THE IMPACT OF CAPITAL INFLOWS ON CORPORATE FINANCIAL FLEXIBILITY: A REVIEW OF MARKET SEGMENTATION EFFECTS IN DEVELOPED EMERGING MARKETS

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Dissertation Abstract

Zeynep Ozcelik, "The Impact of Capital Inflows on Corporate Financial Flexibility: a Review of Market Segmentation Effects in Developed Emerging Markets"

Within the last three decades, there have been large attempts for the globalization of the emerging markets that led to drastic capital inflows. These flows have very important outcomes for the financial markets and international market integration. Understanding these outcomes is very critical for the persistence of the inflows and their positive impact in emerging markets.

This dissertation consists of two parts addressing interconnected issues in capital inflows to emerging markets and their corporate financial impacts: (1) the impact of emerging markets capital inflows on financial markets and international market integration, and (2) the impact of international market segmentation on corporate financial flexibility. In part 1, firstly, brief information on the capital inflow patterns in 10 advanced emerging markets[1] is given. Then, the role of capital inflows in financial markets is investigated. The contribution of the capital inflows to international market integration is analyzed with risk diversification, financial and equity markets measures, which, to the best of my knowledge, have not been analyzed in a wide context before. Whether the patterns in the level of flows are systematically related to international market integration is questioned. Our results show that capital inflows improve market integration in emerging markets. In the second part of the dissertation, the impact of international market segmentation on capital structure decisions by firms is studied through financial flexibility. The results show the importance of capital inflows and their impact on advanced emerging markets at the firm level. Although markets are more integrated due to increasing capital inflows, it has negative effects for firm financial flexibility. Financial flexibility is shown to increase with international market segmentation. This finding is revealed by the comparative spare debt capacity ratios of the individual firms.

[1] At the beginning of the study, FTSE Global Index Series Country Classification Report for September 2010 was used for selecting the emerging countries to be studied. Brazil, Hungary, Mexico, Poland, South Africa and Taiwan were already in the Advanced Emerging markets category. According to 2010 results, it was stated that, Turkey, Malaysia and Czech republic were promoted to Advanced Emerging market status in June 2011. Thailand was in the watch list for 2011. It was also possible for Thailand to be promoted to the Advanced Emerging markets category in 2011. So, it is also included in the sample. However, in January 2014, Thailand is still in the Secondary Emerging market status.
http://www.ftse.com/Indices/Country_Classification

Tez Özeti

Zeynep Ozcelik, "The Impact of Capital Inflows on Corporate Financial Flexibility: a Review of Market Segmentation Effects in Developed Emerging Markets"

Gelişmekte olan ülkelerin, globalleşme çabaları, bu ülkelere 1980'li yıllardan itibaren sermaye akışı getirmekte. Bu sermaye akışı, finansal piyasalar ve uluslararası pazar entegrasyonu için önemli sonuçlar doğuyor, Bu sermaye akışının sürekliliği ve gelişmekte olan ülkelere olumlu etkilerinin devamı için, bu sonuçları anlamak çok önemli.

Bu tez, gelişmekte olan ülkelere sermaye akışı ve bunun kurumsal finansal etkileri hakkında birbiriyle bağlantılı 2 bölümden oluşmaktadır: (1) gelişmekte olan ülkelere sermaye akışının finansal piyasalara ve uluslararası entegrasyona etkisi ve, (2) uluslararası farklılaşmanın kurumsal finansal esneklik üzerine etkisi. Birinci bölümde, gelişmekte olan birincil ülkelere[2] sermaye akışının karakteri hakkında bilgi verilmektedir. Daha sonra, sermaye akışının finansal piyasalardaki rolü araştırmaktadır. Sermaye akışının, uluslararası entegrasyona yaptığı katkı, risk dağıtımı, finansal ve sermaye piyasaları bakış açısıyla değerlendirilmektedir. Sermaye akis seviyelerinin, uluslararası entegrasyonla sistematik ilişkisi sorgulanmaktadır. Çalışmanın bulguları, sermaye akışının, gelişmekte olan ülkelerde uluslararası entegrasyonu arttırdığını göstermektedir. İkinci kısımda ise, uluslararası entegrasyonun, firmaların sermaye yapısı üzerine etkileri finansal esneklik bakış açısıyla çalışılmıştır. Sonuçlar, sermaye akışının ve etkilerinin, gelişmekte olan ülkelerdeki firmalar üzerinde önemli etkileri olduğunu göstermiştir. Her ne kadar ülkeler artık daha entegre olmuş olsalar da, bunun firmaların finansal esnekliği üzerinde negatif etkisi görülmüştür. Finansal esneklik, uluslararası farklılaşma ile artmıştır.

[2] Çalışmanın başlangıcında, çalışmaya dahil edilecek gelişmekte olan piyasalar seçilirken, FTSE Global Index Series Ülke Sınıflandırma Eylül 2010 raporu kullanılmıştır. Brezilya, Macaristan, Meksika, Polonya, Güney Afrika ve Tayvan Birincil gelişmekte olan ülkeler kategorisinde yer alıyordu. 2010 sonuçlarına göre, Türkiye, Malezya ve Çek Cumhuriyeti, 2011 haziran ayında bu sınıfa dahil oldu. Tayland 2011 için izleme listesinde yer alıyordu. 2011 yılında, Tayland'ın da bu sınıfa girebileceği not edilmişti. Dolayısıyla, Tayland da çalışmaya dahil edildi. Fakat, Ocak 2014'te, Tayland hala ikincil gelişmekte olan ülkeler sınıfında yer alıyor.
http://www.ftse.com/Indices/Country_Classification

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To my husband

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CHAPTER 1

INTRODUCTION

The capital inflows to emerging markets have been analyzed widely in literature and most of the research focuses on the macro analysis. However, although the capital inflows and the financial globalization it brings, have country effects; firm financials and the firm capital structure decisions are also influenced.

The focus of our study is on ten emerging countries. We analyze the impact of the capital inflows on individual firm through the international market segmentation point of view. In the first part of the study, the capital inflows and the impact on the financial markets and market segmentation is given in detail.

Second chapter is dedicated to the impact of market segmentation on the firm. We choose one single measure for the firm to study the segmentation and capital inflows impact; which is the financial flexibility of the firm.

Studies show that one of the most important capital structure decision factors regarding a firm is the level of financial flexibility of a firm (Bancel and Mittoo, 2004; Brounen, De Jong, and Koedijk, 2004; Graham and Harvey, 2001). In this study, our aim is to focus on the market segmentation effects of capital inflows on corporate financial flexibility. Financial flexibility of the firm will be measured with robust indicators and indices.

Compared to the financial flexibility literature, our micro level analysis is one of the first attempts showing the corporate financial flexibility effects of the capital inflows to emerging markets.

Aim of the Research

The concept of capital flows and market integration is a financial issue with growing importance since the globalization of financial markets has been the biggest development in world economy since 1980s. There have been wide financial liberalization attempts in the emerging countries that contributed to the financial openness (the existence of international financing opportunities) across the world. Together with the liberalization processes, countries relaxed restrictions on foreign ownership of assets together with making macroeconomic and trade reforms. As a result of the foreign flows, countries are now financially more integrated and these capital inflows let individuals and firms adjust their financial positions and provide liquidity and diversification[3].

The biggest increase in capital flows has been in recent years. IMF data indicates that capital flows to not only emerging countries but also to the developed countries have increased during the 1990s. In this time period, the capital inflows between industrial countries rose by 300% and trade inflows increased by 63% (Evans & Hnatkovska, 2011). In 1990s, the capital inflows to emerging countries have accelerated, too. The FDI flows accelerated again after the financial crisis at the end of 1990s. Asia, with a high growth rate, big size and low labor costs, attracted major part of the FDI flows in 1990s. Between 2000 and 2010, we see a similar increase in capital flows to emerging countries.

The capital inflows have a different trend in the last decade that is also characterized by crises as well. Except for the sharp decline in the flows for the emerging markets between 2008- 2009, we see a drastic rise in patterns since the beginning of 2000s. In 2012, the capital inflows to emerging countries is

[3] Bank for International Settlements (BIS) definition.

equivalent to $1.200 billion dollars; 9% of the total Emerging Markets GDP. Although there is a decline in the Emerging Europe capital inflows relative to 2007 levels, it is recovering since 2011. Latin America capital inflows have always been in an increasing trend since 2002. China and emerging Asia have always been the hot investment areas for foreign capital flows but the peak is after 2002. It has been continuously increasing since then with only one exception of emerging Asia in 2008. MENA[4] has the smallest share of the emerging markets foreign capital flows.

Not only the capital inflows increased in amount, the composition of the capital inflows to emerging countries has also changed after 1980s. When we classify according to the instruments used for the flows, we can say that the private flows (bond and equity) have become the major source of financing current account imbalances (Taylor & Sarno, 1997). The biggest portion, nearly half, of the capital inflows to emerging markets is through Direct Equity Investment, followed by investment by Nonbanks (Figure 2). Evans and Hnatkovska (2011) also state that the main increase in the capital flows is in equity and debt markets. Portfolio flows, meaning capital flows to stock markets, are achieved through country funds, American Depository Receipts or direct purchase of shares (Chandra, 2002). Portfolio flows and foreign direct investment have replaced commercial bank debt (Bekaert, Harvey, & Lumsdaine, 2002). This is still true all through the decade except for 2007, just before the global financial crisis.

These trends for the market-based strategies were driven by the rich resources of the private initiative and capital markets and the absence of controls on

[4] Middle East and North Africa countries. Includes both oil- rich economies and relatively scarce resource countries such as Egypt, Morocco and Yemen. (WorldBank)

the current account (Errunza V. , 2001). As a result, in 2012, 52% of the FDI inflows have been used in developing economies.

It is well known that the developed and emerging markets have different characteristics. Emerging countries have higher expected returns (Stulz 1999a, Henry 2000b, Bekaert and Harvey 2000), higher volatility (Bekaert and Harvey 1997 and DeSantis and Imrohoroglu 1997), low correlation with developed market returns (Harvey 1995) and a higher degree of predictability as compared to developed financial markets. If international segmentation still exists within the globalized world, international diversification pays and the investors can take advantage of these dissimilarities between emerging and developed markets.

So, emerging countries market integration should have different market implementations and impacts compared to developed markets. We should study emerging markets inflows separately to see the impacts on the markets.
Most empirical studies on market integration study the issue in the context of the diversification benefits, cost of capital and international risk sharing. The general outcome is that policies should be encouraged to access international markets in order to decrease the investor countries' exposure to idiosyncratic risk through channeling funds to less integrated countries, mainly emerging countries, due to the low correlations with the developed markets (Divecha et al., 1992). In their paper, Evans and Hnatkovska (2011) state that the volatility of the US portfolio flows has increased four times over the past 30 years while the volatility of equity returns has declined which can be attributed to gains from diversification through world financial markets integration.

It is also argued that foreign capital affect the emerging economies positively in the sense that the foreign investors in emerging countries can raise the prices of

stocks with diversification potential and the cost of equity capital will go down (Bekaert & Harvey, 2003). This will result in an increasing investment and economic welfare for the emerging country. This turned out to be true in many emerging countries and they attained more efficient resource allocation and risk sharing.

However, there is little evidence that countries' risk sharing has increased through financial liberalization and international integration of the markets. Market integration may lower expected returns as well as increasing correlations between emerging and world markets. The more the markets are integrated, the less is the increase in stock prices in the emerging countries.

It is true that liberalization has ended up with more integrated financial markets but it does not mean full integration of the emerging markets to the world markets (mild segmentation hypothesis of Errunza & Losq (1985)). Home asset preference may be one reason why even some developed country markets are not fully integrated as well. Also, Zhang (2011) suggests that the frictions in the markets prevent capital flows to countries even if the capital controls are removed. He proposes that these frictions are the obstacles to international risk sharing. So, in line with Errunza & Losq's (1985) mildly segmented markets hypothesis, some diversification benefits may still exist.

With interventions via economic and financial crisis, this trend from a segmented market structure to an integrated market structure in 2000s is influential on financial and economic factors. The developments in the integration of emerging markets raise questions on the benefits of the capital inflows for both the investor in the emerging country and for the emerging country itself. To evaluate the capital inflow trends, we will focus on the dynamics of the capital inflows and their effects on the performance of the countries. We will try to answer the questions, from the

investors' point of view, "are there any diversification benefits in investing in emerging countries?" and from the emerging country point of view, "what are the benefits of capital inflows on the financial markets?"

As well as these country level aggregates, firm level impacts on integration will also be investigated in chapter 2 of this paper. However, the international market integration literature for emerging markets has very limited resources focusing on firm level data.

The research questions we addressed are: What kind of impacts do capital inflows have on financial markets and the degree of international market integration of these advanced emerging markets? How does international market segmentation affect the listed firms' capital structure in terms of financial flexibility in advanced emerging markets?

The outline of the paper is documented in Figure 1. First, we will begin with a brief overview for the capital inflow definitions and the broad patterns in the capital inflows. The IMF classification will be used for the external assets and liabilities. Foreign direct investment (FDI), portfolio investment, other investment and derivatives will be analyzed for foreign liabilities. Equity and debt flows will also be studied separately. We find the significance of the influence of the capital inflows on financial markets. In chapter 2, the effect of segmentation on a very important driver of capital structure decisions; financial flexibility; will be tested on listed firms in advanced emerging countries.

