risks attached to capital flow may only be revealed with sudden stops and or reverse flows as suggested in Calvo

et al. (1993); Calvo (1998); Shin (2013). They report the consequences of reverse flow; strong depreciation in the value of domestic currency, increase in the cost of borrowing, and decline in investments and growth. Calvo et al. (1993); Calvo (1998) particularly analyze Latin Countries' exposure to foreign capital and the consequences of reverse flow in 1990s and conclude that it can lead to devastating results if the economy becomes dependent on foreign capital.

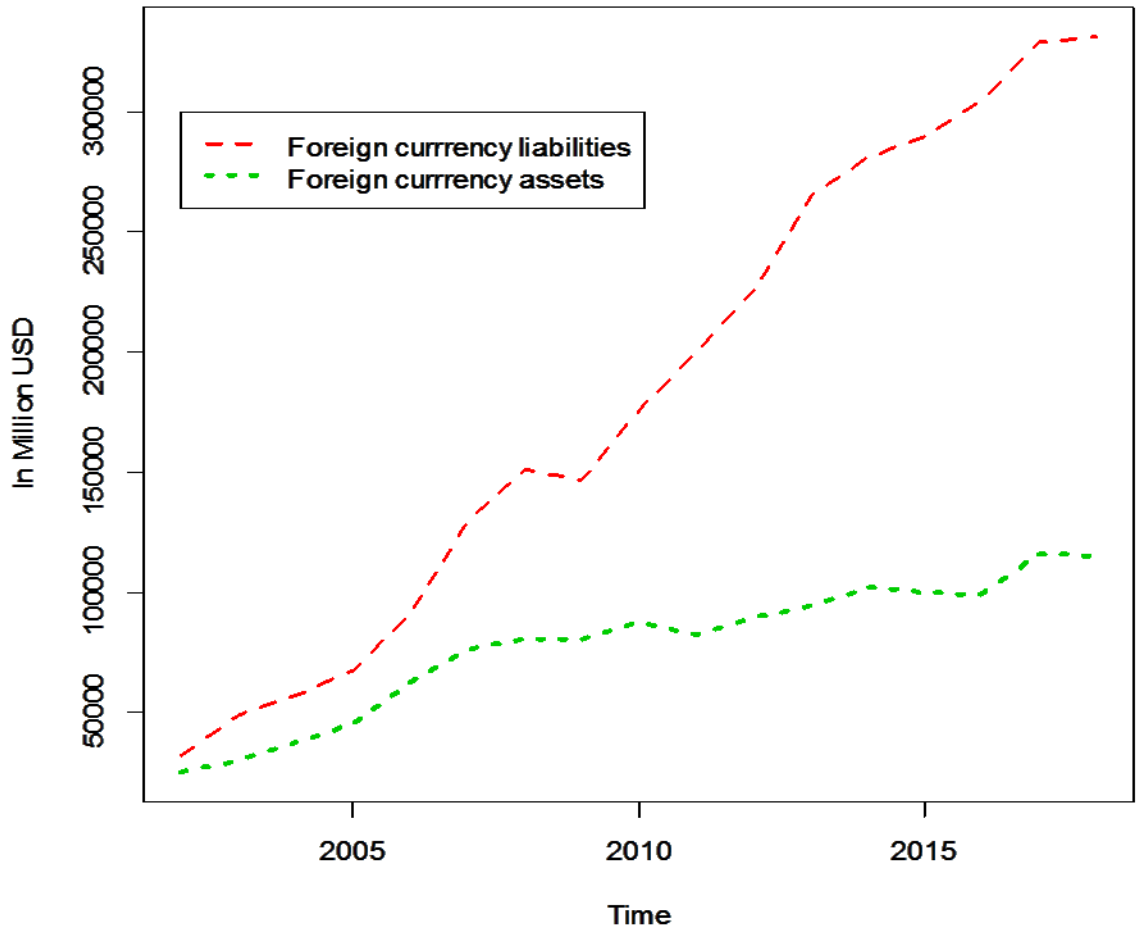

Figure 4. Non-financial sector foreign currency position
Data source: [CBRT, 2018]

Since the FED's announcement of ending quantitative easing program and its intention to increase interest rates, subsequently, exchange rate and associated liquidity shocks have revealed how risky capital flow bonanzas can become. This trend also shows how far monetary policy spillover can reach unless appropriate measures are taken by the authorities. From early 2015 to late 2018[10] Turkish lira has lost more than 160% of its value against the US dollar which indicates that the value of debt in domestic currency almost tripled. Considering that only less than 30% of the debt is hedged by foreign currency denominated assets, it is a very significant exposure to not only exchange rate risk but also to liquidity shocks. Moreover, an increase in interest rates, reduction in investment and spending activities and lowered growth that occur as result of reverse flow, as suggested in Calvo et al. (1993); Calvo (1998); Shin (2013) may further exacerbate the cost that the borrowers have to bear. Therefore, implications of capital flow require better and deeper understanding in order to be managed adequately.

2.2.1 Growth in consumption

Prior studies have demonstrated that large volume of foreign capital inflow to an economy can promote consumption via two distinct channels. The first one is the credit channel and it is proposed that increased credit supply and lowered cost of financing facilitate household borrowing and promote consumption of various traded and non-traded domestic goods. Particularly, the banks, in the pursuit of interest rate differential,

---

[10] At the end of 2014, $1=2.3870₺ and late 2018s $1= 6,2143₺ by The Central Bank of Turkey exchange rates.

channel foreign funds into the domestic economy and further fuel the rising trend of consumption (Montiel & Reinhart, 1998; Shin, 2013). The second is the trade channel that foreign capital inflow puts upward pressure on the value of domestic currency and makes the imported goods more affordable, thus ultimately leading to a rise in the consumption of foreign made goods. The validity of this channel has also been discussed and empirically documented by Calvo et al. (1993); Lopez-Meica (1999); Reinhart, Calvo and Leiderman (1996) examining the experience of Latin countries. Consequently, increased consumption and growth in GDP will be reflected in the sales numbers of corporate sector and revive the importance of trade credit financing channel.

Classic textbooks based economic models suggest that international capital movements should be rewarding both to the supplier and the receiver because it provides diversification opportunity and higher yield to the supplier, in return necessary funding to the recipient country needed for growth and investment (Ahmed & Zlate, 2014; Bernanke, 2005). Accordingly, earlier sections have documented the influence that foreign capital movements in various forms have on financial variables such as expanding credit supply, reducing interest rates and appreciations in the value of domestic currency. Existing studies argue that in a small open economy, foreign capital can positively influence GDP growth by providing financing for investment, and supporting consumption (Carderrelli, Elekdağ & Kose, 2009; Hoggart & Sterne, 1997; Lopez-Meica, 1999). These theoretical arguments have been validated by empirical studies that increased credit supply and lowered cost of borrowing, namely the credit channel, encourage household consumption and corporate investment. Lopez-Meija (1999) has documented that capital flow episodes of previous decades caused exchange rate appreciation, consumption boom, and rise in the price of nontraded goods. He

further argues that heavy volume of foreign capital appreciate domestic currency, increase demand for foreign goods and causes an expansion in the current account deficit, all of which may lead to a rise in consumer prices. Similar arguments have been raised by Reinhart and Reinhart (2009). After examining international capital movements over the period of 1960 -2007 they report that capital flows tend to increase commodity prices, creating an inflationary pressure, by motivating demand and spending.

Domanski, Fender and McGuire (2011) discuss the implications of global liquidity by assessing the loan supply to the governments and private sector around the globe. They document that after 2009 private sector (households and non-financial corporate sector) drastically increase the level of credit demand, average increase from 2009 to 2010 exceeds 10%. Benigno et al. (2015) after extensive analysis, conclude that foreign capital inflow gives rise to credit supply and naturally, to domestic consumption. Samarina and Bezemer (2016) conduct an analysis on the data of 36 countries and find that increased global level credit supply to non-financial business renders banks to target household as primary costumer, particularly in countries with the lack of growth options. Capital flows into banking sector support the credit line extended to private consumers by banks in the form of mortgage and consumption credit.

Hoggart & Sterne (1997) argue that foreign capital may not necessarily end up financing investment spending. In some cases, such as Latin countries and Eastern Europe in 1990s, foreign capital mostly financed consumption, whereas in the case of Asian countries those funds are channeled toward financing mostly investment spending. Igan and Tan (2015) analyze the effect of capital inflow in 33 countries from 1980 to 2011. They obtain highly significant results that foreign capital leads to credit booms

and thus similar trends occur in both corporate and households' borrowing. They further argue that the effect becomes more distinguishable after taking the level of financial development and the composition of the flow into account. Similarly, Carderelli et al. (2009) examine capital flow to 52 developing and less developed countries in the period of 1987-2007 and conclude that foreign capital have significant and positive impact on GDP growth. Azis and Shin (2015) point out that foreign capital in general accelerates GDP growth and consumption rate. However, in some countries where bank flow constitutes significant percentage of foreign capital they observe that growth in consumption is more distinguished. Underlying reason for that is that the banks, who borrow funds from abroad, channel those funds toward households, consequently boosting the household expenditure.

The other channel through which foreign capital increases consumption is the trade channel. Classic economic theory suggests that decreasing value of foreign currency causes prices for imported goods to become more competitive i.e. foreign capital inflow raises the value of domestic currency, making foreign made goods relatively cheaper. Azis and Shin (2013) describe the issue by arguing that when there is a surge in the stock of foreign capital, the exchange rate of recipient country tends to appreciate. In addition to other consequences of the flow such as expansion in credit liquidity, and lowered interest rates the increased value of domestic currency, it may lead to export to fall and import to rise.

Lopez-Meica (1999) has demonstrated the effects of capital flows in 1990s. He reports that a comparison between Asian and Latin countries reaction to flow reveal clear differences in aggregate consumption patterns. Asian countries have managed to keep the value of currency relatively stable and displayed modest

increase in the level of consumption. Latin countries, on the other hand, experienced strong currency appreciation and the results led to consumption boom and wider current account deficit. Similar findings have been reported in Calvo et al., (1993) and Calvo (1998). Account of past episodes reveal that experience of 1990s, and the effectiveness of trade channel, was felt by some Asian and specific Latin countries. It is explained in (Reinhart et al. 1996) as following:

> **…** as one would expect from the fall in national saving, there has been a rise in private consumption spending. While disaggregated data on consumption are not available for most of the developing countries, the import data suggests the consumption boom is heavily driven by rising imports of durable goods. This has been particularly true in the Latin American experience including Argentina, Brazil, Colombia and Mexico. (pp. 12)

Evidently countries have been learning from the past mistakes and been more cautious about present and future episodes. Azis and Shin (2013) argue that despite significant strengthening in domestic currencies of emerging economies we do not observe noteworthy rises in the ratios of imported goods. This pattern can be explained by controls on foreign capital exercised by monetary authorities to keep the value of domestic currency over appreciating. This point has been consistent with the findings in the literature that starting from mid 2000s, EMs engaged in sterilization and/or accumulation of foreign currency reserve program, which mainly intended to build up foreign currency reserves to prevent over valuation of exchange rates and absorb future shocks (Reinhart and Reinhart, 2009).

Not surprisingly, increased credit liquidity and lowered interest rates, via credit channel, fuel private consumption. Similarly, declining value of foreign currencies can contribute to rise in consumption by making imported goods more affordable, which takes place via trade channel. All in all, the notion that foreign

capital does have a vast potential to influence general consumption draws our attention to corporate trade credit financing channel and how it is evolved under such environment where credit liquidity and sales numbers rise with the influence of foreign capital movements.

2.3 Central bank policy response to capital flow

As discussed in earlier sections, foreign capital flow is accompanied by certain benefits and adverse side effects to the recipient country in the event of reverse flow. Therefore, the phenomena of capital flow is a double sided sword that requires great deal of analysis and appropriate policy measures in order to take advantage of it as much as possible while shielding the economy from its negative outcomes. Understanding the factors that attract foreign capital, macro-micro level variables that are affected and finally the risk factors attached to foreign capital movements and critical evaluation of past policies should lead to developing optimal policies. Optimal policies should allow the nation to harvest the benefits of foreign capital while precluding the risks posed by reverse flow.

The academic literature focusing on the macro level impact of capital flow has been expanding, particularly in the aftermath of 2008 as the need to understand the causes and consequences of the phenomena became more pressing. Common theme emphasized in the leading studies is that capital flow leads to expansionary policy responses by EM central banks and their combination with increased global liquidity is the major driver of credit booms (Calderon & Kubota, 2012; Igan & Tan, 2015; Lane & Mcquade, 2013; Mendoza & Terrones, 2012; Reinhart & Reinhart, 2009). In open

economies credit expansion is driven both by internal factors such as economic growth, low interest rates, increased money supply etc. and the external factors such as global liquidity and global interest rates.

Not only lowered interest rates do encourage borrowing activity from domestic banks but also positive interest rate differential on domestic and foreign assets, despite the decline in EM interest rates, seem to be a major influence on borrowing decisions from abroad. For example Gözgör (2013) documents the effect of global factors by investigating the drivers of credit expansion in 24 EMEs and concludes that one of the major factors behind the expansion in credit level is the difference between global and local interest rates. The gap positively affects the expansion because it makes borrowing from outside sources a feasible choice. As the internal sources continue to be a more costly option, both banks and large corporations with access to international capital markets draw foreign funds into the local system. Banks, as the financial intermediary, channel the global funds into domestic credit supply, by squeezing the positive gap between local and global interest rates. This phenomenon has been documented in (Bruno & Shin 2013; Carabarin et. al., 2015). They show that easy financial conditions in global financial markets encourage both banks to transfer international funds to local credit markets, and firms to borrow from international sources. However, it is suggested that large volume of debt flow can become problematic in the sense that it can upset financial stability and monetary policy. The view has received support from scholars such as Avdjiev et al. (2012); Chen et al. (2012); Hills and Hoggarth (2013). Common argument emphasized in those papers is that capital flow can generate an unwelcome credit growth which may end with a bust in later periods, creating threat to both financial and non-financial sector. They further argue that sudden stops in flow or a

reverse flow can destabilize the economy.Increased borrowing activity, particularly borrowing in foreign currency creates exposure to liquidity and exchange rate risks. However, foreign capital inflow also provides easy financing that can fuel growth and prosperity. As Bernanke (2005) aptly puts it, it is a valuable opportunity for some economies to channel those easy funds to investment and growth. With appropriate policies those funds can promote investment and help to achieve higher growth in countries that are in need of liquidity. Empirically, the contribution of foreign capital on real growth and progress has been investigated in (Azis and Shin, 2013; Carderrelli et al., 2009; Lopez-Meica, 1999) and they document significant results.

Furthermore, Bernanke (2005) asserts that for countries that lack the financial resources to fund promising investments opportunities, the benefit of foreign capital outweigh the costs. Thus, it is very important to recognize financial dynamics of an economy when evaluating costs and benefits of foreign capital. Alp and Yalçın, (2014); Özmen et al. (2012); describe defining attributes of developing economies such as Turkey with low level of savings, financial markets being relatively shallow and highly volatile and firms being mostly bank-dependent for financing. In such economic environment credit supply is limited and financial intermediaries will direct the limited resources to large corporations, who can provide required collateral and liquidity to secure a loan. Naturally, illiquid small firms will not be able to obtain the amount of credit they request. Bernanke (2005) argues that foreign capital, through its impact on credit supply and cost of borrowing, can help with the issue of financing of financially constrained small firms. As they borrow more they invest more, contributing to economic growth.

In addition, foreign capital can also influence macro level variables, which are detrimental in policy choices. Prior literature shows that it can trigger rapid inflation, boosting aggregate demand and consumption (López-Mejía, 1999; Reinhart & Reinhart, 2009), also referred as macroeconomic overheating, it can also lead to a credit boom (Borio et al., 2011; Turner, 2014), eventually undermining effectiveness of the monetary policy followed by central banks (Rey, 2013; Ülke & Berument, 2015). Empirical evidence documented by Prasad, Rogoff, Wei, and Kose (2003) seems to credit those who are cautious about foreign capital. They argue that capital flow of late 1990s to Latin countries was promoting consumption but no significant outcome in the level of output was observed in the same period. Similarly, Calvo et al. (1993); Reinhart et al. (1996) demonstrate that capital inflow can become a problematic issue when it promotes mostly consumption rather than investment.

Finally, studies such as Calvo et al. (1993); Calderon and Cubota (2012); Azis and Shin (2013) argue that sudden stops and/or reverse flows can cause declines in exchange rates, rises in interest rates and inflation, slowing the economic growth. In some cases, episodes may end with the collapse of financial system and pose credible threat to stability of whole economy due to excessive leverage and high exposure to exchange rate risks.

As suggested by above listed studies, foreign capital inflow is accompanied by certain consequences, some of which are positive and some negative, depending upon the end result on the economy. Clearly, most central banks will determine the optimal policy response to capital movements based on comparison of suggested benefits and potential cost, reconciling it with preset long term policy objectives. Classic economic theory suggests that subsequent to a large volume of capital inflow; we can expect to

observe a rise in general prices and an appreciation in the value of local currency. Of course these general symptoms will have further consequences on business cycle and economic conditions. Kaminsky, Reinhart, and Végh (2004) recommend that optimal policy be based on the current business cycle in which the recipient economy is. Hoggart and Sterne (1997) on the other hand, suggest that optimal monetary policy be determined based on specific pull factors of the recipient country that attract foreign capital. Identifying the nature of the flow and the reason for its entrance is important. For example, higher return seeking short term capital causes volatility in the capital supply and in the value of domestic currency. Thus, more appropriate policy tools can be deployed to offset its impact. Nevertheless, central banks' response to it will determine whether it will be contractionary or expansionary and protect the economy from potential side effects that may occur in the case of retrenchment.

Classic economic theory suggests that capital inflow causes local currency appreciation, reducing the competitiveness of domestic product in international arena and consequently contracting foreign demand for domestic product and the output. In return, appreciated local currency will encourage demand for foreign product, and finally induce a reduction in export and even more reduction in output (Dornbusch, 1976; Fleming, 1962; Mundell, 1963), hence leading to a contractionary influence on the overall economy. However, with the expectations that capital flow would fuel economic growth through surge in financing, investment and output, most countries have welcomed the capital flow (Blanchard et al., 2015). Fortunately, central banks have policy tools to manipulate or mitigate the effect of foreign capital. They may use tools to influence the value of local currency, sterilize the expansion in credit supply, develop

policies targeting export, or adopt a completely different strategy aiming at reducing cost of financing and production which may ultimately be beneficial to export as well. Foreign capital inflow has monetary policy implications such as an unwelcome increase in credit supply, appreciation of domestic currency and subsequent worsening in export-import balance. Particularly, expansion in credit supply may demand contractionary polices to be confined with policy rate rise, while facing the possibility of attracting more capital due to higher interest rates (Blanchard et al., 2015). Accordingly, empirical evidence gathered by the studies indicate that primary reason motivating borrowing from abroad is positive interest rate differential between domestic rate and the rate charged on foreign funds (Ahmed & Zlate, 2014; Carabarin et al., 2017 ; Gözgör, 2014; McCauley et al., 2015). Thus, possibility of obtaining successful results subsequent to interest rate rise is negligible. However, policy makers reduce the interest rates just enough to cancel out the increase in the value of local currency then negative impact of inflow on output maybe eliminated (Blanchard et al., 2015), taking the risk of excessive borrowing by domestic agents. Accordingly, most EMEs have responded foreign capital movements with expansionary monetary policy decisions, particularly reducing their interest rates (Anaya et al., 2017). Everything else being equal, the result of excessive leverage and consequent balance sheet exposures are unavoidable; because expansion in credit supply via foreign capital inflow and reduced interest rates by the central banks will naturally paves the way to it.

Nevertheless, restoring the value of domestic currency and trade account balance may involve central bank intervening via various tools such as interest rates and open market operations. Hence, preventing overvaluations in domestic currency and controlling monetary conditions while achieving preset objectives are suggested to be

part of central banks' policy agenda.Another monetary action taken by central banks in EMEs as a response to recent capital movements was to resort to purchase of foreign currency, aiming to mitigate upward pressure on exchange rate (Ahmed & Zlate, 2012; Filardo et al., 2012; Reinhart & Reinhart, 2009) and possibly create an insurance for future economic shocks (Alberola, Erce & Serena, 2016; Gosh et al., 2012). After bearing the cost of economic crisis of last decades, many EMs have adopted monetary policies aiming to maintain certain level of exchange rate flexibility and monetary independence. Sustainability of such policy required accumulation of foreign currency reserves.

Thus hoarding of foreign currency reserves has led to flexible but still managed exchange rate policy, allowed to conduct relatively independent monetary policies and left room for financial integration Aizenman and Glick (2009). Despite highly favored nature of foreign currency accumulation program, empirical findings suggest that it actually further encourages borrowing from abroad, the effect of very thing it has been designed to mitigate. This is best described in the words of Montiel and Reinhart (1999):

> … sterilized intervention[11] appears to be a powerful tool in influencing both the volume and the composition of capital inflows, although hardly in the way that policymakers had originally intended it to. By providing a combination of an implicit exchange rate guarantee and high domestic interest rates on short-term assets vis-a-vis comparable international interest rates, sterilization policies are a magnet in attracting short-term flows. (pp. 4)

[11] It is called sterilized intervention if the central bank completely mops up the expansion in money supply as a result of foreign currency purchase and leaves the money supply unchanged after the purchase.

Hence, foreign currency purchase programs not only encourage the demand but also motivate the supply side by promising high level of return and not so volatile exchange rates in the future. They seem to argue that sterilization actually offers foreign investor what they look for in terms of higher return yielding investment opportunities, since it involves selling domestic assets which yield positive premium on foreign currency denominated assets. Validity of this point has been empirically documented by Alberola et al., (2017). Where they examine gross capital inflow to 63 countries in the period of 1990-2010, and find that hoarding of foreign currency reserves positively and significantly increase capital inflow. Chui et al., (2016) discuss a rising trend amongst EM companies, which is borrowing from abroad in foreign currency. They assert that massive amount of foreign currency reserves hoarded by official sector reduce currency mismatch risk in the eyes of both international capital suppliers and EM borrowers, therefore their access to credit has been facilitated after 2008.

Similar conclusions have been reported by Gosh et al. (2012); Magud et al. (2012). The empirical evidence they demonstrate suggests that less flexible exchange rates, mostly sustained by foreign currency reserve accumulation, makes borrowing from abroad sources, denominated in foreign currency, attractive, possibly creating expectations about the future of exchange rates. Not only expansionary monetary policies of advanced country central banks but also central banks of major EMEs seem to have contributed to excessive borrowing via foreign asset purchases (unsterilized foreign currency purchases). Thus, a monetary policy, designed to mitigate the adverse effects of foreign capital inflow, opens doors to potentially more dangerous path that might have economy-wide consequences. The major problem associated with intense borrowing from abroad resources is that firstly it creates currency mismatch (Chui et al.,

2016; Turner, 2014) and borrowing channel is more likely to lead to credit booms in domestic economy and result in financial crisis (Calderon & Cubota, 2012). In addition, unsterilized foreign currency purchase programs, as a side effect, can also contribute to excessive gearing, due to costs associated with sterilization. However, Brzoza-Brzezina et al. (2010) argue that money and credit aggregates are usually neglected in monetary policy choices for the sake of inflation targeting goals, and in an economic setting where high global credit liquidity and financially integration prevail, such negligence in policy choices may result in large stock of borrowing in foreign currency and accompanying risks.

Although, price stability is explicitly stated as the main goal of monetary policies implemented by the CBRT, as a response to increasing global liquidity it seems to deploy expansionary policies and conduct a relatively managed exchange rate regime. These policies are put into work via systematically lowered rates, increased money supply and accumulation of foreign currency reserves.

The information given in CBRT website clarifies that currency reserves are to be used in implementing predetermined monetary policy and .exchange rate regime. Accordingly, as the foreign capital inflow gained magnitude in volume the CBRT, as part of monetary policy, increased the stock of foreign currency in order to restrict the rises in the value of TL, to prevent trade account balance from worsening and to prepare for future economic shocks when global liquidity fades away (Aysan, Fendoğlu & Kılınç, 2014; Balaylar, 2013). CBRT constantly increased reserves from 2002 to 2011[12],

[12] The Central Bank website indicates that CBRT started currency purchase program in 2002 and conducted the last auction in 2011.

which is also the period of high foreign capital inflow. Balaylar (2011) reports that CBRT sterilized about 75% of the expansion in money supply in result of foreign currency purchase and left the 25% to be part of money supply, contributing to credit liquidity.

Early 2014 the FED announces its intention to increase rates and in return TL losses 16% in value from 2013 to 2014. As a buffer against downward pressure in exchange rates the CBRT deploys currency reserves as planned. Figure 5 below shows the dates and corresponding stock of foreign currencies in USD, accumulated by the CBRT. The pattern suggests that as the foreign capital flows in, central bank decreases policy rates, and accumulates foreign currency in order to re-balance the value of domestic currency and to absorb possible exchange rate shocks in the future, as suggested in (Bernanke, 2005). Therefore, having relatively managed exchange rate policy involves hoarding of foreign currency when foreign capital inflow surges and puts upward pressure on the value of domestic currency, and liquidating those reserves when currency value falls due to global tightening.

As discussed above managed exchange rate regime, followed by Turkey and other EM countries have subtly, and possibly unintentionally, supported borrowing activity, by encouraging both demand and supply sides. Alberola et al. (2017); Ghosh et al. (2012); Magud et al. (2012) document empirical evidence verifying that managed exchange rates, by providing insurance for the future exchange rates encourage borrowing in foreign currency. It is clear that similar policies in Turkey have led to real sector increasing foreign currency denominated debt excessively. In section 2.2 Figure 4 displays non-financial sector foreign currency assets and liabilities. Foreign currency denominated assets is only one third of foreign currency denominated debt, which

quantifies non-financial sector' exposure to exchange rate and as well as liquidity risk, opening the efficiency of current monetary policy of the CBRT to discussion.

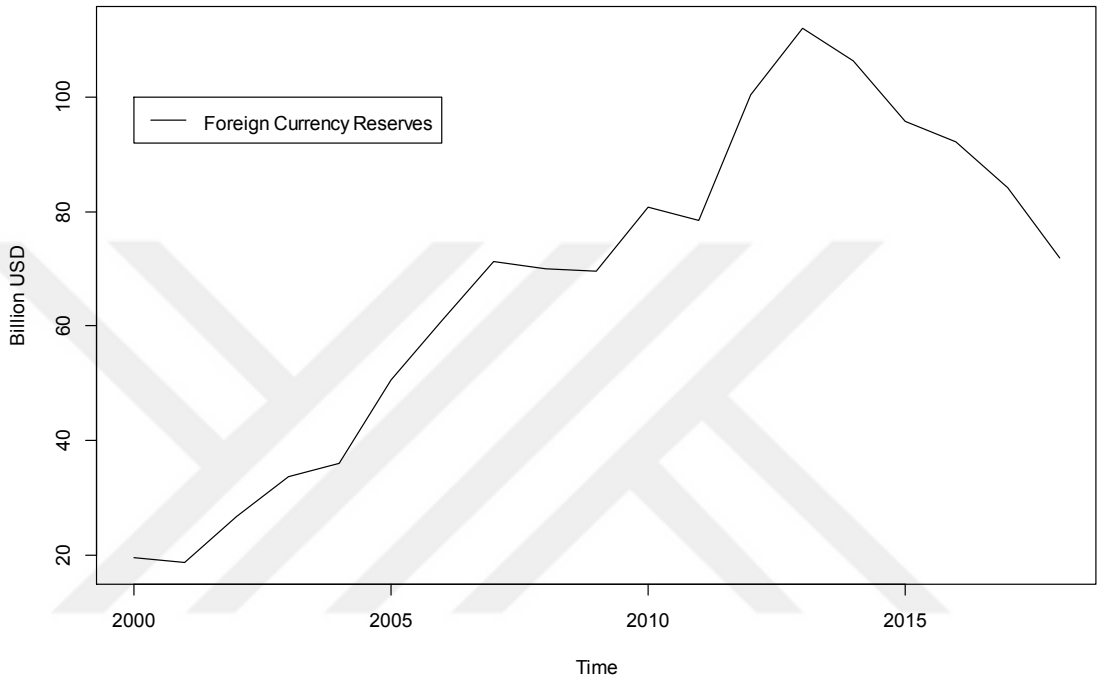

Figure 5. CBRT foreign currency reserves in USD
Data source: [CBRT, 2018]

Similar attitude appears to be adopted in policy rates. As more foreign capital comes into the economy the CBRT embraces an expansionary strategy and constantly lowers the rates. Starting early 2000s, policy rate follows a downward trend until early 2014, which is the time, as clarified above; the FED announces first interest rate increase. We also observe gradual increases in the rates after 2014 (see Figure 6 for details). We do not, however, argue that the only reason for declining interest rates is foreign capital inflow since during this period Turkish economy has made significant progress, which is reflected in various economic indicators such as inflation, employment, GDP per capita, all of which may primarily contribute to determining long term policy objectives.

Nevertheless, as an optimal response to foreign capital entrance into domestic economy CBRT lowers the rates in order to cap the rising value of TL, because strong currency would hurt export and encourage import. As briefly explained earlier, keeping the rates steady or increasing them to prevent credit boom would invite more capital in, due to presence of higher return[13]. Therefore, similar to other EM countries interest rates in Turkey has followed downward moving path until 2014, when the global liquidity started receding.

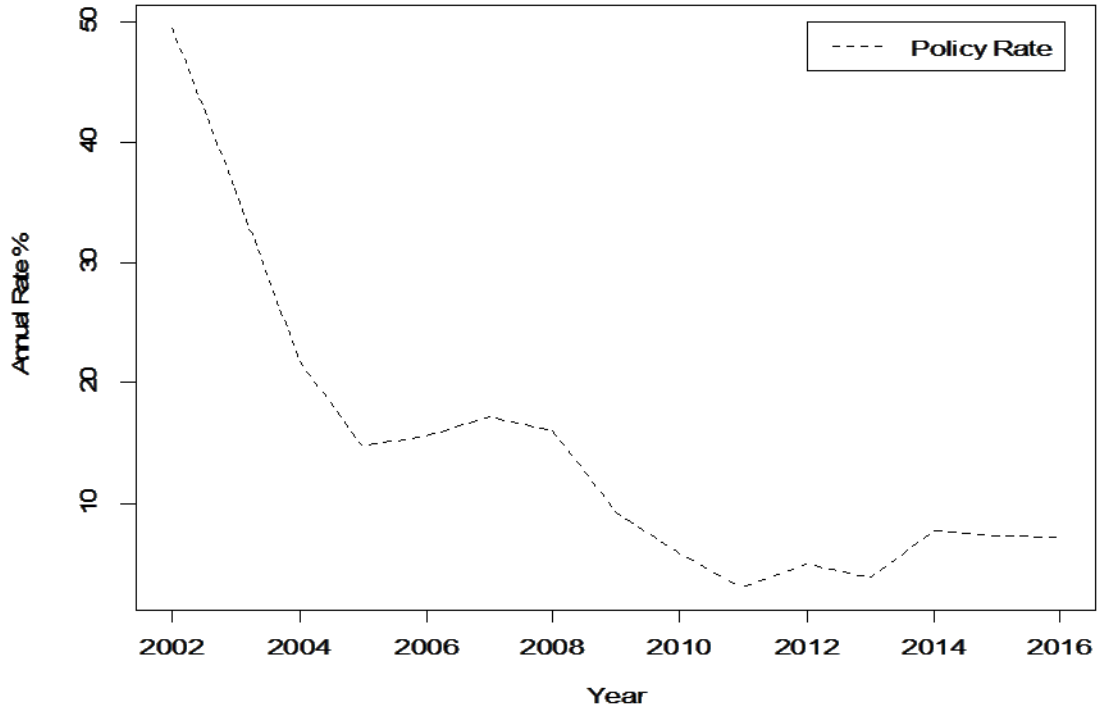

Figure 6. CBRT annual policy rate
Source: [CBRT, 2018]

Last but not least, an economic variable that draws the picture of active monetary policy is money supply (M2) and its growth rate given in Figure 7 below. It actually indicates

[13] Throughout the study it is assumed that policy rates fairly adequate representative of interbank borrowing rate.

that to encourage economic activity and to lower the cost of financing money supply was increased constantly at an average rate of 25% annual. It would be fairly reasonable to argue that global liquidity has also contributed to such expansion.