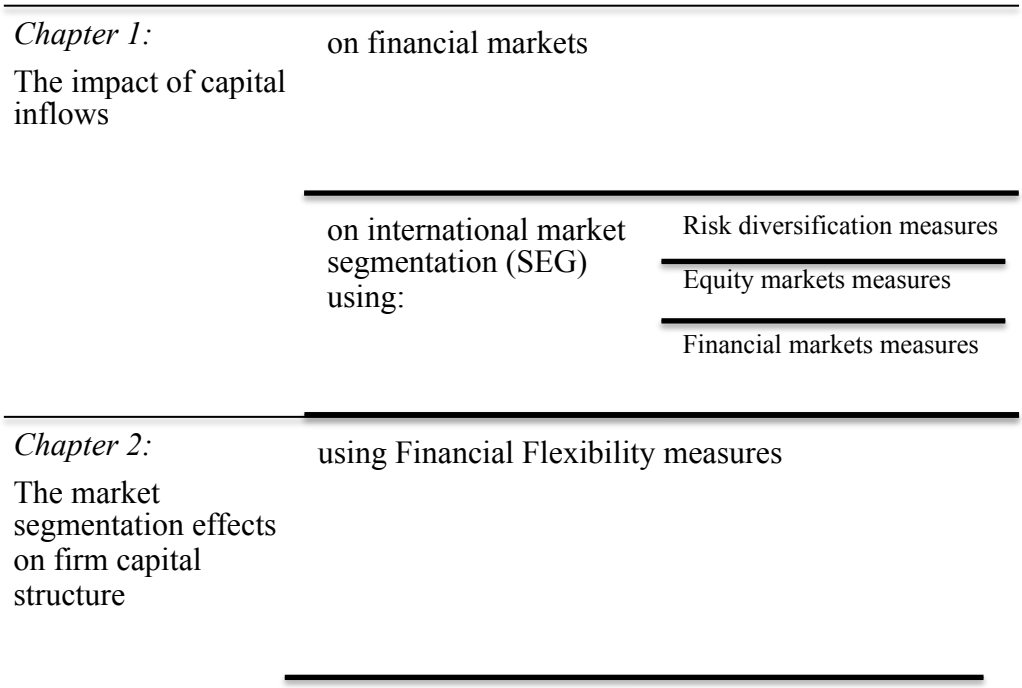


Figure 1. Thesis outline

This study focuses on 10 advanced emerging economies selected on the basis of the FTSE country classification. The economies included cover 34% of the market capitalization of the emerging countries. The firm level influences of international market segmentation will be studied through financial flexibility measures. This study will contribute to a very distinct area of emerging market literature; the firm levels analysis of segmentation and its impact on the firms' capital structure choice. The contribution of the study to the literature is that this will be a preliminary attempt analyzing the capital flows thoroughly and discussing the capital inflows' impact on international market integration during the period 2000- 2012.

CHAPTER 2

THE IMPACT OF CAPITAL INFLOWS ON INTERNATIONAL MARKET SEGMENTATION

Literature on Capital Inflows and the Effects

The capital inflows are sensitive to economic conditions, regulatory policies and financial market structure. After Calvo, Leiderman and Reinhaert (1993), many researchers have studied the determinants of capital flows. They especially present evidence for the influence of real exchange rate appreciation and rate of return differentials on capital inflows to emerging countries.

The volume and the pattern of all different type of these capital inflows to emerging countries are the outcome of two sets of factors- *"push*" and "*pull*" factors. Hernandez and Rudolf (1995), Mody and Murshid et al (2001), Hernandez et al. (2001), Dasgupta and Ratha (2000) and Montiel and Reinhart (1999) argue that the main drivers of capital inflows are pull factors.

Pull factors stem from country specific factors which include fundamentals of the domestic economy and financial variables such as interest rates, expected rate of change, domestic credit level, creditworthiness and volatility of exchange rates and stock prices (Zhang, 2000; Wei and Liu, 2001). Broto et al. (2008) show that FDI is the flow whose volatility is more sensitive to changes in macroeconomic soundness indicators, GDP per capita and lower inflation. This study also states that domestic financial system is more relevant to determining portfolio flows rather than FDI flows.

Williamson (1993) showed that the portfolio flows to developing countries are highly related to the country's openness (existence of international trade and financing opportunities). To proxy the openness of the real sector (trade openness), the ratio of the sum of exports and imports relative to GDP could be used (Kim and Ryou, 2009). Bekaert and Harvey (1997) also use trade as a determinant for capital inflows and use the ratio of export plus imports to GDP as a proxy. They associate an increase in this variable with the increased importance of world information relative to local information regarding stock markets.

Demographics (population growth and average age growth) also have a role in determining capital inflows. Erb, Harvey and Viskanta (1996) suggest that average age explains risk premiums in some developed countries. The importance of social aspects such as human capital development and viability of infrastructure services as well as political aspects has been mentioned by Zhao and Zhu (2000), Balasubrahmanyam and Mahambare (2004) and Wei (2000, 2004).

Push factors arise from macroeconomic policy changes and business cycle conditions in the developed countries (Prasad, Rogoff, Wei and Kose, 2007). Kim and Ryou (2009) consider fluctuations of developed market interest rates, business cycles and the stock prices in major industrial countries to be the core push factors. Calvo et al. (1993) and Fernandez-Arias (1996) state that US interest rate explains much of the capital inflows to Latin America in 1990s. Ying and Kim (2001) state that US business cycles and foreign interest rates explain more than 50% of the capital inflows to Korea and Mexico.

Concerning the volatility of the FDI flows; Broto et al. (2008) have interesting results in their study. Their results show that global factors such as the international equity prices are more important in determining the volatility of

especially FDI flows. They also state that world GDP growth and global liquidity are negatively correlated with FDI volatility.

Considering both push and pull factors, we should say that push factors are short-term basis since they reach their equilibrium levels in the long run. De Vita and Kyaw (2008) argue that both pull and push factors are important in explaining capital flows to emerging countries but that "real" factors have better explanatory power. Hernandez, Mellado and Valdes (2001) suggest that pull factors explained most of the capital inflows rather than the push factors. Taylor and Sarno (1997) argue that push and pull factors are equally important for capital inflows but the push factors are more important in determining bond flows. Chuhan, Claessens, and Mamingi (1993) find that portfolio flows to Latin American and Asian countries are equally sensitive to pull and push factors.

There is a trend towards the importance of global push factors determining the capital inflows. However, the pull factors are more important in the sense that they also help reduce the flows volatility.

As well as these pull and push factors, there are researchers who suggested the variables for capital inflows but not under pull or push factor categories; mostly institutional factors (i.e. capital account liberalization policy. Kim et al. (2004) and Kim and Yang (2008) argued that regulations on cross-border capital transactions are also influential in determining capital inflows. Taylor and Sarno (1997) put forward the main drivers of capital inflows: investment opportunities available in the global economy, the covariance between the expected returns on various investment projects, the preferences of individuals for present and future consumption and their attitudes towards risk. Goldstein, Mathieson, and Lane (1991) have suggested that the right to repatriate dividends and capital is the most important factor for capital

inflows. Credit ratings and secondary market prices of sovereign debt are also important in terms of determining benefits and costs of investing in a country (Bekaert, 1995). Another important factor on capital inflows is current policy and institutional framework that is fostering poverty reduction and sustained growth. Mody and Murshid (2004) use World Bank's Country Policy Institutional Assessment Index (CPIA index). It captures 20 indicators that fall into five categories: economic management, structural reform, social inclusion and public sector management and institutions. A low score indicates poor policies.

Errunza (2001) mentions that the amount of portfolio inflows depend on a variable he calls market investability manifested by market breadth, depth, liquidity, efficiency, regulation, information, removal of perceived barriers (risks), transparency of investment, and repatriation rules. Beck and Demirguc-Kunt (2009) study the financial development variables regarding the capital markets, the financial system and the banking system through a wide window. They mention liquid liabilities to GDP as an indicator for financial depth, which was also suggested by King and Levine (1993). They include other variables for possible measures of the size of the financial system such as liquid liabilities in USD, currency outside banking system to base money, financial system deposits to GDP, bank deposit to GDP, private credit by deposit money banks and other financial institutions to GDP and stock market capitalization to GDP. Banking variables are necessary, too since banks are dominant source of financing in emerging countries so poor banking structure may be an obstacle for growth (Bekaert, Harvey, Lundblad and Siegel, 2011). Concerning the banking system in terms of size, structure, efficiency and stability, they set individual variables since banking sector is the largest part of the

financial system in emerging countries. They also set various variables for the stock market such as size and liquidity variables.

The evidence of push and pull factors for Turkey starts with Culha (2006) but some studies before Culha also mentioned the variables used in his study. Balkan, Biçer and Yeldan (2002) found that a rise in stock price index raises capital inflows. Celasun, Denizer and He (1999) argue that short run interest rate differential is the most important pull factor for capital inflows. Culha (2006) mentions that the relative importance of foreign interest rate as a push factor has increased after 2002 for Turkey. He suggests that this fact makes the capital inflows more volatile and may reverse direction rapidly when external conditions change.

Determining the push and pull factors is important in the sense that the capital inflows driven by pull factors can be controlled by domestic policies. On the other hand, policy makers cannot have any control over the capital inflows dominated by push factors (Culha, 2006). Moreover, capital inflows have some costs such as causing increased vulnerabilities of the financial system which Turkey, Argentina, Mexico suffered in 1990s and 2001. To avoid these costs, it is important to know the determinants of these flows and their effect on real economy, financial markets and international market integration.

The Impact on Financial Markets

As a result of the increase in capital flows globally, a vast literature has emerged. For emerging markets, the most important benefits of capital inflows are suggested as economic growth stimulation by rising domestic saving or transfer of technology and management skills (Bosworth, Collins and Reinhart, 1999).

In earlier studies, the focus was on banking system. Goldsmith (1969), McKinnon (1973) and Shaw (1973) all proved higher savings, resource allocation and economic growth after liberalization. A more recent work, Henry (2000a) shows that the capital inflows after stock market liberalizations cause investment booms after controlling for world and domestic business cycle effects and economic reforms. Similarly, Bekaert, Harvey and Lundblad (2001) empirically showed that the real economic growth increases after liberalization periods. They also showed that investments increase due to the decreased cost of capital.

After liberalizations, the literature on country level findings shows higher economic growth (Bekaert, Harvey and Lundblad, 2000 and 2001), increased stock market liquidity (Levine and Zervos, 1998) and reduced equity premium (Ahimud and Mendelson, 1986). Errunza (2001) determined a number of factors which capital flows, mainly portfolio inflows, contribute to their improvement. Some of these factors are market development, quality information, regulations, investor confidence, corporate control, resource mobilization, globalization through decreased cost of capital and better evaluation of projects, diversification and investor welfare.

Concerning the financial markets, capital flows following financial liberalizations had also been shown to increase emerging market equity prices (Henry 2000b, Bekaert and Harvey, 2000). Bekaert and Harvey (2000) answer the question about the relationship between market liberalization and political risk. They suggest that country ratings increase significantly after liberalizations. They also showed a decrease the aggregate dividend yields and that the right proxy for a change in cost of capital is price change. Consistently, Bekaert, Erb, Harvey and Viskanta (1997) show that the political risk can be considered a priced risk when the

country ratings increase and cost of capital decrease after capital inflows to emerging countries. Froot et al. (2001) and Clark and Berko (1997) find increases in stock market prices after capital inflows. And if the price increase is permanent, it may cause long term decrease in cost of capital associated with risk sharing benefits (Bekaert & Harvey, 2003). Errunza (2001) studies portfolio inflows and argues that one of the most important contributions of the portfolio flows is its effect on cost of capital and project evaluation. He also studies the effect of portfolio inflows on the number of listings as well as other market development indicators. In line with the previous research, Stulz (1999b) showed that capital flows after liberalizations decreased the cost of capital. Bekaert, Harvey and Lumsdaine (2002) showed that capital inflows lead to dividend yield declines that can change the cost of capital and this effect is far from being a temporary price pressure effect.

Taylor and Sarno (1997) argue that after the process of deregulation and globalization, the efficiency and the volatility of the markets have increased. Volatility adds more risk by both making the pricing of financial assets more difficult and generating portfolio flows that are unstable (Corrigan, 1989; Claessens, Dooley, and Warner, 1995; Grabel, 1995; and Clarke, 1996).

On the other hand, some other researchers suggest that volatility is not related with any other financial measures and does not rise because of capital inflows after liberalizations (Tesar and Werner, 1995; Bekaert, 1995).

Bekaert and Harvey (2000) have found that impact of liberalizations on return volatility is significant. Bekaert and Harvey (1997) in another study showed that there is no impact on unconditional volatility. The literature on volatility effects of capital inflows is mixed in the sense that with the opening of the markets,

volatility can increase due to quick reaction of prices to relevant information or volatility can decrease due to the diversification and developments in the market (Bekaert & Harvey, 2003).

It has also been claimed that short term portfolio investment increase volatility by many researchers but Chuhan et al. (1993) have explained that volatility of the flows is determined by institutional structure rather than the flows being short term or long term. They suggested that long term flows are as volatile as short term flows. Moreover, they have not found any evidence to support that foreign portfolio investments are less stable than other sources of foreign investment.

Bekaert and Harvey (2000) argue that the correlation and beta with world markets increase after equity market liberalizations.

Considering the implication of efficiency theory on capital inflows, the studies indicate that as information becomes more accessible as a result of liberalization and increased competition, the predictability of stock returns should decline (Chandra, 2002). Kim and Singal (2000) expect decreased volatility and stock market returns after opening of stock markets. We can take the increased informational efficiency on the basis of liquidity explanation. Levine and Zervos (1998) mention an increase in liquidity after increased capital inflows. As capital inflows increase, raising liquidity, the amount of research done for the stocks also increases. Moreover, foreign investors demand improved disclosure resulting in higher quality information. These all contribute to improved efficiency of capital allocation (Chandra, 2002). Similarly, Kim and Singhal (2000), analyze the change in the frequency of trading after liberalization. They used variance ratio tests and found that stock market efficiency increases with capital inflows after liberalizations.

A World Bank study on portfolio flows shows that portfolio equity investments lead to higher stock market capitalization and turnover in those countries that have the inflow.

As we mentioned before, there are some concerns about the capital inflows, as well. Krugman (1993) suggested that liberalizations and capital inflows do not lead to long-term growth since domestic capital is relatively unimportant. He proposed that capital inflows would not materialize. However, Errunza et al. (1998) has shown that capital inflows do improve efficiency in emerging markets lowering cost of capital and the gain depends on the degree of segmentation, arbitrage restrictions and the market structure of the domestic country.

Another concern on capital inflows is that high correlations during bear markets lead to contagion. But, Stulz (1997) states that: "if there is plenty of arbitrage capital, contagion should not be a problem."

The Impact on International Market Segmentation

Emerging market equity returns are volatile but there is still room for foreign investors to enjoy diversification benefits since they are less correlated with developed market returns (Bekaert, & Harvey, 2003). Bekaert and Urias (1996, 1999), Bailey and Stulz (1990), Bailey and Lim (1992) and Chang, Eun and Kolodny (1995) all found evidence for diversification benefits in emerging countries. Interestingly, De Roon, Nijman and Werker (2001) found that the diversification benefits disappear when the transaction costs and the short sale constraints are taken into account. However, Bekaert and Harvey (2003) argued that diversification benefits still exist even after liberalizations in emerging countries but these are less compared to before they are connected to the world through liberalization periods.

Consistently, Bekaert and Harvey (1998) provide evidence of increased correlations of emerging markets with developed markets but they find that the economic impact is minimal.

Various indicators are used in the literature for market integration under risk diversification, equity and financial markets categories:

Risk diversification measures:

If the emerging markets are assumed to be completely segmented from global markets, the expected return for a domestic firm will depend on the local price of risk and covariance risk. However, if the emerging markets are assumed to be fully integrated after liberalization, the expected returns will depend on global price of risk and covariance risk (Errunza, 2001). Since the global price of risk is lower than local price of risk, the expected return (i.e. cost of capital) would decline after market integration.

Bekaert and Harvey (2000), Henry (2000a), and Kim and Singal (2000) used an international asset-pricing model in the context of risk diversification and documented a decrease in cost of equity capital. To capture the permanent price effects of a change in cost of capital, they used dividend yields and realized returns. As a proxy for cost of capital, average returns are usually not used when studying volatile periods like liberalization periods. They find a decrease in dividend yields after liberalizations. Edison and Warnock (2003) found similar results, adding that the decrease in dividend yields is sharper for countries that have complete liberalizations.

For real markets, Beck and Demirguc-Kunt (2009) included many indicators of the degree of financial integration. International debt to GDP is suggested to

measure the stock of outstanding international bonds relative to a country's economic activity. They also proposed international debt issues to GDP ratio to measure the net flow of international bond issues relative to a country's economic activity. International loans from non-resident banks to GDP is suggested as a proxy for integration and is equal to the loans of BIS reporting banks to a specific country relative to economic activity. Frankel (1992) use another measure of capital market integration including saving-investment correlations and various interest parity conditions.

Although the literature on this issue is limited, Sorensen and Yosha (1998), Lane and Milesi-Ferretti (2002a, 2002b) studied the effects portfolio equity holdings in international risk sharing. Lane and Milesi-Ferretti (2004) investigate rates of return on foreign assets and liabilities and their contribution to international risk diversification. With a model including rate of return on foreign assets and some domestic financial returns, they capture the co-movement of these variables. The greater is the co-movement, the less is the risk sharing.

Equity markets measures:

In another paper by Bekaert and Harvey (1995), the authors use equity return data as a measure of the degree of integration in a parameterized model of integration in the context of equity markets. Stapleton and Subrahmanyam, (1977) and Errunza and Losq, (1985) use another very common method; the mean-variance segmentation model. According to the model, the prices in integrated markets decrease in the covariance between world and local cash flows. Also, the expected returns are related to the covariance with the world market returns rather than local return volatility (Bekaert and Harvey, 1995). Since the volatility of the emerging market

returns are higher than that of the world markets, these models suggest that the prices will increase with liberalizations and the returns will decrease.

Bekaert, Harvey, Lundblad, Siegel (2011) proposed another measure of market integration based on industry level earning yields of countries. They hypothesis is that under financial and economic integration, the valuation differentials between a market and the world should be relatively small and explained by earnings volatility. They use US as a benchmark for an integrated market.

Research Design and Sample

According to the literature survey made, we expect improvement in financial market variables such as stock market turnover, stock market traded value, and efficiency, with increased capital inflows. We also foresee increased market integration between the advanced emerging markets and the world markets. Our hypotheses are:

HYPOTHESIS 1: Stock market liquidity increases with capital inflows.

HYPOTHESIS 2: Efficiency of the capital markets improves with capital inflows

HYPOTHESIS 3a: An increase in capital inflows improves the international integration of emerging markets.

HYPOTHESIS 3b: Capital inflows contribute less to international risk sharing due to the increasing co-movement of returns resulting from integration of markets.

The sample consists of 220 country-year observations for all our variables. The Balance of Payments Manual (BOP) of IMF is used to sort the capital inflows. There are three classifications under the *Current Account*[5]: Goods and Services, Income, and Current transfers. These are the transactions that involve economic

[5] The definitions are taken from the Balance of Payments Manual of the International Monetary Fund (IMF).

values and occur between resident and nonresident entities. Under *Income*, Investment Income covers receipts and payments of residents' and nonresidents' foreign assets and liabilities. *Investment Income* consists of direct investment income (equity dividends, branch profits, and reinvested earnings and income on debt interest), portfolio investment income (income on equity dividends and income on debt interest), and other investment income (interest earned on other capital (loans, etc.) and, imputed income to households from net equity in life insurance reserves and in pension funds). *Distributed Branch Profits* data is taken from Investment Income section of the current account in the Balance of Payments (BOP) of countries.

Financial Account has functional subdivisions; Direct Investment, Portfolio Investment (bonds equity and notes, money market instruments), Financial Derivatives and employee stock options, Other investment, and Reserve assets. *Direct Investment* transactions in the reporting economy or abroad are sub classified into equity capital, reinvested earnings, and other capital (intercompany transactions). *Direct Investments* is mainly equity participations above 10 percent. *Portfolio Investment* is the total equity and debt securities. *Other investment* covers short and long-term trade credits; loans (including use of fund credit, loans from the Fund, and loans associated with financial leases); currency and deposits (transferable and other—such as savings and term deposits, savings and loan shares, shares in credit unions, etc.); and other accounts receivable and payable[6]. The items that *Reserve Assets* cover are monetary gold, SDRs, reserve position in the Fund, foreign exchange assets (currency, deposits, and securities), and other claims. All the flow data is taken from the Balance of Payments statistics of the countries in our sample.

[6] The definitions are taken from the Balance of Payments Manual of the International Monetary Fund (IMF).

The data is present in the World Databank database and the data, a product of Euromoney Institutional Investor.

In contrast to the flow data that is collected from BOP of countries, the stock data is collected from the International Investment Position (IIP) reports. Mainly, it is the balance sheet of the stock of external financial assets and liabilities of countries. So, it measures the stocks of external assets and liabilities at the end of every recording period.

The other variables are included to test their responses to the capital inflow shocks. *Investment* is the gross capital formation and is taken as a percentage of GDP. It includes outlays on additions to the fixed assets of the economy (land improvements; plant, machinery, and equipment purchases; and the construction of roads, railways, and etc.) plus net changes in the level of inventories. *Savings* is gross savings as a percentage of GDP. It is calculated as the gross national income less total consumption, plus net transfers by the World Bank.

Volatility is calculated from the weekly country index returns. Variance ratio test results are used for stock market *Efficiency* calculations. For these two variables and for the *Stock market return,* the data from Bloomberg database is used. The *Stock market traded value* and the *Turnover ratio* of the stock market is taken from the CEIC data.

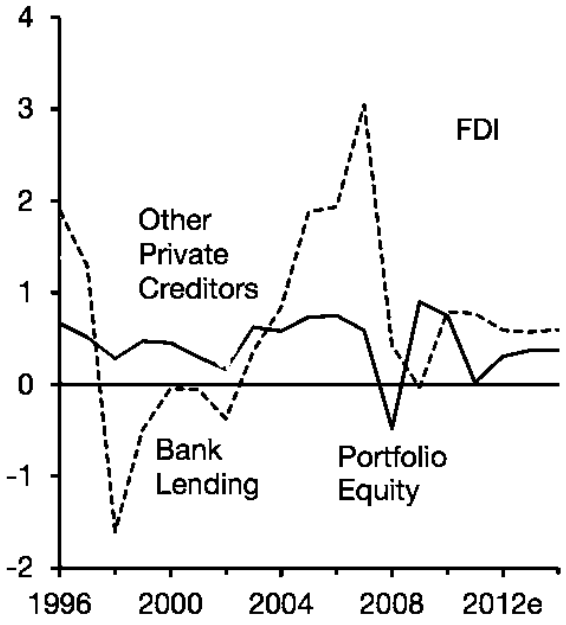
Bond stock and flow data are World Bank, PPG bonds and flow data. The *Bonds* are the public and publicly guaranteed (PPG) debt from bonds that are either

publicly issued or privately placed[7]. World Federation of Exchanges (WFE) statistics is used for international market *segmentation* calculations.

While calculating the *rate of return* (ROR) on foreign assets and liabilities, IMF BOP data is used. Credit and Debit of the interest section of each related function is used. All the other data for the variables is collected form the World Databank of the World Bank and CEIC.

To sum up to capital inflow trends in the last 2 decades, total capital inflows to developed emerging countries in 2011 is USD 310.000 million, it has risen 10 times since 1990. It is approximately 4 times its value in 2000. Capital inflows have a steady growth in 1990s and 2000s with sharp declines in years 2000- 2001 and 2008- 2010, which are mainly due to energy crisis and the global financial crisis, respectively. In year 2007, total capital inflows to the developed emerging countries rise more than 100% of the GDP.

[7] World Bank definition of the bonds.



Source: IIF Research Note, Capital Flows to Emerging Market Economies, *January 2013*

Figure 2 Capital Inflows; FDI, Portfolio Equity, Bank Lending and Other Private Creditors, Percent of GDP, 1996- 2012

In a detailed analysis, FDI, portfolio investment, derivative and other inflows all show similar patterns during the analysis period. However, the response of *portfolio inflows* is sharper and immediate compared to the response of *other inflows* in 2008 (See appendix, figure 1-1). The effect of the crisis on *FDI inflows* is observed not in the current period but the following period. Focusing on countries, rather than total sample, for the period 1990- 2011, Mexico is the only country whose *debt inflows* are more than its *equity inflows* (Appendix, figure 1-3). In Taiwan and Czech, *total equity inflows* are more than *debt inflows* but the values are

very close to each other. In Turkey, *total debt inflows* nearly do not exist. The ratios of *total equity* to *total debt inflows* are more or less the same in the rest of the countries.

We also observe that the concentration of *FDI inflows* within the total inflows has increased steadily in 1990s (Appendix, figure 1-4). The *FDI inflow* concentration peaks in year 2002 and 2008 but there is an important decline in 2009 that also continues in 2010, as well. Still, there is a recovery of the share of *FDI inflows* in total inflows in 2011. *Portfolio equity (PEQ) inflows* are larger in total inflows in 2000s relative to 1990s however the decreasing trend in the ratio of PEQ inflows to total capital inflows is very severe starting from 2005. PEQ inflows nearly disappear in year 2008, with a quite large recovery in 2009. In 2011, PEQ inflows ratio is the smallest among all the functional categories. *Portfolio debt (PD) inflows* share among the other categories was rising until 1994 when there was a decline. It was replaced by *Other inflows*. PD inflows' ratio in the functional categories bundle started to recover in 2003-2006 and 2009- 2011. *Derivative inflows* have always been small quantitatively and in ratio compared to other functions of the financial account. Although not very significantly, its ratio compared to the *other inflows* have been increasing since 2010.