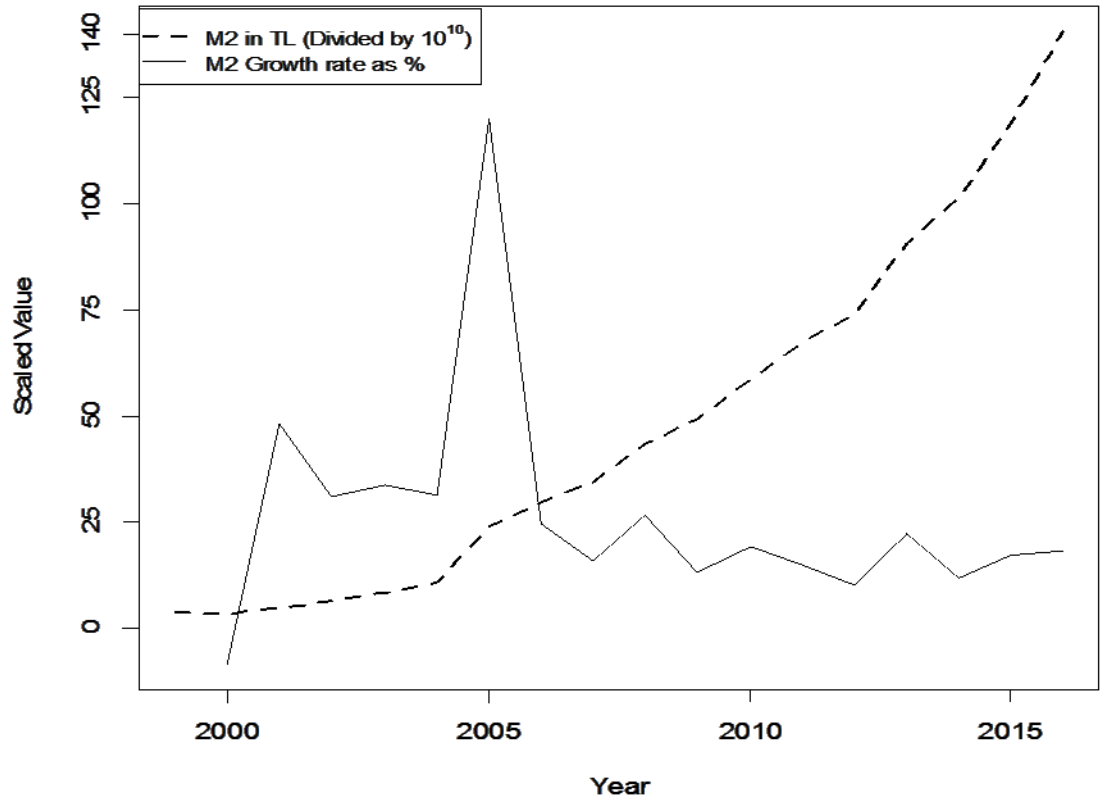

Figure 7. Money supply (M2) and its growth rate
Source: [Federal Reserve Bank of St. Louis, 2018]

Turkish economy has welcomed capital flow and followed expansionary monetary policies in response. Particularly, after 2008 rates decreased very sharply in parallel with the FED policy rates, within two years, policy rate went down by more than 10%. Despite, CBRT's website indicates that primary objective of monetary policy has been price stability since 2005; policy rates show a decreasing trend starting from earlier 2000 till late 2014, and start rising at a time the FED announced the end of quantitative

easing program, an action which resulted in EM currencies depreciating considerably against the dollar. In Chapter 3, we conduct empirical analysis with firm level data and include the effect of monetary policy on firm's financing decisions. We provide empirical evidence that expansionary monetary policies created a highly convenient economic atmosphere for non-financial sector to increase borrowing. Thus, low interest rates, combined with high liquidity fueled via foreign capital inflow and domestic money supply have been the major drivers of the rise in credit supply and excessive leverage of real sector in Turkey. Non-financial sector has borrowed excessively not only in domestic currency but also in foreign currency, giving rise to both liquidity and exchange rate risks, leaving the sector vulnerable to foreign monetary policy shocks.

CHAPTER 3

FINANCIAL DEBT DECISIONS

Interest bearing debt (bank loans and interest bearing securities) has been a major financing instrument for non-financial sector in Turkey. A substantial increase at worrying levels from 2007, before the global crisis, to 2016 has been realized in borrowing trend (see Figure 2 for details). A common statistic, non-financial sector's debt to GDP ratio, shows that in 2007 it was around 29% of GDP, more than doubled and reached up to 67%, indicating about 40 percentage point increase. More aggravating of all, however, is that large portion of the debt is in foreign currency. Foreign currency denominated debt stock has risen from 19% of GDP in 2007 to 35 of GDP in 2016. This ratio documents that more than 50% the debt burden of non-financial sector is in foreign currency. Hence, debt stock of non-financial sector has reached excessive levels and become one of the primary concerns. Excessive leverage has managed to place Turkey among the "fragile five" indicating vulnerabilities and dependence on foreign capital in order to maintain economic stability and continue business operations smoothly. Clearly, corporate sector's exposure has risen and thus, they face both liquidity and exchange rate risks.

As demonstrated in earlier sections, with rising global liquidity large volume of international capital has expanded credit supply in EM countries, and in Turkey, causing the cost of financing to go down significantly and facilitating lending process for financially constrained firms. Similarly, recent decade of expansionary policies in Turkish economy; a period coincides with global liquidity, manifested via low interest rates and increased money supply. Thus, credit supply and easy financing conditions, fed

with rising global liquidity and expansionary monetary policies, have opened doors to excessive borrowing. We attempt to document and explain excessive borrowing activity and try to understand motivations of corporate sector. To answer these questions, we examine the effects of global liquidity on Turkey and recent domestic monetary policies, reconciling the influence of those macro variables with firm specific variables. Next, borrowing activity of non-financial sector has been examined empirically within the borders of capital structure theories and, the contribution of foreign capital and expansionary policies have been investigated and discussed in detail.

3.1 Corporate capital structure: Theoretical landscape

The question of how a firm balances its liabilities and own funds kept finance academics busy for a long time and resulted in a large body of literature. Such academic effort ultimately led to the establishment of "trade-off theory", "pecking order theory" and "market timing hypothesis". Capital structure studies focus on firms' financing choices with the objective of maximizing value of the firm with or without assumption of perfect markets. As a result, these concepts have received great deal of attention and support from the academic world.

Trade-off theory is built upon the work of Modigliani and Miller (1958, 1963) where they show that debt financing creates tax shield benefits. Later studies showed that although debt provides tax shield, significant costs attached to it, such as bankruptcy, and agency cost. Trade off theory emerged out of these debates, suggesting that optimal capital structure trades off the costs and benefits of debt financing (Haris & Raviv, 1991; Rajan & Zingales, 1995; Titman & Wessels, 1988). Pecking order theory

of capital structure is largely established by Myers (1984) and Shyam-Sunder and Myers (1999), proposing that due to high informational asymmetry between managers and the capital providers, a firm starts financing its operations from the option that is the least subject to agency cost. Therefore, managers would prefer the least costly option, which is internal financing, second comes debt financing and finally external equity financing, which is arguably subject to the most severe informational asymmetry.

Market timing hypothesis of Baker and Wurgler (2002) suggests that optimal capital structure, which is shaped overtime, is the result of the firm's attempt to time the market. They argue that when the stock prices are favorable firms issue equity, and when the stock prices are low they repurchase it. This idea is established based on the changes in cost of financing that when stock prices are high cost of equity financing is low, thus the firms issue equity, when stock prices are low, the cost is high thus, they repurchase it. As a result of this issue-repurchase cycle, leverage is negatively correlated to stock prices.

Basic capital structure theories assume that corporate financing decisions are formed majorly by firms' trade off cost and benefit of various financing instruments. They, however, do not take into considerations firms' ability to raise capital or the general monetary conditions that facilitate and/or halt borrowing process. For example Bernanke and Blinder, (1992); Bernanke et al., (1994); Kashyap and Stein, (1994) argue that large, mature (financially unconstrained) firms with stable earnings are able to obtain desired amount of debt financing, but small (financially constrained) firms with volatile earnings, despite their high growth potential, have limitations in accessing the debt financing they need, particularly in times of economic contractions. Due to the lack of access to public debt markets and limited internal resources, they are dependent on

bank lending. High informational asymmetry and lack of collateralizable assets create external finance premium demanded by the lender. This premium fluctuates with monetary cycle. Credit expansion via expansionary monetary policies may reduce the premium demanded. In contrast, contractionary movements in banks' reserves may lead to an increase in the premium, rendering a considerable reduction in borrowing activity of small firms (Bernanke & Blinder, 1992; Gertler & Gilchrist, 1993).

These financially constrained firms are susceptible to monetary cycle through availability of bank lending channel. As a result each firm maybe affected differently from monetary tightening and expansion cycles, based on level of dependence on bank loans (Bougheas et al., 2006; Morris & Sellon, 1995). Despite the fact that well-established capital structure theories have been studied extensively, the arguments that financial economics literature has brought to the light still requires academics' attention. Reconciling the credit channel of monetary policy studies with capital structure theories, it becomes evident that taking into consideration financing challenges of firms and sufficiency of capital supply in an economy will contribute to the literature by expanding our understanding of financing patterns in an economic setting where global liquidity and financial integration are in rise.

Our study documents empirical results confirming the arguments of previous research. We find that financially constrained small firms severely suffered through the period of early 2000s, a period characterized by high inflation, high interest rates and small growth in GDP. However, recent expansionary monetary policies and increase in credit supply fueled by global liquidity caused financially constrained firms to borrow at historically high levels. During expansionary period of the economy, all firms in general but financially constrained small firms in particular increase borrowing activity quite

aggressively. On the other hand, increase in debt ratios of large private and public firms are relatively modest. Such large fluctuations in debt financing of firms of different sizes is due to internal financial strength and instable level of access to external funding, varying in accordance with monetary policy stance.

Since mid-2000s Turkish economy has received large amount of foreign capital and been experiencing expansionary monetary policy, both of which we document to improve financially constrained firms' access to external borrowing. We show that both foreign capital and monetary policy directly and significantly contribute to the rise in borrowing activity. For private firms, we use size as the measure of financing constraint as proposed in (Hadlock & Pierce, 2010). As secondary criteria we use stock market listing status to separate firms based on their access to external funds. Our results reveal that financially unconstrained large private and publicly traded firms mostly benefit from foreign capital. On the other hand, financially constrained small private firms increase their debt ratios both with the effect of expansionary monetary regime and foreign capital. We further find the effect of monetary policy to be more influential on the borrowing activity of financially constrained small firms than it is on financially unconstrained firms. Next we review the effect of monetary policy on borrowing activity, and then direct our focus on the influence of foreign capital and finally discuss borrowing activity of financially constrained and unconstrained firms starting from the patterns in aggregate data and move on to the results of firm level analysis.

3.1.1 Corporate financing under changing monetary conditions

In order to explain the cyclicality in economic activity of corporate sector, financial economics literature has focused on two distinct channels via which monetary policy transmitted to real economy. First is the bank lending channel, arguing that monetary policy tightening directly affects bank liquidity and reduces the liabilities of banking sector. Banks, as the major financial intermediary, would further reduce the supply of loans, and become more discriminatory in accepting loan applications. As a consequence, small (bank-dependent) firms suffer from the lack of availability of external funding, and decrease level of spending and investment (Bernanke & Blinder, 1992; Gertler & Gilchrist, 1994; Morris & Sellon, 1995).

In an economy where real sector accommodates many small bank-dependent firms it is inevitable that operations, both investment and financing will be affected by the monetary policies (Ashcraft & Campello, 2007). This point has been discussed and empirically documented by (Bernanke et al., 1994; Kasyap et al., 1993). They document that central bank monetary policy works through balance sheet of small firms. When central banks initiate's policies aiming at monetary tightening, interest rates go up, banks reserves and credit supply decline, causing a reduction in economic activity. Once the interest rates are up, and loanable funds are in short supply, banks would further cut down on the credit extended to small, illiquid firms (Bernanke & Blinder 1992; Bernanke et al., 1994; Kasyap & Stein, 1994) and an episode of flight to quality starts (Bernanke et al., 1994). Gertler and Gilchrist (1993) examine firms' financing decisions under different monetary regimes. They identify distinct patterns that small firms reduce fraction of bank loans in balance sheet while large firms on the other hand significantly increase debt ratios. Kasyap et al. (1994) further document that it is the bank lending

channel that is in effect because large firms, too, decrease percentage of bank loans but they shift toward other options such as commercial papers and money markets instruments. Similar results have been documented by Korajczyk and Levy (2003) that during tightening financially constrained firms reduce bank financing and return to it during expansion, presenting pro-cyclical pattern in capital structure. It is evident that drastic changes in monetary policy lead to reshaping capital structure of firms.

The other channel, on the other hand, namely the balance sheet channel, suggests that there is cyclicality in the agency cost between banks and corporate sector because what drives agency cost is in fact subject to cyclicality. Volume of sales, cash flows and the value of other collateralizable assets as well as total net worth of a firm may be drastically affected by monetary policy, further deteriorating or improving financial position of firms. Thus, depending on the prevailing monetary policies financially weakened firms may no longer be eligible to a line of credit because their depleted financial position amplifies the agency cost of borrowing, resulting in lack of access to external funding (Bernanke et al., 1994). Cecchetti, (1995) argues that implications of changing monetary policy are more effective on firms that are small and financially weak yet have more growth opportunities. Such a reduction in lending-borrowing activity may result in a large social welfare cost because of impaired economic activity of SMEs. As discussed below, although empirical findings seem to support balance sheet channel, regardless of the way it is transmitted, both theories point to the similar

end results that borrowing and investing activity of financially constrained firms[14] may significantly drop with the monetary policy of tightening. Studies in this area usually treat small firms as the main target of monetary policy changes by assuming that large firms have other means such as equity and debt markets instruments available to them to buffer against the cycle, hence, they may be able to tolerate the effect of the new policies. Accordingly, Morris and Sellon (1995) show that not only large firms have substantial amount of cash flow which may allow them to shield against adverse effects of changing monetary policy, they also have been reducing the percentage of bank loan financing significantly over the last two decades, suggesting that small firms are in fact more vulnerable to changes in monetary policy. Credit channel literature's main argument, in summary, is that borrowing activity is cyclical, particularly for financially constrained firms. They may be able to enhance borrowing and other operations during monetary expansion and reduce it during contraction.

3.1.2 Foreign capital, credit expansion and debt financing

It has been firmly established that firms, particularly the small ones due to their financially constrained nature, are susceptible to monetary regime and therefore, their operations are pro-cyclical. During contractionary monetary regimes, higher costs of borrowing and reduced supply of external funds impair their ability to obtain debt financing. On the contrary, monetary expansion increases credit availability and lowers cost of financing; ultimately it leads to a rise in borrowing activity. Similar end results in

---

[14] Financing constraint is usually associated with small and medium sized firms in monetary economic literature such as Bernanke and Blinder (1992); Gertler and Gilchrist (1994),and Morris and Sellon, (1995)

borrowing activity may occur via foreign capital inflow. Increasing global liquidity renders capital to move across borders and influence the economic atmosphere in other countries as documented by Azis and Shin, (2003); Baks and Cramer (1999); McCauley et al. (2015); Passari and Rey (2015); Samarina and Bezemer (2015) and many others. They argue that monetary expansion can spillover to other countries and influence interest rates and credit liquidity. Recent episode of international capital flow seems to have helped to achieve such a contagion of monetary expansion.

Baks and Cramer (1999) study the spillover effect amongst the financial centers. They document that increased liquidity in one center also influences another, lowering the cost of borrowing. Azis and Shin (2013) argue that period of high liquidity in advanced countries caused funds to flow through international banking system. The banks, whose liabilities sides of the balance sheets have expanded, are inclined to provide more credit to corporations. Monetary easiness in advanced countries have triggered large amount of capital to flow, in various forms to the rest of the world. Particularly, in some of the EMs, foreign capital have increased the asset prices, and decreased cost of financing and expanded financial liquidity (Adrian & Shin, 2008). Evidently, interaction amongst the developed and developing economies caused noteworthy consequences. After advanced country central banks decreased the interest rates to historically low levels subsequent to the mortgage crisis, EM interest rates, not only long term rates but also short term rates, have become sensitive to those decreased term premium (Filardo et al., 2014; Miyajima et al., 2012). Takáts and Vela (2014) and Miyajima et al. (2014) analyze EM and advanced country long term rates, and report that after 2008 they became much more sensitive to global long term rates. The main drivers of the linkage between EMs interest rates and advanced country rates seem to be

primarily international and domestic bond market yields and domestic money markets yields, which are affected by the sizable foreign capital movements. For example Mohanty, (2014) documents that in some of the emerging countries, including Turkey; more than 20% of government bonds have been purchased by non-residents. As a result, we have observed EM firms to engage in international bond issuance to take advantage of favorably low interest rates (Filardo et al., 2014; Miyajima et al., 2012; Sobrun & Turner, 2015). Similar arguments are proposed by Özatay (2013) that large amount of capital inflows immediately lowers the interest rates and expands credit level, resulting in non-financial sector heavily borrowing. Azis and Shin, (2013) cite inflated liabilities in firms' balance sheet as one of the most important results of global liquidity. As the more credit becomes available at affordable cost the more risk taker firms become, by financing operations with borrowing.

Carabarin et al. (2015) analyze the consequences of increased global liquidity on Mexican firms' capital structure. They observe that improved credit conditions and lower cost of borrowing in the aftermath of 2008 allowed firms to take on more debt. Not only the debt ratios of Mexican firms have considerably increased but also origin of the credit have shifted from domestic toward abroad. Since larger firms are able to obtain debt financing from international markets, domestic credit resources become available to the use of smaller firms with limited access to international markets, resulting in higher level of debt employment in capital structure. They particularly document the rising trend of Mexican firms' bond issuance in international money markets. As a result domestic credit channels have become available to small and medium sized businesses. Thus, both large firms with access to global capital markets and small firms with no access, experience a rise in debt ratios. Although Carabarin et

al. (2015) point to the untapped domestic credit reserves that became available in the service of small firms as the main reason behind increased debt ratios, changing attitude of banks toward small firms with the favorable atmosphere in the economy appears to have contributed to it, as well. During expansionary state of the economy, banks have tendency to miscalculate credit risks and inflate credit supply (Berger & Udell, 2004; Borio et al., 2001). On the contrary, during monetary contractions financial intermediaries are more selective in delivering limited credit to those who demand more than what is supplied (Bernanke et al., 1994). Therefore, as banks tighten and loosen their lending standards in accordance with the macroeconomic conditions, forced capital structure of bank -loan dependent firms will fluctuate with business cycle. Firm that are large, liquid and have significant positive cash flow may optimally determine the debt ratios because they experience little or no financial constraint. Even during monetary contractions large firms can mostly rely on their own reserves and be mildly affected by tight credit conditions. On the other hand small firms with high financial constraints would feel more strongly the rigidity in the lending conditions (Ashcraft & Campello, 2007; Gertler & Gilchrist, 1994). They report that bank-loan dependent nature of small firms in comparison to large firms allow monetary policy to work through real economy because small firms are more sensitive to macroeconomic variables than large firms. Similarly, Rauh and Sufi (2010) document significant variation in debt structure of firms with different credit ratings. They argue that traditional capital structure theories ignore the different debt categories in balance sheet and that prevents them detecting the variation. Particularly low credit rated firms highly dependent on short term secured bank loans whereas high credit firms mostly prefer unsecured bond and equity financing. They conclude that high credit rated firms mostly rely on unsecured bond and equity

financing, while low credit rated firms benefit from multiple resources with imposed covenants. Their findings clearly demonstrate the dependency and vulnerability of some firms in financing decisions.

Empirical studies indicate that rapid credit expansion, rise in asset prices, and lowered interest rates are the major results of capital flow toward emerging markets. Increased asset prices and lowered cost of borrowing, accompanied with credit expansion may encourage firms to borrow more, ultimately leading to a rise in economic activity. Considering the empirical evidence of prior research that small, bank-dependent firms are more sensitive to macro level changes; we conduct a comprehensive analysis of financing patterns of financially constrained small firms with comparison to those who have better access to external funding during such a time in which Turkish economy has received large amount of foreign capital flow. This time period coincides with important developments that Turkish economy has experienced; such as drastic changes in inflation, interest rates and other macro level indicators. Thus, accounting for the effect of monetary policy is paramount, which we do.

Our study provides comparative analysis between publicly held (financially unconstrained) and privately owned (financially constrained) companies. We further separate private companies based on asset size. Large swings in aggregate debt ratios, presented below provide support to our hypothesis that recent economic developments have led to considerable increase in the debt ratios of financially constrained small firms. Furthermore, firms, with the access to international capital borrow from international resources and leave the local credit supply to the service of small firms. Moreover, with the downward pressured interest rates and increased quantity of bank credit reserves by large amount of foreign capital, the process has led to aggressive

borrowing activity in SMEs. Turkey, as one of the major EMs, has welcomed such a large volume of foreign capital and it became necessary to investigate and document micro-level consequences of global liquidity. We also argue that expansionary monetary policies followed by the CBRT in the last decade are partially contributed to aggressive borrowing activity. Therefore, both the effect of foreign capital inflow and monetary regime is investigated and found to have a significant influence in the subject. This study, to the best of my knowledge, is the first attempt at understanding how foreign capital contributes to financing of firms at micro level. The results provide at firm level evidence for monetary policy contagion and dependency on foreign capital for economic activity. The results also show that superfluously easy credit conditions can lead to excessive borrowing and eventually pose threat to financial stability.

3.1.3 Patterns in aggregate data

Easy credit conditions at global level and expansionary domestic monetary policies gave momentum to borrowing activity. As foreign capital entered domestic system, mostly it has become part of the credit supply, thus lowered the cost of borrowing and encouraged financial intermediary to soar credit supply. Figure 8 shows non-financial sector interest bearing debt (bank loans and debt securities) to GDP ratios. Both borrowing in foreign and domestic currency follow uninterrupted rising trend. Portion of foreign currency in total debt stock has been about 50% at all times, which becomes more than half in years of 2009 and 2010, signifying exposure to excessive currency risk. This simple detail explains the significance of foreign capital to Turkish economy, why it is placed in the fragile five and why it is considerably more vulnerable to advanced country monetary policy shocks.

Borrowing is a natural part of the journey in the way of growth and progress for businesses, however, the point that has been reached by real sector today has become alarming. Particularly, foreign currency denominated debt is strikingly high and non-financial sector is highly vulnerable to liquidity and exchange rate risks. Large pile of debt, around half of which is in foreign currency, make the real sector so fragile the sector has become dependent to inflow of foreign capital to maintain profitability and liquidity needed for the time of debt contracts maturity.

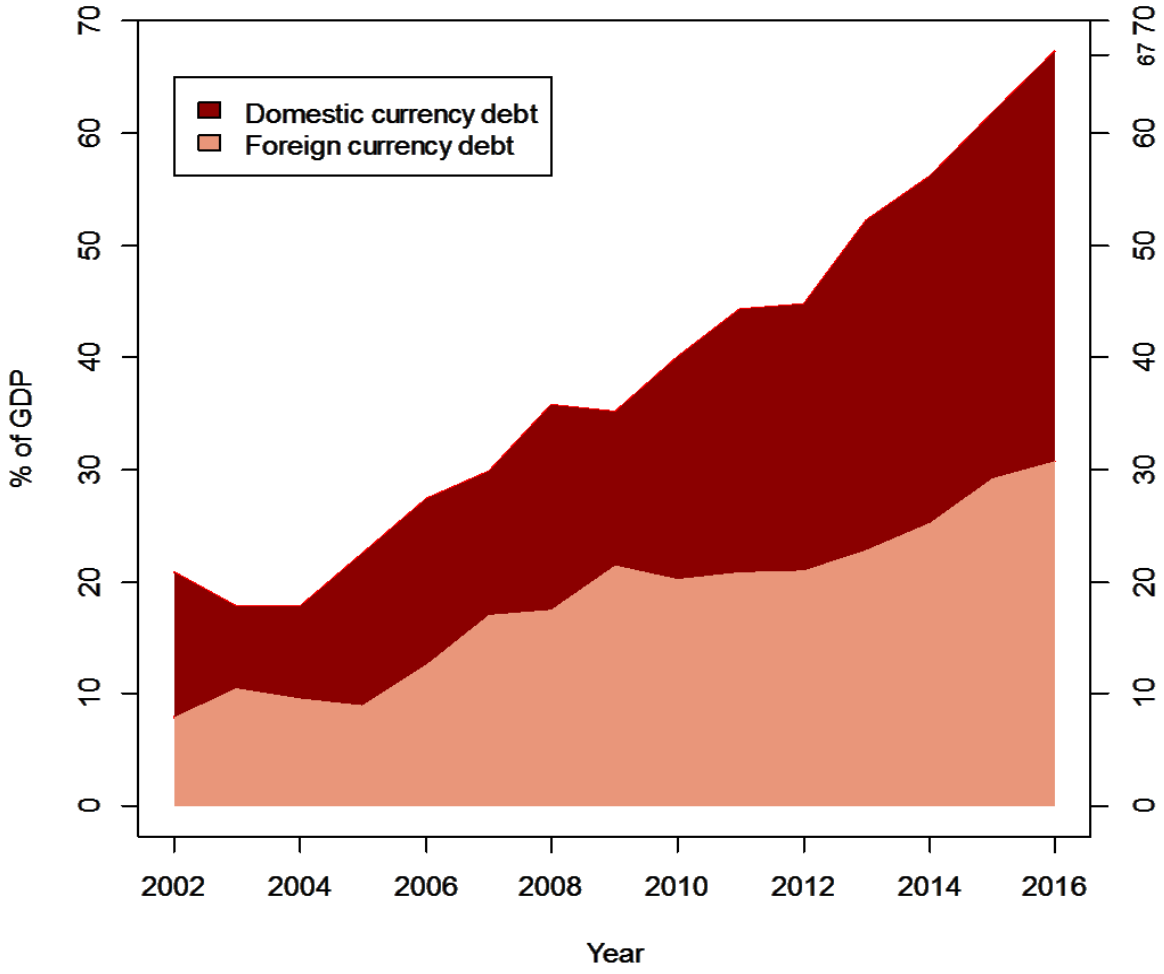

Figure 8. Ratio of domestic and foreign currency debt to GDP
Source: [IMF international statistics, CBRT, 2018]

Most importantly, foreign currency debt holders largely lack the revenue sources denominated in foreign currency (see Figure 3) to handle the debt burden, which makes them as fragile to exchange rate shocks as a tower of cards to the wind. From the portions of debt accumulated over the years, it is safe conclude that non-financial sector has been facing more severe currency mismatch originated risks than liquidity risks. However, it is necessary to emphasize that only the presence of domestic currency denominated debt does not eliminate real sector's dependency on continuance of foreign capital due to prevailing economic vulnerabilities.

In consistent with arguments presented above, we also observe significant rise in the level of interest bearing debt ratios of firms in times of high liquidity. Figure 9 presents aggregate financial debt (short plus long term bank loans, bonds and other issued interest bearing securities) of 27.872 firms between 1996 and 2016. General trend suggests that monetary shocks do in fact affect smaller firms significantly and the large firms relatively mildly. As suggested by the literature, financially constrained small firms are the ones that suffered the most in times of economic crisis in early 2000s. Their debt ratios have declined down, from 42% of total assets to 18% at end of 2001, and rose up to 42% levels at the end of 2014, indicating more than 130% increase. Not surprisingly medium sized firms follow a similar but relatively softer pattern. During the same time frame financial debt ratios of large private and public firms, however, fluctuates relatively less. Particularly publicly held companies maintain more stable debt ratios overtime, indicating that they were able to maintain access to external funds. Once the Turkish economy has left bad memories of early 2000s behind, SMEs are highly inclined to take advantage of the favorable financial conditions in the second half of the

decade. This significant rise in the level of borrowing may indicate that they had suffered from the lack of external borrowing during early 2000s and had to put on hold viable investment opportunities till external funding was available. The difference between debt ratios of constrained and unconstrained firms may be an indication that they did not have to endure the financial limitations to which small firms are subjected to. The end result illustrates that firms have contributed to the excessive debt stock and economy-wide risks proportional to their previous financing constraint.

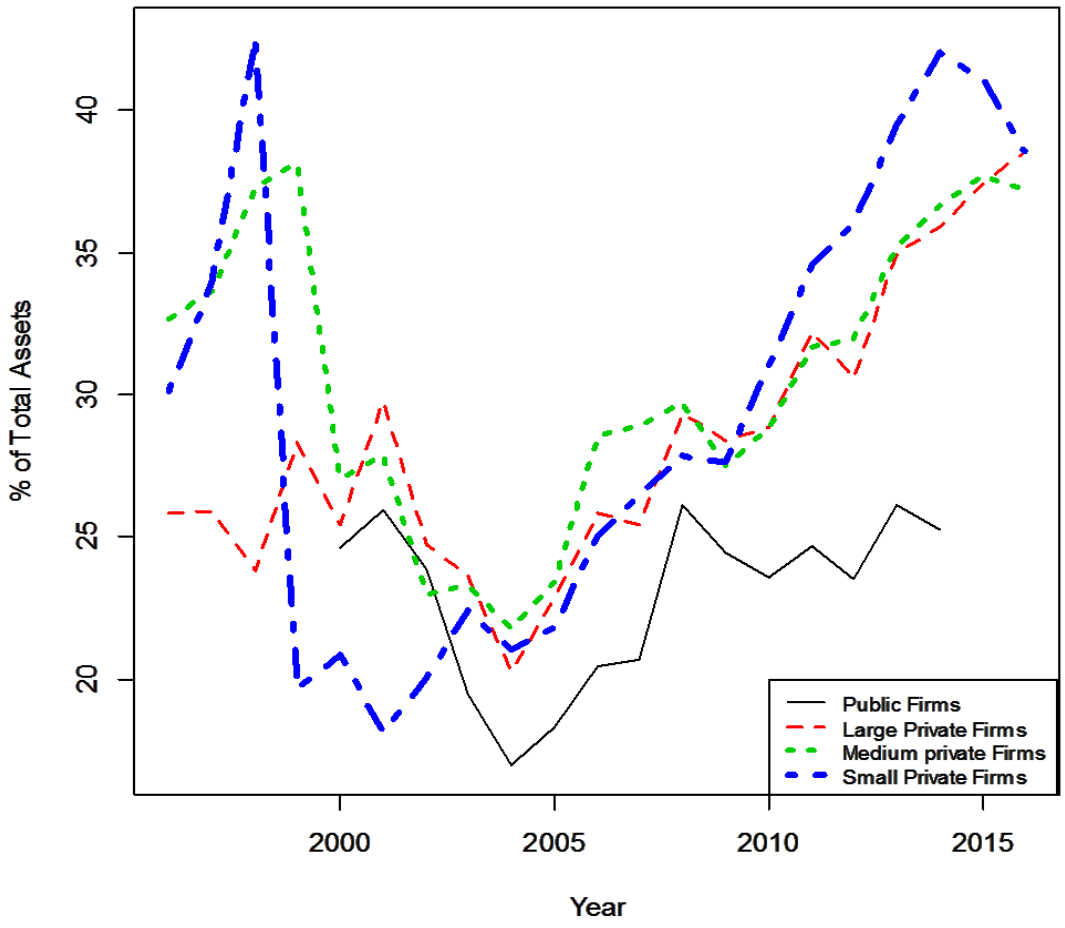

Figure 9. Non-financial firms' financial debt ratios
Source: [CBRT, 2018]

In various forms, capital flow can induce credit supply rise and consequent increase in leverage, particularly in an economy characterized with low saving rates, less developed financial markets and many bank-dependent SMEs with financial constraint. As discussed earlier Turkish economy, as of one of the major developing economies embodies those idiosyncrasies. In the econometric exercise of the study, we document that foreign capital directly contributes to borrowing activity. Primary analysis of the study indicates that foreign capital inflow and monetary policy have enhanced borrowing process and contributed to surging debt ratios of all firms. However, SMEs have benefitted the most from expanded credit liquidity. Increased credit liquidity and affordable costs in international capital markets have become attractive to larger firms and local credit resource are mostly left to use of SMEs, allowing them to borrow more.

3.2 Literature review

Using an individual credit dataset covering loans granted by domestic banking system to Turkish firms Başkaya, Giovanni, Kalemli-Özcan, Peydro and Ulu (2017) show that times of high capital inflow is followed by high credit offering, particularly by large banks which can access to international funds. Although, they do not directly test credit expansion their findings indicate that the banking system in Turkey is the major intermediary between non-financial sector and foreign funds. Direct test for the expansion in credit supply caused by foreign capital inflow is conducted by Orhangazi (2014). His main findings suggest that low real interest rates and cheap capital inflow to Turkey increase the credit supply to private sector. As a result, firms, particularly the ones with financial constraint, encouraged by the favorable economic indicators may

increase borrowing. In an economy where there is shortage of capital to finance real sector' projects firms may have to abandon or postpone investments either due to lack of funding or high cost of financing, which leads to project to become NPV negative. When a firm suffers from financing constraint, not being able to access to funds needed, the projects it will undertake will be limited to its internal resources (Petersen & Rajan, 1997). On the other hand if external funding becomes available, firms will be able to startup more project by borrowing. Similarly, a decrease in the cost of financing may lead to more positive NPV projects, and thus, more borrowing. Recent trends in financial debt ratios of Turkish firms, particularly those of SMEs, seem to be supporting this view.

Including sensitivity of the capital supply side to monetary conditions and the degree to which corporate sector's reliance on banks for funding is imperative in reaching to an insightful conclusion. For example Jimenez, Ongena, Peydró, and Saurina (2012) report that during monetary contraction, which is proxied by lower growth in GDP and increase in short term interest rates, loan supply significantly drops, but only those banks with high capital and liquidity are able to provide credit while also reducing the level of supply maintained previously. Denhaan, Sumner and Yamashiro (2005) empirically document that during such times banks seem to increase short term credit supply as an optimal response to changing interest rates, and because of the risk arising from the weakened balance sheet of the borrower they manage to avoid committing long term credits. By using the data that covers loan applications, they identify the influence of monetary conditions on supply side and conclude that firms' borrowing ability suffers from increases in the interest rates. Similar empirical findings are also documented in (Aysun & Hepp, 2013). They show that during monetary tightening financing

constraints become severe, and weaknesses in the balance sheet of corporate sector become more distinguishable. They also consider the level of liquidity in the bank balance sheets and conclude that refusal of loan applications is mostly the result of weakened balance sheets. Bernanke Gertler and Gilchrist (1996) point to the cyclicality in solvency of corporate sector, both in the sense of profitability and net worth, accompanied with macroeconomic conditions. Since the value of the collateral and the company itself are sensitive to policy changes they drive the agency cost between borrower and lender. They further argue that during more problematic times agency cost will rise, in turn corporate borrowing and investing activity will decelerate, causing a ultimate decline in aggregate output.

In a time of monetary contraction, limited credit supply will abandon financially weak firms Bernanke et al. (1996). They explain that high agency cost resulted from informational asymmetry and the lack of collateral weakens their access to bank loans in times of contraction and those funds will be channeled toward high quality and financially strong firms. Empirical support to this argument is presented in (Gertler & Gilchrist, 1994). They demonstrate that during tight monetary period, large firms' debt ratios go up while those of small firms go down, a pattern explained by flight to quality. Korajczyk, Lucas and McDonald (1990); Korajczyk and Levy (2003) state that macroeconomic conditions are likely to impact firms' choice of financing. They document that firms with access to capital markets, i.e. firms with no financing constraints, are more likely to issue equity when stock prices are favorable as a result of good macroeconomic conditions and issue debt when the conditions are reversed, displaying a pro-counter-cyclical pattern in choice of equity and debt, respectively. They further demonstrate that firms with financing constraint display capital structure pattern

that moves with monetary policy: firms seem to increase (decrease) debt ratios in favorable (undesired) economic conditions. Bougheas et al., (2006) study the UK manufacturing companies and find that small, young and relatively riskier firms are more affected by monetary policy than large firms with adequate amount of collateral to secure a line of credit. They document that size and level of collateral stand out as the major variables to buffer against the effect of monetary tightening. Clearly, financing flexibility is cited to be an important factor in the determining degree to which a firm is susceptible to monetary policy shocks. Rauh and Sufi (2008), examine the link between debt structure and firms quality proxied by credit ratings, and document that higher quality of firms mostly prefer unsecured bond financing with relatively less strict covenants and equity financing. As the quality (credit rating) of the firm goes down debt becomes mostly secure and covenants are much stricter, indicating that firms' ability to raise debt maybe affective in determining structure of debt financing.

Recent trend of international capital movement has drawn the attention of many academics toward its consequences on EMEs. Expansionary monetary policy leads to enlarging credit supply and lowering the cost of borrowing, facilitating borrowing-lending process. Uncontrolled foreign capital inflow to emerging nations can render similar results, suggested in (Azis & Shin, 2013; Baks & Cramer, 1997; Borio et al., 2011; Chen et al., 2012; Rey et al., 2013; Turner, 2014). Briefly, their findings indicate that large amount of foreign capital inflow may result in

- An increase in domestic credit availability.
- Softening credit conditions due to high amount of liabilities in banks' balance sheet,

Foreign capital inflow to these economies can also lead to a downward pressure on cost of financing and allow more projects to become net present value (NPV) positive. Therefore, large volume of foreign capital flow has the potential to influence borrowing trend of all firms, but particularly those of financially constraint ones. As the access to traditional borrowing channel is improved, financially constrained firms re-structure their capital and gradually reduce the portion of less efficient instruments which they relied on in the absence of bank financing.

Above discussion suggests that in periods of monetary expansion those financially weak firms that suffer from the lack of access to capital markets may increase their economic activity once the credit conditions are restored. Having obtained the credit they requested i.e. they will have the liquidity and the incentive to optimally re-structure financing side of the balance sheet. Phrased differently, they may reduce percentage of some financing instruments such as trade credit, given that it is assumed to be more expensive and focus on other channels such as bank loans, now that it is available. In order to adequately evaluate their significance to an average firm our study considers and analysis both financial debt and trade credit financing together, both of which are highly important in funding and needed to be investigated together as separate debt components.

Existing literature has established that capital inflow increases credit supply and leads to softened lending conditions. We investigate the existence of a direct link between foreign capital flow and the borrowing activity by comparing those of financially constrained (privately owned SMEs) and unconstrained (publicly held firms, traded in stock exchange market), which will allow us to document the distinction between borrowing activity of two groups in times of high liquidity. We further

document how these changes in macro level conditions affect firms' preferences between trade credit (TC) and debt financing. Alleviated lending conditions and expansion of credit supply may allow firms with financing constraint to access more credit, increase debt financing and gradually abandon TC, i.e. allow them to move toward more optimal capital structure in the sense that it is more adequate to finance growth opportunities and the cost of financing is minimized. Therefore, main objective of the study requires us that we separately analyze the financing components to correctly document how they evolve. This approach has been practiced by other academics as well. Some of the recent corporate finance literature, for example (DeMarzo & Fishman, 2007; Diamond, 1993; Rauh & Sufi, 2008), has started paying special attention to debt composure in firms' balance sheet rather than putting them all in together. Ignoring the variations in a firm's financing options may prevent from identifying and interpreting the patterns in the behavior of firms under different macro-economic conditions, which, as discussed earlier, profoundly affect the availability of those options.

3.3 Data and methodology

The study uses the unique data set of CBRT which includes balance sheet and income statements of more than 30.000 firms in different sizes. After eliminating implausible values such as negative total assets, negative tangible assets or ratio of any balance sheet item to total assets which is greater than one, the data left available has 151.072 observations belonging to 27.522 firms. It covers non-financial sectors: agriculture, mining, manufacturing, energy supply, water supply, construction, retail, transportation, accommodation, information and communication, real estate, professional, scientific and

technical activities, administrative and support service, education, human health and social work activities, arts, entertainment and recreation, other service activities and collected from firms via annual surveys. Privately owned firms have been split into groups based on asset size (large, medium and small). Firm size has been determined as the main criterion for financing constraint, as suggested in (Bernanke & Blinder, 1992; Gertler & Gilchrist, 1994; Hadlock & Pierce, 2010; Morris & Sellon, 1995). Hadlock and Pierce (2010) review and discuss in detail various methodology to identify financing constraints and they propose that size and age is the least endogen characteristics of firms that represent their level of access to external financing. Naturally we define small and medium sized firms as financially constrained and the rest are unconstrained.

Table 2 presents descriptive statistics of the data used in the analysis as pointed out earlier we eliminated implausible values such as negative total or tangible asset, or observations that are greater than one when scaled to total assets. Our data includes a wide range of firms from various sectors, and descriptive statistics of variables document such variation. For instance some firms seem to maintain high liquidity, some firms have almost none tangible assets. Similarly, we observe firms that are almost completely financed by internal resources and some have negative equity level. Standard deviations in the Table 2 provide discrepancies in the policies of firms toward certain balance sheet items, which considerably contributes to efficiency of our analysis.

We also use stock market listing status as second criterion to classify firms as financially constrained and unconstrained. Given that most of the data belongs to small and medium sized firm (CBRT data description booklet), the firms falling into top ten

percentile in total assets size is treated to be the large and the rest is divided equally: the lowest 45 percentile constitutes the small and the rest is medium firms[15]. We are also able to compare our results to the estimation conducted with publicly traded company data, which is obtained from DataStream database. Due to legal regulation we were not allowed to combine public company data to that of private companies. However, separate estimations are applied and results are reported.

Table 2. Descriptive Statistics for Financial Debt Analysis

	Minimum	Maximum	Mean	Median	St. Deviation	Observation
Liquidity	.0001	.9977	.3362	.3165	.219	151,072
Tangible	.0001	.9997	.2714	.2142	.2286	151,072
Log(size)	5.874	24.821	16.681	16.663	15.467	151,072
Debt	.0008	.8868	.3105	.2892	.2140	151,072
Own fund	-.2294	.9961	.3252	.2973	.2538	151,072
ROA	-.2198	2.566	.0560	.0479	.1106	151,072
GDP growth	-0.06	0.111	0.055	0.061	.047	
Inflation	0.062	1.06	0.38	0.179	0.34	
Foreign Capital	.272	.621	.491	.493	.103	

Source: [CBRT, 2018]

We use 21 years of annual data, from 1996 to 2016, during which time Turkish economy has suffered both 2001 currency crisis and 2008 mortgage crisis and hosted large volume of foreign capital. Starting from 2004, monetary authorities have been implementing expansionary monetary policies, via decreasing interest rates and aggressively supporting credit guarantee fund, which we also account for in the analysis with a

[15] CBRT's own classification of firm size considers firms which have more than 500 workers as the large firm, between 250-500 medium and less than 250 small. A comparison reveals that its classification of large firms is about 10% of the total, too.

dummy variable. The estimation period is long enough to establish the effect of macro level variables and to draw reliable conclusions from the econometric analysis. We estimate both publicly traded and private companies, with the assumption that stock market listing status removes financing challenges and if a firm is traded on the stock exchange market it is considered to be financially unconstrained. We proceed with assumption that small firms relatively more financially constrained, and the larger firms relatively less. Hence, we are able to document the financing decision of privately held firms based on their financing constraint and compare their behavior to those of publicly traded firms as reaction to foreign capital inflow and monetary expansion.

Periods subsequent to crisis are important because those are the times CBRT adopted loose monetary policy to empower the recovery. Therefore, we also account for expansionary monetary policy via dummy variable. The data set covers a variety of firms in different sizes and industries, as well as varying degree of financial position, all of which present an excellent laboratory to study arguments of the study. If in fact capital flow and monetary expansion have softened the credit conditions and caused the borrowing activity to rise, panel data study will be able to successfully capture such an influence. Clearly the trends in aggregate capital structure data suggest high level of dependence on prevailing economic conditions. Documenting such dependence next to other firm-specific variables are essential goal of this study, only then we can document true significance of foreign capital and appropriate policy measures can be taken for future episodes. With this objective in mind, the hypothesis presented in this study will be tested via panel data analysis constructed as following

$$L_{it}^{L} = \alpha + \beta X_{it} + \delta Y_t + \Phi D_j + \mu_i + \mathcal{E}_{it} \quad (1)$$

Three models of panel data analysis have been estimated and Langrange Multiplier and Hausman test results (see Appendix A for the results of the analysis and Appendix B for the details of the Langrange and Hausman tests) indicate that the model which best fits the data is fixed effect panel data analysis[16]. Initially, Langrange multiplier test rejects no heterogeneity across firms and therefore pooled OLS model is eliminated. Finally, we use Hausman test to determine whether fixed or random effect model better describe the data. It determines firm-specific errors (u_i) correlated with any of the regressors (Green, 2008). Hausman test result also rejects null of no systematic differences across firms and we proceed with fixed effect model, which is stated to be more efficient in capital structure studies as well (Bougheas et al., 2006).

Dependent variable L_{it}^{L} is total financial debt (short plus long term bank loans, bonds and other issued interest bearing securities) to total assets in equation 1. Financial debt is defined as interest bearing debt. Dummy variable to capture the monetary expansion between 2004 and 2015 have been included in the model. Firm specific variables represented by X_{it}. Macroeconomic variables that have been found to be effective in earlier studies are represented by Y_{it}. μ_i stands for time-invariant firm-specific error term. $\mathcal{E}_{it}$ represents identically and independently distributed error term. All macro variables are retrieved from Federal Reserve Bank of St. Louis and CBRT data bases. The variables and their importance in earlier studies briefly explained below. Particularly, firm specific variables are determined following the major studies in the

[16] To account for possible endogeneity issues GMM model is suitable, however due to large gaps in our data set we are unable to conduct GMM estimation with efficiency. It can be seen that average firm-year observation for private firms is five.

area of capital structure literature, studies such as Frank and Goyal (2009); Harris and Raviv (1991); Rajan and Zingales (1995); Titman and Wessels (1988). Most capital structure studies use the ratio of total liabilities to total assets as the debt ratio. Dependent variable in the present study is the ratio of book value of financial debt to book value of total assets. It is particularly suitable given the motivation behind the study is to isolate the effect of capital inflow on financial debt and TC financing, since we expect to observe differing impact. Book values are used in leverage calculation. Not only is this a necessity because data covers mostly private firms, it is also appropriate in capital structure studies because most managers make their financing decision based on book values (Graham & Harvey, 2001). Additionally, market values must be used with great caution because capital flow can significantly increase stock prices (Passari & Rey, 2015; Rey, 2013) pushing the debt ratios down therefore, one may find opposite affects by using market values and book values.

3.3.1 Firm specific variables

Tangibility: It is defined as the ratio of fixed assets to total assets. Most capital structure studies have found tangibility to be a statistically significant determinant of debt ratio as it is used to provide collateral. Also the literature suggests that the more tangible assets a firm has the less bankruptcy risk exists. Therefore, tangibility provides the capacity to borrow more without increasing financial distress risk (Frank & Goyal, 2009; Harris & Raviv, 1991; Rajan & Zingales, 1995)

ROA: It is measured as operating profit divided by total assets. The more profitable a firm is the less debt it will have assuming maintained capital structure follows pecking order. On the other hand more profit means more income to shield so

trade off theory suggests increased leveraged with increased profitability (Frank & Goyal, 2009; Harris & Raviv, 1991; Howakimian, Opler, & Titman, 2001; Rajan & Zingales, 1995).

Size: It is measured by logarithm of total assets; the larger it is the more debt a firm can handle without increasing bankruptcy risk (Frank & Goyal, 2009; Harris & Raviv, 1991; Rajan & Zingales, 1995).

Liquidity: It is defined as the sum of cash, short term investments and accounts receivable divided by total assets. Highly level of liquidity may mean large sum of cash and similarly high amount of marketable securities, pecking order theory suggests that these firms will have relatively less debt, as they focus on financing with internal funding (Frank & Goyal, 2009Harris & Raviv,1991; Howakimian et al, 2001;Rajan & Zingales, 1995).

Monetary policy dummy variable (Policy Dummy): The time of expansionary monetary policy[17] coincides with large amount of foreign capital inflow because capital flow literature largely cites 2004 as the beginning of recent capital flow episode (Azis & Shin, 2015; Turner, 2014) In order to extract the effect of foreign capital, we account for monetary regime employing a dummy variable as following.

1996-2004, 2008-2009 and 2015-2016=0 and 2005-2014=1

In constructing dummy variables, we take reporting periods into consideration. For instance the mortgage crisis took place in 2008; however we could observe its effect on balance sheets mostly in the next reporting period, in 2009. Aggregate data presented

[17] After 2003 both inflation and interest rates have declined, GDP growth rate increased and the budget of credit guarantee fund for SMEs has tripled, all economic indicators suggesting an expansionary policy.

in Figure 9 supports our insight. Similarly, we assume 2005 as starting date of monetary expansion, or it is the date it will start reflecting on financial tables of firms. We also assume that expansionary policy has been disrupted after 2014. Underlying reason for that are the increases in interest rates and declines in domestic exchange rates with FED's interest rate decision. Since capital inflow rises coincide with these dates, it will also best serve to isolate the influence of monetary policy and document true impact of foreign capital on borrowing activity.

In addition to the firm specific variables listed above macro variables which are material in firms' financing decision are also included. Previous literature has documented that variables such as inflation and GDP growth can be influential.

GDP growth: It represents the overall growth in the economy and can provide indications regarding the range of investment taken up. Higher rate of growth may also point to a stability and trust in general economy, all of which would encourage economic activity. The more investment a firm has the more external funding maybe needed (Deesomsak, Paudyal, & Pescetto. 2004; DeJong, Kabir, & Nguyen, 2008; Köksal & Orman, 2013).

Inflation: Consumer price index is used to include the increases in prices in the model. Capital structure studies seem to provide conflicting reasoning why and how it should influence borrowing decision. When inflation is high, value of tax shield is higher as a result firms tend to increase debt ratios (Taggart, 1981). Market timing theory also suggest that higher expected inflation may encourage firms to issue more debt now than the future as the current interest rates are more favorable (Frank & Goyal, 2009). By the same logic we may expect to see firms postponing their borrowing until the cost of borrowing declines. Similar arguments proposed by Mokhova and

Zinecker, (2014) that inflation is representation of adverse conditions in business life and negatively affects the economic activity. Therefore, high inflation should lower the leverage rates.

Foreign capital: As the main variable of interest to the present study, it is included in the model as it is scaled to real GDP. Values of direct borrowings, in the form of cash credit and debt securities (listed under FPI) that are obtained by non-financial firms, have been excluded from the analysis. Thus the variable is constructed as: (FDI +FPI+ Credits- (non-financial sector debt securities+ non-financial sector loans)) /GDP. We believe that this is the correct approach in order to document the effect of foreign capital. We obtain annual foreign capital data from CBRT data base listed under international investment position. Stationarity of the variable is verified via Zivot-Andrews and Lumsdaine-Papell unit root tests by accounting for the structural breaks (for details see Appendix C, Tables C1 and C2, and Appendix D, Figures D1 and D2). Both tests are employed to obtain robust result in consideration to small number of observation.

3.4 Empirical findings

The primary goal of the study is to analyze and document the role that foreign capital has played in financing nonfinancial corporations. As discussed earlier, heavy volume of foreign capital entrance coincides with a period of expansionary monetary policy in Turkish economy. Resulting circumstances have made necessary to account for the effect of monetary regime while isolating the influence of foreign capital. Therefore, we have included dummy variable in the model to account for the effect of monetary policy.

We were able to document, by excluding corporate borrowing, firm level evidence that foreign capital positively affects firms' borrowing decisions. More importantly, results indicate that it significantly facilitates borrowing process for financially constrained firms and enable them to increase portion of bank loan financing in their balance sheet. This major result has ultimately been established via rising credit liquidity fueled by foreign capital and supported by expansionary domestic monetary policy. Both the lending and the borrowing parties are encouraged by the excess liquidity and the affordable level of cost of borrowing. Combining the findings in Tables 3, 4 and 5 with aggregate data it becomes clearer previous financing constraints also encourage excess borrowing once the constraints are removed. Previous literature has established that foreign capital inflow contributes to enlargement in credit expansion at the aggregate level (Calderon & Kubota, 2012; Igan & Tan, 2015; Lane & Mcquade, 2013; Mendoza & Terrones, 2012; Reinhart & Reinhart, 2009). Given the stylized characteristics of EMEs, the results of the study offer valuable insights. We find that capital flow positively influences debt ratios of all firms, in general. The coefficient is positive and highly significant in all specifications. However financially unconstrained large private and publicly held firms seem to benefit more than financially constrained smaller firms, since the coefficient is considerably smaller for those. Evidently, advanced country monetary policies have extensive implications at firm level, in financing decision of non-financial sector.

Tables 3, 4 and 5 below present the results of fixed effect panel data analysis on financial debt with relevant explanatory variables. All standard errors are robust to heteroscedasticity and autocorrelation. The results suggest that firms rely on foreign capital for financing. We also document that effect of monetary policy on financially

unconstrained large private and public firms is limited, own financial resources and their current access to financing channels must allow them to operate optimally, thus they are less affected. On the other hand financially constrained firms are more affected by the monetary policy. Dummy coefficient is highly significant and considerably larger in magnitude. The findings are consistent with previous empirical studies. Due to their weak financial position, they are vulnerable to monetary cycle and increase their borrowing activity once monetary conditions have become accommodative.

Table 3. Fixed Effect Analysis on Financial Debt -Small and Medium Firms

Dependent Variable	Total Financial Liabilities (Short plus long term bank loans, bonds and other issued interest bearing securities)					Total Financial Liabilities (Short plus long term bank loans, bonds and other issued interest bearing securities)				
Classification	Financially Constrained (Medium Firms)					Financially Constrained (Small Firms)				
Time Period	Full Period	1996-2002	2003-2016	2003-2016	2003-2016	Full Period	1996-2002	2003-2016	2003-2016	2003-2016
Liquidity	.024**	-.076	.0271***	.0217***	.020**	.0151***	-.0369	.022***	.017*	.016*
	(0.014)	(0.432)	(0.001)	(0.001)	(0.032)	(0.006)	(0.256)	(0.004)	(0.064)	(0.078)
ROA	.023**	.076	.0110	.003	.007	.065***	.0632*	.057**	.091***	.094***
	(0.039)	(0.687)	(0.767)	(0.837)	(0.624)	(0.002)	(0.082)	(0.023)	(0.003)	(0.005)
Size	.049***	.027	.0478***	.039***	.034***	.058***	.0047	.0619***	.051***	.047***
	(0.000)	(0.815)	(0.000)	(0.000)	(0.000)	(0.000)	(0.081)	(0.000)	(0.000)	(0.000)
Tangible Assets	.144***	.0125	.145***	.162***	.163***	.1185***	.0898	.1184***	.118***	.119***
	(0.000)	(0.523)	(0.000)	(0.000)	(0.000)	(0.000)	(0.112)	(0.000)	(0.000)	(0.000)
Own Fund	-.444***	-.374***	-.439***	-.443***	-.446***	-.273***	-.21***	-.272***	-.316***	-.317***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Foreign Capital	.0356***	-.156	.0399***		.080***	.044***	-.3995	.0478***		.0686***
	(0.000)	0.316	(0.000)		(0.000)	(0.000)	(0.329)	(0.000)		(0.000)
Foreign Capital Lagged					.155***					.0671***
					(0.000)					(0.000)
GDP Growth	.0001	.0005	.0009**	-.001***	- .0001**	.0001***	-.0162	.0001***	-.0001	-.0003
	(0.355)	(0.701)	(0.048)	(0.008)	(0.000)	(0.000)	(0.329)	(0.000)	(0.905)	(0.197)
Inflation	-.001	.001	-.001**	-.001**	-.001**	-.0001	-.002*	.0004**	.0004	.0009
	(0.000)	(0.935)	(0.000)	(0.035)	(0.025)	(0.716)	(0.072)	(0.021)	(0.528)	(0.125)
Monetary Policy Dummy	.008***		.007***	.007***	.011***	.0014***		.0016***	.0016***	.0020***
	(0.000)		(0.000)	(0.000)	(0.000)	(0.000)		(0.000)	(0.000)	(0.000)
R^2	0.32	0.37	0.30	0.30	0.29	0.19	0.14	0.19	0.19	0.18
Observation Count	69.180	2,023	67,171	67,171	47.689	67.719	5.042	62,876	62,876	42.182
Number of Firms	11.832	1,528	11,788	11,788	10.780	13.495	3.680	13.102	13.102	10.770

P-values are in parentheses and ***, **, * denote significance levels at1%, 5 %, and 10% , respectively

Table 4. Fixed Effect Analysis on Financial Debt- Large Firms

Dependent Variable	Total Financial Liabilities (Short plus long term bank loans, bonds and other issued interest bearing securities)				
Classification	Financially Unconstrained (Large Firms)				
Time Period	Full Period	1996-2002	2003-2016	2003-2016	2003-2016
Liquidity	-.0297	.1189	-.036*	-.036*	-.0517**
	(0.119)	(0.318)	(0.059)	(0.054)	(0.016)
ROA	-.0182	-.1478**	-.0206	-.0208	-.0328
	(0.168)	(0.013)	(0.192)	(0.190)	(0.202)
Size	.0394***	-.0132	.0372***	.0378***	.0314***
	(0.000)	0.502	(0.000)	(0.000)	(0.000)
Tangible Assets	.1455***	.311***	.139***	.139***	.147***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Own Fund	-.510***	-.448***	-.503***	-.503***	-.521***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Foreign Capital	.0001	.243		.008	.370*
	(0.955)	(0.353)		(0.561)	(0.075)
Foreign Capital Lagged					.1272***
					(0.000)
GDP Growth	-.0003	.0001	-.006	-.0002	-.001***
	(0.175)	(.123)	(.123)	(0.561)	(0.000)
Inflation	.001***	.001	.002	-.0001*	-.0001**
	(0.003)	(.267)	(.242)	(0.054)	(0.035)
Monetary Policy Dummy	.005**		.002	.002	.003
	(0.019)		(0.242)	(0.250)	(0.377)
R^2	0.38	0.32	0.37	0.36	0.40
Observation Count	15,404	851	14,553	14,553	10.765
Number of Firms	2,239	547	2,231	2,231	1.927

P-values are in parentheses and ***, **, * denote significance levels at1%, 5 %, and 10% , respectively

Table 5. Fixed Effect Analysis on Financial Debt - Public and Private Firms

Dependent Variable	Total Financial Liabilities (Short plus long term bank loans, bonds and other issued interest bearing securities)					Total Financial Liabilities (Short plus long term bank loans, bonds and other issued interest bearing securities)			
Classification	Financially Constrained (Private Firms)					Financially Unconstrained (Public Firms)			
Time Period	Full Period	1996-2002	2003-2016	2003-2016	2003-2016	2000-2014			
Liquidity	.0207**	-.0639**	.019***	.011*	.010	-.1683***	-.2150***	-.2193***	-.2204***
	(0.000)	(0.046)	(0.000)	(0.084)	(0.118)	(0.000)	(0.000)	(0.000)	(0.000)
ROA	.055**	.0409	.0457*	.0712*	.0742**	.0281	.0156	.0159	.0188
	(0.038)	(0.188)	(0.064)	(0.055)	(0.044)	(0.560)	(0.744)	(0.748)	(0.706)
Size	.053***	.008	.0540***	.044***	.040***	.0829***	.0880***	.0883***	.0869***
	(0.000)	0.329	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Tangible Assets	.134***	.113***	.141***	.141***	.142***	.0025	.0269	.0271	.0317
	(0.000)	(0.006)	(0.000)	(0.000)	(0.000)	(0.941)	(0.467)	(0.467)	(0.395)
Own Fund	-.346***	-.277***	-.354***	-.390***	-.391***	-.0305**	-.0245*	-.0246*	-.0252*
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.016)	(0.098)	(0.091)	(0.083)
Foreign Capital	.029***	.259	.034***		.065***	.0043			.0522
	(0.000)	(0.605)	(0.000)		(0.000)	(0.142)			(0.134)
Foreign Capital Lagged					.109***			.210***	.209***
					(0.000)			(0.000)	(0.000)
GDP Growth	-.0001	-.0005	.0002***	-.0001***	-.001***	-.000	-.003**	-.003**	-.003***
	(0.236)	(0.561)	(0.000)	(0.000)	(0.000)	(0.628)	(0.029)	(0.029)	(0.010)
Inflation	.0001***	- .001*	-.001	.001	-.001	.0024***	.001***	.001***	.002***
	(0.000)	(0.065)	(0.369)	(0.140)	(0.636)	(0.000)	(0.000)	(0.000)	(0.000)
Monetary Policy Dummy	.0115***		.0115***	.0115***	.0141***	.0233	.0650	.0658	.0137**
	(0.000)		(0.000)	(0.000)	(0.000)	(0.474)	(0.468)	(0.470)	(0.044)
R^2	0.25	0.20	0.24	0.24	0.25	0.10	0.13	0.13	0.13
Observation Count	151,072	7.703	144.597	144.597	100.634	3.708	3.708	3.299	3299
Number of Firms	27.522	5.633	27.120	27.120	23.476	349	349	343	343

P-values are in parentheses and ***, **, * denote significance levels at 1%, 5 %, and 10% , respectively

Given that the motivation of our study is to examine the effect of rising foreign capital inflow since early 2000s, we estimate three different set of models encompassing the periods of 1996-2016, 1996-2003, and 2004-2016, as shown in Tables 3, 4 and 5 above. The capital flow coefficient is significant in first and third periods and insignificant in the period of 1996-2003. This result indicates that foreign capital flow triggered by advanced country monetary policies have become influential in borrowing activity of firms operating in a sovereign country since 2003. Initially, we intended to compare publicly traded firms to privately owned firms, under the paradigm of financing constraint. However, to account for the clear differences amongst the financial strength of firms of different sizes, we also separate private firms as large, medium and small based on asset size. Our results are significant in all groups, and indicate to clear differences between private and public firms. Furthermore, variations among private firms yield that financially constrained firms increase borrowing more than do unconstrained ones, which can be explained by the effect of monetary policy. Monetary policy dummy is highly significant for financially constrained firms and less significant for unconstrained ones. In some cases we obtained no significant effect, which is the case in public firms. Accordingly, in period of 2004-2014 financially constrained firms, on average, increase their debt to total asset ratio more than the rest. The least increase is observed in public firms. The dummy variable is highly relevant in explaining the influence of monetary policy on such difference. Results show that monetary policy mostly targets the smallest group of firms, and dummy coefficient quantifies that result. Dummy variable indicates that monetary expansion led to largest increase in the debt ratios of small, medium, large and public firms, respectively, in reverse order of their asset size. This result also reflects the degree of vulnerability to monetary policy.

Our study design allows us to make a comparative analysis of those who are challenged by financing constraints and those who are not. We find that public firms are the ones who most benefitted from the flow; possibly due to increased debt capacity became available via increasing stock prices. Borio et al. (2011); Bhattaria et al. (2015); Rey (2013) show that foreign capital inflow increase equity prices. As equity prices move up, the ratio of debt declines, opening up more space for additional debt. Regarding the impact of foreign capital on borrowing activity of private and public firms, the difference is quite significant. Capital flow affects public firms debt financing decision more than those of private ones despite less increase in average ratios, this result may be attributed to debt capacity created via surges in stock prices. One year lagged value of foreign capital produces more significant results and magnified impact on debt ratios, which indicate that the impact of capital flow takes more than a year to work through the system. Similarly, we find evidence that monetary policy significantly and positively influence borrowing activity of private firms whereas the effect on public firms is insignificant.

In accordance with prior studies, we find that liquidity variable is significant in all variations, with differing impact based on level of financing constraint. Debt ratios of small and medium sized firms are positively, while public and large private firms are negatively affected by liquidity. A result which may be explained financial strength and position of firms that it provides sort of collateral, and shows ability to repay the debt, and indication of financial solvency for small firms. On the other hand, it indicates availability of internal resources to finance operations for financially constrained firms. The more liquidity a firm has the less need may arise for additional debt financing. Magnitude of the coefficient also represents how important it is in financing of public and

large private firms, while the coefficient is relatively small for SMEs. Tables 3, 4 and 5 above report the relevant P-values in parentheses and the coefficients. All standard errors are robust to heteroscedasticity and autocorrelation.

Unlike findings in previous literature (Frank & Goyal, 2009; Harris & Raviv, 1991; Howakimian et al., 2001; Rajan & Zingales, 1995) we find no significant relationship between profitability and borrowing in any of the variations. On the other hand, we find size coefficient to be significant and positively affective in debt ratios as documented by the above cited studies. It is argued that tangible assets positively affect the borrowing because it is used as collateral to secure loans (Frank & Goyal, 2009; Harris & Raviv, 1991; Rajan & Zingales, 1995). Our results indicate that tangible assets are highly significant in determining debt ratios of all private firms. On the other hand, it is not significant in the case of public firms. This would suggest that financially constrained firms are required to provide collateral when borrowing while financially unconstrained ones may be not.