The biggest USD *total inflows* and *total equity inflows* go to Brazil, Turkey, Mexico and Poland in 2000s (Appendix, figure 1-5). The portion for Hungary has fallen since 2007-2008. Brazil, Mexico, Poland and Turkey are the countries that have the largest percentage of the share in *total debt inflows* to developed emerging countries in late 2000s. Mexico has the largest USD *PD inflows*. Other than the fact that the *PEQ inflows* have negative values in the recent world financial crisis, *PEQ inflows* and *FDI inflows* exhibit similar country shares in totals. Strikingly, Hungary

has had a relatively larger share in *FDI inflows* relative to its share in other functional categories.

From Appendix, figure 1-5, Taiwan, Turkey and Czech have larger proportion of *Other inflows* in their capital inflows mix. Similarly, South Africa and Taiwan have a big portion of *PEQ inflows* compared to the other countries' percentages. The percentage of *PD inflows* is more or less the same in all countries but Hungary and Thailand have the largest share of *FDI inflows*.

Total USD inflows to developed emerging markets follow a similar path for all of the countries (Appendix, figure 1-5, graph a). However, Mexico and Poland do not show as severe declines as the other countries in year 2008. There has been a definite increase in total inflows to these countries in 2000s. As a percentage of GDP, most countries' total inflows again show a similar pattern but Poland, Mexico and Czech's results are segmented (Appendix, figure 1-5, graph a). Unlike the other countries, total inflows/ GDP ratio of Poland and Mexico do not decrease at the recent world financial crisis. The reason for Czech total inflows/ GDP ratio to differentiate from the other countries is that it is fluctuating since 1996 but the trend is already declining since then. From 2002 up until the recent crisis, it is clearly seen that the total inflows/ GDP ratio for all other countries are increasing. Overall, total inflows/ GDP ratios reflect the consequences of the financial and economic crisis of 1990s and 2000s.

When the total inflows USD and percentage of GDP graphs are analyzed at the same time, it is observed that for most of the countries the graphs are inline. However, Turkey, South Africa and Poland have different results compared to the other countries. Apart from the declines in crisis periods, the inflows have been

rising in Turkey since 1990s but although there is a huge improvement in USD inflows, total flows as percentage of GDP has not been increasing as sharply. It could be related to the realized growth in the country in the last decade. Similarly, the total inflows/ GDP ratio has not been increasing as high as the USD inflows in Poland and South Africa. There is a contradictory result for Czech. Although the percentage of the total inflows to GDP is falling, the USD inflows keep rising.

The results for other functions are graphed in Appendix, figure 1-6. It could be important to note that the *total equity inflows* to Mexico have been declining in the last two decades opposite of the case for Turkey and Hungary. *Total equity inflows*, very similar to *FDI and PEQ inflows*, to Turkey have been increasing drastically since 2004.

Methodology

Impact of Capital Inflows

A Vector Autoregression (VAR) model will be used to study the relationship between different types of inflows (measured as a fraction GDP) and their effects on the other variables (also measured as a fraction of GDP). VAR models are systems of regression models; a hybrid model between univariate time series models and simultaneous equation models. They have

Table 1 Adjustable definitions for the Capital Inflows VAR model

Variables used for the Vector Autoregression model

Capital Inflows Variables	*Description*
Total capital Inflows	
	FDI/ GDP, transfer of profits/ GDP, Portfolio Investment/ GDP (Equity investment, debt investment), Other investments /GDP, Derivatives/ GDP
	Equity instruments, Debt Instruments

Variable	*Description*
$INVESTMENT_{it}$	a proxy for the impact on real markets. Investment over GDP.
$SAVINGS_{it}$	a proxy for the impact on real markets. Savings over GDP.
$TRADED\_VALUE_{it}$	a proxy for the impact on the financial markets. Measures stock market liquidity. Total stock valued traded.
$TURNOVER_{it}$	a proxy for the impact on the financial markets. Measures stock market liquidity. Turnover ratio of the domestic stock market.
$volatility_{it}$	a proxy for the impact on the financial markets. Measures stock market liquidity. Volatility of the stock markets.
$EFFICIENCY_{it}$	a proxy for the impact on the financial markets. Measures efficiency of the stock market. Deviation from unity as the result of the variance ratio test is the measure.
COC_{it}	a proxy for the impact on international market integration. Measures the risk diversification. The proxy for the cost of capital is the realized rates of return on stock market.
$SEGMENTATION_{it}$	a proxy for the impact on international market segmentation. Measures the equity market segmentation. The measure is the weighted earning yield differential across industries and the corresponding world index industry
$IFIGDP_{it}$	a proxy for the impact on international market integration. Measures international financial integration. The measure is total foreign assets and foreign liabilites over GDP
$BOND\_STOCK_{it}$	a proxy for the impact on international market integration. Measures international financial integration. The proxy is bondstock over GDP
$BONDS\_ISSUED_{it}$	a proxy for the impact on international market integration. Measures international financial integration. The proxy is total bond issues over GDP
Other Variables	*Description*
$No\_listed\_firms_{it}$	Control variable. a proxy for the the asset concentration in the country. The proxy is number of firms listed in the local stock exchange.
$Tbills_{it}$	Control variable. a proxy for the the microstructure effects in the country. Measures the cost of capital. The proxy is the 12 months interest rates on the T bills.
Broad $money/GDP_{it}$	Control variable. a proxy for the the microstructure effects in the country. Measures the availability of capital. The proxy is broad money over GDP
size of $trade_{it}$	Control variable. a proxy for the the macroeconomic influences in the country. Measures the size of trade in the country. The proxy is total exports and imports over GDP.
$inflation_{it}$	Control variable. a proxy for the the macroeconomic influences in the country. The proxy is the average inflation.
WGI_{it}	Control variable. a proxy for the the country risk and policy. The proxy is the average of selected World Governance Indicators.

Table 2 Descriptive Statistics for total capital inflows to developed emerging countries

Panel A and B show the summary statistics. The variables are further explained in table 1.

Panel A: Descriptives, USD million, 1990- 2011

	Total Inflows	FDI	PEQ	PD	Derivative	OTHER
Mean	142,756.50	59,276.19	26,541.78	28,651.78	-961.15	24,167.61
Maximum	431,395.90	188,487.50	91,359.10	114,281.40	9,770.10	121,411.00
Minimum	29,402.89	7,792.38	-47,531.80	-310.06	-25,184.78	-33,714.90
Std. Dev.	114,702.20	51,090.20	31,383.12	29,465.99	7,562.10	41,164.11

Panel B: Descriptives for the variables as used in the VAR equation

	FDIL	PEQL	PDL	TOTAL_FL	TOTAL_DL	TOTAL_EQL
Mean	0.029	0.008	0.011	0.055	0.019	0.037
Std. Dev	.0.029	0.014	0.017	0.058	0.038	0.034
	SAVINGS	INVESTMENT	EFFICIENCY	TRADED_VALUE	TURNOVER	W_SEG_
Mean	22.139	22.158	0.476	29.937	62.084	16.003
Std. Dev	2.638	3.818	0.039	20.117	.26.581	33.673
	IFIGDP	BONDS ISSUED	BOND STOCK	No listed firms	Tbills	size of trade
Mean	1.301	0.006	0.076	368.5	14.673	0.508
Std. Dev	0.421	0.008	0.03	155.8	8.639	0.145
	inflation	WGI				
Mean	55.583	0.302				
Std. Dev	104.838	0.114				

a very rich structure and can be used as an alternative to large-scale simultaneous equations structural models. Each variable is considered endogenous and the model allows the variable to depend on the lags or the combination of white noise terms of the other variables as well as well as its own. However, the downside of the model is that it is difficult to choose the right lag length in the VAR models.

The VAR model describes the k number of endogenous variables over the same sample period (t=1, 2, …., T) as a linear function of their past lags. The

variable vector is a *k*x1 vector y_{it}. The reduced VAR model we will use to study the capital inflows and their impacts is as below:

Eq 1[8] $$y_{it} = \beta_{i0} + \beta_{i1} y_{it-1} + \beta_{i2} y_{it-2} + \cdots + u_{it}$$

where β_{i0} is a *k*x1 vector of constants, β_i is *a kxk* matrix, and u_{it} is a *k*x1 vector of error terms. The endogenous variables (the definitions are explained in detail in the previous section and Table 1) are defined by y_{it} where *i* is capital inflows (*CAPINF*), *Investment, Savings*, stock market volatility (*volatility*), value of the stocks traded (*Traded_value)*, stock market turnover ratio (*Turnover*), stock market efficiency (*Efficiency*), risk diversification (*coc*), international market segmentation (*Segmentation*), international financial integration (*IFIGDP*, *bondstock* and *bondissues*). Several control variables are used: the number of stocks listed (*No of_listed_firms*), cost of capital (12 months T-bill rate, *Tbills*), availability of capital (*broad money*[9]*/GDP*), the size of trade in the country (*size of trade*), inflation rate (consumer prices, *inflation*) and a policy variable for the country (*WGI*). Worldwide Governance Indicators (*WGI*) data from the World Bank Databank reports the governance indicators for the countries in 6 dimensions: control of corruption, government effectiveness, political stability and absence of violence/ terrorism, regulatory quality, rule of law and voice and accountability. We took the average of the estimate values for each year. Control variables are explained more at the end of

[8] $y_{1t} = \beta_{10} + \beta_{11} y_{1t-1} + \beta_{12} y_{1t-2} + \cdots + u_{1t}$
$y_{2t} = \beta_{20} + \beta_{21} y_{2t-1} + \beta_{22} y_{2t-2} + \cdots + u_{2t}$
.....

In the VAR model, all the variables are considered as endogenous and are explained by the evolution of its own lags as well as the lags of all the other variables. *y* values for the equation are the capital inflow variables (total capital inflows, FDI, transfers of profit, Portfolio inflows, equity and debt inflows) and the economic and financial market variables (saving, investment, stock market volatility, stock market traded value, stock market turnover, stock market efficiency, cost of capital, international market segmentation and integration variables together with the variables).

[9] According to the database we use, CEIC data of the Euromoney Institutional Investor, broad money is the sum of currency outside banks; demand deposits other than those of the central government; the time, savings, and foreign currency deposits of resident sectors other than the central government; bank and traveler's checks; and other securities such as certificates of deposit and commercial paper.

this section and in table 1. The p period back data y_{it-p} is defined as the p-th lag of y_{it}. All the variables are described in Table 1.

Capital inflows will be classified into functional and instrumental settings. Also, the transfers of profit to FDI will be used separately to see its relation with the other variables.

Savings and Investment are going to be used to study the impact of capital inflow on real economy. There is a big literature on the economic impacts so we did not want a repetition. But, to deliver complete results, we included some of the most important economic indicators.

The impact of capital inflows on *financial markets* will be measured by several variables: Stock market liquidity will be measured by value traded, volatility and turnover ratio (Kim and Singal, 2000). Turnover ratio is the ratio of the total market value traded over total market capitalization. Kim & Singal (2000) studied the stock market returns before and after market openings and tested the stock market efficiency based on randomness of stock returns since randomness is related to efficiency. Variance ratio test of Campbell, Lo and MacKinlay (1988) will be used to evaluate stock market efficiency in emerging markets just like Claessens, Dasgupta, and Glen (1995) and Coppejans and Domowitz (1996) did.

The impact of the capital inflows on *international market segmentation* is analyzed deeply and through different measures for the robustness of our results. Indicators for risk diversification, equity and financial market integration will be used separately. But our main variable will be equity markets measure.

To evaluate emerging markets' *stock market segmentation* from the world markets, the methodology in Bekaert et al. (2011) will be used:

Eq 2 $$SEG_{i,t} = \sum_{j=1}^{N} IW_{i,j,t} \left| EY_{i,j,t} - EY_{w,j,t} \right|$$

N is the number of industries and industry's portfolio weight corresponds to the relative (equity) market value of the industry in the country portfolio. The weight of industry *j* in country *i* is defined by $IWi_{,j,t}$.

$EY_{i,j,t}$ represents industry *j* 's earnings yield as determined locally in country *i* and $EY_{w,j,t}$, the corresponding earnings yield as determined in global capital markets. The main variable of analysis is the absolute value of the difference between industry valuation ratios, $\left| EY_{i,j,t} - EY_{w,j,t} \right|$. The weighted sum of these earning yield differentials is a proxy for the degree of equity market segmentation for a country. For the real numbers we get for the segmentation measure to make sense, we need a benchmark from an integrated market. So, US benchmark will be used as an integrated market example to rationalize the segmentation data we get.

The control variables include four categories: asset concentration, microstructure effects, macroeconomic influences and policy (Bekaert and Harvey, 1999). The number of stocks listed is a proxy for asset concentration and it is expected to increase with capital inflows. The macroeconomic variables are the ratio of the size of the trade sector (exports plus imports) to GDP and average inflation. As a proxy for the cost and availability of capital, the ratio of broad money to GDP is used implying microstructure effects. For country risk, variables from World Governance Indicators (WGI) will be averaged. According to the literature, size of trade and WGI are expected to be positively related to capitals inflows while T-bill rates, inflation and broad money to GDP ratio are negatively related.

Robustness on International Market Integration Measures

Risk diversification measure: Rate of return on foreign assets

To study the impact of capital inflows the integration of the international markets, we used the measure *SEG*. Now, we are also adding another integration measure: a measure by Lane and Milesi-Ferretti (2004). We will calculate the rates of return on foreign assets to proxy for cost of capital to see how internationally integrated emerging markets are. For an example, FDI liability returns will be calculated as;

(1) IL_t^{FDI}: income debit related to FDI

(2) $yL_t^{FDI} = \frac{ID_t^{FDI}}{FDI_{t-1}}$: yield on FDI liabilities

(3) $FDIL_{t-1}$: the country's stock of FDI liabilities

(4) $FDIA_t$: stock of FDI assets

(5) FDI_t: underlying FDI flow during year t

(6) $kL_t^{FDI} = \frac{FDIL_t - FDIL_{t-1} - FDI_t}{FDIL_{t-1}}$: capital gain on FDI liabilities

(7) $iL_t^{FDI} = (1 + yL_t^{FDI})(1 + kL_t^{FDI}) - 1$: nominal rate of return on FDI liabilities

Real yields and returns are found by deflating nominal returns by the inflation rate. Availability for risk sharing is obtained by measuring the co-movement of ROR on foreign liabilities and domestic stock returns and interest rates (γ);

(8) $i_t^{FDIL} = \propto + \beta\gamma + \varepsilon_t$

As long as β is equal to one, foreign liabilities do not provide any diversification against fluctuations in foreign financial returns (Lane and Milesi-Ferretti, 2004). Risk sharing is greater when co-movement is greater.

We can use the comovement between the rate of return on foreign assets and domestic stock market returns as another measure of risk sharing. In this case, the greater is the comovement, the weaker is risk sharing. The relation between the comovement of the returns and the capital inflows will be checked.

Risk diversification measure: Cost of capital

Cost of capital (coc) changes can also be used for analyzing the degree of international market integration. However, measuring changes in cost of capital and capital inflows is not an easy task. Following the country level work in Errunza and Miller (2000) and Bekaert and Harvey (2000), realized returns on the stock market will be used to proxy for changes in cost of capital in the long run. A decrease in coc will imply a more integrated market.

Financial markets measures:

For measuring the effects of various variables on the financial integration of emerging markets, we will follow Lane and Milesi-Ferretti (2004) and use a volume-based measure:

Eq 3 $$IFIGDP_{i,t} = \frac{FA_{i,t}+FL_{i,t}}{GDP_{i,t}}$$

Intenational Financial Integration *(IFIGDP)* is the ratio of FA and FL to GDP. *FA* and *FL* refer to the stocks of aggregate foreign assets and liabilities.

Another measure, Equity based International Financial Integration *(IFIGDPEQ),* is an indicator of the level of equity (portfolio and FDI) and takes into account the different functions of Capital inflows (Lane and Milesi-Ferretti, 2004):

Eq 4 $$IFIGDPEQ_{i,t} = \frac{PEQA_{i,t}+FDIA_{i,t}+PEQL_{i,t}+FDIL_{i,t}}{GDP_{i,t}}$$

PEQA (L) and FDIA (L) are the stocks of portfolio equity and FDI assets (liabilities). IFIGDPEQ is an indicator of the level of equity.

Bonds are another instruments countries use to get integrated with the global markets. Following Beck and Demirguc- Kunt (2009), the ratio of International debt to GDP and international debt issues to GDP will be used as a proxy for market integration. Comovement analysis on the determinants of market integration and capital inflows will be applied.

Empirical Analysis

Vector Autoregression

The model is estimated as in Equation 1. Other than the return data, the variables are used as either a percentage of GDP or the market capitalization. The definitions are

given in Table 1. The only real number variable, *number of listed firms,* is used by taking the natural logarithm.

VAR Lag Order Selection

Appropriate lag length of the endogenous variable is preliminary for the analysis. We used LR, sequential modified LR test statistic (each test at 5% level), HQ, AIC (Akaike) and SC (Schwarz) criteria to determine the appropriate lag length. Based on these criteria, the lag order chosen is 1 and 2 in the VAR analysis.

To make sure the impulse response functions and the variance decompositions are valid, AR Roots table and graphs are checked. All the roots have modulus less than 1 and they lie inside the borders of the unit circle.

Estimation for the model

Table 3 summarizes the estimates for all the variables. We use Block F tests and Granger causality tests together with Impulse Response functions and Variance Decompositions to understand the VAR estimation results. The relations also proved by the granger causality test are highlighted.

A broader analysis will be given in the next section but to give a brief idea we should state that, according to the Granger causality test results, *Distribution of Profits* affect the future lags of *Investments*. The capital inflows have impact on the international market integration measure we use, *segmentation*, as well as the risk

Table 3 VAR estimates for the impacts of capital inflows model

Vector autoregression results for the impact of capital inflows are shown below. *TOTAL_INFLOWS* is the total capital inflows/ GDP. *FDI_INFLOWS* is total FDI inflows/GDP. Portfolio equity and portfolio debt inflows are shown as a percentage of GDP and denoted by *PEQ_INFLOWS* and *PD_INFLOWS*, respectively. Total equity and total debt inflows are also tested as a part of the instrumental classification of the Balance of Payments reporting. *TOTAL_EQ_L* denotes total equity inflows/ GDP and *TOTAL_DL* denotes the total debt inflows/ GDP. Distribution of profits is also another variable, *DIST_PROFITS* and is classified under FDI inflows. The definitions of the variables are given in table 1. The coefficients, standard errors, and t statistics are given. The relationships also proved by the granger causality test are highlighted.

		INVESTMENT	SAVINGS	TURNOVER_RATIO	TRADED_VALUE	EFFICIENCY	COC	IFIGDP	SEGMENTATION	BOND_STOCK	BONDS_ISSUED
TOTAL_INFLOWS(-1)	coefficient	0.48	3.95	-55.93	2.89	0.08	-0.01	0.14	-313.81	0.03	0.02
	S.E.	-9.42	-7.03	-72.35	-61.54	-0.07	-0.03	-0.84	-278.64	-0.06	-0.03
	t-statistic	[0.05062]	[0.56181]	[-0.77312]	[0.04693]	[1.07332]	[-0.39439]	[0.16773]	[-1.12622]	[0.46251]	[0.75347]
FDI_INFLOWS(-1)	coefficient	-12.84	19.05	141.53	56.13	-0.26	-0.14	-1.84	264.27	-0.18	-0.09
	S.E.	-23.4	-17.42	-180.35	-150.8	-0.18	-0.07	-2.05	-697.04	-0.16	-0.08
	t-statistic	[-0.54858]	[1.09316]	[0.78477]	[0.37223]	[-1.46295]	[-1.90636]	[-0.90024]	[0.37913]	[-1.11636]	[-1.18122]
PEQ_INFLOWS(-1)	coefficient	-11.19	27.63	-311.54	260.74	-0.13	0.12	5.25	-553.8	-0.2	-0.06
	S.E.	-25.66	-19.21	-188.25	-163.52	-0.21	-0.08	-2.12	-774.77	-0.17	-0.09
	t-statistic	[-0.43607]	[1.43799]	[-1.65494]	[1.59459]	[-0.61774]	[1.41278]	[2.47775]	[-0.71480]	[-1.16418]	[-0.64993]
PD_INFLOWS(-1)	coefficient	-43.54	-0.31	0.48	-114.91	-0.19	0.14	-0.28	-2135.41	-0.05	-0.02
	S.E.	-31.5	-24.72	-236.99	-198.94	-0.26	-0.1	-2.9	-915.3	-0.22	-0.11
	t-statistic	[-1.38218]	[-0.01244]	[0.00204]	[-0.57761]	[-0.75960]	[1.35353]	[-0.09714]	[-2.33301]	[-0.23486]	[-0.15028]
TOTAL_EQ_L(-1)	coefficient	-9.72	25.34	-106.46	187.94	-0.22	0.01	1.87	-223.48	-0.23	-0.08
	S.E.	-18.08	-13.23	-138.34	-115.44	-0.14	-0.06	-1.59	-543.75	-0.12	-0.06
	t-statistic	[-0.53746]	[1.91466]	[-0.76955]	[1.62808]	[-1.56402]	[0.19322]	[1.17800]	[-0.41100]	[-1.95487]	[-1.27486]
TOTAL_DL(-1)	coefficient	2.77	-0.12	-12.09	-32.2	0.17	-0.02	-1.15	-490.2	0.1	0.03
	S.E.	-11.62	-8.85	-89.08	-77.41	-0.09	-0.04	-1.02	-348.1	-0.08	-0.04
	t-statistic	[0.23833]	[-0.01360]	[-0.13570]	[-0.41594]	[1.87003]	[-0.51233]	[-1.12254]	[-1.40820]	[1.30562]	[0.85637]
DISTR_PROFITS(-1)	coefficient	-761.39	-455.99	-394.43	8.54	3.18	-3.18	66.09	56941.92	19.23	10.22
	S.E.	-803.88	-584.16	-6433.88	-6601.53	-7.32	-3.78	-110.78	-26510.8	-8.32	-3.2
	t-statistic	[-0.94714]	[-0.78059]	[-0.06131]	[0.00129]	[0.43505]	[-0.84131]	[0.59660]	[2.14788]	[2.31076]	[3.19270]

diversification and financial markets measures we used for integration robustness; *coc, IFIGDP* and *the bonds issued*. Debt inflows have the most significant impact on financial markets, stock market traded value over GDP (*traded value*) and the stock market *efficiency*.

Impulse response functions

The block F-test results do not show the sign of the relationship between the dependent and the independent variables. Rather, we used impulse response functions and variance decompositions. Impulse response functions show the current responses of the dependent variables to shocks in other variables. Each equation is estimated separately. A unit shock is applied to the error and the effects on the dependent variable are noted.

Tables 4 and figure 3 summarize the values of the multipliers for the responses the variables to total capital inflow shocks. Table 4 shows that the biggest reaction to *total inflow* shocks is observed from *stock market traded value, turnover ratio* and *segmentation* data. The response of *segmentation* to total capital inflow shocks is negative and the multipliers average -9 in the first three periods. The reaction turns to positive temporarily but then again is negative. It does not die down; it fluctuates in the negative side. To elaborate more on the impulse response of segmentation to total capital inflow shocks; this -9 figure for the impulse response indicates that one unit increase in the total capital inflows to GDP ratio results in 9% decrease in international market segmentation. The response of *segmentation* is similar for FDI inflow shocks as well. These results support our hypothesis (hypothesis 3) that international markets integration improves with increased capital inflows.

Table 4 Impulse response table for total capital inflow shocks

The table presents the impulse response of the variables to the total capital inflow shocks. The analytic standard errors are shown below the responses. *TOTAL_FL* is the total capital inflows/ GDP. The definitions of the variables included in this VAR model are given in table 1.

Period	INVESTMENT	SAVINGS	TURNOVER_ RATIO	TRADED_ VALUE	EFFICIENCY	COC	IFIGDP	SEGMENTATION	BOND_ STOCK	BONDS_ ISSUED	TOTAL_ INFLOWS
1	0.6737	0.3082	0.8379	5.5533	-0.0014	0.0018	0.1088	-9.8341	-0.0018	0.0010	0.0472
	-0.2637	-0.1998	-2.0746	-1.6963	-0.0021	-0.0009	-0.0220	-7.9477	-0.0018	-0.0009	-0.0042
2	1.0573	0.7691	-2.4895	3.5596	0.0010	-0.0016	0.0266	-10.4106	0.0003	0.0006	0.0092
	-0.3915	-0.2902	-2.7503	-2.6435	-0.0027	-0.0012	-0.0294	-12.3535	-0.0028	-0.0011	-0.0074
3	-0.1205	0.4460	-1.1715	1.8588	0.0014	-0.0007	0.0704	-7.2285	0.0022	0.0012	0.0058
	-0.4357	-0.3336	-3.2163	-2.7988	-0.0029	-0.0013	-0.0290	-13.6636	-0.0030	-0.0011	-0.0074
4	-0.3024	0.5993	-0.8445	1.7888	-0.0019	0.0001	0.0763	3.1554	0.0030	0.0002	-0.0014
	-0.4355	-0.3652	-3.4644	-2.6378	-0.0027	-0.0010	-0.0270	-13.4322	-0.0030	-0.0009	-0.0059
5	-0.3797	0.5694	-1.2591	1.4362	-0.0002	0.0001	0.0752	-0.4239	0.0016	0.0001	0.0002
	-0.4079	-0.3896	-3.5903	-2.2438	-0.0026	-0.0008	-0.0275	-11.1490	-0.0028	-0.0008	-0.0049
6	-0.2516	0.6118	-1.3742	1.7306	0.0003	0.0006	0.0713	-3.4979	0.0008	0.0001	0.0021
	-0.3860	-0.4108	-3.4996	-1.8300	-0.0024	-0.0006	-0.0280	-9.3515	-0.0026	-0.0007	-0.0038
7	-0.1510	0.6218	-2.1858	1.8022	0.0014	0.0001	0.0663	-3.9558	0.0002	0.0000	0.0025
	-0.3749	-0.4336	-3.4141	-1.6870	-0.0022	-0.0005	-0.0303	-6.9078	-0.0025	-0.0006	-0.0034
8	-0.1470	0.6438	-2.9242	1.7341	0.0017	0.0000	0.0657	-2.9542	-0.0001	-0.0001	0.0022
	-0.3724	-0.4528	-3.3261	-1.6991	-0.0020	-0.0004	-0.0321	-5.3936	-0.0024	-0.0005	-0.0030
9	-0.1609	0.6544	-3.0919	1.7686	0.0017	-0.0001	0.0653	-5.2923	-0.0003	-0.0001	0.0014
	-0.3778	-0.4700	-3.2966	-1.7138	-0.0018	-0.0003	-0.0345	-4.6925	-0.0023	-0.0005	-0.0028
10	-0.1913	0.6525	-3.3304	1.8179	0.0015	0.0000	0.0659	-4.3454	-0.0005	-0.0001	0.0009
	-0.3794	-0.4873	-3.2961	-1.7194	-0.0018	-0.0002	-0.0369	-4.4083	-0.0022	-0.0004	-0.0026