3.5 Robustness analysis

We conduct two sets of robustness analysis; first part involves adding potentially relevant variables to our base model and the secondly we re-group private firm data based on their level of trade credit balance. We show that our results are robust to adding and subtracting the variables that are found to be important in financing decisions by previous literature. We include a set of macro variables that would have cause and effect relation with foreign capital inflow to ensure that they are not proxy for it. To avoid repetition we do not provide detailed description of the variables and refer to Section 3.3 Equation 1 for

the model and the variables that are used. Below Table 6 shows that our variable of interest is highly significant and the sign of the coefficient would not change as we include potentially relevant variables. We use variables such as policy rate, currency growth[18] and liquid liabilities to GDP ratio to include aggregate monetary expansion in the model in addition to the same set of explanatory variables that we have reviewed in Section 2.3. In earlier sections we discuss the discoveries of prior literature in detail regarding the consequences of foreign capital movement across borders. They show that changes in exchange rates, interest rates and monetary expansion are the immediate results accompanying capital flow. Therefore, we have used those variables to see if the variable of interest survives and not a proxy for any of those variables. Policy rates and current liabilities to GDP ratio appear to be highly significant. As we add more variables, inflation and GDP growth variables change sign and in some cases they become insignificant. Due to high correlation among those macro variables their reliability suffers thus we do not focus on them.

Table 6 below shows that the coefficient of foreign capital is highly significant in all variations. However, its magnitude seems to be declining as we add more variables. Particularly, after adding policy rate, which is also highly significant and negatively affects borrowing decision, magnitude of the coefficient almost halves. Other variables; currency growth and M3 to GDP don't seem to absorb the proposed effect. Table 6 reports the relevant P-values in parentheses and associated coefficients. All standard errors are robust to heteroscedasticity and autocorrelation.

---

[18] Currency growth variable is calculated using currency basket, consists of 50% USD and 50% EUR exchange rate.

Table 6. Fixed Effect Analysis on Financial Debt with Additional Macro Variables

Dependent variable	Total Financial Liabilities (Short plus long term bank loans, bonds and other issued interest bearing securities)								
Classification	All Private firms								
Time Period	2003-2016								
Size	.055***	0.054***	0.054***	0.054***	0.054***	0.054***	0.051***	0.050***	0.050***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Tangible Assets	.120***	0.1205***	0.123***	0.131***	0.131***	0.131***	0.132***	0.133***	0.133***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Own Fund	-.345***	-.346***	-.354***	-.354***	-.354***	-.354***	-.354***	-.354***	-.353***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Foreign Capital		.0313***	.0348***	.0341***	.0340***	.0344***	.0158***	.0169***	.0179***
		(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
ROA			.048**	.045**	.045*	.045*	.046*	.046*	.0445*
			(0.044)	(0.044)	(0.065)	(0.064)	(0.060)	(0.060)	(0.074)
Liquidity				.019***	.019***	.019***	.0186***	.0185***	.0183***
				(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Inflation					-.0004	-.0001	.0001***	.0001***	.0001***
					(0.849)	(0.816)	(0.000)	(0.000)	(0.000)
GDP Growth						.0002***	-.0001	.0001*	.0001*
						(0.000)	(0.616)	(0.086)	(0.099)
Policy Rate							-.001***	-.001***	-.001***
							(0.000)	(0.000)	(0.000)
M3/GDP								-.055**	-.007
								(0.011)	(0.738)
Currency Basket Growth									.0249***
									(0.000)
R^2	0.24	0.24	0.24	0.24	0.24	0.25	0.25	0.25	0.25
Observation	144.597	144.597	144.597	144.597	144.597	144.597	144.597	144.597	144.597
Number of Firms	27.120	27.120	27.120	27.120	27.120	27.120	27.120	27.120	27.120

P-values are in parentheses and ***, **, * denote significance levels at 1%, 5% ,and 10%, respectively

We define our model as explained in Section 2.3 Equation 1. We add each variable one by one to see if the capital flow coefficient loses its significance. We do not focus on the effect of new variables on the debt ratios because of high correlation among the macro variables. It is noticeable that adding policy rate and liquid liabilities to GDP ratio disturbs the significance of inflation and GDP growth variable. Sign of their coefficients change as well. Therefore, we invite the reader to be cautious in drawing conclusions from the effect of those variables on debt ratios when used together.

Next we re-divide private firm data using their trade credit balance. Given the large number of firms operating in a wide range of sectors, it is necessary to verify the consistency of our results in the case of reclassification of firms. In section 3 we focus on trade credit (TC) policies and argue that it is highly important to financially constrained firms. Furthermore, there is a high correlation between level of trade credit supplied and demanded. Thus we separate private firms based on the balance of their trade credit (TC) level; those who have average net positive TC (demanded TC minus supplied TC) and those who have average net negative TC (demanded TC minus extended TC)[19]. The substitution hypothesis of Meltzer (1960) suggests that firms which have lack of access to traditional credit resources compensate the shortage of bank financing via trade credit financing. Since his proposal, financial aspect of TC and its importance for small firms have been documented by a sizeable body of literature (Long, Malitz & Ravid., 1993; Ng, Smith & Smith, 1999; Petersen & Rajan, 1997; Özlü & Yalçın, 2010; Abdulla, Dang, & Arif, 2017). Hence, we use net balance of trade credit to re-classify firms with the objective that financial aspect of trade credit may offer valuable

[19] Since publicly traded firms have net positive trade credit balance there is no need to conduct estimation again.

insight into the debt financing pattern. We use average values to separate the firms because year to year changes may not provide reliable information about the financial position of the firms, however, the average of 21 years would more likely to provide more reliable insight into firms' financial situations.

General conclusion emphasized is that TC could be an alternative financing instrument for firms, which lack the liquidity and have some difficulty obtaining bank loans. Since TC offered by a firm is a TC demanded by others, financial position of the firm should directly affect both. For example Lin and Chou (2014) analysis Chinese firms' TC (both demanded and extended) decisions by using the same set of variables. They further estimate the difference between them using the same variables and document the existing balance in the level of trade credit offered and demanded. Given the financial function of it, the balance between them should tell us about the firms' financial strength. If the financial characteristics of a firm are major determinant of its trade credit policy then negative (positive) balanced firms may be considered financially strong (weak), given that it requires financial flexibility to tolerate supplying more than the amount they receive. Thus their borrowing reaction to capital flow and expansionary monetary policy would not only contribute to our understanding of the financing patters but also help to improve efficiency of our analysis. We use the same set of variables as defined in section 2.3 to avoid repetition we do not provide detailed description of variables and refer to relevant section. Table 7 reports the relevant P-values in parentheses and associated coefficients. All standard errors are robust to heteroscedasticity and autocorrelation.

Table 7. Fixed Effect Analysis on Financial Debt - Based on TC Balance

Dependent Variable	Total Financial Liabilities (Short plus long term bank loans, bonds and other issued interest bearing securities)									
Classification	Trade Credit Negative Firms					Trade Credit Positive Firms				
Time Period	1996-2016	1996-2002	2003-2016	2003-2016	2003-2016	1996-2016	1996-2002	2003-2016	2003-2016	2003-2016
Liquidity	.0105	-.0243	.0011	.003	.001	.032***	-.062	.033**	.025**	.024**
	(0.134)	(0.589)	(0.699)	(0.703)	(0.837)	(0.000)	(0.140)	(0.019)	(0.019)	(0.021)
ROA	.063*	.057	.575*	.099*	.104*	.042*	.038	.0297	.0264	.0275
	(0.069)	(0.170)	(0.068)	(0.070)	(0.056)	(0.051)	(0.356)	(0.108)	(0.116)	(0.102)
Size	.0526***	.008	.053***	.042***	.036***	.054***	.014	.054***	.046***	.044***
	(0.000)	(0.286)	(0.000)	(0.000)	(0.000)	(0.000)	(0.226)	(0.000)	(0.000)	(0.000)
Tangible Assets	.123***	.167***	.123***	.127***	.129***	.172***	.066	.142***	.155***	.155***
	(0.000)	(0.004)	(0.000)	(0.000)	(0.000)	(0.000)	(0.300)	(0.000)	(0.000)	(0.000)
Own Fund	-.395	-.371***	-.391***	-.449***	-.452***	-.303***	-.190***	-.303***	-.306***	-.306***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Foreign Capital	.039***	-.184	.051***		.091***	-.0003	-.346	.011		.0195
	(0.000)	(0.110)	(0.000)		(0.000)	(0.968)	(0.342)	0.267		(0.128)
Foreign Capital Lagged					.129***					.084***
					(0.000)					(0.000)
GDP Growth	-.0002	.0103	-.0002	-.0007***	-.001***	.0004***	-.0013	.0001	.0001	.0001
	(0.358)	(0.372)	(0.286)	(0.000)	(0.000)	(0.360)	(0.368)	(0.410)	(0.635)	(0.418)
Inflation	-.0003**	-.0002	.0001***	.001**	.001**	.0001	-.0016	.0001	.0001***	.0001***
	(0.046)	(0.838)	(0.002)	(0.013)	(0.129)	(0.542)	(0.222)	(0.194)	(0.002)	(0.001)
Monetary Policy Dummy	.0130*** (0.000)		.0125*** (0.000)	.0130*** (0.000)	.0156*** (0.000)	.009*** (0.000)		.009*** (0.000)	.009*** (0.000)	.011*** (0.000)
R^2	0.32	0.20	0.31	0.31	0.30	0.25	0.12	0.23	0.23	0.23
Observation Count	92.142	4.532	87.729	87.729	62.041	60.158	3.385	56.868	56.868	38.593
Number of Firms	15.590	3.330	15.393	15.393	13.647	11.975	2.426	11.727	11.727	9.829

P-values are in parentheses and ***, **, * denote significance levels at 1, 5, and 10 percent, respectively

Monetary policy affects both groups' borrowing activity positively. Coefficients are highly significant and similar in magnitude. Given that all private firms significantly increase borrowing during expansion, the result is no surprise to us. Despite our expectation that financially strong firms would offer more TC and weak ones would receive more and supply less, the results show that smaller firms in general offer more TC and thus they have negative balance. Larger firms, on the other hand, receive more TC and supply less, and they have positive balance. This finding would indicate that despite the paramount importance of financial aspect of TC there is more to it. Aggregate data shows that firms with negative net TC balance have higher financial debt ratios in general, they are highly liquid, have less tangible assets and inventory and relatively smaller in size. This result is to be expected because supplying more trade credit would require additional liquidity. Foreign capital seems to affect positively borrowing activity of both groups but those, with negative balance, tend to increase borrowing more than the rest. Results indicate that the coefficient of negative balanced firms is three times greater than that of positive balanced firms; the more foreign capital comes in, the more they borrow. This result is consistent with our expectations because they would need to borrow more in order to finance the negative balance in TC. On the other hand, capital flow also positively affects debt ratios of positive balanced firms but the effect is relatively small. Finally both groups appear to be positively and roughly equally affected by monetary policy stance.

CHAPTER 4

TRADE CREDIT CHANNEL

Trade credit (TC) is defined as the credit extended by the supplier to the buyer in the process of purchasing product. If a company allows payment to be made at a later date other than the day the product is delivered, it would be extending trade credit to the buyer. As a result of this arrangement, the buyer will be able to make late payment but receive the product on an agreed upon date, in other words, the seller provides the buyer with liquidity by not requesting an immediate payment, yet possibly charging additional fee in return. As a common practice most firms, to some extent, take a part on either side of the transaction by receiving and/or extending it (Petersen & Rajan, 1997). Studies show that both received and extended TC are affected by similar characteristics and closely related to the financial situation of a company. As a result, we have determined to assess both demanded and offered TC together for the purpose completeness. We also investigate how the company specific and macro level variables influenced the difference between the two. By using stock market listing status as a proxy for access to credit resources, we examine how attitude of non-financial corporations evolve toward TC financing in times of high financial liquidity. We further separate private firms into groups (small-medium and large) based on size, to distinguish financing patterns of financially constrained and unconstrained firms as a response to rising foreign capital inflow. Size variable has been consistently treated as the main measure of financing constraint in prior studies such as (Bernanke & Blinder, 1992; Gertler & Gilchrist, 1994; Hadlock & Pierce, 2010; Morris & Sellon, 1995). We also include monetary policy (see

Section 2.2 for detailed review of monetary policy stance) in the analysis to isolate any affect it may have, and results show that it increases efficiency of the model.

While causes and consequences of TC have been discussed extensively, there has been relatively little effort in understanding the role it plays in optimal capital structure decisions. Capital Structure studies usually focus on explaining total liabilities or debt ratios, and ignore the variations amongst the major components of liabilities (Rauh & Sufi, 2010). A sizeable literature shows that trade credit is an important source of financing for small firms, it is further claimed to be an alternative to bank loans (Abdulla et al., 2017; Garcia-Appendini & Montoriol-Garriga, 2011), particularly in cases where a firm has to deal with financing constraints. Some of the stylized facts about TC are that it is largely utilized by small firms, which are usually described as financially weak, and bank dependent, and it is mostly provided by large firms, which usually have access to capital markets, highly profitable and larger in asset size (Ng et al., 1999; Nilsen, 2002; Petersen & Rajan, 1997). These facts suggest that small firms may be inclined to take advantage of TC relatively more because they lack the access to other sources for financing. By the same logic, large firms have access to other financing channels and they have high internal cash flows to finance their operations, thus, they have capacity to extend it. Financial literature suggests that trade credit can substitute traditional financing, particularly short term bank loans. This idea becomes more prominent if firms are described as financially constrained (Love et al., 2007; Meltzer, 1960; Petersen & Rajan, 1997) or when firms do not have access to capital markets or a credit rating (Abdulla et al., 2017; Nilsen, 2002).

Empirical studies have shown that trade credit is one of the major elements in corporate financing. For example Petersen and Rajan (1997) document that TC

constitutes 15% of total financing of an average American firm. In other developed countries such as Germany, France and Italy TC ratios go up to as high as 20 % and in UK it is more than 50% of total debt (Mateut et al., 2006). TC seems to be an important financing channel for Turkish firms as well. According to CBRT data TC, both payables and receivables to total assets ratio has been around 20% and 25%, respectively, average of all firms, and historically it has been around 40% of total liabilities. However, historical average ratio of TC to total assets have large swings and seem to follow a counter cyclical pattern that during difficult times of the economy, in early 2000s, the ratio of payables has risen as high as 29% and declined down to 17% in the good times. A 12% difference alone in payables is large enough gab to motivate our investigation. Evidently, aggregate data suggests that during economic contraction those firms which suffer from the lack of access to bank financing have greatly benefitted from TC and as the economic atmosphere improved, they tend to gradually decrease the level of TC balance, and heavily finance operations by financial debt. A separation based on size shows that TC financing, for small firms, went up to more than 31% of total assets whereas financial debt, which is described as the conventional financing channel, was only 18% of total assets in early 2000s. However at the end of the estimation period the pattern reverses and financial debt ratios reach up to 40% and TC financing declines down to 18%, for small firms. CBRT data indicates that during 1996-2006 trade credit were more than 50% of total liabilities and rest of the period it has been around 40%, for a very large portion of non-financial firms. Clearly the large private and publicly held firms have maintained the most stable trade credit level, possibly due to their strong solvency and access to conventional financing channels. On the other hand they seem to have increased supply of TC (receivables) during difficult times of the economy. As

suggested by Schwartz (1974), large firms, with financing resources within their reach, tend to provide more trade credit to economy to ensure continuance of their buyers.

In a recent study, Abdulla et al. (2017) investigate UK firms' practice of TC, accounting for their stock market listing status. They examine the changes in companies' TC financing decisions before and after going public. They document a significant reduction in the level of TC received after firms have become publicly traded in a stock market, suggesting that access to capital markets diminishes the need for TC as the listing secures an access to cheaper options, i.e. it removes financing constraints. They also document that the larger a firm grows the less TC it seems to demand and vice versa. Empirical studies cite mostly the large firms as the trade credit provider and the small firms as the receiver. Large, financially solid corporations, with access to credit channels can extend trade credit because they usually have little difficulty financing its operations and therefore, have the capacity to grant the credit demanded by smaller firms. On the other hand small firms usually operate with a little liquidity and have limited access to traditional credit channels. They cover substantial portion of their liquidity needs through TC (Ng et al., 1999; Meltzer, 1960; Petersen & Rajan, 1997; Özlü & Yalçın, 2010).

As is the case with financial debt, TC financing channel is also subject to monetary cycle, argued by empirical studies. Studies point to an important result that monetary tightening renders financial debt sources inaccessible, driving financially constrained firms toward the supplier's financing. Therefore, documenting financial aspect of TC financing requires the issue to be assessed together with financial debt. In an economy where real sector accommodates many small bank-dependent firms it is inevitable that operations, both investment and financing will be affected by the

monetary policies (Ashcraft & Campello, 2007). This point has been discussed and empirically documented by (Bernanke et al., 1994; Kasyap et al., 1993). They document that central bank monetary policy works through balance sheet of small firms. When central banks initiate's policies aiming at monetary tightening interest rate go up, banks reserves and credit supply decline, causing a reduction in economic activity. Once the interest rates are up, and loanable funds are in short supply, banks would further cut down on the credit extended to small, illiquid firms (Bernanke & Blinder 1992; Bernanke et al., 1994; Kasyap & Stein, 1994) and an episode of flight to quality starts (Bernanke et al., 1994). Gertler and Gilchrist (1993) examine firms' financing decisions under different monetary policies. They identify distinct patterns that small firms reduce fraction of bank loans in balance sheet while large firms on the other hand significantly increase debt ratios. Kasyap et al. (1994) further document that it is the bank lending channel that is in effect because large firms too decrease percentage of bank loans but they shift toward other options such as commercial papers and money markets instruments. Similar result have been documented by Korajczyk and Levy (2003) that during tightening financially constrained firms reduce bank financing and return to it during expansion, presenting pro-cyclical pattern in capital structure. It is evident that drastic changes in monetary policy lead to reshaping capital structure of firms.

Empirical findings and arguments proposed in financial literature point to a conclusion that a contraction or expansion in bank financing caused by changes in monetary regime is what mostly drives firms' attitude toward TC financing. Since it is proposed to be an alternative financing source, the substitution hypothesis, the general expectation is that when monetary policy tightening begins financially constrained firms may become reliant on TC. Factors such as high level of informational asymmetry

between lender and the borrower may not allow financial intermediary to adequately judge the fair value of small businesses, and create a wedge in the cost external financing or completely cut off firms' access to it. The lack of collateral to secure a loan, illiquidity of assets or less profitability; they all indicate financial weaknesses in internal resources and when the credit supply is reduced in financial system, this wedge grows further forcing financially constrained firms to go with more expensive option, which is trade credit (Guariglia & Mateut, 2002; Ng et al., 1999; Petersen & Rajan, 1997). Existing research has proposed arguments to justify offering TC to buyer in such difficult times. To briefly explain: One of the reasons TC may become advantageous compared to bank financing is because it allows informational asymmetry to diminish significantly. By only keeping track of the frequency and the volume of orders, supplier would gain a valuable insight into the financial conditions of the buyer. As a result the supplier is in more adequate position to judge the buyers' financial situation (Bastos & Pindado, 2008; Nilsen, 2002; Mateut et al., 2006). The supplier can always repossess the inventory, previously sold to buyer and recover her cost in case of distress, which would be a more costly practice for banks since the seller knows the product and how to liquidate it (Bilasio, 2003; and Bougheas et al., 2008). Furthermore, the seller knows that denying the buyer TC would mean losing the future business with her. This issue becomes more pressing as the market becomes more competitive, as a result it is the supplier's best interest to provide liquidity by allowing the buyer to make the late payment (Bougheas et al., 2008; Casey & O'Toole, 2014). As briefly explained above, the supplier's willingness to provide TC grants access to the buyer to an alternative financing. Since they have TC financing available when needed in the absent of bank credit, they may channel that liquidity to operations. Ferrando and Mulier (2013)

document that not only day to day operations but also long term objectives, such as overall growth, may be managed, benefitting from TC financing in times of economic contraction.

Therefore, firms that are eligible to a line of credit may still continue to borrow as long as they are able or till the point at which it becomes more expensive than trade credit. The substitution hypothesis also suggests that large firms, maintaining certain level of liquidity, are inclined to provide TC needed by their customers. Similarly, financially constrained firms will demand more TC from the supplier as they exhaust own liquidity (Huang, Shi, & Zhang, 2011). Therefore, capital structure of financially unconstrained large private and publicly held firms may show little sensitivity to altering monetary conditions. However, financially constrained small and medium sized firms are highly sensitive and aggregate data reflects that sensitivity, by confirming our initial impression that foreign capital influences trade credit decision through credit expansion. It is safe to argue that capital structure pattern has the marks of monetary policy on it, driving firms to most viable options at the time of contraction and expansion.

To reach a more precise conclusion we exclude TC, obtained from abroad, from total foreign capital numbers. Foreign capital inflow can potentially influence trade credit decisions via two main channels: the first one is credit channel, which is strictly related to financial aspect of TC. We document that financially unconstrained (publicly held and private large) firms are non-responsive to expansionary monetary policy and consequent to capital flow; they increase TC financing from the supplier and decrease TC extended to the buyer. On the other hand those financially constrained firms seem to decrease the level of TC demanded and increased level of TC offered, as their access to bank credit is enhanced by expansionary monetary policies and increased credit liquidity by foreign

capital inflow. Second channel via which it is effective is increasing sales and consequent competition. In section 2.3.1, we provide detailed analysis on the effect of foreign capital inflow and consequent rise in consumption and corporate sales. Therefore, surge in the supply of trade credit (accounts receivable) must be related to increasing sales and competition among firms, which is fed by foreign capital, and can be explained by the race over expanding market share.

Accordingly, our findings indicate that as the monetary regime changes the focus of TC policy shifts; substitution function of TC becomes more prominent as a financing instrument during difficult times of economy since financially unconstrained (large private and public) firms are more likely to increase supply of TC (accounts receivable) and financially constrained SMEs are more likely to increase their demand (accounts payable) for it, as proposed in (Nilsen, 2002; Meltzer, 1960; Petersen & Rajan, 1997). However, during monetary expansion, its function as financing instrument mostly evolves into a sales promoting tool as suggested in (Cuñat & Garcia-Appendini, 2011; Fabbri & Klapper, 2016; Garcia-Appendini & Montoriol-Garriga, 2011).We observe a reverse pattern in supply of TC and demand for it. SMEs are more likely to increase both bank loan financing and supply of TC while they significantly reduce their demand for TC. Increased competition and other sales promoting arguments, such as reputation building and product quality verification, encourage firms to offer more TC to even smaller firms and probably at better terms. We observe modest reduction in the supply of TC from large private and public firms, which is consistent with the competition argument that down the chain of trade, number of small suppliers is greater than it is in

upper levels, where there may be only a few large suppliers[20]. The strong competition among SMEs result in higher level of TC supplied at better terms.

It is extensively discussed in the earlier sections that foreign capital inflow can lead to an enlargement in credit supply accompanied with softened credit conditions and lowered cost of financing, facilitating firms' borrowing activity. Accordingly, recent trend of capital inflow has provided liquidity in credit markets, and has softened credit conditions (Başkaya et al., 2017; Orhangazi, 2014; Özatay, 2013). These improvements in credit channel may allow bank-dependent small firms to be able to obtain more financial credit, which they may had been denied previously due to their financial limitations. It is traditionally suggested that trade credit is more expensive than other forms of financing, thus our expectation is that a rise in the supply of bank loans fed by foreign capital inflow will drive firms away from TC. Particularly, those small, financially weak firms may desire to take advantage of such favorable credit conditions and reduce the amount of TC they demand while improved economic conditions through sales and competition may encourage them to offer more TC to even smaller firms. As the economic expansion prevails, flight to quality episode ends and firms' balance sheet strengthen through increased sales and liquidity. As a result, financially constrained small firms decrease demand for the supplier's financing as the bank financing becomes more available to them. It is necessary to clarify that we expect to observe a significant surge (reduction) in the level of TC offered (demanded) among financially constrained firms. However, an increase in the supply of TC by small firms maybe more meaningful,

---

[20] Fabri and Klapper (2016) and Demir and Jakovic (2018) empirically document how bargaining power and strong competition drive the balance of trade credit.

considering the impact of rising foreign capital and consequent credit expansion. Large private and public firms, however, may be the least sensitive to changing economic conditions and they may show opposite reaction; a significant reduction in TC supplied and a modest increase in TC demanded. This is due to their customers will demand less and less TC and improved economic conditions and sales numbers may lead to favorable terms at TC contracts. Aggregate data shows that our initial impression regarding the TC financing pattern of non-financial firms is in support to our hypothesis. On the other hand, tight monetary periods are accompanied by limited supply of bank loans and high cost of bank financing. Therefore firms that are unable to access or cannot afford to use bank loans may diverge back toward TC during economic contraction. We observe such a pattern in early 2000s that portion of trade credit financing in external funds (TC plus bank loans) among financially constrained firms goes up to about 65%, which is almost twice more than the portion of traditional bank loans.

Second channel via which it is effective is increasing sales and consequent competition. In section 2.3.1, we provide detailed analysis on the effect of foreign capital inflow and consequent rise in consumption and corporate sales. Therefore, surge in the supply of trade credit (accounts receivable) must be related to increasing sales and competition among firms, which is fed by foreign capital, and can be explained by the race over expanding market share.

Accordingly, our findings indicate that as the monetary regime changes the focus of TC policy shifts; substitution function of TC becomes more prominent as a financing instrument during difficult times of economy since financially unconstrained (large private and public) firms are more likely to increase supply of TC (accounts receivable) and financially constrained SMEs are more likely to increase their demand (accounts

payable) for it, as proposed in (Nilsen, 2002; Meltzer, 1960; Petersen & Rajan, 1997). However, during monetary expansion, its function as financing instrument mostly evolves into a sales promoting tool as suggested in (Cuñat & Garcia-Appendini, 2011; Fabbri & Klapper, 2016; Garcia-Appendini & Montoriol-Garriga, 2011).We observe a reverse pattern in supply of TC and demand for it. SMEs are more likely to increase both bank loan financing and supply of TC while they significantly reduce their demand for TC. Increased competition and other sales promoting arguments, such as reputation building and product quality verification, encourage firms to offer more TC to even smaller firms and probably at better terms. We observe modest reduction in the supply of TC from large private and public firms, which is consistent with the competition argument that down the chain of trade, number of small suppliers is greater than it is in upper levels, where there may be only a few large suppliers[21]. The strong competition among SMEs result in higher level of TC supplied at better terms.

Failing to account for financial limitations of some firms in obtaining external funding can lead to fallacious interpretations of financing patters. Clearly, bank lending channel literature indicates that adverse changes in the stance of monetary policy can drastically hinder firms' ability to obtain bank loans. As presented above those with access to substituting funds shift toward them, which are mainly capital market instruments, while those who cannot, increase their reliance on TC in such times. On the other hand, this pattern reverses drastically in times of expansion. Large amount of capital inflow to the system can generate the results that are usually attributed to

[21] Fabri and Klapper (2016) and Demir and Jakovic (2018) empirically document how bargaining power and strong competition drive the balance of trade credit.

expansionary monetary policy, such as enlargement in credit supply, softened credit conditions, lowered cost of financing. Such a phenomenon has been experienced by Turkey since mid-2000s and to an amplified degree since 2009. Additionally, state-guaranteed funds channeled toward SMEs and historically low interest rates to enable economic activity contributed to monetary expansion. As a result of such drastic changes, we have been able to document that small firms, which are assumed to be financially constrained, significantly decrease (increase) their level of TC demanding (offering) while raising the financial debt ratios simultaneously as a consequent to foreign capital inflow. While obtaining these results we were cautious enough to exclude direct borrowing values (trade credit obtained by Turkish firms) from capital inflow numbers. Our econometric analysis also reveals significant effect that large firms, unlike small ones, increase their TC demanded, possibly improved economic conditions allow them increase their market share and they were able to acquire TC at favorable terms. We also find that capital flow and monetary policy influence financing constrained firms' supply of TC significantly. It is very likely that enhancements in access to bank loans and increased competition are mainly responsible for the increase. Consistent with prior literature we demonstrate that monetary policy is more influential on trade credit policy choices of financially constrained firms; on the other hand financially unconstrained large private and public firms are relatively less susceptible to it.

Given that our data set covers approximately 28.000 firms and of those only 343 are listed in stock exchange and 2.574 are defined as large, i.e. have no binding financing challenges, the subject matter is paramount importance to Turkish economy. Most of the literature focuses on either debt financing or TC channel alone. We argue that more reliable and complete analysis requires different debt components to be

examined separately and possibly in the same study. Therefore, our study focuses on financing decisions separately; both financial debt and TC financing. Not only does it provide a sense of completeness but also allows us to gain better insight into understanding about financing pattern of firms during fluctuations in economic conditions. Additionally, most studies focus on either publicly traded, large, financially unconstrained firms, or small, bank-dependent firms that are financially constrained and they obtain findings explaining the evolution in TC or debt financings of certain group of firms. Therefore, we focus on, both SMEs and publicly held firms, all of which, when considered together, presents perfect laboratory to study changes in TC financing. CBRT data set coverage is the most extensive available to the use of academics and it shows that about 98.5% of the firms in the dataset are either small or medium and possibly have challenges accessing to conventional bank financing. Therefore, our expectation is that foreign capital inflow will negatively (positively) influence the level of TC demanded (offered) among the small and medium sized firms. On the other hand we expect to see no drastic changes in the level of TC demanded among large private and public firms, but improved economic conditions and increased liquidity may encourage them to receive more TC while reducing the supply.

Furthermore, Turkish economy constitutes an excellent example to document the way TC and financial debt patterns evolve under different monetary conditions because first of all Turkey has experienced relatively large amount of capital inflow very recently, which boosted the credit markets with cheap liquidity, secondly, Turkish capital markets are mainly described as shallow, highly volatile and associated with the lack of liquidity, thirdly, SMEs compose a very important portion of the real sector and finally, from 1996 to 2016, which is the period that our data set covers Turkish economy

has suffered several financial crisis, including 2001 currency crisis and 2008 mortgage crisis. Very recently it has experienced significant improvements in economic indicators such as drastic decline in interest rates and inflation, high growth in GDP, and strengthened credit guarantee fund. During this time period Turkey has experienced both contractionary and expansionary economic regimes and starting from earlier 2000s it has been a recipient to a large volume of foreign capital, implying that Turkish firms should carry the marks of prevailing monetary conditions on their capital structure. To the best of my knowledge there has not been a study investigating, particularly the impact of foreign capital flow on TC financing channel. Therefore, the need for a depth analysis of firms financing choices exists, particularly, after having accommodated such large foreign capital inflow. The results may provide better insight into how TC channel works when whole economy is subject to foreign capital inflow, further contributing to our understanding of financing choice of firms.

4.1 Aggregate patterns in trade credit financing

CBRT data indicates that TC has been an important source of funding for Turkish firms. Figure 10 presents historical average of TCs, classifying firms based on asset size, stock market listing status. Particularly SMEs seem to have been financed by TC from 1996 to 2008, and it has been decreasing consistently since then, a time period in which Turkey has received large volume of foreign capital in various forms resulting in enlargement of credit supply. On the other hand large and medium sized firms display relatively more stable trend that amount of TC has been around 16-18% in the given time period. It may be argued that because those firms had to experience little difficulties in funding, they

did not turn to TC for financing as much as small firms did, resulting in an optimal level of TC maintained steadily overtime. Clearly as the firm grows in size the pattern becomes more stable. This is possibly due to financial strength of the firms that linearly correlated with firm's size. The more financially strong firms become the less TC they need for financing and their exposure to monetary cycle become less significant. We observe that public firms maintain average TC received about 10% of their total assets. The ratio is highly stable that it does not fluctuate in early 2000s, one of worst financial crisis in history of Turkish economy.