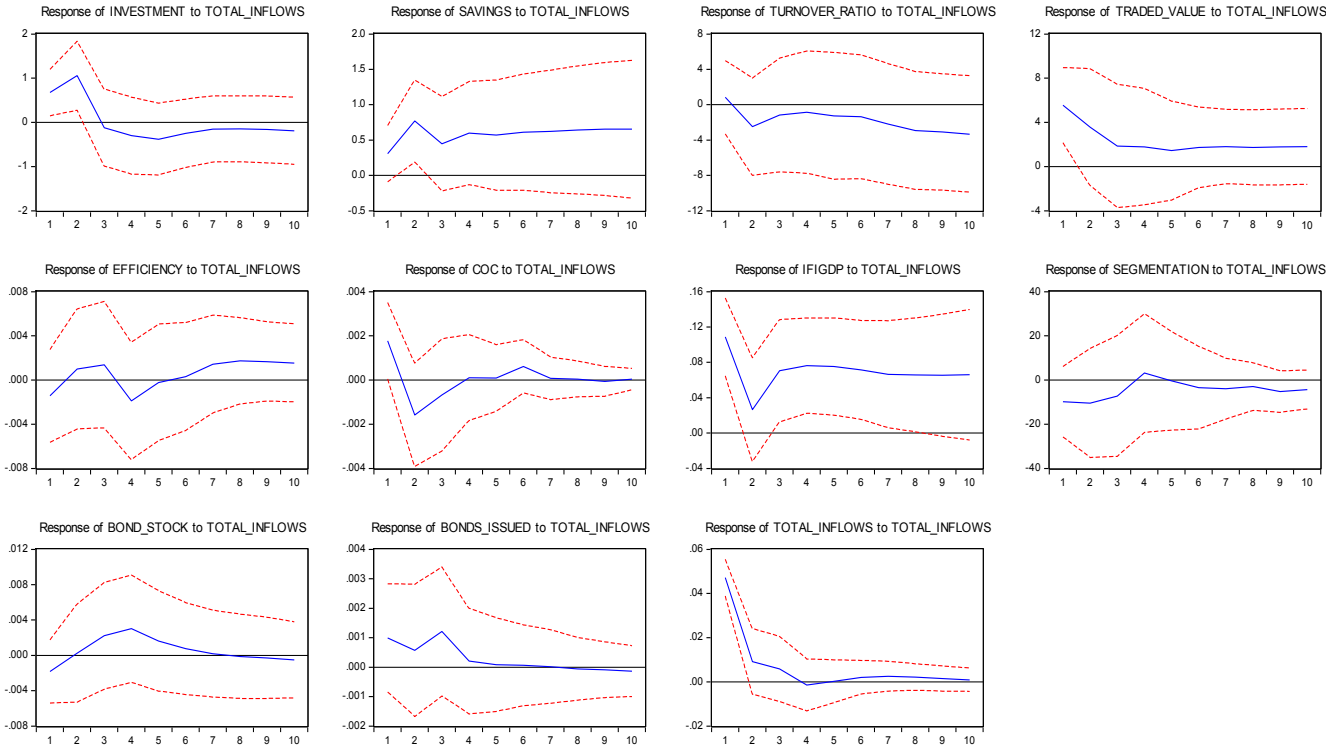


Figure 3 The impulse responses to the total capital inflow shocks
The figure presents the impulse response of the variables to one standard deviation total capital inflow shocks, shown in table 4. TOTAL_FL is the total capital inflows/ GDP. The definitions of the variables included in this VAR model are given in table 1.

The response of *Turnover ratio* to total inflows is quite uncertain and it fluctuates after a positive reaction initially. The response of *stock market traded value* to total capital inflow shocks is positive and its peak is at period 1. Its multiplier peaks at 5.55 at year 1 and averages 2.30 in 10 periods. This result also supports our 1st hypothesis.

The impulse the responses of *Investment* to total capital inflow shocks are small and negative after 3 periods. Its peak is at period 2 and then the effect dies down. The response of *Savings* to total capital inflow shocks is different compared to that of Investment. It is always positive but uncertain initially. The reaction is the same after period 6. Total capital inflows have larger effect on Savings. The multiplier for Savings is 0.76 at the peak and around 0.64 at the steady state. However, the multiplier at the Investment peak is 1.05 and after period 2, the reaction erodes steadily until -0.19. The response of *volatility* to the shocks is negative and small with a temporary positive at period 4. The effect on *efficiency* is the opposite of that on volatility except for the negative multiplier initially. It is mainly positive with a negative initial response and a negative peak at period 4. The reaction of *cost of capital* to is uncertain with a positive multiplier in the first period and a negative peak at period 2. It fluctuates but reaches a steady state towards the end of 10 periods. As an integration measure, *IFIGDP* respond to total capital inflow shocks positively. The response of *total bonds issued* and *bond stock* to total capital inflow shocks fluctuate and is moderate but it is positive. Bond stock has an initial negative response after the shock. These robustness measures for international market integration also support our hypothesis that market integration increases with capital inflows. The results for *coc* effects of total capital inflows is ambiguous though.

Table 5 Impulse response table for FDI inflow shocks

The table presents the impulse response of the variables to the FDI inflow shocks. The analytic standard errors are shown below the responses. *FDIL* is total FDI inflows/GDP. The definitions of the variables included in this VAR model are given in table 1.

Period	INVESTMENT	SAVINGS	TURNOVER_ RATIO	TRADED_ VALUE	EFFICIENCY	COC	IFIGDP	SEGMENTATION	BOND_ STOCK	BONDS_ ISSUED	FDI_ INFLOWS
1	0.4875	0.3942	2.6875	2.1559	-0.0033	0.0004	-0.0140	-2.3063	-0.0025	-0.0010	0.0136
	-0.2686	-0.1995	-2.0830	-1.7426	-0.0021	-0.0009	-0.0237	-8.1002	-0.0018	-0.0009	-0.0012
2	0.2739	0.4736	1.8658	1.7370	-0.0039	-0.0014	-0.0414	3.2555	-0.0049	-0.0015	0.0047
	-0.3998	-0.2919	-2.7127	-2.5748	-0.0026	-0.0011	-0.0281	-12.5010	-0.0027	-0.0011	-0.0021
3	-0.0049	0.1347	2.9403	0.1823	-0.0038	-0.0001	0.0015	-1.1771	-0.0047	-0.0017	0.0037
	-0.4564	-0.3436	-3.1699	-2.8075	-0.0029	-0.0012	-0.0293	-13.9125	-0.0031	-0.0011	-0.0022
4	-0.0113	0.0906	4.8078	-0.6435	-0.0053	-0.0011	0.0098	4.9407	-0.0045	-0.0016	0.0023
	-0.4816	-0.4016	-3.6026	-2.8878	-0.0029	-0.0009	-0.0285	-13.1873	-0.0033	-0.0010	-0.0020
5	0.0628	-0.0563	4.0835	-1.1340	-0.0040	0.0006	0.0109	6.0192	-0.0062	-0.0013	0.0013
	-0.4761	-0.4436	-3.8363	-2.6444	-0.0030	-0.0007	-0.0287	-10.4287	-0.0032	-0.0009	-0.0018
6	0.3853	-0.1036	5.8239	-0.0688	-0.0026	0.0001	0.0013	-11.3988	-0.0060	-0.0002	0.0003
	-0.4611	-0.4801	-3.9072	-2.2789	-0.0029	-0.0006	-0.0308	-8.6755	-0.0030	-0.0009	-0.0016
7	0.4562	-0.1594	4.4834	0.6042	-0.0010	0.0005	-0.0078	0.1256	-0.0056	0.0001	0.0007
	-0.4433	-0.5053	-3.8036	-2.0455	-0.0028	-0.0005	-0.0330	-7.1249	-0.0029	-0.0008	-0.0015
8	0.4548	-0.1239	4.3262	1.4302	-0.0005	-0.0003	-0.0115	-4.6844	-0.0043	0.0005	0.0009
	-0.4322	-0.5231	-3.7038	-1.9872	-0.0024	-0.0005	-0.0352	-5.8851	-0.0028	-0.0007	-0.0014
9	0.2839	-0.1335	4.0383	1.7724	-0.0007	-0.0001	-0.0140	-0.1931	-0.0032	0.0004	0.0016
	-0.4361	-0.5397	-3.6711	-1.9654	-0.0022	-0.0004	-0.0379	-5.7045	-0.0027	-0.0007	-0.0013
10	0.0866	-0.1462	4.3442	1.9809	-0.0012	-0.0004	-0.0096	-0.3664	-0.0022	0.0003	0.0014
	-0.4351	-0.5570	-3.6970	-1.9525	-0.0021	-0.0003	-0.0406	-5.3435	-0.0026	-0.0006	-0.0013

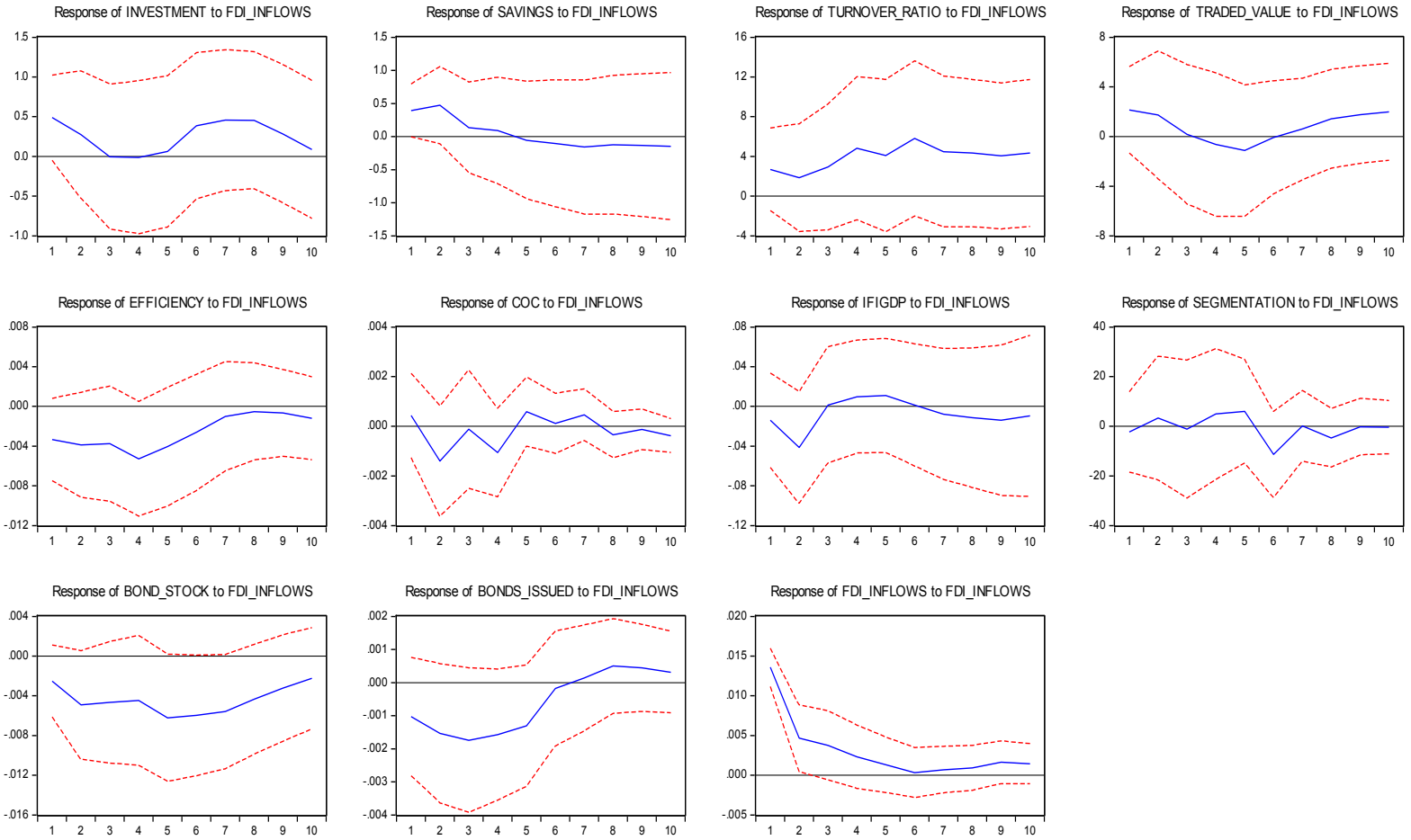


Figure 4 The impulse responses to the FDI inflow shocks The figure presents the impulse response of the variables to one standard deviation FDI inflow shocks, shown in table 5. *FDIL* is total FDI inflows/GDP. The definitions of the variables included in this VAR model are given in table 1.

Similar to our results for total capital inflows, the responses to FDI inflows shocks are more for *stock market traded value*, *turnover ratio* and *segmentation* (table 5 and figure 4). The response of *segmentation* to FDI shocks is negative initially with fluctuations afterwards. Its peak is at -11.39 and the reaction reaches a negative steady state after period 6. The response of *turnover ratio* is always positive and is at steady state after period 7. The multipliers for the response of stock market turnover are around 5. The reaction of *traded value* is positive initially. The effect turns to negative for 3 periods but then increases rapidly to positive at period 6 and reaches a positive steady state. The rest of the variables' responses to FDI inflow shocks are only moderate. The response of *Investment* and *Savings* are not similar as it was for total capital inflows. The reaction of Investment to FDI inflow shocks is positive. It decreases for 2 periods but then starts increasing again. It dies down at periods 9- 10 but it should be noted that the effect is quite small. The response of savings, however, is positive initially and reaches a steady state around zero after 2 periods. *Efficiency* responds to FDI inflow shocks negatively. The effect reaches a steady state around zero at period 8. *Volatility* responds positive initially and then fluctuates around zero. The rest of the variables' responses to FDI inflow shocks are not very significant. The response of *distributed profits* to FDI inflow shocks is quite limited. It is negative initially. It dies down after period 4.

The response of *segmentation* to portfolio equity inflow shocks is initially positive and then there is a sharp decrease and a negative peak. The multiplier at period 3 is -17.92 (table 6 and figure 5). The effect does not die down; it continues fluctuating between negative and positive. The response of *stock market traded value* is positive to PEQ inflow shock. It does not die down but it reaches a steady state around 1.5 at period 6. The multiplier at the peak is 4.67 at period 2.

Table 6 Impulse response table for Portfolio equity inflow shocks

The table presents the impulse response of the variables to the PEQ inflow shocks. The analytic standard errors are shown below the responses. Portfolio equity inflows are shown as a percentage of GDP and denoted by *PEQL*. The definitions of the variables included in this VAR model are given in table 1.

Period	INVESTMENT	SAVINGS	TURNOVER_ RATIO	TRADED_ VALUE	EFFICIENCY	COC	IFIGDP	SEGMENTATION	BOND_ STOCK	BONDS_ ISSUED	PEQ_ INFLOWS
1	0.429775	0.218501	1.220156	4.318373	0.002901	0.001058	0.097688	4.861504	0.000188	0.001331	0.014471
	-0.2726	-0.20518	-2.01658	-1.71078	-0.00219	-0.00087	-0.02096	-8.30023	-0.00186	-0.00094	-0.0013
2	0.468242	0.818538	-3.017177	4.676079	-0.000797	-0.000457	0.069196	2.431093	-0.00082	-0.000724	0.003107
	-0.38792	-0.27547	-2.55868	-2.48619	-0.00271	-0.00111	-0.02581	-12.044	-0.00281	-0.00108	-0.00238
3	0.344293	0.834421	-1.797616	3.955592	0.00067	-0.000971	0.036162	-17.92756	0.001357	0.000999	-0.00132
	-0.47643	-0.34646	-3.13494	-2.86921	-0.0031	-0.00126	-0.02912	-14.0602	-0.0033	-0.00119	-0.00259
4	-0.04108	0.655778	-0.789258	3.707392	-0.001455	0.000198	0.053853	0.655269	0.001853	0.000291	-0.00137
	-0.47927	-0.36925	-3.16786	-2.76722	-0.00273	-0.00096	-0.02281	-13.9513	-0.00334	-0.00088	-0.00216
5	-0.21668	0.687432	-1.434447	2.312978	-0.001837	-0.000566	0.062524	6.89009	0.001399	-0.00048	-0.00024
	-0.42688	-0.35727	-2.91362	-2.05018	-0.00259	-0.00084	-0.01901	-11.4921	-0.00267	-0.00069	-0.00156
6	-0.27308	0.666492	-1.74929	1.491419	-0.001504	0.000342	0.071243	1.473501	0.000152	-0.000602	-0.00013
	-0.37309	-0.3514	-2.75781	-1.57498	-0.00242	-0.00067	-0.02068	-9.0812	-0.00216	-0.00064	-0.0012
7	-0.14217	0.641866	-0.826095	1.496255	-0.000942	7.88E-05	0.065685	-6.396301	-0.00045	-0.000424	-0.00073
	-0.33862	-0.34814	-2.44118	-1.40577	-0.0023	-0.00049	-0.02221	-6.23544	-0.00189	-0.00057	-0.00095
8	-0.11488	0.608256	-1.706483	1.378725	-6.35E-05	0.000303	0.063945	-0.767853	-0.001401	-0.000466	-0.00084
	-0.3223	-0.34175	-2.34913	-1.36577	-0.002	-0.00035	-0.02312	-5.18634	-0.00171	-0.00051	-0.00084
9	-0.03458	0.609673	-1.776544	1.566083	0.000353	4.25E-05	0.061491	-6.193027	-0.001862	-0.000356	-0.00081
	-0.31984	-0.3402	-2.27094	-1.39002	-0.00177	-0.0003	-0.02379	-4.68805	-0.00167	-0.0005	-0.00083
10	-0.0217	0.584467	-2.177506	1.675453	0.000746	0.000213	0.058915	-5.491019	-0.002235	-0.000293	-0.00076
	-0.32907	-0.34066	-2.25723	-1.47057	-0.00174	-0.00025	-0.02483	-4.3523	-0.00175	-0.00052	-0.00082

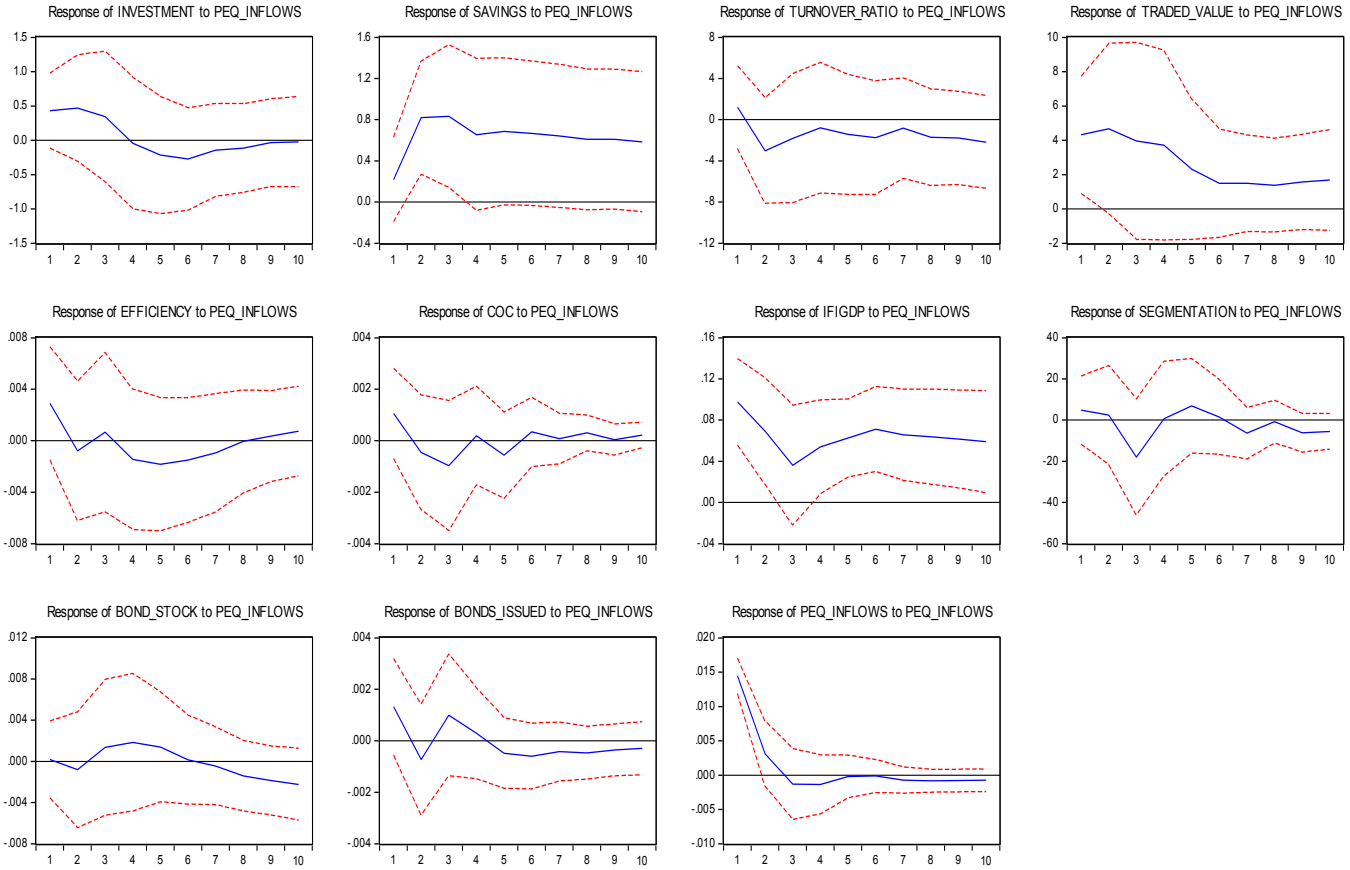


Figure 5 The impulse responses to the Portfolio equity inflow shocks

The figure presents the impulse response of the variables to one standard deviation PEQ inflow shocks, shown in table 6. Portfolio equity inflows are shown as a percentage of GDP and denoted by *PEQL*. The definitions of the variables included in this VAR model are given in table 1.

Surprisingly, the effect on stock market *turnover* is unlike the case for total capital inflows or FDI inflows. It is negative and is at steady state after period 2. Its negative peak is -3.01 at period 2. The response of *savings* to PEQ inflow shocks is positive and does not die down. It is around 0.6. *Investments*' response to PEQ shocks is positive initially. It turns to negative at period 4 and then dies down to zero. *IFIGDP* and *IFIGDPEQ* respond to PEQ inflow shocks positively. IFIGDP has a peak at the beginning of the period at 0.097. The effect reaches a steady state after year 3 but it does not die down. The positive response of *coc* to PEQ inflow shocks fluctuates after period 2. The effect dies down slowly. The response of *bonds issued* and *bond stock* to PEQ inflow shocks is positive after a small decrease at the period 2 after the shock. However, the effect is small and it dies down after year 5.

The reaction of the *segmentation* variable to PDL inflow shocks is negative with ups and downs. The multiplier at the negative peak is 26.50 (table 7 and figure 6). Then, the effect dies down after period 6. The response of *stock market turnover ratio* to the shocks is negative. The effect for stock market turnover does not die down, it stays around -5. The effect for *traded value* has a positive peak at period 1. It decreases to negative at period 3. After a slight increase starting from period 4, it reaches a steady state around 1.7.

The response of *Investment* to the PDL inflow impulse is small. It is positive initially. It continually decreases and after period 4, it turns to negative. It does not die down. In contrast, *Savings* respond to these kinds of shocks positively but still the effect is moderate. The response graphs of *bonds issued* and *bond stock* are similar. They are initially positive and have peaks at year 3 with multipliers 0.002 and 0.001 respectively. Both effects die down after year 3.

Table 7 Impulse response table for Portfolio debt inflow shocks

The table presents the impulse response of the variables to the PD inflow shocks. The analytic standard errors are shown below the responses. Portfolio debt inflows are shown as a percentage of GDP and denoted *PDL*. The definitions of the variables included in this VAR model are given in table 1.