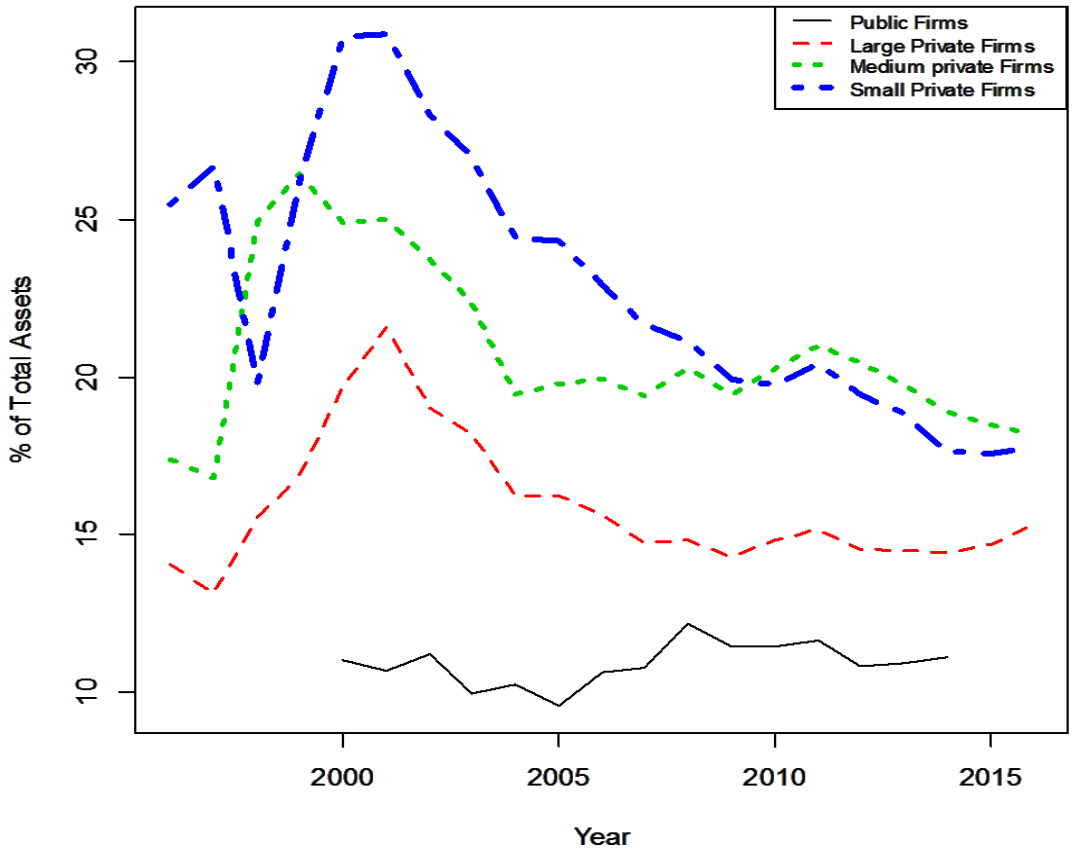

Figure 10. Trade credit received - accounts payable
Source: [CBRT, 2018]

Around 2001 and 2002, TC ratios reach to the peak, 33% and starting from 2004 they decline down to 20% on average. In general, financially constrained firms seem to follow a counter-cyclical trend but financially unconstrained firms appear to be unresponsive to monetary cycle. During this time period, improvements in the economy, such as lowered inflation and interest rates, high growth in GDP must have contributed to firms' access to financial resources for borrowing. More importantly we find that credit expansion via foreign capital inflow and expansionary monetary regime influence their choice of financing and hence they gradually abandon supplier's financing largely return to financial debt service from financial institutions.

Similar to our observations presented earlier, the better access financially constrained firms gain to conventional financing channels and the less trade credit financially unconstrained firm have to supply, because the demand for it goes down, as presented in Figure 11. Thus their level of TC supplied starts to go down after around 2002 and 2003. Unlike TC received, average ratios are more stable and SMEs seem to experience slight increase possibly due to increased competition. Interestingly, large private firms in general provide the least amount of TC to their buyer. Financially constrained small and medium sized firms and public firms, on the other hand provide the highest level of TC on average. This may be explained by the fact that much smaller business partners' need for trade credit financing to handle daily operations. Through business network small firm more likely to deal with even much smaller firms, who demand more trade credit, which is reflected in aggregate patterns.

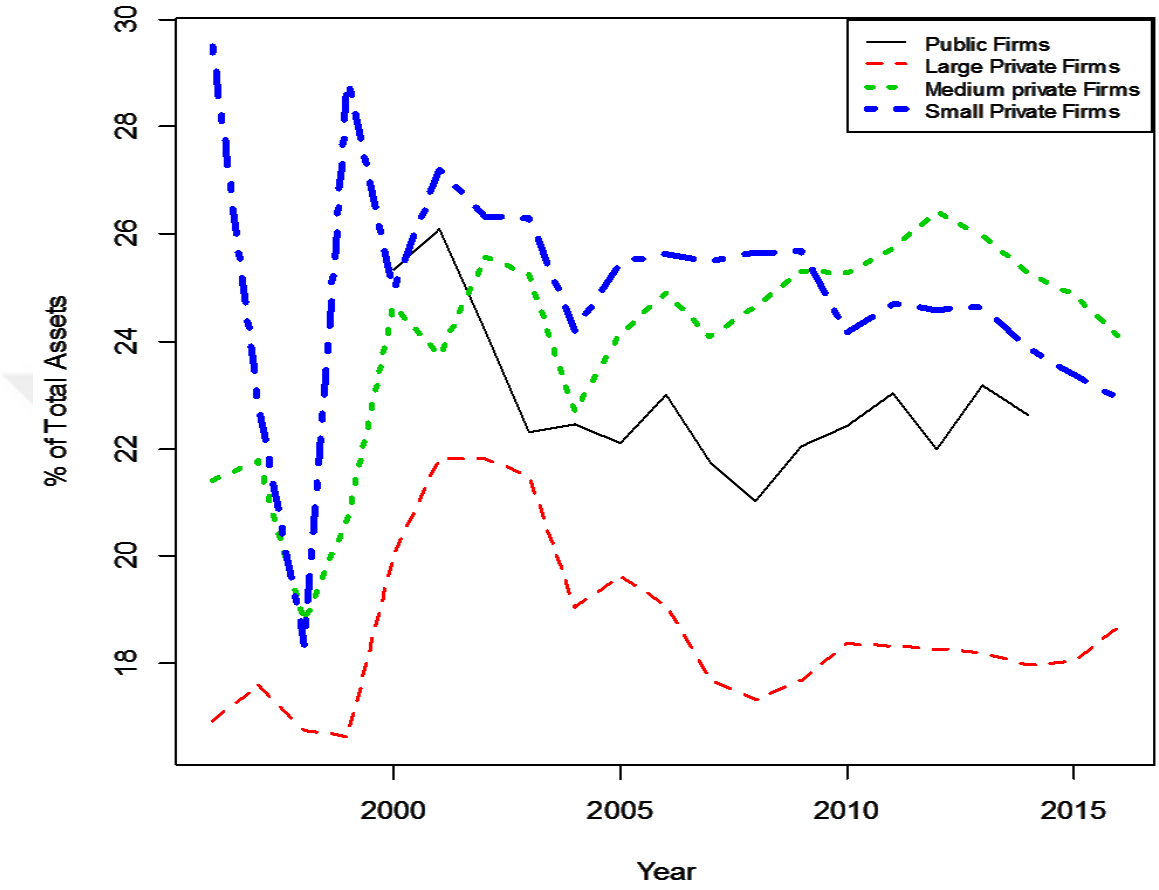

Figure 11. Trade credit supply - accounts receivable
Source: [CBRT, 2018]

There seems to be an inverse correlation between firm size and supply of TC, which is due to strong competition among smaller firms. Large number of supplier would translate to presence of alternative suppliers from which the buyer may choose; therefore the seller may be inclined to supply more TC at favorable terms to increase or maintain its market share. Small number of large private firms and public firms mean relatively small number of alternative suppliers to choose from, hence they may use their market power and not supply as much TC as the small firms do to maintain their market share. Under the assumption that firms maintain an optimal level of liabilities composed of

trade credit, financial debt and other debt instruments, there is a clear pattern that trade credit becomes very important financing choice when financial debt becomes inaccessible. This pattern is more distinguished for small firms; given their financing challenges, naturally they seem to have turned to an alternative financing option in times of economic difficulty. As shown in Figure 12 percentage of TC in total debt declines as the access to bank credit improves over time.

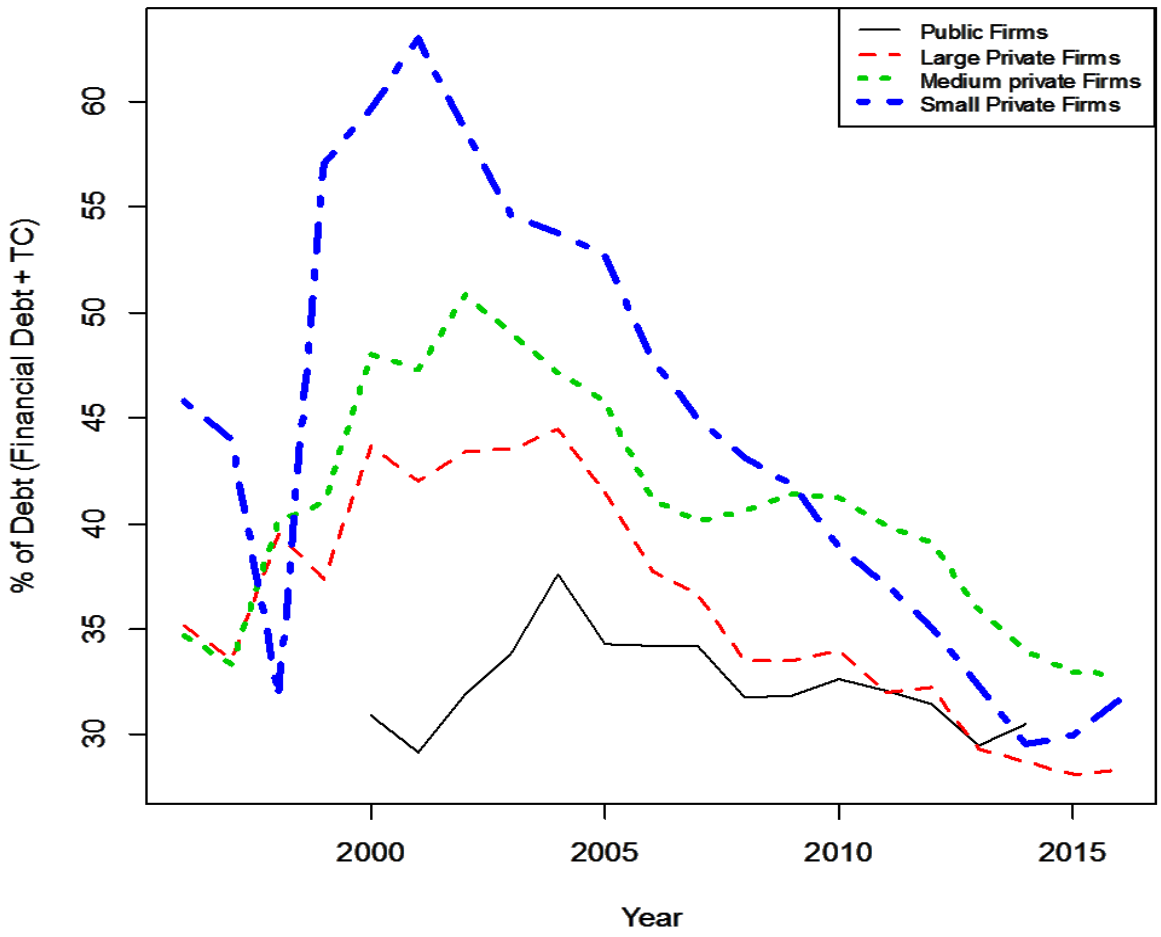

Figure 12. Ratio of trade credit to external debt
Source: [CBRT, 2018]

The ratio of TC has gone up as high as 63% of debt. Small firms have employed more TC than traditional bank financing in 7 out of 21 years. Large and medium firms follow the same pattern with less drastic changes in the ratios. Clearly, they must have certain level of buffer against the financial difficulties of early 2000s, which helped them to absorb the effect of contraction. Cyclicality in choice of financing highly distinguishable that between late 1990s and early 2000 firms are heavily financed by financial debt and seem to disregard trade credit, the pattern reverses in early 2000s possibly due to impact of the crisis. After 2006, however, firms return back to following earlier pattern and again tend to finance mostly by financial debt and abandon trade credit. General pattern appears to be consistent substitution hypothesis. The fact that very recently they have significantly decreased the level of TC financing, maybe an indication that it is more expensive than traditional bank financing, as suggested in the literature. Finally, the medium and large firms have experienced similar but softer cyclical movements, possibly absorbing economics shock with their internal resources.

On the other hand, aggregate data suggest strong counter cyclical movements in the level of TC demanded. However, general supply of TC patterns requires more in-depth analysis. In accordance with the findings of prior literature, small firms pose the strongest reaction to financial conditions by readjusting the level of TC, and the softest reaction is observed in large private and public firms. Particularly public firms are able to manage highly stable TC policies despite economic crisis in early and late 2000s. Such a high percentage of TC in total liabilities and as well as large fluctuations in average ratios over the estimation period has motivated our study.

4.2 Trade credit channel literature review

In simple terms, trade credit (TC) encompasses postponement of payment, while receiving product in advance thus, the buyer has the product to liquate and can channel the funds toward operations. Despite its uncomplicated nature TC seems to benefit almost all firms but mostly those which suffer from the lack of access to traditional credit, such as bank financing (Petersen & Rajan, 1997). Such an important source of financing has received appropriately great deal of attention from academics in three major aspects. The first point of focus has been the reasoning behind firms' preference toward extending and demanding TC, under different monetary regimes. The thesis that has been advanced by previous research is that demand for TC rises during monetary contractions and decline in expansions. It is because financially constrained firms suffer from the lack of access to bank loans and they benefit from interfirm credit. Once the access is restored they gradually decrease demand for TC because it is usually assumed to be more expensive than traditional bank financing. Studies such as Garcia-Appendini and Montoriol-Garriga (2013); Nilsen (2002); Petersen and Rajan (1997) emphasized that financial aspect of TC, as an alternative financing from the supplier, mostly concerns financially constrained firms. Similarly, the supply of TC is expected to rise in expansion and to reduce in contraction (Lin & Chou, 2014). Thus, financing dimension of TC, particularly for financially constrained firms, and cyclical changes in patterns have been the focus of this strand of literature. In fact, what is subject to cyclicality is bank lending channel and thus, so are alternative financing options.

Bernanke and Gertler (1995); and Bernanke et al. (1996); Kasyap et al. (1993) state that bank lending channel works through its impact on bank loans and balance sheet of non-financial firms. A contractionary (expansionary) monetary policy would

cause the interest rates to increase (decline), and credit offered to corporate sector to decline (rise). On the other hand, with the effect of tightening monetary policy, weakened balance sheets of firms become no longer eligible to bank financing. Declined cash flows, asset prices and lack of collateral render bank loans inaccessible. On the contrary, during monetary expansion asset prices rise, cash flows increase, firms become more profitable and highly liquid, all of which contribute to securing a line of credit from banks. Firms that have no financing challenges, such as large firms, firms with good credit ratings or those that are traded in a stock exchange market may be the ones which are the least affected by monetary conditions. The ones, who suffer from financing challenges, are the most affected by monetary policy changes. Such financially challenged firms display a significant reduction in investment and other operations in economic contraction (Gertler & Gilchrist, 1994; Oliner & Rudebush, 1996). This literature argues that during tight monetary conditions, obtaining credit from conventional channels becomes too demanding for small, financially constrained firms, to whom obtaining bank loans have already been difficult as it is (Fazzari et al., 1988; Graham & Harvey, 2001). Naturally, those financially constrained firms, denied bank loans would turn to interfirm credit (TC) from their supplier (Meltzer, 1960; Schwartz, 1974). Meltzer (1960) suggests that TC would constitute an alternative to bank financing for small firms, his hypothesis came to known as "the substitution hypothesis". Since Meltzer's (1960) work, recent papers focusing on monetary policy effect on real economy has motivated academics to focus on examining TC financing channel under different monetary policies.

Meltzer (1960) reports that when bank credit is in short supply, large firms increase the duration and amount of their receivables. Meanwhile, small firms demand

more TC and extend maturity of their payables, trying to recompense for the absence of bank credit. He concludes that because contractionary monetary policy can significantly erode firms' access to bank loans, those which are denied loans, in return, demand more TC from their supplier. His findings lead to the notion that TC may be a substitute for bank loan, reducing the need for external funding. Empirical findings documented by a sizeable literature, some of which are cited above, are consistent with his conclusion. Furthermore, Figure 10 in previous section showing TC of firms in different sizes suggests that case of Turkish firms is in line with arguments presented in Meltzer (1960) and others. On the other hand, large, financially solid firms may increase TC extended to small firms, as they can easily finance through other instrument available to them. Choi and Kim (2005) demonstrate results supporting to Meltzer's argument but they further find that trade credit channel is not only extended from high liquid firms to low liquids ones, on the contrary, both type of firms tend to increase both accounts payables and receivables. This finding has also been confirmed by Altunok et al. (2015); Nilsen (2002). Garcia-Appendini and Montoriol-Garriga (2013) argue that tight monetary conditions may impact all firms, to a varying degree depending upon their balance sheet. Those with low leverage and high stock of cash would be less affected than those with high amount of leverage and comparatively low cash. As a result in tight monetary conditions or in an economic recession most firms may request more TC but only those cash rich companies may grant the wish. They document that just after 2008 crisis overall credit level has reduced measurably but supply is increased by only high liquid firms. Similar findings are reported in ((Lin & Chou, 2014) that not only small firms but also relatively large firms reduced the supply of TC during mortgage crisis.

Nilsen (2002) studies US companies and reports that small firms and some of the large firms, which lack credit rating, characterized as financially constrained, increase their use of TC during contractionary economy. A similar study, conducted by Blasio (2003) using Italian private company data, he finds empirical support that the substitution hypothesis is applicable to Italian manufacturing companies. Casey et al. (2004) examine European firms' financing choice around 2008 crisis. They particularly focus on firms whose bank loan applications are actually rejected and the ones which did not apply to a loan due to high cost of borrowing. Their findings point at an increased volume of trade credit among firms that are defined as credit rationed. Mateut et al. (2006) classify firms into groups based on asset size, assuming size to proxy for having access to credit channels. They estimate monetary policy effect on TC both in a period of expansion and contraction. They confirm existence of a substitution affect, particularly among small firms. They demonstrate that, in shortage of bank financing, small firms largely turn to TC financing. Choi and Kim (2005) examine the changes in the level of both receivables and payables of US companies, and find that as a response to the financial shocks firms increase both, but TC is supplied mostly by large firms. Özlü and Yalçın (2011) study the determinants of demanded TC level of Turkish private firms, between 1996 and 2008. Using policy rate as a proxy for availability of bank financing they find that increasing interest rate drives firms toward demanding more TC. This effect becomes more prominent among the small firms compared to large ones. They continue with sector-based separation of firms; manufacturing and non-manufacturing, which reveals similar results. Huang et al. (2011) analyze Chinese publicly traded company data and by separating the estimation period based on GDP growth rate such as slow and rapid growth. They discover substitutionary

(complementary) effect in slow (rapid) growth periods, implying time varying relation between bank loans and trade credit. Similar findings have been presented by Tsuruta (2015), he finds empirical evidence that trade credit and bank financing are in fact complementary. He analyzes Japan private business data and finds that after Japanese government initiated credit guarantee program for small businesses, those firms increased TC activity, both demanded and extended. Clearly, increased liquidity seems to encourage firms to offer more trade credit possibly at relatively more acceptable conditions. Findings of Tsuruta, (2015) and Huang et al. (2011) are actually in line with Marotta (2005), who discovers that TC is not any more expensive than bank loans. Cost based argument provides logical explanation as to why firms' preference toward TC, both offered and demanded, may change during times of high bank credit availability. Abdulla et al. (2017) examine both publicly traded and privately owned firms simultaneously and document that those that are not listed in a stock exchange market run more trade credit in their balance sheet. Considering stock market listing of a firm as a proxy for access to capital markets they show that publicly held firms carry, on average 23% less trade credit than those that are privately owned. Nilsen (2002) analyzes American firms, and reports that both large and small firms increase TC financing substantially during contractionary periods. After employing credit rating as criteria to separate firms, he shows that only those which are assigned no credit rating increase the level of TC while those with credit ratings presents no significant increase. Findings of Nilsen, (2002) are consistent with those of Kasyap and Stein (1994), who have concluded that substitution effect is in place during monetary tightening. Overall empirical findings in studies such as Ng et al. (1999); Long, Malitz, and Ravid (1993);

Petersen and Rajan (1997); Özlü and Yalçın (2010) indicate that trade credit actually is a source of liquidity for those that have limited access to conventional credit.

Academic literature has also focused on other aspects of TC besides its role for financing in monetary contraction. Since Meltzer's (1960) article on the substitution function of TC, studies have been trying to explain why firms engage in TC financing, besides financial reasons. Because general conclusion implied in the literature is that TC is a financing instrument which gains importance during shortage of traditional debt financing, then why would it still exist in times of high financial liquidity? For example Marotta (2005) suggests that the real purpose of TC among firms is to encourage them to make the early payments thus they benefit from discount offered by the supplier. Schwartz (1978) suggests that supplier holds better advantage in assessing and monitoring the financial position of the buyer than a bank. As a result it can provide better and/or fair priced credit to the buyer. This way the supplier applies price discrimination to certain buyers. Asymmetric information which is costly to remove would not allow banks to offer the same credit at similar terms since supplier and the buyer are in the same business and the supplier has more reliable information on the buyer (Petersen & Rajan, 1997). This point has been shown to be a valid one by asset pricing literature, as well. Goto, Xiao and Xu (2015) take informational advantage of supplier into consideration in the process of stock portfolio formation. They argue that the suppliers' informational advantage allows them to become business partners with potentially profitable firms. Such advantage, proxied by the level of TC supplied, can be used to predict future stock returns. They further argue that investors can identify true quality of stocks by observing TC financing of that company since the supplier has the informational advantage over stock markets and the banks. Additionally, salvaging

value hypothesis of Ng et al. (1999) asserts that repossessing the inventory maybe a relatively more efficient practice for the supplier, consequently they can provide TC at better terms. Petersen and Rajan, (1997) argue that the supplier can always repossess the inventory and resell it to other costumers, which maybe highly costly and inefficient practice for financial institutions.

Product quality theory of Smith (1987) argues that offering TC to the buyer would provide opportunity to test the product quality. Particularly the higher level of TC offered by small firms is said to be the result of a process of establishing reputation by younger firms (Long et al., 1993). This point has been consistent with Turkish data as well. Small firms on average offer 6% more TC (receivables to total assets) than do large firms, interestingly enough this ratio declines down to 4% positive difference at difficult times, between 2000 and 2003, when Turkish economy was dealing with a severe economic crisis, which suggests that financial aspect of TC is not the only relevant reason for the existence of TC. Another argument, developed by Mateut et al. (2015) is that the inventory composition and product kind influence motivation to offer TC. As the demand fluctuates with overall economy the supplier may overshoot sales projections and may have to incur inventory cost. In order to minimize the inventory cost the supplier maybe inclined to offer more TC at more acceptable terms. Demir and javorcik (2018) show that increased competition also cause firms to offer more TC to protect their market share. Similar findings have been also documented by Fabbri and Klapper (2016) that bargaining power originated from market share results in obtaining more TC among Chinese firms, i.e. weaker firms, firms with smaller market share seem to provide more TC to maintain their market share.

Another strand of literature has explored the significance of TC financing by documenting what kind of daily operations are financed by TC channel. Blasio (2003) demonstrates that Italian firms use trade credit to finance inventory. During monetary contractions, he argues, the coefficient of the relation becomes more prominent. He argues that specifically the small firms are dependent on TC for financing inventory. Guariglia and Mateut (2004) report similar findings that firms tolerate liquidity shocks by TC financing and continue to finance inventory investment during contraction. Ferrando and Mulier (2013) document that European firm's use TC to finance asset growth. They examine firms from 8 different countries in Europe, which allows them to control for development of financial markets. They find the effect to be more significant in countries where financial markets are less developed. Nevertheless, it is important for a firm to obtain TC from the supplier to finance production and maintain certain level of liquidity, but it is also necessary to offer TC to expand market share and provide liquidity to the buyer.

Özlü and Yalçın (2010) study the changes in the level of TC of Turkish private firms under different monetary policy regimes. They examine firms' TC policy across various categories such as size, sector, export and import. Their findings support our initial perspective that financially constrained firms do lean toward financing via TC (bank loans) during monetary tightening (expansion). Since foreign capital inflow can lead to expansion in credit supply we should expect to find significant results that capital inflow alters firms financing choice via credit liquidity. Similarly, increased consumption and corporate sales with the effect of rising liquidity would revive the importance of trade credit. Thus, strong competition over market share combined with financial flexibility may further motivate the supply of trade credit, while mitigating the

need for TC financing. Given that competition become more intense in direct proportion with the number of firms in the same sector, it is fairly reasonable to expect more distinct results among smaller firms than larger firms which are relatively fewer in number and may have more market power.

4.3 Data and methodology

The study uses the unique data set of CBRT that includes balance sheet and income statements of more 30.000 firms in different size. After eliminating implausible values such as negative total assets, negative tangible assets or ratio of any balance sheet item to total assets which is greater than one, the data left available has 151.072 observations belonging to 27.522 firms. It covers non-financial sectors: agriculture, mining, manufacturing, energy supply, water supply, construction, retail, transportation, accommodation, information and communication, real estate, professional, scientific and technical activities, administrative and support service, education, human health and social work activities, arts, entertainment and recreation, other service activities and the data is collected from firms via voluntarily submitted annual surveys. Privately owned firms have been split into groups based on asset size (large, medium and small). Firm size has been determined as the main criteria for financing constraint, as suggested in (Bernanke & Blinder, 1992; Gertler & Gilchrist, 1994; Hadlock & Pierce, 2010; Morris & Sellon, 1995). Hadlock & Pierce (2010) review and discuss in detail various methodologies to identify financing constraints and they propose that size and age is the least endogen characteristics of firms that represent their level of access to external

financing. Naturally, to be consistent with prior studies we define small and medium sized firms as financially constrained and the rest are unconstrained.

Table 8 presents descriptive statistics of the data used in the analysis. As pointed out earlier we eliminated implausible values such as negative total assets or negative tangible assets, or observations that are greater than one when scaled to total assets. Our data includes a wide range of firms from various sectors, and descriptive statistics reflect such variation. For instance some firms seem to maintain high liquidity, some firms have almost none tangible assets. Similarly we observe some firms that are almost completely financed by internal resources and while some have negative equity. Values of trade credit, both supplied and received, for some firms go up as high as 99% of total assets and in some cases they maintain zero trade credit. Standard deviation is higher for accounts receivable than it is for accounts payables, implying more variation in the policy of financing from the supplier. Standard deviations in Table 8 actually illustrate discrepancies in the policies of firms toward certain balance sheet items, which considerably contributes to efficiency of the analysis. Table 8 also reports short term interest bearing debt ratios. In some cases, firms have short term borrowing to total assets ratio of as high as 90%, which significantly increases vulnerability and may bring them close to bankruptcy. We observe similar peaks in profitability ratios, which would imply that high cash flow may provide insurance.

We also use stock market listing status as a second criterion to classify firms as financially constrained and unconstrained. Given that most of the data belongs to small and medium sized firms (CBRT data description booklet), the firms falling into top ten

percentile of total assets is treated to be the large and the rest is divided equally: the middle 45 percentile constitutes the medium sized firm and the rest is small[22]. We treat publicly traded companies financially unconstrained and do not separate them based on size. Unfortunately, due to legal regulation we were not allowed to combine public company data to that of private companies. However, separate estimations are applied and results are reported.

Table 8. Descriptive Statistics for Trade Credit Analysis

Variables	Minimum	Maximum	Mean	Median	St. Deviation
Cash-like assets	0.000	.9802	.0951	.0417	.1269
Inventory	0.000	.9925	.2312	.1888	.1937
Short Loan	0.000	.8868	.1807	.1340	.1748
Accounts Payable	0.000	.999	.199	.150	.176
Accounts Receivable	0.000	.994	.244	. 207	.193
Tangible Assets	0.000	.999	.271	.214	.228
Log(size)	5,87	24.82	16.68	16.66	1.54
Own fund	-.229	.996	.325	.297	.253
ROA	-.219	2.56	.056	.047	.110
GDP growth	-0.06	0.11	0.05	0.06	.047
Inflation	0.06	1.06	.38	0.17	0.34
Foreign Capital	.325	.726	.597	.622	.114

Source: [CBRT, 2018]

[22] CBRT's own classification of firm size considers firms which have more than 500 workers as the large firm, between 250-500 medium and less than 250 small. A comparison reveals that its classification of large firms is about 10% of the total, too.

We use 21 years of annual data, from 1996 to 2016, during which time Turkish economy has suffered both 2001 currency crisis and 2008 mortgage crisis and welcomed large volume of foreign capital. Starting from 2004, monetary authorities have been implementing expansionary monetary policy, via decreasing interest rates and aggressively supporting credit guarantee fund, which we also account for with a dummy variable. The estimation period is long enough to demonstrate the effect of macro level variables and as well as to draw reliable conclusions from the econometric analysis. We estimate both publicly traded companies with the assumption that stock exchange market listing status removes financing challenges and if a firm is not publicly traded, it is considered to be financially constrained. We further proceed with the assumption that small firms relatively more financially constrained and the larger firms relatively less suffer from it. Hence, we are able to document the financing decision of private firms based on their financing constraint as well as compare their behavior to those of public firms.

Periods subsequent to crisis are important because those are the times CBRT adopted loose monetary policy to empower recovery. The data set covers a variety of firms in different sizes and industries, as well as varying degree of financial position, all of which present an excellent laboratory to investigate the arguments of the study. If in fact capital flow and monetary expansion have softened the credit conditions and caused changes in trade credit decisions, panel data analysis will be able to successfully capture such an influence. Clearly the trends in aggregate capital structure data suggest a high level of dependence on prevailing economic conditions. Documenting such dependence next to other firm-specific variables are essential goal of this study, only then appropriate policy measures can be taken for future episodes of international capital

flow. With this objective in mind, the hypothesis presented in this study will be tested via panel data analysis, which is also the common methodology in previous studies[23].

Three models of panel data have been estimated (see Appendix E, Tables E1 and E2 for details) and Langrange Multiplier and Hausman (see Appendix F, Tables F1 and F2 for details) test results indicate that the model which best fits the data is fixed effect analysis. Initially, Langrange multiplier test rejects no heterogeneity across firms and therefore pooled OLS is eliminated. Finally we use Hausman test to determine whether fixed or random effect better describes the data, i.e. determines if the firm-specific errors (u_i) correlated any of the regressors (Green, 2008). Hausman test result also rejects null of no systematic differences across firms and we proceed with fixed effect model, which is stated to be more efficient in capital structure studies as well (Bougheas et al., 2006).

$$TC_{it}^{D} = \alpha + \beta X_{it} + \delta Y_t + \Phi D_j + \mu_i + \mathcal{E}_{it} \quad (2)$$

$$TC_{it}^{S} = \alpha + \beta X_{it} + \delta Y_t + \Phi D_j + \mu_i + \mathcal{E}_{it} \quad (3)$$

Dependent variable in Equation 2 TC_{it}^{D}, is short plus long term TC demanded (accounts payable) to total assets ratio. Dependent variable in equation 3 is, TC_{it}^{S} short plus long term TC supplied (accounts receivable) to total assets ratio. For both specifications same set of explanatory variables are used, as explained in detail below. Dummy variable to capture the monetary expansion between 2004 and 2015 have been included in the model. Firm specific variables represented by X_{it}. Macroeconomic variables that have

[23] To account for possible endogeneity issues GMM model is suitable, however due to large gaps in our data set we are unable to conduct GMM estimation with efficiency. It can be seen in Table 3.4.1 that average firm-year observation is five for private firms.

been found to be effective in earlier studies are represented by Y_{it}, μ_i stands for time-invariant firm-specific error term, ε_{it} represents identically and independently distributed error term. All macro variables are retrieved from Federal Reserve Bank of St. Louis and CBRT data bases. The variables and their importance in earlier studies briefly explained below. Particularly firm specific variables are determined following the major studies in the area of capital structure literature such as Love et al. (2012); Nilsen (2002); Petersen and Rajan (1995).

If in fact, as suggested in the literature, TC is more expensive than traditional financing and it is mostly perceived as a substitute to bank loans then our methodology will lead to documentation of empirical evidence indicating that firms' preferences for TC do change based on credit conditions and availability of traditional financing sources. It will also present evidence indicating Turkish firms' dependence on foreign capital as well as advanced country monetary policy spillover effect at micro level. Furthermore, the changes in the supply decisions will capture the influence from rising consumption and sales.

4.3.1 Firm specific variables

Cash-like assets: It is defined as the sum of cash and short term investments divided by total assets. High level of liquidity means large amount of cash and marketable securities which would influence firms TC policies (Love et al., 2012; Nilsen, 2002; Petersen & Rajan , 1995).

Tangibility: It is defined as the ratio of fixed asset to total assets. Most capital structure studies have found tangibility to be a statistically significant determinant of debt ratio as it provides collateral. If tangibility, as collateral, provides access to

conventional credit channels, it must have opposite and significant effect on TC. Therefore, we expect to detect negative relation between tangible assets and trade credit financing.

ROA: It is measured as operating profit divided by total assets. Profitability of a firm is a sign for solvency and indication for future business which may be interest to the supplier. Highly profitable firms may rely more on internal resources and less on TC but at the same time, high profitability may offer high capacity for TC, given that business partners have better insight regarding the health of business of their partners (Ng et al., 1999; Petersen & Rajan, 1997).

Size: It is measured as logarithm of total assets; general view is that the larger a firm is the more business it can handle. Being able to take advantage of TC may require a history with business partners. Overtime a trustworthy business relation will allow the supplier to offer more TC to the buyer (Nilsen, 2002; Petersen & Rajan, 1997). However, academic literature generally presents the large firms as TC provider and small firms as the receiver except for firms with strong market influence (Fabbri & Klapper, 2008). Size is also found to be an influential variable in financial debt decisions and it provides capacity to handle debt without increasing probability of bankruptcy. Therefore, size variable may present negative relation considering financial aspect of TC financing.

Inventory: it is the defined as the balance of inventory to total assets. Bougheas et al. (2008) find that inventory level is a highly relevant variable in TC decision because the intention to avoid the cost of carrying high level of inventory may encourage firms to provide more TC.

Short term bank loans: it is defined as short term bank loans and interest bearing securities divided by total assets. TC literature has traditionally tested the substitution hypothesis by including it as one of the explanatory variables in the model and it has been found to be highly significant (Abdulla et al., 2017; Cuñat, 2007;Fisman & Love, 2003; Giannetti, Burkart & Ellingsen, 2011; Petersen & Rajan, 1997). A negative coefficient indicates to the existence of substitutionary effect of TC.

In constructing dummy variable, we take reporting periods into consideration. For instance the mortgage crisis took place in 2008; however, we could observe its effect on balance sheet mostly in the next reporting period, i.e. in 2009. Figure 10 for aggregate data supports our insight. Similarly, we assume 2005 as starting date of monetary expansion, or it is the date it will start reflecting on financial tables. We also assume that expansionary policy has been disrupted after 2014. Underlying reason for that are the increases in interest rates and declines in domestic exchange rates with the FED's interest rate decision. Since rises in foreign capital coincide with these dates, it will also best serve to isolate the influence of monetary policy and document true impact of foreign capital on trade credit activity. Hence we construct monetary policy dummy variable as following.

1996-2004, 2009 and 2015-2016=0 and 2005-2014=1

In addition to the firm specific variables listed above macro variables which are material in firms' financing decision are also included. Previous literature has documented that variables such as inflation and GDP growth can be influential.

GDP growth: It represents the overall growth in the economy and can provide indications regarding the economic situation. Capital structure studies such as Deesomsak et al. (2004); DeJong et al. (2008); and Köksal and Orman, (2013) have

present it to be relevant factor in financing decision. We use annual real GDP growth rate in the analysis as one of the explanatory variables.

Inflation: Consumer price index is used to include the increases in prices. Frank and Goyal, (2009); Mokhova and Zinecker, (2014); Taggart, (1985) argue that inflation can influence the value of tax shield driven from debt financing thus firms may re-examine their choice of financing in times of high inflation.

Monetary economics literature has emphasized the importance of macro level indicators to operations of financially constrained firms. Bernanke and Blinder (1992); Gertler and Gilchrist (1994); Morris and Sellon, (1995) argue that financially constrained small firms are highly vulnerable to changing economic conditions. Spending and investing activities of those firms rise and decline with monetary policy cycle. Therefore, it is necessary to include macro variables in the model.

Foreign capital inflow: as the main variable of interest to the present study, it is included in the model as it is scaled to real GDP. Value of direct trade credit borrowings, listed under "other investment", which is the trade credit obtained by non-financial firms, provided from business partners abroad, has been excluded from the analysis. Thus the variable is constructed as: (FDI +FPI+ other investment-trade credit) /GDP. This is the correct approach in order to document the true effect of foreign capital. We obtain annual data from CBRT data base listed under international investment position data. Stationarity of the variable is verified via Zivot-Andrews and Lumsdaine-Papell unit root tests by accounting for the structural breaks (for details see Appendix G, Tables G1 and G2, and Appendix H, Figures H1 and H2). Both tests are employed to obtain robust result in consideration to small number of observation.

Main objective of the study is to document the impact that foreign capital has on one of the major financing channel, TC level of firms. Given the economic consequences of capital inflow and financial aspect of TC, as a substitute for bank financing, we expect to detect statistically significant negative (positive) impact on TC demanded (offered). Since their financial constraints are alleviated they should gradually decrease level of TC demanded, conversely they should increase the supply of TC due to expanded credit availability. Large private and publicly held firms, however, due to their financial flexibility should present little sensitivity. Finally correlation coefficients (see Appendix I) are within acceptable limits for the analysis.

4.4 Empirical findings

Separately examining debt components leads to a considerably more efficient estimation. Our results indicate some of the balance sheet items, that affect financial debt positively, also affect TC financing negatively. Variables such as tangible assets and size have opposing effects on bank loans and TC. Separate analysis in the same study also allows us to properly document the significance of the substitution hypothesis of Meltzer (1960) between TC and bank loans. Furthermore, treating accounts receivables and payables related but separate items contribute to the efficiency of our analysis. We show that the coefficients of the same explanatory variables differ in magnitude and have opposing signs. Due to high correlation between supply of and demand for TC, we also analyze the difference between the two (Net trade credit=demanded TC-offered TC), and discuss responsiveness of net TC to foreign capital and other variables in robustness check. We find that financially constrained and

unconstrained firms differently response to capital flow and monetary policy variable. Clearly, capital flow and monetary policy dummy negatively affect financially constrained firms' demand for TC; they decrease the level of supplier's credit. On the other hand, foreign capital flow positively influences receiving TC in financially unconstrained firms; hence they increase the demand for it. Both publicly held firms and privately owned large firms increase level of TC financing from the supplier. Furthermore, the influence of monetary stance on financially unconstrained firms' TC policy has been limited. Tables 9, 10 and 11 below present the results of fixed effect panel data analysis on trade credit demand and supply. All standard errors are robust to heteroscedasticity and autocorrelation. P values are reported in parentheses.

Table 9. Fixed Effect Analysis on TC Demand - Small and Medium Firms

Dependent Variable	Total Trade Credit Demanded					Total Trade Credit Demanded				
Classification	Financially Constrained (Medium Firms)					Financially Constrained (Small Firms)				
Time Period	Full Period	1996-2002	2003-2016	2003-2016	2003-2016	Full Period	1996-2002	2003-2016	2003-2016	2003-2016
Cash-like Assets	-.0279***	.0270	-.029***	-.031***	-.032***	-.045***	-.109***	-.047***	-.045***	-.045***
	(0.000)	(0.652)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
ROA	.0089	-.0087	.0095	.0087	.0081	.0290*	.0275	.0253	.049**	.047**
	(0.270)	(0.898)	(0.262)	(0.433)	(0.469)	(0.087)	(0.423)	(0.200)	(0.030)	(0.040)
Size	-.026***	-.0342**	-.026***	-.023***	-.023***	-.015***	.033***	-.017***	-.013***	-.010***
	(0.000)	(0.033)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Tangible Assets	-.057***	-.0207	-.057***	-.069***	-.069***	-.115***	-.1303***	-.112***	-.111***	-.112***
	(0.000)	(0.783)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Own fund	-.249***	-.468***	.034***	-.238***	-.238***	-.213***	-.2956***	-.208***	-.234***	-.233***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Inventory	.035***	.0707	.034***	.031***	.031***	.0092	-.0495	.0105	.021***	.020***
	(0.000)	(0.322)	(0.000)	(0.000)	(0.000)	(0.160)	(0.184)	(0.120)	(0.009)	(0.009)
Short Term Loans	-.262***	-.293***	-.258***	-.247***	-.247***	-.263***	-.436***	-.252***	-.251***	-.251***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Foreign Capital	-.0006	-.0054	-.005		-.018**	-.051***	.3891	-.045***		-.054***
	(0.465)	0.974	(0.265)		(0.020)	(0.000)	(0.116)	(0.000)		(0.000)
Foreign Capital Lagged					-.0293***					-.0615***
					(0.000)					(0.000)
Inflation	-.00008	-.0026*	.0002	.0003	.0002	.0005***	.006***	.0006***	.0001***	.0007***
	(0.466)	(0.066)	(0.180)	(0.359)	(0.458)	(0.000)	(0.000)	(0.000)	(0.000)	(0.077)
GDP Growth	.0004***	-.0007	.004***	.0008***	.0008***	.0002**	.005	.0003***	.0001***	.0009***
	(0.000)	(0.675)	(0.000)	(0.000)	(0.000)	(0.022)	(0.000)	(0.000)	(0.000)	(0.000)
Monetary Policy Dummy	.002**		.002**	.002**	.003***	0.023**		0.001	0.001	0.001
	(0.044)		(0.022)	(0.026)	(0.006)	(0.058)		(0.102)	(0.339)	(0.849)
R^2	0.19	0.39	0.18	0.18	0.17	0.18	0.24	0.17	0.17	0.17
Observation Count	69.180	2,023	67,171	67,171	47.689	67.719	5.042	62,876	62,876	42.182
Number of Firms	11.832	1,528	11,788	11,788	10.780	13.495	3.680	13.102	13.102	10.770

P-values are in parentheses and ***, **, * denote significance levels at 1, 5, and 10 percent, respectively

Table 10. Fixed Effect Analysis on TC Demand - Large Firms

Dependent Variable	Total Trade Credit Demanded				
Classification	Financially Unconstrained (Large Firms)				
Time Period	Full Period	1996-2002	2003-2016	2003-2016	2003-2016
Cash-like Assets	-.0119	.1358	-.0139	-.0025	-.0026
	(0.432)	(0.237)	(0.359)	(0.883)	(0.877)
ROA	-.006	-.1002	-.0005	.0048	.0060
	(0.667)	(0.256)	(0.967)	(0.776)	(0.722)
Size	-.017***	-.002	-.015***	-.0153***	-.016***
	(0.000)	(0.811)	(0.000)	(0.000)	(0.000)
Tangible Assets	-.043***	-.027	-.038***	-.049***	-.048***
	(0.000)	(0.738)	(0.004)	(0.002)	(0.002)
Own fund	-.1842***	-.372***	-0,175***	-0.185***	-0.186***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Inventory	.0705***	.372***	.062***	.053***	.053***
	(0.000)	(0.000)	(0.000)	(0.010)	(0.010)
Short Term Loans	-.204***	-.340***	-.190***	-.202***	-.202***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Foreign Capital	.0316***	.0424	.017*		.0183
	(0.003)	(0.708)	(0.084)		(0.158)
Foreign Capital Lagged					.0162
					(0.350)
Inflation	-.0002	.0001	.0001	.0007	.0004
	(0.132)	(0.900)	(0.521)	(0.253)	(0.424)
GDP Growth	.0006***	-.0002	.0006***	.0004*	.0004*
	(0.000)	(0.813)	(0.000)	(0.051)	(0.053)
Monetary Policy Dummy	-.006***		-.005***	-.005***	-.003
	(0.001)		(0.002)	(0.003)	(0.127)
R^2	0.18	0.34	0.22	0.22	0.2
Observations	15,404	851	14.553	14.553	10.765
Number of Firms	2,239	547	2,231	1.927	1.927

P-values are in parentheses and ***, **, * denote significance levels at 1, 5, and 10 percent, respectively

Table 11. Fixed Effect Analysis on TC Demand - Private and Public Firms

Dependent Variable	Total Trade Credit Demanded					Total Trade Credit Demanded			
Classification	Financially Constrained (Privately owned Firms)					Financially Unconstrained (Public Firms)			
Time Period	Full Period	1996-2002	2003-2016	2003-2016	2003-2016	2000-2014			
Cash-like Assets	-.0341***	-.0409***	-.0361***	-.034***	-.034***	-.0402**	-.0402**	-.0401**	-.0405**
	(0.000)	(0.281)	(0.000)	(0.000)	(0.000)	(0.018)	(0.016)	(0.038)	(0.036)
ROA	.0224***	.0072	.019	.034*	.033*	-.0077	-.0077	-.0080	-.0075
	(0.009)	(0.808)	(0.162)	(0.061)	(0.061)	(0.704)	(0.712)	(0.723)	(0.742)
Size	-.0195***	.017***	-.021***	-.018***	-.017***	-.0156***	-.0156***	-.0166***	-.0169***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)	(0.000)	(0.003)	(0.003)
Tangible Assets	-.0853***	-.097**	-.081***	-.085***	-.085***	-.0396***	-.0396***	-.0366***	-.0403***
	(0.000)	(0.012)	(0.000)	(0.000)	(0.000)	(0.006)	(0.006)	(0.005)	(0.007)
Own fund	-.2327***	-.273***	-.218***	-.231***	-.230***	.0029	.0026	.0036	.0036
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.608)	(0.604)	(0.577)	(0.592)
Inventory	.0212***	.0005	.0244***	.028***	.028***	.1622***	.1623***	.1878***	.1895***
	(0.000)	(0.987)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Short Term Loans	-.2633***	-.353***	-.249***	-.245***	-.245***	-.0189	-.0188	-.0228	-.0228
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.209)	(0.205)	(0.137)	(0.138)
Foreign Capital	-.0183***	-.0551	-.021***		-.024***	.0372			.0658
	(0.000)	(0.540)	(0.000)		(0.000)	(0.106)			(0.382)
Foreign Capital Lagged					-.047***			.0790***	0.076***
					(0.000)			(0.000)	(0.000)
Inflation	.0001***	.0009	.0004***	.0006***	.0004*	-.003**	-.003**	-.0004**	-.0005**
	0.142	(0.178)	(0.000)	(0.000)	(0.097)	(0.017)	(0.017)	(0.038)	(0.032)
GDP Growth	.0003***	-.0001***	.0004***	.0008***	.0008***	.0003	.0003	.0001*	.0001
	(0.000)	(0.875)	(0.000)	(0.000)	(0.000)	(0.488)	(0.488)	(0.073)	(0.163)
Monetary Policy Dummy	.001**		.001**	0.001*	.002**	-.0386	-.0385	.0152	.0048
	(0.017)		(0.021)	(0.059)	(0.021)	(0.167)	(0.165)	(0.424)	(0.881)
R^2	0.18	0.19	0.18	0.18	0.17	0.08	0.08	0.08	0.08
Observation Count	151,072	7.703	144.597	144.597	100.634	3.708	3.708	3.299	3.299
Number of Firms	27,522	5.633	27.120	27.120	23.476	349	349	343	343

P-values are in parentheses and ***, **, * denote significance levels at 1, 5, and 10 percent, respectively

We observe that capital flow and monetary policy significantly reduces financially constrained firms' demand for TC. Expansionary monetary policy and increased credit liquidity via foreign capital inflow must provide them with access to conventional financing options hence they eliminate the need for trade credit financing. Similarly foreign capital significantly and positively affects the supply of trade credit from financially constrained firms. We argue that this is the result of an attempt to increase their market share. Foreign capital flow significantly influences the level consumption (Carderrelli, et al., 2009; Hoggart & Sterne, 1997; Magud et al., 2012; Montiel & Reinhart, 1998; Shin, 2013). This increase will be reflected in sales numbers and by providing more TC at more acceptable terms financially constrained firms can promote sales and hence increase their market share. In summary we find that function of trade credit changes based on economic atmosphere and level financing constraint of a firm. In times of contraction it maybe a substitute for bank loans for constrained firms; it is also a sales promoting instrument during expansionary economy.

On the other hand financially unconstrained firms yield opposing reactions. Since demand from smaller firms is also the supply from larger firms, the result is consistent that they reduce the supply. Interestingly, financially unconstrained firms increase their demand for TC, possibly because enhancing economic conditions lead to better terms at trade credit contracts, encouraging them to take advantage. As explained before increased consumption and sales numbers must allow them to receive TC at favorable terms so they increase TC financing as result of surges in foreign capital. On the other hand, we find that monetary policy have limited impact on TC decision of financially unconstrained firms

Our conclusion that substitution function of TC becomes more prominent during difficult times of economy and it becomes sales promoting instrument in good times is in line

with the results of previous studies. Since large and publicly held, financially unconstrained firms are more likely to increase supply of TC and financially constrained SMEs are more likely to increase their demand for it in times of contraction, as proposed in (Meltzer, 1960; Nilsen, 2002; Petersen & Rajan, 1997). However, during monetary expansion, its function as financing instrument mostly turns into sales promoting instrument as suggested in (Cuñat & Garcia-Appendini, 2011; Fabbri & Klapper, 2008; Garcia-Appendini & Montoriol-Garriga, 2011). Monetary policy dummy and capital flow variable significantly and positively (negatively) contribute to supply (demand for) of TC from financially constrained firms. This result is the major consequences of increased credit availability. SMEs are more likely to increase both bank loan financing and supply of TC while they significantly reduce their demand for TC. Increased competition and other sales promoting arguments, such as reputation building and product quality verification, encourage firms to offer more TC and probably at better terms to even smaller firms. We observe a reverse pattern in supply of TC and demand for it in financially unconstrained firms. The fact that both large private and publicly held firms show similar responses to the same variables gives support to our criteria for financing constraint.

Previous literature that has built upon the work of Meltzer (1960) has largely emphasized the financial aspect of trade credit (TC). They show that TC can be alternative source of financing for financing constraint firms. Furthermore, it has been documented in studies such as (Choi & Kim, 2003; Huang et al., 2011; Mateut et al., 2006) that shortage of bank loans drives more firms toward TC financing. Our results are complementary to the findings of the previous literature. In a period of high financial liquidity, we find that firms gradually decrease level of TC demanded and increase TC offered. However these results vary

by the level of financing constraint. We document that foreign capital directly and significantly influenced TC decision of all firms. Unconstrained firms increase demand for TC while constrained firms decrease. Evidently, this finding reveals support to the arguments developed in prior literature that as the more credit becomes available from financial institutions, financially constrained firms lean toward traditional financing while abandoning TC. Increase in the supply of TC can also be explained by the argument that it is used as an instrument to promote sales and expand market share.

We observe that, in Tables 12, 13 and 14 all financially constrained firms significantly increase level of TC supply in response to capital flow. Coefficients are highly significant and the effect takes place within the same year. On the other hand, financially unconstrained firms display opposing reaction and their extended TC level declines significantly. Since all SMEs reduce their demand for TC, it is a natural reaction for even larger firms to decrease level of TC extended. For public firms, monetary policy dummy variable turns out to be insignificant in both specifications. Access to financial resources as well as their financial reserves must provide them with flexibility and thus they are able to operate optimally without being affected by the changes in monetary regime.

Table 12. Fixed Effect Analysis on TC Supply - Small and Medium Firms

Dependent Variable	Total Trade Credit Supplied					Total Trade Credit Supplied				
Classification	Financially Constrained (Medium Firms)					Financially Constrained (Small Firms)				
Time Period	1996-2016	1996-2002	2003-2016	2003-2016	2003-2016	1996-2016	1996-2002	2003-2016	2003-2016	2003-2016
Cash-like Assets	-.635***	-.541***	-.639***	-.662***	-.662***	-.653***	-.766***	-.649***	-.671***	-.670***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
ROA	.123***	-.010	.126***	.114***	.116***	.069***	.053***	.068***	.062***	.062***
	(0.000)	0.818	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Size	-.014***	-.017*	-.014***	-.015***	-.016***	-.008***	.002	-.009***	-.013***	-.013***
	(0.000)	0.081	(0.000)	(0.000)	(0.000)	(0.000)	(0.758)	(0.000)	(0.000)	(0.000)
Tangible Assets	-.486***	-.533***	-.488***	-.499***	-.498***	-.593***	-.690***	-.586***	-.594***	-.594***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Own fund	.008*	.026	.008	.001	.0009	-.001	-.063***	.0022	-.0043	-.0046
	(0.086)	(0.404)	(0.106)	(0.756)	(0.875)	(0.775)	(0.006)	(0.584)	(0.436)	(0.402)
Inventory	-.550***	-.587***	-.550***	-.564***	-.563***	-.642***	-.762***	-.632***	-.639***	-.639***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Short Term Loans	.044***	-.002	.046***	.041***	.040***	.019***	-.041*	.020***	.023***	.023***
	(0.000)	(0.937)	(0.000)	(0.000)	(0.000)	(0.000)	(0.069)	(0.000)	(0.000)	(0.000)
Foreign Capital	.019***	.278*	.0210***		.021***	.0123**	.0313	.0126***		.0126**
	(0.000)	(0.087)	(0.000)		(0.000)	(0.035)	(0.749)	(0.003)		(0.018)
Foreign Capital Lagged					-.003					.0096
					(0.726)					(0.287)
Inflation	.0001	.001	.0003**	.0001**	.0001**	.0006	.0003	.013	- .001***	- .001***
	(0.141)	(0.136)	(0.031)	(0.013)	(0.013)	(0.359)	(0.750)	(0.532)	(0.000)	(0.000)
GDP Growth	.0005***	.002**	.0004***	.0001***	.0001***	0.001***	-.0001	.0003***	.0003**	.0003**
	(0.000)	(0.042)	(0.000)	(0.000)	(0.000)	(0.009)	(0.800)	(0.000)	(0.022)	(0.018)
Monetary Policy Dummy	-.0004		-.0004	.0001	.007	.001		.001	.001	.001
	(0.653)		(0.799)	(0.938)	(0.564)	(0.338)		(0.632)	(0.473)	(0.206)
R^2	0.44	0.44	0.44	0.44	0.46	0.50	0.65	0.50	0.50	0.51
Observation Count	69.180	2,023	67,171	67,171	47.689	67.719	5.042	62,876	62,876	42.182
Number of Firms	11.832	1,528	11,788	11,788	10.780	13.495	3.680	13.102	13.102	10.770

P-values are in parentheses and ***, **, * denote significance levels at 1, 5, and 10 percent, respectively

Table 13. Fixed Effect Analysis on TC Supply - Large Firms

Dependent Variable	Total Trade Credit Supplied				
Classification	Financially Unconstrained (Large Firms)				
Time Period	Full Period	1996-2002	2003-2016	2003-2016	2003-2016
Cash-like Assets	-.409***	-.401***	-0,411***	-0,432***	-0,432***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
ROA	.138***	.001	.134***	.161***	.164***
	(0.000)	.985	(0.000)	(0.000)	(0.000)
Size	-.009***	-.015	-.008***	-.010***	-.012***
	(0.000)	0.204	(0.000)	(0.000)	(0.000)
Tangible Assets	-.280***	-.279***	-.276***	-.301***	-.297***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Own fund	-.018*	.070	-.016*	-.021*	-.023**
	(0.065)	(0.144)	(0.098)	(0.062)	(0.042)
Inventory	-.283***	-.356***	-.287***	-.317***	-.316***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Short Term Loans	.028**	.091*	.0286**	.0281*	.0281*
	(0.026)	(0.100)	(0.029)	(0.055)	(0.055)
Foreign Capital	.051***	.195	.0521***		.048***
	(0.000)	(0.114)	(0.000)		(0.000)
Foreign Capital Lagged					.0179
					(0.326)
Inflation	.0001	.001	.0005*	-.002***	-.001***
	(0.269)	(0.293)	(0.063)	(0.000)	(0.000)
GDP Growth	.0007***	0.001	.001***	.001**	.001**
	(0.000)	(0.430)	(0.000)	(0.018)	(0.018)
Monetary Policy Dummy	-.006***		-.006***	-.005***	-.003*
	(0.000)		(0.000)	(0.000)	(0.092)
R^2	0.22	0.19	0.23	0.22	0.24
Observation Count	15,404	851	14,553	14,553	10.765
Number of Firms	2,239	547	2,231	2,231	1.927

P-values are in parentheses and ***, **, * denote significance levels at 1, 5, and 10 percent, respectively

Table 14. Fixed Effect Analysis on TC Supply - Private and Public Firms

Dependent Variable	Total Trade Credit Supplied					Total Trade Credit Supplied			
Classification	Financially Constrained (Private Firms)					Financially Unconstrained (Public Firms)			
Time Period	Full Period	1996-2002	2003-2016	2003-2016	2003-2016	2000-2014			
Cash-like Assets	-.6260***	-.693***	-.620***	-.641***	-.641***	-.455***	-.455***	-.49***	-.49***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
ROA	.0904***	.023	.093***	.083***	.084***	.065**	.065**	.086**	.085**
	(0.000)	(0.156)	(0.000)	(0.000)	(0.000)	(0.032)	(0.030)	(0.007)	(0.007)
Size	-.0113***	-.005	-.573***	-.014***	-.015***	-.005	-.005	-.001	-.0010
	(0.000)	(0.361)	(0.000)	(0.000)	(0.000)	(0.570)	(0.567)	(0.906)	(0.916)
Tangible Assets	-.5216***	-.610***	-.511***	-.519***	-.518***	-.346***	-.346***	-.36***	-.36***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Own fund	.0024	-.0304	.002	.003	-.004	-.0010	-.001	-.008	-.0089
	(0.409)	(0.170)	(0.381)	(0.328)	(0.255)	(0.904)	(0.906)	(0.325)	(0.325)
Inventory	-.5842***	-.719***	-.573***	-.581***	-.581***	-.319***	-.319***	-.31***	-.31***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Short Term Loans	.0296***	-.019	.031***	.030***	.030***	.071**	.071**	.0584*	.0584*
	(0.000)	(0.336)	(0.000)	(0.000)	(0.000)	(0.025)	(0.029)	(0.082)	(0.082)
Foreign Capital	.0150***	.1224	.0187***		.0187***	-.083**			-.083**
	(0.000)	(0.134)	(0.000)		(0.000)	(0.025)			(0.014)
Foreign Capital Lagged					.0006			-.101**	-.091**
					(0.295)			(0.018)	(0.022)
Inflation	.0001**	.001*	.0002**	- .001**	- .001**	.001*	.001*	.0007	.0007*
	(0.022)	(0.075)	(0.026)	(0.000)	(0.000)	(0.075)	(0.075)	(0.105)	(0.068)
GDP Growth	.0003***	.00093	.0003***	.0003***	.0003***	-.0002	-.0002	.005**	.0003
	(0.000)	(0.211)	(0.000)	(0.000)	(0.000)	(0.270)	(0.270)	(0.037)	(0.473)
Monetary Policy Dummy	.001		-.001	.001	.001	.018**	.018**	.082	.523
	(0.832)		(0.853)	(0.782)	(0.427)	(0.011)	(0.016)	(0.595)	(0.188)
R^2	0.46	0.57	0.45	0.45	0.45	0.26	0.26	0.26	0.26
Observation Count	151,072	7.703	144.597	144.597	100.634	3.708	3.708	3.299	3.299
Number of Firms	27,522	5.633	27.120	27.120	23.476	349	349	343	343

P-values are in parentheses and ***, **, * denote significance levels at 1, 5, and 10 percent, respectively

Other macro variables; GDP and inflation, are significant for private firms in both cases, and insignificant for public firms. They seem to affect private firms positively, both the demand for and supply of TC. Expected inflation and GDP growth can reveal valuable information regarding future sales numbers. If the benefit derived from changes in future prices and sales can outweigh the cost of carrying higher level of inventory and trade credit then financially constrained firms may be inclined to demand more TC. By the same logic those, to whom they supply TC, may demand more, increasing the trade credit borrowing activity altogether, as a response to GDP growth and rise in inflation.

We find that most firms prefer internal resources to finance their operations. Coefficients of operating income and cash and cash-like assets are highly significant and have a negative sign. The more liquid assets a firm has the less TC it demands from the supplier. These findings indicate that internal resources are affective in determining how much trade credit to request from the supplier and they are consistent with prior research. Abdulla et al. (2017) argue that, as suggested by pecking order theory, cash flows and liquid assets negatively affect the level of TC demanding, and internal resources are to exhaust first is in order of financing instruments. Profitability positively affects the supply of TC as well. This result is expected because extending trade credit to buyer requires financial liquidity, which is supported by high profitability and positive cash flows. Consistent with substitution hypothesis, demand for TC declines with size variable. The more a firm grows in size the less trade credit it demands. Size has a positive effect on debt financing, as firms become financially more flexible the need for TC financing diminishes. Interestingly, size variable negatively affects the supply in all groups, which may be explained by growing market share. We also find that level of own funds negatively affect the demand for TC, while showing no

significant relation to supply of it. The substitution hypothesis is mostly assessed by examining the relation between TC and financial debt in early studies such as (Nilsen, 2002, Mateut et al., 2005; Petersen & Rajan, 1997). They argue that the more access a firm has to financial debt financing the less need arises for TC, yielding negative coefficient between financial debt and accounts payable. Similarly, holding access to traditional financing also leads to supply of more TC. Our results are in line with the proposed relation. However, we observe that financially constraint SMEs, in general, offer more TC than financially unconstrained large private and public firms, which have better access to traditional financing. This finding supports our conclusion that expanding market share and increasing sales numbers are under consideration in addition to financial aspect of TC.

Our estimations reveal that inventory has a direct negative effect on supply of TC and positive effect on demand for it. This finding is largely explained by the sales numbers. If firms produce more than they can sell they will have incentive to reconsider the level of inventory and possibly reduce it. Similarly, if the demand for product is not satisfied they may increase level of inventory. As a result inventory, all else equal, negatively affects accounts receivable balance (Bougheas et al., 2008). By the same logic, we argue that level of inventory directly affects demand for TC. As firms move more inventories they would request more TC. If the amount declines the need for TC declines as well. Consistent with prior literature we find the effect more significant on accounts receivable than accounts payable which is 30 times greater. This gap between magnitudes of the coefficients drops significantly for public firms. This finding would suggest that public firms are able to plan and forecast future sales number more efficiently.

4.5 Robustness analysis

We apply various robustness analyses to verify that results are robust to adding potentially relevant variables and restructured dependent variable. Results indicate that capital flow and monetary policy coefficient is significant and robust to modifications. More importantly, we show that it may be as much relevant a variable to financing choice as firms specific variables are. Given the importance of trade credit financing to financially constrained firms and high correlation between TC demanded and extended we start with restructuring dependent variable of our model and conduct the estimation with the same set of explanatory variables. We redefine our dependent variable as following.

$$TC_{it}^{N} = \alpha + \beta X_{it} + \delta Y_t + \Phi D_j + \mu_i + \mathcal{E}_{it} \quad (4)$$

Dependent variable in equation 3 of Section 4.3 is revised; TC_{it}^{N} ratio of accounts payable minus accounts receivable (short plus long term TC demanded minus short plus long term TC offered) to total assets. Firm specific and macro variables are as specified earlier in Section 4.3 Equation 2. We find that capital flow coefficient is significant in all specifications except for financially unconstrained large firms. Since detailed review of the firm specific variables has already been covered we avoid repetition and focus on the effect of monetary policy and capital flow variable in the analysis. We conduct robustness check on same data sets that are created based on financing constraint criteria as defined in Section 4.3, period covering from 1996 to 2016.

As shown in Table 15 foreign capital negatively affects the net TC balance. This result is consistent with earlier findings that financially constraint firms gradually decrease the

demand for TC and increase the supply. We observe that financially constrained firms' coefficient is the greatest in magnitude and highly significant. We also find that for publicly held firms, as compatible with their financially flexible nature, sign of the coefficient is positive thus they increase demand and decrease supply as a consequence. Monetary policy dummy is highly significant for financially constrained firms and the sign of the coefficient is consistent with the rest of the analysis. It causes a decline in the demand and an increase in the supply, a result possibly related to increase in the supply of bank loans. We also observe that the monetary policy coefficient of public firms is the smallest in magnitude, which indicates their immunity to monetary policy changes. Tables 15, 16 and 17 report the relevant P-values in parentheses and associated coefficients. All standard errors are robust to heteroscedasticity and autocorrelation. Consistent with earlier findings, liquid assets, profitability, tangible assets and inventory are highly influential in determining the balance of net trade credit. High liquidity, high level of inventory and tangible asset positively affect and increase the difference while size and profitability negatively affect it. Only medium sized firms are highly susceptible to monetary policy and they significantly increase the balance whereas small firms show little reaction.

Table 15. Fixed Effect Analysis on Net TC - Small and Medium Firms

Dependent Variable	Net Trade Credit (Demanded-Extended)					Net Trade Credit (Demanded-Extended)				
Classification	Financially Constrained (Medium Firms)					Financially Constrained (Small Firms)				
Time Period	1996-2016	1996-2002	2003-2016	2003-2016	2003-2016	1996-2016	1996-2002	2003-2016	2003-2016	2003-2016
Cash-like Assets	.607***	.568***	.610***	.630***	.310***	.608***	.656***	.601***	.625***	.625***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
ROA	-.114***	.002	-.117***	-.106***	-.107***	-.040	-.0259	-.043	-.012	-.014
	(0.000)	(0.893)	(0.000)	(0.000)	(0.000)	(0.133)	(0.525)	(0.167)	(0.724)	(0.683)
Size	-.012***	-.017	-.011***	-.008***	-.007***	-.006***	.031**	-.007***	.0001	.0002
	(0.000)	(0.347)	(0.000)	(0.000)	(0.000)	(0.000)	(0.029)	(0.000)	(0.942)	(0.283)
Tangible Assets	.428***	.512***	.430***	.430***	.42***	.477***	.560***	.473***	.483***	.482***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Own fund	-.257***	-.495***	-.252***	-.240***	-.239***	-.211***	-.232***	-.210***	-.230***	-.22***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Inventory	.585***	.658***	.585***	.595***	.594***	.651***	.713***	.642***	.660***	.659***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Short Term Loans	-.307***	-.291***	-.305***	-.289***	-.288***	-.282***	-.395***	-.272***	-.275***	-.274***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Foreign Capital	-.021***	-.283	-.0261***		-.030***	-.0634***	.3577	-.0582***		-.0670***
	(0.000)	(0.282)	(0.000)		(0.000)	(0.000)	(0.200)	(0.000)		(0.000)
Foreign Capital Lagged					-.0259**					-.0899***
					(0.044)					(0.000)
Inflation	-.0001	-.004**	-.001	.001***	.001**	.0004***	.0056***	.0005**	.003***	.002***
	(0.106)	(0.012)	(0.683)	(0.009)	(0.032)	(0.000)	(0.008)	(0.023)	(0.000)	(0.000)
GDP Growth	-.0001	-.0036	0.001	0.0003	0.001*	.0001	.005**	.0002	.0006**	.0006**
	(0.655)	(0.109)	(0.936)	(0.711)	(0.076)	(0.907)	(0.039)	(0.898)	(0.002)	(0.004)
Monetary Policy Dummy	.002**	.002**	0.02**	.002*	.001	.001		.001	.001	-.001
	(0.046)	(0.036)	(0.036)	(0.073)	(0.765)	(0.332)		(0.290)	(0746)	(0.489)
R^2	0.35	0.43	0.35	0.35	0.35	0.35	0.33	0.35	0.35	0.37
Observation Count	69.180	2.023	67.171	67.171	47.689	67.719	5.042	62,876	62,876	42.182
Number of Firms	11.832	1.528	11.788	11.788	10.780	13.495	3.680	13.102	13.102	10.770

P-values are in parentheses and ***, **, * denote significance levels at 1%, 5%, and 10%, respectively

Table 16. Fixed Effect Analysis on Net TC - Large Firms

Dependent Variable	Net Trade Credit (Demanded-Extended)				
Classification	Financially Unconstrained (Large Firms)				
Time Period	1996-2016	1996-2002	2003-2016	2003-2016	2003-2016
Cash-like Assets	.397***	.537***	.397***	.429***	.429***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
ROA	-.144***	-.10	-.135***	-.156***	-.158***
	(0.000)	(0.318)	(0.000)	(0.000)	(0.000)
Size	-.008***	.012	-.007**	-.004**	-.003**
	(0.003)	(0.371)	(0.012)	(0.262)	(0.398)
Tangible Assets	.236***	.251**	.238***	.250***	.249***
	(0.000)	0.020	(0.000)	(0.000)	(0.000)
Own fund	-.166***	-.442***	-.159***	-.163***	-.162***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Inventory	.354***	.728***	.349***	.371***	.370***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Short Term Loans	-.232***	-.431***	-.219***	.005***	-.230***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Foreign Capital	-.020	-.1534	-.032**		-.022*
	(0.133)	(0.292)	(0.012)		(0.080)
Foreign Capital Lagged					-.005
					(0.658)
Inflation	-.001**	-.001	-.001	-.001*	-.001
	(0.041)	(0.352)	(0.380)	(0.080)	(0.117)
GDP Growth	-.001	-.001	-.001	-.001	-.001
	(0.661)	(0.306)	(0.868)	(0.702)	(0.715)
Monetary Policy	0.005		0.001	0.007	0.004
	(0.800)		(0.642)	(0.742)	(0.872)
R^2	0.20	0.40	0.21	0.20	0.22
Observation Count	15,404	851	14.553	14.553	10.765
Number of Firms	2,239	547	2.231	2.231	1.927

P-values are in parentheses and ***, **, * denote significance levels at 1%, 5%, and 10%, respectively

Table 17. Fixed Effect Analysis on Net TC - Public and Private Firms

Dependent Variable	Net Trade Credit (Demanded-Extended)					Net Trade Credit (Demanded-Extended)			
Classification	Financially Constrained (Private Firms)					Financially Unconstrained (Public Firms)			
Time Period	1996-2016	1996-2002	2003-2016	2003-2016	2003-2016	2000-2014			
Cash-like Assets	.591***	.653***	.584***	.607***	.606***	.415***	.423***	.459***	.459***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
ROA	-.679***	-.016***	-.074***	-.048	-.050	-.0729*	-.0720*	-.0942**	-.0935**
	(0.000)	0.647	(0.000)	(0.126)	(0.115)	(0.061)	(0.057)	(0.011)	(0.012)
Size	-.008***	.022**	-.008***	-.003**	-.001	-.0106	-.0106	-.0154	-.0159
	(0.000)	(0.018)	(0.000)	(0.026)	(0.307)	(0.228)	(0.206)	(0.121)	(0.112)
Tangible Assets	.436***	.513***	.430***	.433***	.432***	.3064***	.3069***	.3188***	.3210***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Own fund	-.235***	-.242***	-.220***	-.227***	-.225***	.0036	.0036	.0126	.0124
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.679)	(0.677)	(0.153)	(0.159)
Inventory	.605***	.720***	.597***	.610***	.609***	.481***	.476**	.507***	.509***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Short Term Loans	-.292***	-.333***	-.281***	-.276***	-.275***	-.0903***	-.0987***	-.0813**	-.0813**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.007)	(0.002)	(0.023)	(0.023)
Foreign Capital	-.033***	-.177	-.0389***		-.0435***	-.0028			.0917*
	(0.000)	(0.110)	(0.000)		(0.000)	(0.946)			(0.073)
Foreign Capital Lagged					-.0537***			.1390***	.1619***
					(0.000)			(0.000)	(0.000)
Inflation	-.00001	-.001	.001	.002***	.001***	.0003	.0003	-.0016	-.0016
	(0.994)	(0.877)	(0.196)	(0.000)	(0.000)	(0.471)	(0.471)	(0.100)	(0.224)
GDP Growth	-.001	-.001071	0.0001	0.0004	0.0004	-.0011**	-.0011**	-.0011**	-.0010**
	(0.820)	(0.313)	(0.810)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Monetary Policy Dummy	0.001*		0.001**	.001	-0.001	-.1346***	-.1340***	-.0675	-.0220
	(0.063)		(0.039)	(0.167)	(0.695)	(0.000)	(0.000)	(0.030)	(0.524)
R^2	0,35	0.34	0.34	0.34	0.34	0.20	0.20	0.21	0.21
Observation Count	151,072	7.703	144.597	144.597	100.634	3.708	3.708	3.299	3.299
Number of Firms	27,522	5.633	27.120	27.120	23.476	349	349	343	343

P-values are in parentheses and ***, **, * denote significance levels at 1%, 5%, and 10%, respectively

In the second part of this section we proceed with an additional set of macroeconomic variables which might have high correlation with foreign capital; variables such as policy rate, currency growth and liquid liabilities to GDP ratio to include aggregate monetary expansion in the model. We use full data set and the period covers from 2003 to 2016, it is because capital flow actually rose after 2003. The model is the same as the equations 2 and 3 of section 4.3, therefore we briefly describe the new variables added to the model below.

$$TC_{it}^{D} = \alpha + \beta X_{it} + \delta Y_t + \mu_i + \mathcal{E}_{it} \quad (5)$$

$$TC_{it}^{S} = \alpha + \beta X_{it} + \delta Y_t + \mu_i + \mathcal{E}_{it} \quad (6)$$

TC_{it}^{D} and TC_{it}^{S} represent the ratio of trade credit demanded (accounts payable) and trade credit supplied (accounts receivable) to total assets, respectively. X_{it} represents the firm specific variables as defined in Section 3.3. Y_t stands for the macro economic variables and foreign capital , which are also previously reviewed in detail. In addition, we use policy rate, currency growth rate, which is calculated using currency basket, consists of 50% USD and 50% EUR exchange rate. We also use liquid liabilities to GDP ratio to control for monetary expansion. As explained earlier large volume of foreign capital flow can influence interest rates, exchange rates and credit supply, all of which we include in the analysis to make sure that the coefficient of interest does not act as proxy for any of these variables. Results show that as we add each variable magnitude of the capital flow coefficient declines but it is still significant at 1% level and the sign does not change. We find that adding policy rate significantly reduces the magnitude of the

coefficient but the sign of the coefficient is the same. Policy rate seems to be a relevant variable in TC financing decision which may be explained by the financial aspect of TC. However, it is highly suggested to be cautious with interpretation of the effect of the macro variables such as inflation, policy rate, and GPD growth on trade credit policies because of high correlation amongst them, when they are included in the analysis together. Capital flow variable survives the analysis and results show that it is robust to adding these variables. Tables 18 and 19 report the relevant P-values in parentheses and the coefficients. All standard errors are robust to heteroscedasticity and autocorrelation.

Table 18. Fixed Effect Analysis on TC Demand with Macro Variables

Dependent Variable	Total Trade Credit Demanded										
Classification	All Private Firms										
Time Period	2003-2016										
Size	-.026***	-.025***	-.025***	-.025***	-.024***	-.022***	-.021***	-.021***	-.020***	-.018***	-.018***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	0.000
Tangible Assets	-.075***	-.076***	-.075***	-.085***	-.077***	-.08***	-.07***	-.081***	-.081***	-.082***	-.082***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	0.000
Own Fund	-.179***	-.178***	-.179***	-.177***	-.177***	-.219***	-.238***	-.218***	-.218***	-.218***	-.21***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	0.000
Foreign Capital/GDP		-.036***	-.035***	-.035***	-.034***	-.034***	-.034***	-.029***	-.026***	-.020***	-.014***
		(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
ROA			.0100	.0120	.0128	.0192	.0157	.0190	.0188	.0186	.0186
			(0.385)	(0.290)	(0.276)	(0.173)	(0.185)	(0.162)	(0.167)	(0.170)	(0.171)
Cash-like Assets				-.059***	-.052***	-.035***	-.037***	-.036***	-.036***	-.035***	-.03***
				(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Inventory					.025***	.025***	.020***	.024***	.024***	.023***	.023***
					(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Short Term Loans						-.249***	-.252***	-.249***	-.249***	-.250***	-.250***
						(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Inflation							.004***	.004***	-.006	.008***	.008***
							(0.003)	(0.002)	(0.706)	(0.000)	(0.000)
GDP Growth								.004***	.005***	-.006	-.006
								(0.000)	(0.000)	(0.463)	(0.465)
Policy rate									.003***	-.007***	-.007***
									(0.004)	(0.000)	(0.000)
M3/GDP										-.134***	-.133***
										(0.000)	(0.000)
Currency Growth Rate											-.0051
											(0.804)
R^2	0.09	0.09	0.11	0.12	0.12	0.13	0.16	0.17	0.21	0.21	0.21
Observation Count	144.597	144.597	144.597	144.597	144.597	144.597	144.597	144.597	144.597	144.597	144.597
Number of Firms	27.120	27.120	27.120	27.120	27.120	27.120	27.120	27.120	27.120	27.120	27.120

P-values are in parentheses and ***, **, * denote significance levels at 1%, 5%, and 10%, respectively

Table 19. Fixed Effect Analysis on TC Supply with Macro Variables

Dependent Variable	Total Trade Credit Supplied										
Classification	All Private Firms										
Time Period	2003-2016										
Size	-.004***	-.004***	-.005***	-.004***	-.012***	-.01***	-.01***	-.01***	-.014***	-.01***	-.01***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Tangible Assets	-.260***	-.260***	-.25***	-.331***	-.51***	-.51***	-.51***	-.511***	-.510***	-.510***	-.51***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Own Fund	-.002***	-.002***	-.017***	-.001	-.002	.002	-.001	.002	.002	.002	.002
	0.320	(0.000)	(0.000)	(0.669)	(0.353)	(0.411)	(0.353)	(0.383)	(0.414)	(0.414)	(0.366)
Foreign Capital/GDP		.027***	.034***	.036***	.012***	.012***	.014***	.019***	.006***	.006***	.006***
		(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.005)	(0.005)	(0.008)
ROA			.095***	.111***	.093***	.092***	.096***	.093***	.093***	.093***	.092***
			(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Cash-like Assets				-.46***	-.618***	-.620***	-.612***	-.620***	-.62***	-.62***	-.62***
				(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Inventory					-.573***	-.572***	-.57***	-.573***	-.572***	-.57***	-.57***
					(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Short Term Loans						.031***	0.03***	.031***	.031***	.031***	.031***
						(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Inflation							.002**	.002**	.001***	.001***	.001***
							(0.032)	(0.026)	(0.000)	(0.000)	(0.000)
GDP Growth								.003***	.001	.0005	.0005
								(0.000)	(0.117)	(0.490)	(0.530)
Policy Rate									-.010***	-.010***	-.010***
									(0.000)	(0.000)	(0.000)
M3/GDP										-.0121	-.036***
										(0.371)	(0.009)
Currency Growth Rate											.009***
											(0.000)
R^2	0.06	0.07	0.07	0.17	0.40	0.44	0.44	0.44	0.45	0.45	0.45
Number of Observations	144.597	144.597	144.597	144.597	144.597	144.597	144.597	144.597	144.597	144.597	144.597
Number of Firms	27.120	27.120	27.120	27.120	27.120	27.120	27.120	27.120	27.120	27.120	27.120

P-values are in parentheses and ***, **, * denote significance levels at 1%, 5%, and 10%, respectively

CHAPTER 5

CONCLUSION AND DISCUSSION

The aggregate data clearly reveals the significance of foreign capital by demonstrating that foreign currency debt constitutes significant portion of the non-financial sector financing. However, the findings also indicate that excess supply of credit and accommodative monetary policy choices may result in excessive leverage and the related vulnerabilities. Since the CBRT has little influence on foreign monetary conditions which implies that as the real sector's dependence on foreign capital for financing continues, business operations such as borrowing and investment, and naturally the economic growth may be constantly vulnerable to monetary policy decisions of foreign countries. The dependence will also feed exchange rate risks in addition to liquidity risks. Accordingly, recently, not only rising global liquidity with the effect of foreign economies but also expansionary monetary policy decisions in domestic economy have increased credit supply and facilitated borrowing process for the real sector. Thus, credit supply and lending conditions have become highly accommodative for heavy borrowing and extravagant debt stock, which is so high that have become threatening to survival of heavily leveraged firms. Unlike, however, regular borrowing activity, around 50% of the borrowing has taken place in foreign currency; consequently, non-financial sector has been facing both liquidity and exchange rate risks. A noteworthy decline in the value of domestic currency would translate into a noteworthy rise in the foreign currency debt burden of real sector whose income is denominated in a currency other than its debt, i.e. debt is not naturally hedged. Therefore, their survival have become dependent on continuance of foreign capital

inflow in order to maintain certain level of profitability and liquidity for debt contracts to mature in near future. Most privately held firms, in general, financially constraint firms in particular, have increased debt stock to historically high levels which require significant amount of cash flows to continue operations without being forced to bankruptcy. It is clear that the more financially challenged a firm previously was, the more it has borrowed once the challenges are mitigated by improved excess to credit supply and enhanced lending conditions, thus they contributed to total debt stock in proportion to their previous financing constraint, in percentage wise.

A sudden stop in foreign capital flow or a reverse flow, which would potentially trigger depreciation in the value of domestic currency, and consequent rise in interest rates and inflation, can severely affect the profitability of real sector, even if the borrowed funds had been channeled toward efficient investments. Thus, declined sales volume and cash flows combined with increases in the debt burden via exchange rate fluctuations would seriously jeopardize business operations and may force the companies out of business. It is important to emphasize that exchange rate related risks still pose a genuine threat even if the most of the borrowing is in domestic currency. Overly vulnerable nature of the economy to foreign monetary policy shocks has led to real sector to be exposed to liquidity risks, since maintaining uninterrupted business operations has become dependent on the entrance of foreign capital into the domestic economy. In the event of reverse capital flow, interest rates may rise, inflation may go up and the value of domestic currency may decline, which would indicate to rising cost of borrowing and production, and reductions in corporate sales and investment, hence less cash flow and less liquidity. Therefore, foreign capital, though seems to have benefitted the real sector greatly, can lead to a credit boom which ends with a bust,

leading to failures of indebted firms both in the non-financial and financial sector. Similarly, improvements in credit channels seem to have mitigated the challenges that SMEs have to address in the process of obtaining external funding, thus they have gradually reduced the portion of trade credit financing and consequently increased bank financing. In addition to financing side, foreign capital has an important role to play in sales side of the business operations. Increased liquidity fed via foreign capital and expansionary domestic policy has positively affected consumption and caused expansion in corporate sales. Increasing sales and expanding market share revived the importance of trade credit channel among the competing firms and it manifested in high volume of trade credit offering. Hence, strong link has been established between the rise of foreign capital and the expansionary supply of trade credit to smaller firms.

Although, a direct test on investment channel has not been conducted, it is fairly reasonable to assume that the main motivation behind borrowing activity is to invest and grow. Empirical evidence at the aggregate level is overwhelming that foreign capital does promote growth. It is highly likely that these funds have been deployed in strategic investments and R&D operations which are essentially the backbone to progress and development. However, the findings indicate that real sector financing is significantly dependent on foreign capital and recent wave of capital flow led to real sector balance sheet vulnerabilities to rise via exposure to exchange and liquidity shocks. More importantly, non-financial sector have become addicted to foreign capital inflow in the sense that it provides credit liquidity and low cost of financing, affects household consumption and consequently sales and profitability. Furthermore, the continuance of inflow keeps exchange rates at a desired level, and the debt, denominated in both domestic and foreign currencies, manageable. In sum, foreign capital provides access to

affordable funding needed for investment and growth while creating exposure to foreign monetary policy shocks. Therefore, it is highly essential to understand the level of dependence and as well as vulnerabilities in order to take necessary policy measures aiming to mitigate the potential adversary outcomes that may occur in the case of a sudden stop or a reverse flow, while allowing to take advantage of the excess liquidity to the highest possible.

It would be inefficient to apply capital controls, which would hurt financial integration and block the entrance of foreign capital, for the sake of avoiding negative consequences of the movements. In such scenario the economy would miss an opportunity of accessing to affordable funding to finance growth and achieve prosperity at relatively less cost. Since it is established that the real sector is dependent on foreign capital for financing, macro-prudential policies are needed. Such policies would involve monitoring the exposure of both financial and non-financial sectors in a way that both exchange rate and liquidity risks are minimized and kept within tolerable boundaries. Secondly, solutions to SMEs financing limitations should become part of long term economic policy objectives in order to keep them from excessive borrowing activity because the more they suffer from financing constraints, the more they contribute to total leverage and the related risks by borrowing boundlessly in times of high credit supply. Thirdly, it is possible that the real sector has heavily borrowed because they may be preserving the idea that the central bank would step in and take necessary measures to bail them out in case of a bankruptcy. It is also possible that central bank interventions in exchange rates may be encouraging them about the stability of future exchange rates thus, unintentionally providing assurance for exchange rate related risks to which they are exposed. Empirical evidence overwhelmingly indicates that central banks'

commitment to exchange rate stability and the sterilization or exchange rate market interventions encourage both the foreign currency lenders and the borrowers to continue to do so. In either case, the underlying reason behind excessive leverage should be revealed and policy tools should be redesigned to focus on minimizing excessive leverage related risk. Therefore, leverage decisions, both in foreign and domestic currency, should be regulated and monitored by the financial authorities. Furthermore, the business managers should be extensively informed of highly probable consequences of their decisions and of the central bank's attitude and long term objectives. These policy recommendations, as a starting point, can at least help to comprehend and avoid the potential risks involved with foreign capital, while allowing the economy benefit from it.

APPENDIX A

GENERAL RESULTS ON FINANCIAL DEBT

Dependent Variable	Total Financial Liabilities (Short plus long term bank loans, bonds and other issued interest bearing securities)		
Classification	All Privately Owned Firms (1996-2016)		
Model	Pooled OLS	Random Effect	Fixed Effect
Liquidity	.0093	.02396***	.0207**
	(0.107)	(0.000)	(0.000)
ROA	.1910***	.0821***	.0559**
	(0.000)	(0.000)	(0.038)
Size	.0035***	.0332***	.0531***
	(0.000)	(0.000)	(0.000)
Tangible Assets	.1853***	.1527***	.1341***
	(0.000)	(0.000)	(0.000)
Own Fund	-.3404***	-3651	-.3463***
	(0.000)	(0.000)	(0.000)
Foreign Capital	.6789***	.0881***	.0294***
	(0.000)	(0.000)	(0.000)
Inflation	-.0028***	-.0011***	.0001**
	(0.000)	(0.000)	(0.032)
GDP Growth	-.0001	.0009***	.0001***
	(0.140)	(0.000)	(0.000)
Monetary Policy Dummy	0.135***	0.095***	.0115***
	(0.000)	(0.000)	(0.000)
R^2	0.25	0.36	0.25
Observation Count	151,072	151,072	151,072
Number of Firms	27,522	27,522	27,522

P-values are in parentheses and ***, **, * denote significance levels at 1, 5 and 10 percent, respectively

APPENDIX B

LANGRANGE AND HAUSMAN TESTS ON FINANCIAL DEBT

Langrange Multiplier test for random effect vs simple pooling		Hausman test for random effect vs Fixed Effect	
H0:No Significant Variance		H0:Model is consistent	
H1: Significant Variance		H1: Model is inconsistent	
Chisq	105340	Chisq	2567.9
p-value	0.000	p-value	0.000
Conclusion: Pooling is not appropriate		Conclusion: Fixed Effect estimation is consistent	

APPENDIX C

UNIT ROOT TEST RESULTS-FINANCIAL DEBT ANALYSIS

Table C1. Zivot-Andrews Unit Root Test-Non-Debt Flow

Zivot-Andrews Unit Root Test
Date: 01/17/19 Time: 12:01
Sample: 1996 2016
Included observations: 21
Null Hypothesis: Foreign capital has a unit root with a structural break in both the intercept and trend
Chosen lag length: 3 (maximum lags: 4)
Chosen break point: 2008

	t-Statistic	Prob. *
Zivot-Andrews test statistic	-4.018	0.0801
1% critical value:	-5.57	
5% critical value:	-5.08	
10% critical value:	-4.82	

* Probability values are calculated from a standard t-distribution and do not take into account the breakpoint selection process

Table C2. Lumsdaine-Papell Unit Root Test - Non-Debt Flow

Regression Run From 1998 to 2016
Observations 19
Breaks in Intercept and Trend
Breaks at 2003:01
With 1 lags chosen from 8

Sig Level	Crit Value
1%(**)	-5.5700
5%(*)	-5.0800
10%	-4.8200

Variable	Coefficient	T-Stat
Y{1}	-2.3514	-6.0139**
D(2003:01)	-0.1253	-2.6670
DT(2003:01)	-0.1070	-4.4999
Constant	0.2442	3.1566
Trend	0.1323	3.1566

APPENDIX D

STRUCTURAL BREAK POINTS NON-DEBT FLOW

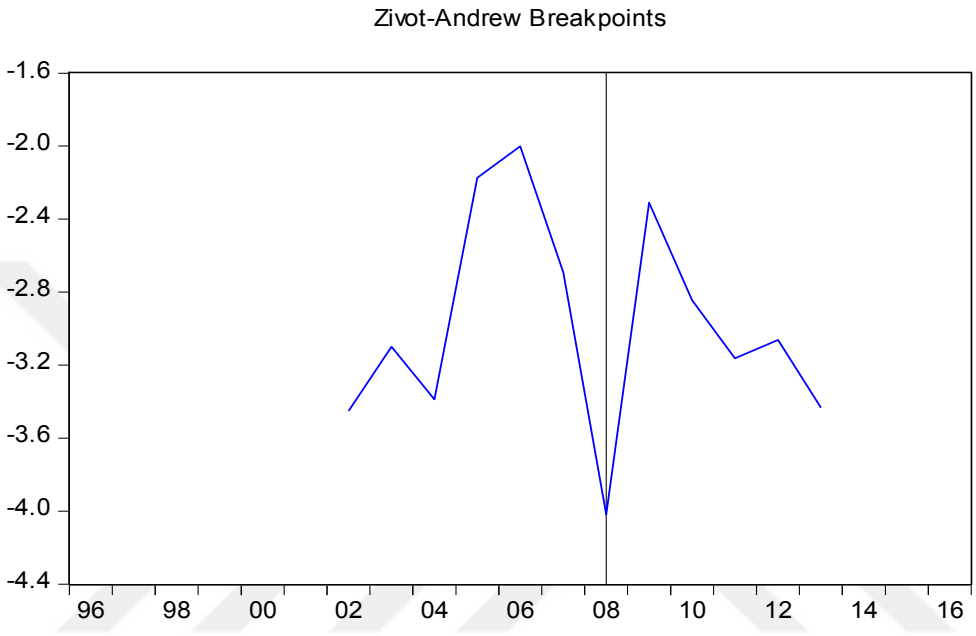

Figure D1. Zivot-Andrews structural break point in Non-Debt Flow

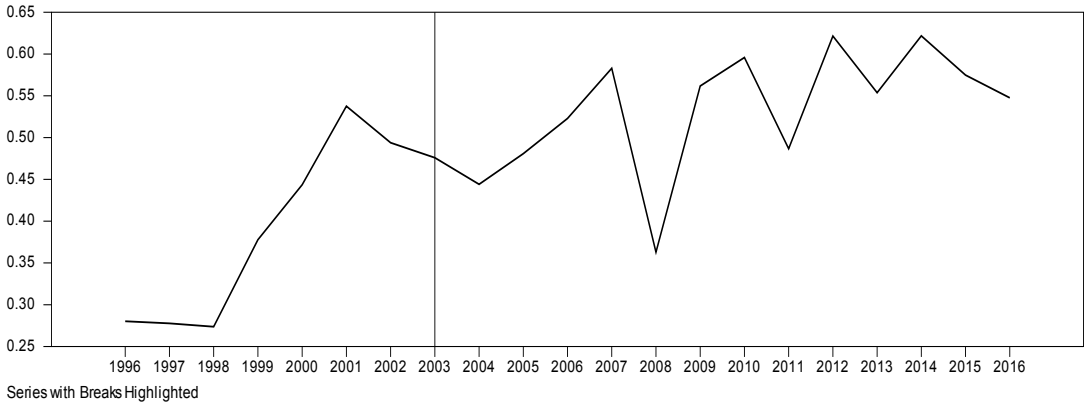

Figure D2. Lumsdaine-Papell structural break point in Non-Debt Flow

APPENDIX E

GENERAL RESULTS ON TRADE CREDIT

Table E1. General Results on Trade Credit Supply

Dependent variable	Total Trade Credit Demanded (Accounts Payable)		
Classification	All Privately Owned Firms (1996-2016)		
Model	Pooled OLS	Random Effect	Fixed Effect
Cash-like Assets	-.0396***	-.03665***	-.0341***
	(0.000)	(0.000)	(0.000)
ROA	.1015***	.0291***	.0224***
	(0.000)	(0.000)	(0.009)
Size	-.0068***	-.0159***	-.0195***
	(0.000)	(0.000)	(0.000)
Tangible Assets	-.1791***	-.1179***	-.0853***
	(0.000)	(0.000)	(0.000)
Own fund	-.2327***	-.2307***	-.2327***
	(0.000)	(0.000)	(0.000)
Inventory	.0545***	.0302***	.0212***
	(0.000)	(0.000)	(0.000)
Short Term Loans	-.2068***	-.2547***	-.2633***
	(0.000)	(0.000)	(0.000)
Foreign Capital	-.2627***	-.0338***	-.0183***
	(0.000)	(0.000)	(0.000)
Inflation	.0006***	.0003***	.0001***
	(0.000)	(0.000)	0.142
GDP Growth	.00026	.0003***	.0003***
	(0.558)	(0.000)	(0.000)
Monetary Policy Dummy	.013***	.001*	.001**
	(0.000)	(0.056)	(0.017)
R^2	0.23	0.18	0.18
Observation Count	151072	151072	151,072
Number of Firms	27,522	27,522	27,522

P-values are in parentheses and ***, **, * denote significance levels at1, 5 and 10 percent, respectively.

Table E2. General Results on Trade Credit Demand

Dependent Variable	Total Trade Credit Supplied (Accounts Receivable)		
Classification	All Privately Owned Firms (1996-2016)		
Model	Pooled OLS	Random Effect	Fixed Effect
Cash-like Assets	-.4148***	-.6009***	-.6260***
	(0.000)	(0.000)	(0.000)
ROA	.2432***	.1062***	.0904***
	(0.000)	(0.000)	(0.000)
Size	-.0150***	-.0138***	-.0113***
	(0.000)	(0.000)	(0.000)
Tangible Assets	-.5253***	-.5340***	-.5216***
	(0.000)	(0.000)	(0.000)
Own fund	.0313***	.0072***	.0024
	(0.000)	(0.000)	(0.409)
Inventory	-.4106***	-.5487***	-.5842***
	(0.000)	(0.000)	(0.000)
Short Term Loans	.1797***	.0534***	.0296***
	(0.000)	(0.000)	(0.000)
Foreign Capital	.0929***	.0220***	.0150***
	(0.000)	(0.000)	(0.000)
Inflation	-.0005***	-.0001	.0001**
	(0.000)	(0.508)	(0.022)
GDP Growth	.0006	.0004***	.0003***
	0.186	(0.000)	(0.000)
Monetary Policy Dummy	.001***	.001	.001
	(0.000)	(0.644)	(0.832)
R^2	0.42	0.45	0.46
Observation Count	151,072	151,072	151,072
Number of Firms	27,522	27,522	27,522

P-values are in parentheses and ***, **, * denote significance levels at 1, 5 and 10 percent, respectively.

APPENDIX F

LANGRANGE AND HAUSMAN TESTS NON-TC FLOW

Table F1. Langrange and Hausman Tests on Trade Credit Demand

Langrange Multiplier test for random effect vs simple pooling		Hausman test for random effect vs Fixed Effect	
H0:No Significant Variance		H0:Model is consistent	
H1: Significant Variance		H1: Model is inconsistent	
Chisq	105340	Chisq	2567.9
p-value	0.000	p-value	0.000
Conclusion: Pooling is not appropriate		Conclusion: Fixed Effect estimation is consistent	

Table F2. Langrange and Hausman Tests on Trade Credit Supply

Langrange Multiplier test for random effect vs simple pooling		Hausman test for random effect vs Fixed Effect	
H0:No Significant Variance		H0:Model is consistent	
H1: Significant Variance		H1: Model is inconsistent	
Chisq	123498	Chisq	3954.9
p-value	2.2e-16	p-value	2.2e-16
Conclusion: Pooling is not appropriate		Conclusion: Fixed Effect estimation is consistent	

APPENDIX G

UNIT ROOT TEST NON-TC FLOW

Table G1. Zivot-Andrews Unit Root Test-Non-TC Flow

Zivot-Andrews Unit Root Test
Date: 01/17/19 Time: 12:01
Sample: 1996 2016
Included observations: 21
Null Hypothesis: Foreign capital has a unit root with a structural break in both the intercept and trend
Chosen lag length: 0 (maximum lags: 3)
Chosen break point: 2003

	t-Statistic	Prob. *
Zivot-Andrews test statistic	-6.065826	0.042599
1% critical value:	-5.57	
5% critical value:	-5.08	
10% critical value:	-4.82	

* Probability values are calculated from a standard t-distribution and do not take into account the breakpoint selection process

Table G2. Lumsdaine-Papell Unit Root Test-Non-TC Flow

Lumsdaine-Papell Unit Root Test, Series TC
Regression Run From 1997:01 to 2016:01
Observations 20
Breaks in Intercept and Trend
Breaks at 2002:01
With 0 lags chosen from 8

Sig Level	Crit Value
1%(**)	-5.5700
5%(*)	-5.0800
10%	-4.8200

Variable	Coefficient	T-Stat
Y{1}	-1.3682	-6.3864**
D(2002:01)	-0.0975	-2.0022
DT(2002:01)	-0.0944	-4.4570
Constant	0.1960	2.6080
Trend	0.1087	2.6080

APPENDIX H

STRUCTURAL BREAK POINTS NON-TC FLOW

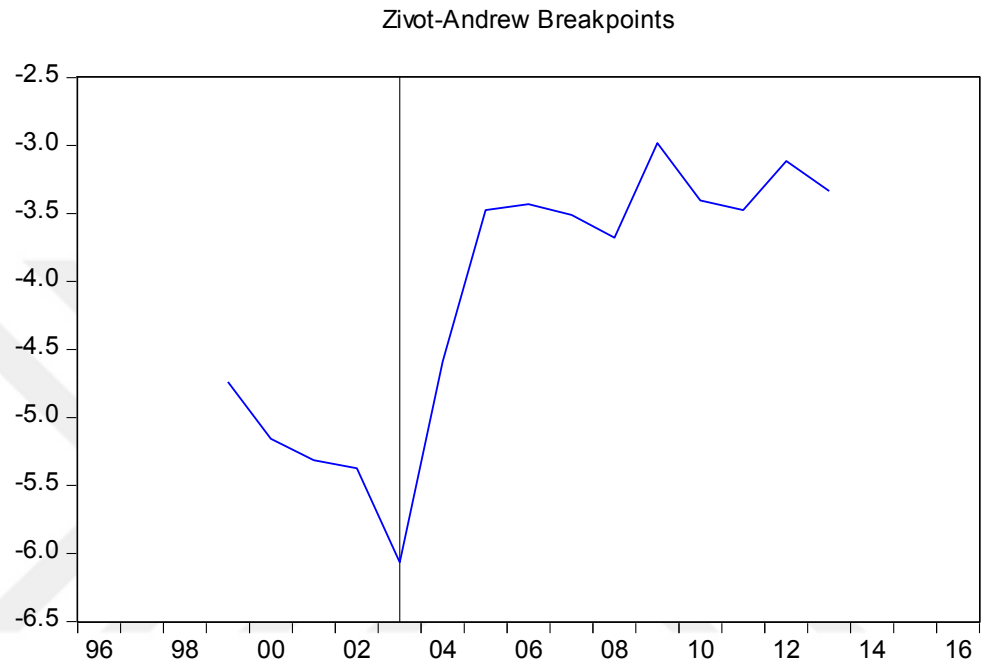

Figure H1. Zivot-Andrews Structural Break Point in Non-TC Flow

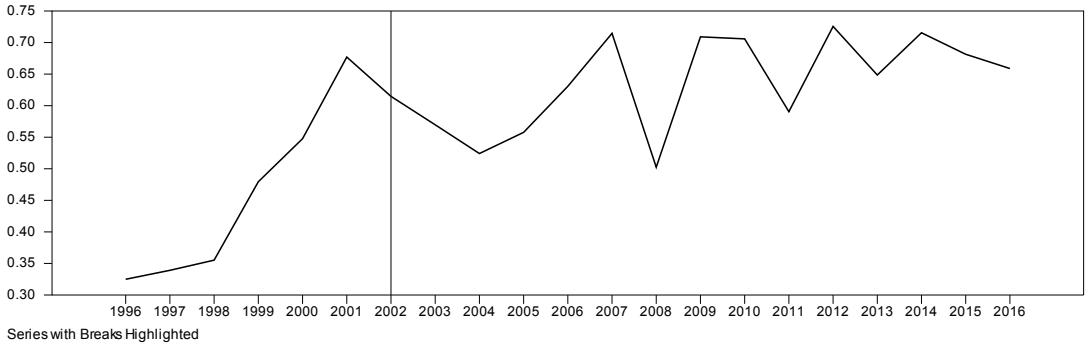

Figure H2. Lumsdaine-Papell Structural Break Point in Non-TC Flow

APPENDIX I

CORRELATION MATRIX OF VARIABLES

	Liquidity	Inventory	Tangible	TC Demand	TC Supply	Size	Financial Debt	Own Fund	ROA	GDP Growth	Inflation	Foreign Capital TC	Foreign Capital Debt
Liquidity	1.0												
Inventory	-0.17	1.00											
Tangible	-0.48	-0.39	1.00										
TC Demand	0.23	0.14	-0.23	1.00									
TC Supply	0.80	-0.12	-0.42	0.28	1.00								
Log(size)	-0.09	-0.18	0.02	-0.12	-0.06	1.00							
Financial Debt	-0.05	-0.02	0.10	-0.25	-0.05	0.11	1.000						
Own Fund	0.01	-0.09	0.13	-0.38	-0.04	0.03	-0.413	1.00					
ROA	0.18	-0.01	-0.08	-0.01	0.12	0.01	-0.052	0.289	1.00				
GDP Growth	0.01	0.02	-0.01	0.01	-0.01	-0.01	0.021	-0.018	-0.027	1.00			
Inflation	0.01	0.06	-0.02	0.09	0.01	-0.38	-0.128	-0.009	0.078	-0.07	1.00		
Foreign Capital TC	0.01	-0.03	0.01	-0.05	0.01	0.18	0.123	-0.041	-0.026	-0.20	-0.267	1.00	
Foreign Capital Debt	0.01	-0.03	0.01	-0.05	0.01	0.18	0.120	-0.035	-0.027	-0.20	-0.260	0.985	1.00

REFERENCES

Abdulla, Y., Dang, V. A., & Arif, K. (2017). Stock market listing and the use of trade credit: Evidence from public and private firms. *Journal of Corporate Finance,* 46(3),391-410.

Adrian, T. & Shin, H. S. (2010). Liquidity and leverage. *Journal of Financial Intermediation*, 19(3), 418-437.

Ahmed, S. & Zlate, A. (2014). Capital flows to emerging market economies: A brave new world? *Journal of International Money and Finance,* 48(4), 221-248.

Aizenman, R. & Glick. R. (2009). Sterilization, monetary policy, and global financial integration. *Review of International Economics,* 17(4), 777–801.

Alberola, E., Erce, A., & Serena, J. (2016). International reserves and gross capital flows dynamics. *Journal of International Money and Finance*, 60,151–171.

Alp, B. & Yalçın, C. (2015). *Türkiye'de şirketlerin borç dolarizasyonu ve büyüme performansı*. (Türkiye Cumhuriyet Merkez Bankası Araştırma ve Para Politikası Genel Müdürlüğü Çalışma Tebliği No: 15/01). Retrieved from http://www.tcmb.gov.tr/wps/wcm/connect/8f9791ae-f076-45ab-8ec0-091f4d900a11/WP1501.pdf?MOD=AJPERES&CACHEID=ROOTWORKSPACE-8f9791ae-f076-45ab-8ec0-091f4d900a11-m3fB9jO

Altunok, F., Mitchell, K., & Pearce, D. (2015).*The trade credit channel and monetary policy transmission: Empirical evidence from U.S. panel data* (MPRA Working Paper No. 66273). Retrieved from https://mpra.ub.uni-muenchen.de/66273/

Anaya, P., Hachula, M., & Offermanns, C. J. (2017). Spillovers of U.S. unconventional monetary policy to emerging markets: The role of capital flows. *Journal of International Money and Finance,* 73(1), 275–295.

Ashcraft, A. B. & Campello. M. (2007). Firm balance sheets and monetary policy transmission. *Journal of Monetary Economics*, 54(6), 1515-1528.

Avdjiev, S., McCauley, R., & McGuire, P. (2012). *Rapid credit growth and international credit: Challenges for Asia* (BIS Working Papers No. 377). Retrieved from https://www.bis.org/publ/work377.htm

Aysan, A. F., Fendoğlu, S., & Mustafa, K. (2014).*Macroprudential policies as buffer against volatile cross-border capital flows*. (CBRT Working Paper No. 14/04). Retrieved from http://www.tcmb.gov.tr/wps/wcm/connect/EN/TCMB+EN/Main+Menu/Publications/Research/Working+Paperss/2014/14-04

Aysun, U. & Hepp, R. (2013). Identifying the balance sheet and the lending channels of monetary transmission: A loan-level analysis. *Journal of Banking & Finance*, 37(8), 2812–2822.

Azis I. J. & Shin, H. S. (2013). *How do global liquidity phases manifest themselves in Asia*? (Asian Development Bank Report No. RPT136042-3). Retrieved from http://hdl.handle.net/11540/821

Baker, M. & Wurgler, J. (2002). Market timing and capital structure. *The Journal of Finance*, 57(1), 1–32. doi:10.1111/1540-6261.00414, 2002.

Baks, K. & Kramer, C. (1999). *Global liquidity and asset prices: Measurement, implications, and spillovers* (IMF Working Paper No. 99/168). Retrieved from http://www.imf.org/external/pubs/cat/longres.aspx?sk=3376

Balaylar, N. A. (2011). Türkiye'de döviz piyasasi müdahalelerinin sterilizasyon maliyeti. *Dokuz Eylül Üniversitesi Sosyal Bilimler Enstitüsü Dergisi*, 13(3), 19-38.

Bank for International Settlements, Committee on the global financial system on capital flows and emerging market economies. (2009). *Report of the Committee on the Global Financial System on Capital flows and emerging market economies.* (Report No.33). Retrieved from https://www.bis.org/publ/cgfs33.htm

Bastos, R. & Pindado, J. (2007) An agency model to explain trade credit policy and empirical evidence. *Applied Economics*, 39(20), 2631-2642, DOI: 10.1080/00036840600722232

Başkaya Y. S., Giovanni, J. D., Kalemli-Özcan, Ş., Peydro, J., & Ulu, M. F. (2017) Capital flows and the international credit channel. *Journal of International Economics,* 108, 15–22.

Benigno, G., Converse, N., & Fornaro, L. (2015). Large capital inflows, sectoral allocation, and economic performance. *Journal of International Money and Finance*, 55(2), 60-87.

Berger, A. & Udell, G. (2004). The institutional memory hypothesis and the pro-cyclicality of bank lending behavior. *Journal of Financia Intermediation.* 13(4), 458–495.

Bernanke, B. & Blinder, A. (1992). The federal funds rate and the channel of monetary transmission. *American Economic Review,* 82(4), 901-921.

Bernanke, B. & Gertler, G. (1995). Inside the black Box: The credit channel of monetary policy transmission. *The Journal of Economic Perspectives,* 9 (4), 27–48.

Bernanke, B., Gertler, M., & Gilchrist, S. (1996). The financial accelerator and the flight to quality. *The Review of Economics and Statistics,* 78(1), 1–15.

Bernanke, B. (2005). Monetary policy in a world of mobile capital. *Cato Journal*, 25 (1), 1-14.

Bhattarai, S., Chatterjee, A., & Park, W. Y. (2015). *Effects of US quantitative easing on emerging market economies* (ADBI Working Paper No.803). Retrieved from http://research.economics.unsw.edu.au/RePEc/papers/2015-26.pdf

Blanchard, O., Ostry, J. D., Ghosh, A., & Chamon, M. (2015*). Are capital inflows expansionary or contractionary? Theory, policy implications, and some evidence,* (NBER Working Paper No. 21619) Retrieved from https://www.nber.org/papers/w21619 .

Blasio, G. (2003). Does trade credit substitute for bank credit? Evidence from firm-level data. *Economic Notes*, 34(1), 85-112.

Borio, C., McCauley, R., & McGuire, P. (2011): Global credit and domestic credit booms, *BIS Quarterly Review*, September, 43–57.

Bougheas, S., Mizen, P., & Yalcin, C. (2006). Access to external finance: Theory and evidence on the impact of monetary policy and firm-specific characteristics. *Journal of Banking & Finance,* 30(1), 199–227.

Bruno, V. & Shin, H. S. (2015). Cross-border banking and global liquidity. *Review of Economic Studies*, 82(2), 535-564.

Brzoza-Brzezina, M., Chmielewski, T., Niedźwiedzińska, J. (2011). *Substitution between domestic and foreign currency loans in central europe: Do central banks matter*? (European Central Bank Working Paper No.1187). Retrieved from https://www.ecb.europa.eu//pub/pdf/scpwps/ecbwp1187.pdf

Calvo, G. A., Leiderman, L., & Reinhart, C. M. (1993). *Capital inflows and real exchange rate appreciation in Latin America: The role of external factors (*MPRA Working Paper No. 7125). Retrieved from http://mpra.ub.uni-muenchen.de/7125/.

Calvo, G. A. (1998). Capital flows and capital-market crises: The simple economics of sudden stops. *Journal of Applied Economics*, 1(1), 35-54.

Campello, M., Graham, J., & Harvey, C. R. (2010). The real effects of financial constraints: Evidence from a financial crisis. *Journal of Financial Economics*, 97(3), 470–487.

Carderelli, R., Elekdağ, S., & Kose, A. (2009). *Capital inflows: Macroeconomic implications and policy responses* (IMF Working Paper No. wp/09/40). Retrieved from http://www.imf.org/external/pubs/cat/longres.aspx?sk=22756

Casey, E. & O'Toole, C. M. (2014). Bank-lending constraints, trade credit and alternative financing during the financial crisis: Evidence from European SMEs, *Journal of Corporate Finance,* doi: 10.1016/J.Jcorpfin.2014.05.001.

Cecchetti, S. G. (1995). Distinguishing Theories of the Monetary Transmission Mechanism. *Review - Federal Reserve Bank of St. Louis,* 77(3), 83-97.

Cerutti, E., Claessens, S., & Puy, D. (2015). *Push factors and capital flows to emerging markets: Why knowing your lender matters more than fundamental* (IMF Working Paper No.15/127). Retrieved from https://www.adb.org/publications/push-factors-capital-flows-emerging-markets

Cerutti, E., Claessens, S., & Ratnovski, L. (2014). *Global liquidity and drivers of cross-border bank flows* (IMF Working Paper No. 14/69). Retrieved from http://www.imf.org/external/pubs/cat/longres.aspx?sk=41511

Chen, S., Liu, P., Maechler, A., Marsh, C., Saksonovs, S., & Shin, H. S. (2012). *Exploring the dynamics of global liquidity* (IMF Working Paper No.wp/12/246). Retrieved from http://www.imf.org/external/pubs/cat/longres.aspx?sk=40045

Choi, W. G. & Kim, Y. (2005). Trade credit and effects of macro-financial shocks: Evidence from US panel data. *Journal of Finance and Quantitative Analysis*, 40(4), 897–925.

Chui, M., Kuruc, E., & Philip, T. (2016). *A new dimension to currency mismatches in the emerging markets: Nonfinancial companies* (BIS Working Paper No. 550). Retrieved from https://www.bis.org/publ/work550.htm

Cole, R. A. (2013). What do we know about the capital structure of privately held US firms? Evidence from the surveys of small business finance. *Financial Management,* 42 (4), 777-813.

Cuñat, V. (2007). Trade Credit: Suppliers as Debt Collectors and Insurance Providers. *Review of Financial Studies,* 20(2), 491–527.

Cuñat, V. & Garcia-Appendini, E. (2011). Trade credit and its role in entrepreneurial finance. Handbook of Entrepreneurial Finance. Oxford, England. *Oxford University Press*.

Deangelo , H., Deangelo, L., & Whited, T. M. (2012). Capital structure dynamics and transitory debt. *Journal of Financial Economics,* 99(2), 235–261.

Deesomsak, R., Paudyal, K., & Pescetto, G. (2004). The determinants of capital structure: Evidence from the Asia pacific region. *Journal of Multinational Financial Management*, *14(4)*, 387-405.

Dejong, A., Kabir, R., & Nguyen, T. T. (2008). Capital structure around the world: The roles of firm and country specific determinants. *Journal of Banking and Finance, 32*(9), 1954-1969.

Demarzo, P. & Fishman, M. (2007). Optimal long-term financial contracting. *Review of Financial Studies,* 20(6), 2079-2128.

Demir, B. & Javorcik, B. (2018). Don't throw in the towel, throw in trade credit! *Journal of International Economics*. 111(3), 171-189.

Denhaan, W. J., Sumner, S. W., & Yamashiro, G. M. (2005). Banks' loan portfolio and the monetary transmission mechanism. *Journal of Monetary Economics*, 54(3), 904-924.

Diamond, D. (1993). Seniority and maturity of debt contracts. *Journal of Financial Economics,* 33(3), 341-368.

Dornbusch, R. (1976). Expectations and exchange rate dynamics. *Journal of Political Economy*, 84(6), 1161–1176.

Eickmeier, S., Gambacorta, L., & Hofmann, B. (2013). Understanding global liquidity. *European Economic Review*, 68(4), 1-18.

Fabri, D. & Klapper, L. F. (2016). Bargaining power and trade credit. *Journal of Corporate Finance,* 41(2), 66–80

Fazzari, S., Hubbard, G., & Peterson, B. (1988). Financing constraints and corporate investment. *Brookings Papers on Economic Activity,* 1, 141–195.

Ferrando, A. & Mulier, K. (2013). Do firms use the trade credit channel to manage growth? *Journal of Banking & Finance,* 37(8),3035–3046

Filardo, A., Mohanty, , M. S., &Moreno, R. (2012) *Central bank and government debt management: Issues for monetary policy* (BIS Working Papers No. 67). Retrieved from http://www.bis.org/publ/bppdf/bispap67d_rh.pdf

Fisman, R. & Love, I. (2003). Trade credit, financial intermediary development, and industry growth. *Journal of Finance,* 58(1), 353–374.

Frank, M. & Goyal, V. (2009). Capital structure decisions: Which factors are reliably important? *Financial Management,* 38(1), 1–37.

Garcia-Appendini, E. & Montoriol-Garriga, J. (2013). Firms as liquidity providers: Evidence from the 2007–2008 financial crisis. *Journal of Financial Economics,* 109(1), 272–291.

Gertler, M. & Gilchrist, S. (1994). Monetary policy, business cycles, and the behavior of small manufacturing firms. *The Quarterly Journal of Economics* 109(2), 309–340.

Ghosh, A., Kim, M., Qureshi, J., & Zalduendo, M. (2012). *Surges* (IMF Working Paper No. wp/12/22). Retrieved from http://www.sciencedirect.com/science/article/pii/S002219961300144X

Giannetti, M., Burkart, M., & Ellingsen, T. (2011). What you sell is what you lend? Explaining trade credit contracts. *Review of Financial Studies,* 24(4), 1261–1298.

Goto, S., Xiao, G., & Xu, Y. (2015). As told by the supplier: trade credit and the cross section of stock returns. *Journal of Banking & Finance* 60 (3) 296–309.

Gözgör, G. (2014). Determinants of domestic credit levels in emerging markets: The role of external factors, *Emerging Markets Review,* 18, 1–18.

Graham, J. & Harvey, C. R. (2001). The theory and practice of corporate finance: evidence from the field. *Journal of Financial Economics,* 60(2), 187–243.

Guariglia, A. & Mateut, S. (2004). Credit channel, trade credit channel, and inventory investment: Evidence from a panel of UK firms. *Journal of Banking & Finance,* 30(10), 2835–2856.

Hadlock, C. J. & Pierce, J. R. (2010). New evidence on measuring financial constraints: Moving beyond the KZ index. *The Review of Financial Studies*, 23(5), 1909–1940.

Harris, M. & Raviv, A. (1991). The theory of capital structure. *Journal of Finance,* 46(1), 297–356.

Hills, B. & Hoggarth, G. (2013). Cross-border bank credit and global financial stability. *Bank of England Quarterly Bulletin,* 53(2), 126-136.

Hoggart, G. & Sterne, G. (1997). *Capital flows: Causes, consequences and policy responses (*Bank of England Working Paper No. 14). Retrieved from http://www.bankofengland.co.uk/education/Documents/ccbs/handbooks/pdf/ccbshb14.pdf

Hovakimian, A., Opler, T., & Titman, S. (2001) .The debt-equity choice. *Journal of Financial and Quantitative Analysis*, 36(1), 1-24.

Huang, H., Shi, X., & Zhang, Z. (2011). Counter-cyclical substitution between trade credit and bank credit. *Journal of Banking & Finance*, 35(8), 1859–1878.

Igan, D. & Tan, Z. (2015). Capital inflows, credit growth, and financial *systems. Emerging Markets Finance and Trade,* 53(12), 2649-2671.

Jiménez, G., Ongena, S., Peydró, J., & Saurina, J. (2012). Credit supply and monetary policy: Identifying the bank balance-sheet channel with loan applications. *American Economic Review,* 102(5), 2301-2326.

Joeveer, K. (2013). What do we know about the capital structure of small firms. *Small Business Economics.* 41(2), 479–501.

Kaminsky, G., Reinhart, C., M., & Végh, C. A. (2004). *When it rains, it pours: Pro-cyclical capital flows and policies* (NBER Working Paper No. 10780). Retrieved from https://www.nber.org/papers/w10780

Kashyap, A., & Stein, J. (1994). *Monetary policy and bank lending in monetary policy* (NBER Working Paper No. 4317). Retrieved from https://www.nber.org/papers/w4317

Kashyap, A., K., Stein, J., & Wilcox, D. W. (1993). Monetary policy and credit conditions: evidence from the composition of external finance. *The American Economic Review*, 83(1), 78-98.

Kirabaeva, K., & Razin, A. (2010). *Composition of capital flows: A survey* (NBER Working Paper No. w16492). Retrieved from https://www.nber.org/papers/w16492

Korajczyk, R., & Levy, A. (2003). Capital structure choice: macroeconomic conditions and financial constraints. *Journal of Financial Economics,* 68(1), 75–109.

Köksal, B. & Orman, C. (2015). Determinants of capital structure: evidence from a major developing economy. *Small Business Economics,* 44(2), 255-282.

Lane, P., & McQuade, P. (2013). Domestic credit growth and international capital flows. *Scandinavian Journal of Economics*, 116(1), 218-252.

Lin, T. & Chou, J. (2014). Trade credit and bank loan: evidence from Chinese firms. *International Review of Economics and Finance,* 36(4), 17–29.

Long, M. S., Malitz, I. B., & Ravid, S. A. (1993).Trade credit, quality guarantees, and product marketability. *Financial Management,* 22(4), 117-127.

López-Mejía, A. (1999). *Large capital flows: a survey of the causes, consequences and policy responses* (IMF Working Paper No. wp/99/17). Retrieved from http://www.imf.org/external/pubs/cat/longres.aspx?sk=2891

Love, I., Preve, L., & Sarria-Allende, V. (2007). Trade credit and bank credit: evidence from recent financial crises. *Journal of Financial Economics,* 83(2), 453–469.

Magud, N.E., Reinhart, C., & Vesperoni, E. R. (2012). Capital inflows, exchange rate flexibility, and credit booms. *Review of Development Economics*, 18(3), 415-430.

Marotta, G. (2005). When do trade credit discounts matter? Evidence from Italian firm-level data. *Applied Economics*, 37(4), 403-416.

Mateut, S., Bougheas, S., & Mizen, P. (2006). Trade credit, bank lending and monetary policy transmission. *European Economic Review,* 50(3), 603-629.

McCauley, R., McGuire, P., & Sushko, V. (2015). *Global dollar credit: Links to US monetary policy and leverage* (BIS Working Paper No. 483). Retrieved from https://www.bis.org/publ/work483.htm

Meltzer, A. (1960). Mercantile credit, monetary policy, and size of firms. *Review of Economics and Statistics,* 42(4), 429–437.

Mendoza, E. G. & Terrones, M. E. (2012). *An anatomy of credit boom and their demise* (NBER Working Paper No.18379). Retrieved from https://www.nber.org/papers/w18379

Miranda-Agrippino, S. & Rey, H. (2015). *World asset markets and the global financial cycle* (NBER Working Paper No. 21722). Retrieved from https://www.nber.org/papers/w21722

Miyajima, K., Mohanty, M. S., & Chan, T. (2012). *Emerging market local currency bonds: Diversification and stability* (BIS Working Paper No. 391). Retrieved from www.bis.org/publ/work391.htm

Miyajima, K., Mohanty, M. S., & Yetman, J. (2014). *Spillovers of US unconventional monetary policy to Asia: The role of long-term interest rates* (BIS Working Paper No. 478). Retrieved from www.bis.org/publ/work478.htm

Modigliani, F. F. & Miller, M. H. (1958). The cost of capital, corporation finance, and the theory of investment. *American Economic Review*, 49(4), 655–669.

Modigliani, F. F. & Miller, M. H. (1963). Corporation income taxes and the cost of capital: A correction. *American Economic Review*, 53(4), 433–443.

Mohanty, M. S. (2014). *The transmission of unconventional monetary policy to the emerging markets* (BIS Working Paper No. 78). Retrieved from www.bis.org/publ/work78.htm

Mokhova, N. & Zinecker, M. (2014). Macroeconomic factors and corporate capital structure. *Contemporary Issues in Business, Management and Education*, 110, 530 – 540.

Montiel, P., & Reinhart, C. (1999). Do capital controls and macroeconomic policies influence the volume and composition of capital flows? Evidence from the 1990s. *Journal of International Money and Finance*, 18(4), 619–635.

Morris, C. S. & Sellon, G. H. (1995). Bank lending and monetary policy: Evidence on a credit channel. *Economic Review*, 80 (2), 59-75.

Morgan Stanley (2013). *Morgan Stanley Report of Global EM investor: The fragile five*. Retrieved from: https://www.morganstanley.com/public/Tales_from_the_Emerging_World_Fragile_Five.pdf

Mundell, R. (1963). Capital mobility and stabilization policy under fixed and flexible exchange rates. *Canadian Journal of Economics and Political Science*, 29(4), 475–485.

Myers, S. C. (1984). Presidential address: The capital structure puzzle. *Journal of Finance* 39(3), 575–592.

Ng, C., Smith, J., & Smith, R. (1999). Evidence on the determinants of credit terms used in interfirm trade. *Journal of Finance,* 54(3), 1109–1129.

Nilsen, J. (2002). Trade credit and the bank lending channel. *Journal of Money, Credit, and Banking,* 34(1), 226–253.

Oliner, S. & Rudebusch, G. (1996). Monetary policy and credit conditions: evidence from the composition of external finance: Comment. *American Economic Review,* 86(1), 300–309.

Orhangazi, Ö. (2014). Capital flows and credit expansions in Turkey. *Review of Radical Political Economics* , 46(4), 509– 516.

Özatay, F. (2013). *Turkey's distressing dance with capital flows* (The Economic Policy Research Foundation of Turkey Report No. R201407). Retrieved from http://www.tepav.org.tr/en/yayin/s/723

Özlü, P. & Yalcin, C. (2010). *The trade credit channel of monetary policy transmission: Evidence from non-financial firms in Turkey* (CBRT Working Paper No.1016). Retrieved from http://www.tcmb.gov.tr/wps/wcm/connect/EN/TCMB+EN/Main+Menu/Publications/Research/Working+Paperss/2010/10-16

Özmen, E., Şahinöz S., & Yalçın, C. (2012). *Profitability, savings and investment of non-financial firms in Turkey* (Türkiye Cumhuriyet Merkez Bankası Araştırma ve Para Politikası Genel Müdürlüğü Çalışma Tebliği No. 12/14). Retrieved from http://www.tcmb.gov.tr/wps/wcm/connect/EN/TCMB+EN/Main+Menu/Publications/Research/Working+Paperss/2012/12-14

Passari, E. & Rey, H. (2015). Financial flows and the international monetary system. *The Economic Journal,* 125(584), 675–98.

Petersen, M. & Rajan, R. (1997). Trade credit: Theories and evidence. *Review of Financial Studies* 10(3), 661–691.

Prasad, E., Rogoff, K., Wei, S., & Kose, M., A. (2013). *Effects of financial globalization on developing countries: Some empirical evidence* (IMF Working Paper No.220). Retrieved from http://www.imf.org/external/pubs/cat/longres.aspx?sk=16428

Rajan, R. & Zingales, L. (1995). What do we know about capital structure: Some evidence from international data. *Journal of Finance*, 50(5), 1421–1460.

Rauh, J. D. & Sufi, A. (2008). Capital structure and debt structure. *Review of Financial Studies*, 23(12), 4242-4280.

Reinhart, C. M. & Reinhart, V. (2009), Capital flow bonanzas: an encompassing view of the past and present (NBER Working Paper No. 14321). Retrieved from https://www.nber.org/papers/w14321

Rey, H. (2013). *Dilemma not trilemma: The global financial cycle and monetary policy independence* (NBER Working Paper No. 21162). Retrieved from https://www.nber.org/papers/w21162

Samarina, A. & Bezemer, D. (2016). Do capital flows change domestic credit allocation. *Journal of International Money and Finance,* 62, 98–121

Schneider, F. & Frey, B. (1985). Economic and political determinants of foreign direct investment. *World Development*, 13(2), 161-175.

Schwartz, R. A. (1974). An economic model of trade credit. *Journal of Financial and Quantitative Analysis,* 9(4), 643–657.

Shin, H. S. (2013). *The second phase of global liquidity and its impact on emerging economies*. (Proceedings, Federal Reserve Bank of San Francisco, Issue Nov, 1-10). Retrieved from http://www.frbsf.org/economic-research/events/2013/november/asia-economic-policy-conference/program/files/The-Second-Phase-of-Global-Liquidity-and-Its-Impact-on-Emerging-Economies.pdf

Shyam-Sunder, L. & Myers, S., C. (1999). Testing static tradeoff against pecking order models of capital structure. *Journal of Financial Economics,* 51(2), 219–244.

Sobrun, J. &Turner, P. (2015). Bond markets and monetary policy dilemmas for the emerging markets. (BIS Working Papers No.508). Retrieved from https://www.bis.org/publ/work508.htm

S&P (2017). *S&P Research Report of Sovereign postcard: The new fragile five*. Retrieved from https://www.spratings.com/documents/20184/0/The%20New%20Fragile%20Five/ea13345f-dbc4-4dc0-8159-fe7c87885da5

Taggart, R. A. (1981). *Secular patterns in corporate finance* (NBER Working Paper No. 810). Retrieved from https://www.nber.org/papers/w810

Takáts, E. & Vela, A. (2014*). International monetary policy transmission* (BIS Working Paper No. 78). Retrieved from https://www.bis.org/publ/bppdf/bispap78b_rh.pdf

Titman, S. & Wessels, R. (1988). The determinants of capital structure. *Journal of Finance,* 43(1), 1–19.

Tong, H. & Wei, S. J. (2009). *The composition matters: capital inflows and liquidity crunch during a global economic crisis* (NBER Working Paper No.15207). Retrieved from https://www.nber.org/papers/w15207

Tsurate, D. (2015). Bank loan availability and trade credit for small businesses during the financial crisis. *The Quarterly Review of Economics and Finance,* 55 (3) 40–52.

Turner, P. (2014). *The global long-term interest rate, financial risks and policy choices in EMEs* (BIS Working Paper No: 441). Retrieved from https://www.bis.org/publ/work441.htm

Tutan, M. U. & Campbell, A. (2015). Turkey's economic fragility, foreign capital dependent growth and hot money. *Journal of Balkan and Near Eastern Studies*, 17(4), 373-391, doi: 10.1080/19448953.2015.1063295

Ülke, V. & Berument, H. (2015). Effectiveness of monetary policy under different levels of capital flows for an emerging economy. Turkey, *Applied Economic* Letters, 22(6), 441-445.