Period	INVESTMENT	SAVINGS	TURNOVER_ RATIO	TRADED_ VALUE	EFFICIENCY	COC	IFIGDP	SEGMENTATION	BOND_ STOCK	BONDS_ ISSUED	PD_ INFLOWS
1	0.552824	0.271057	0.464262	6.087006	0.000217	0.001944	0.126053	-6.654807	-0.000805	0.001981	0.017274
	-0.26485	-0.21004	-2.02692	-1.61171	-0.00219	-0.00088	-0.02207	-7.80725	-0.0019	-0.00092	-0.00155
2	0.627292	0.694584	-1.764204	2.447366	-0.002409	-0.000892	0.020961	-15.59815	0.00074	0.000201	-0.00463
	-0.44276	-0.32902	-2.99108	-2.72524	-0.00318	-0.00133	-0.03369	-13.6338	-0.00317	-0.00129	-0.00307
3	0.03594	0.400937	-9.713691	-2.719708	-9.79E-05	0.000179	0.067218	-1.468777	0.001755	0.001981	0.001416
	-0.5675	-0.41987	-3.81661	-3.302	-0.00374	-0.00156	-0.03799	-17.3307	-0.00393	-0.00145	-0.00344
4	0.031974	0.63045	-2.49079	0.237935	-0.00049	0.000264	0.067639	-26.50864	0.001153	-9.29E-05	0.001653
	-0.54293	-0.41381	-4.08898	-2.78628	-0.00316	-0.00143	-0.03106	-16.6405	-0.00355	-0.00112	-0.00292
5	-0.398907	0.769872	-6.355171	-0.038897	0.001242	0.001265	0.060168	7.525119	0.000201	0.000567	-0.00145
	-0.52742	-0.47443	-4.52959	-2.60352	-0.00311	-0.00108	-0.0346	-15.3718	-0.00345	-0.00112	-0.00216
6	0.019128	0.787706	-6.615558	1.174167	0.002127	-0.00017	0.060113	-9.498482	0.000356	0.000518	0.001529
	-0.50911	-0.51399	-4.41504	-2.40322	-0.00308	-0.00084	-0.03347	-13.4803	-0.0033	-0.00096	-0.00178
7	-0.145569	0.843819	-5.685024	1.598806	0.003453	-0.000225	0.058236	-1.913217	0.000109	0.000262	-0.00066
	-0.50048	-0.53974	-4.38915	-2.22347	-0.00297	-0.00073	-0.03504	-11.2167	-0.00301	-0.00092	-0.00158
8	-0.301231	0.859917	-6.286624	1.342582	0.002416	-0.000145	0.065423	2.871012	0.000247	0.000199	0.000579
	-0.48263	-0.56485	-4.32502	-2.13764	-0.00272	-0.00053	-0.03665	-9.24702	-0.00275	-0.00078	-0.00129
9	-0.356943	0.850556	-5.016756	1.783125	0.002414	-0.000171	0.068085	-5.393227	-0.000261	-0.0002	0.000128
	-0.47736	-0.58619	-4.23264	-2.06816	-0.00262	-0.00045	-0.03905	-7.02101	-0.00255	-0.00073	-0.00106
10	-0.449793	0.825545	-4.828794	1.843523	0.00226	-4.15E-05	0.071905	-0.662209	-0.000386	-0.00011	7.14E-05
	-0.48203	-0.59963	-4.15883	-2.06939	-0.0025	-0.00033	-0.04165	-6.25087	-0.00241	-0.00067	-0.00085

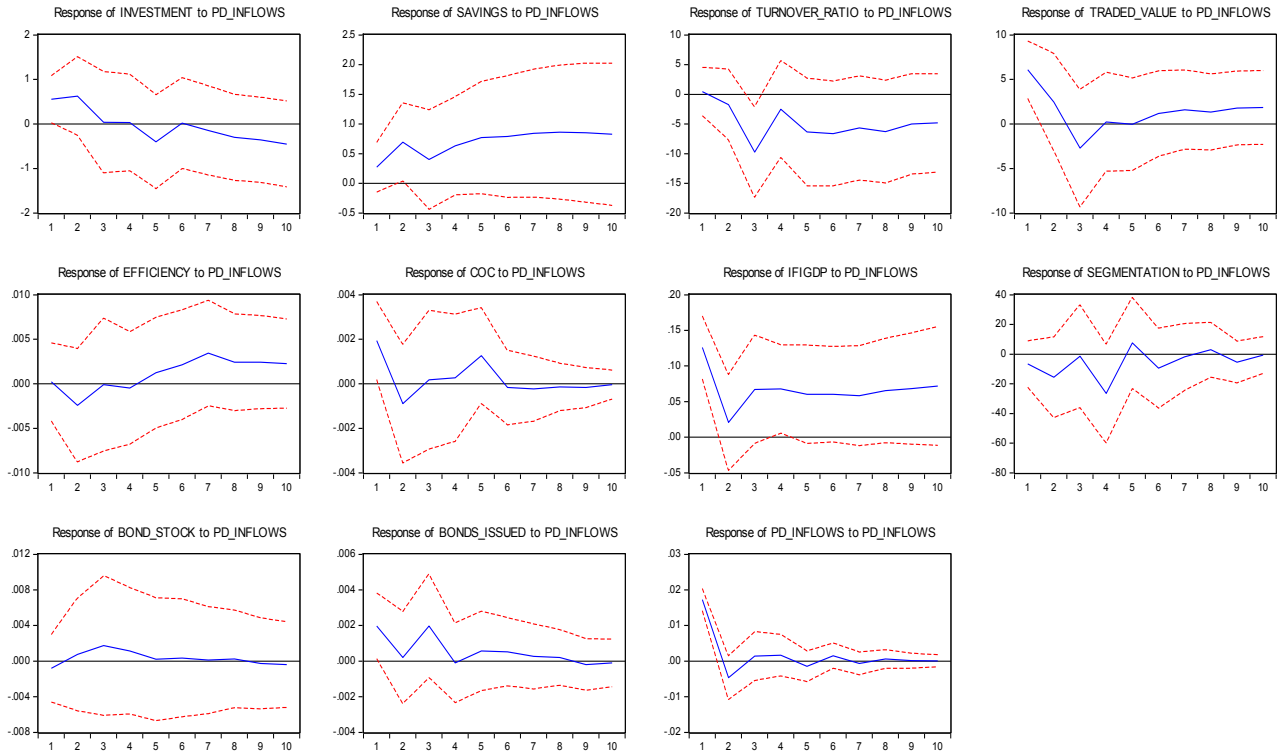


Figure 6 The impulse responses to the Portfolio debt inflow shocks

The figure presents the impulse response of the variables to one standard deviation PD inflow shocks, shown in table 7. Portfolio debt inflows are shown as a percentage of GDP and denoted *PDL*. The definitions of the variables included in this VAR model are given in table 1.

The response of *segmentation* to total equity inflow shocks is negative initially. After a temporary positive effect at years 3-6, it dies down (table 8 and figure 7). The effect on *stock market turnover ratio* is positive right after the shock. Then it turns to negative for 2 periods. It again increases to positive and dies down after 8 periods. The response of stock market *traded value* as a percentage of GDP is positive but the multipliers decrease after the first period. The responses of *investment* and *savings* are both small and positive. Investment falls more than savings after the shock, especially in periods 4 to 6 where it is negative. The effects do not die down but reach a steady state around 0.4. The reaction of *IFIGDP* to total debt inflow shocks is small and positive. It does not die down; the response reaches a steady state at 0.045. The response of *efficiency* to the shocks is small and negative with a positive response right after the shock. The response of *coc* to total equity shocks is positive initially but it decreases at period 2 and is negative onwards. The response of *bonds issued* and *bond stock* is small and negative.

The response of *segmentation* to total debt inflow shocks is negative up to period 3 and the multiplier is -17.39 at period 2. The effect then fluctuates and dies down (table 9 and figure 8). The response of *stock market turnover ratio* to the shocks is negative and the reaction does not die down. It stays around -2. The stock market *traded value* reacts to total equity inflows shocks positively. Its peak is at the first period. The multiplier at the peak is 4.54 and the effect dies down after 4 periods.

The response of *savings* is positive despite being small. The effect does not die down. The impulse response graph of *investment* differentiates from that of savings in the sense that investments initially react positively to total equity inflow shocks. Then it starts decreasing and turns to negative. It dies down after 5 periods.

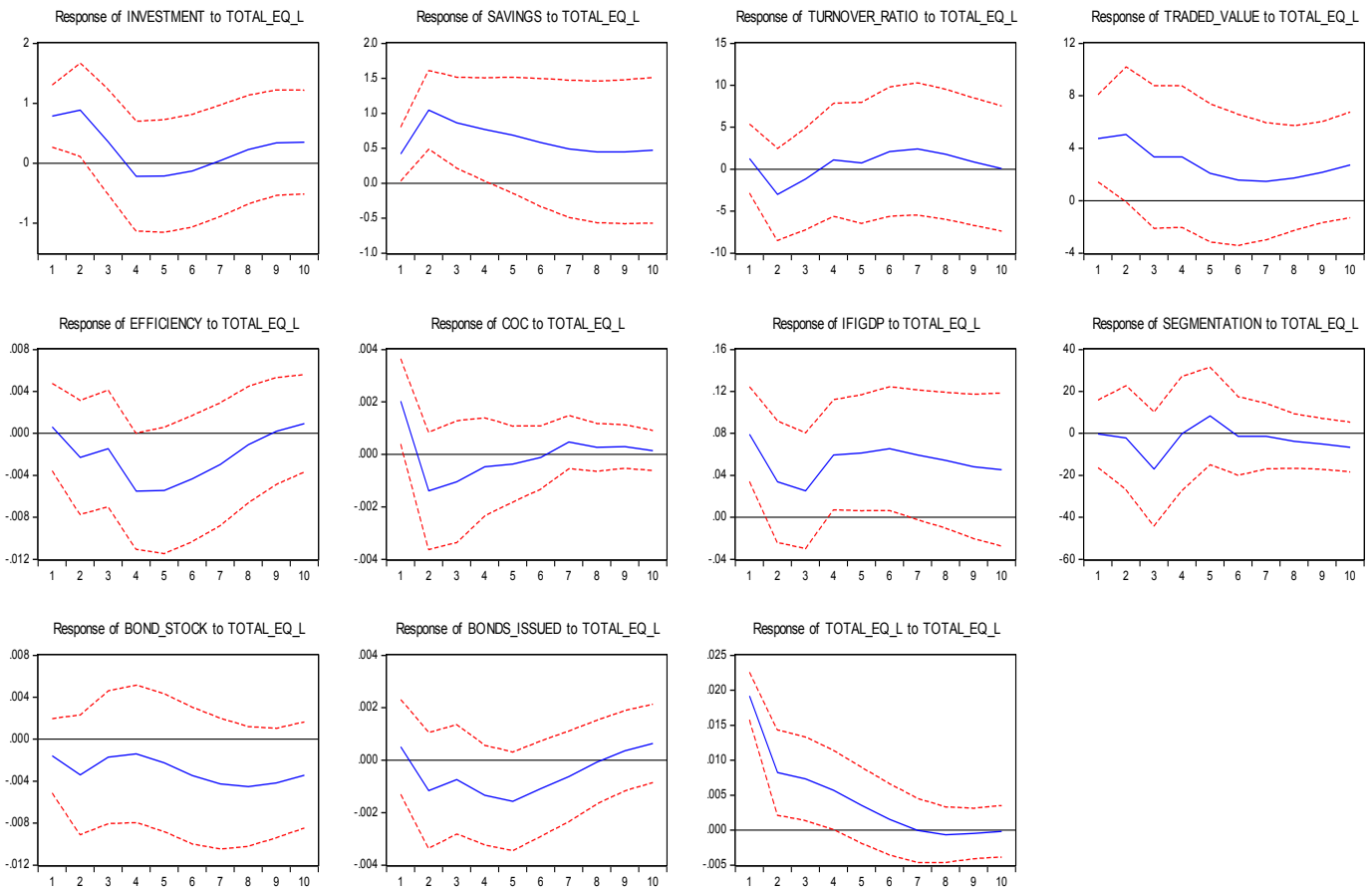


Figure 7 The impulse responses to the Total Equity inflow shocks

The figure presents the impulse response of the variables to one standard deviation PD inflow shocks, shown in table 8. *TOTAL_EQ_L* denotes total equity inflows/ GDP. The definitions of the variables included in this VAR model are given in table 1.

Table 8 Impulse response table for Total Equity inflow shocks

The table presents the impulse response of the variables to the Total Equity inflow shocks. The analytic standard errors are shown below the responses. *TOTAL_EQ_L* denotes total equity inflows/ GDP. The definitions of the variables included in this VAR model are given in table 1.

Period	INVESTMENT	SAVINGS	TURNOVER_ RATIO	TRADED_ VALUE	EFFICIENCY	COC	IFIGDP	SEGMENTATION	BOND_ STOCK	BONDS_ ISSUED	TOTAL_EQ_L
1	0.784477	0.416973	1.272714	4.745426	0.000601	0.002025	0.079278	-0.275275	-0.00158	0.000507	0.019204
	-0.25987	-0.19334	-2.05452	-1.66486	-0.00208	-0.00081	-0.02257	-8.08715	-0.00176	-0.0009	-0.0017
2	0.888305	1.046704	-3.004067	5.049185	-0.002302	-0.001393	0.033698	-2.154044	-0.0034	-0.00116	0.008215
	-0.38952	-0.28072	-2.74059	-2.57852	-0.00272	-0.00112	-0.02896	-12.4133	-0.00285	-0.0011	-0.00305
3	0.354083	0.864053	-1.169407	3.324089	-0.001446	-0.001043	0.025216	-17.02651	-0.00173	-0.00074	0.007307
	-0.43616	-0.32567	-3.03899	-2.7272	-0.00278	-0.00116	-0.02752	-13.567	-0.00317	-0.00104	-0.00299
4	-0.21914	0.765661	1.094405	3.346716	-0.005517	-0.000475	0.059486	-0.100027	-0.0014	-0.00134	0.005711
	-0.45784	-0.37052	-3.37327	-2.69582	-0.00277	-0.00093	-0.02624	-13.599	-0.00328	-0.00095	-0.00284
5	-0.214744	0.684315	0.752207	2.094792	-0.005449	-0.000374	0.061434	8.298125	-0.00225	-0.00157	0.003532
	-0.47065	-0.41503	-3.61306	-2.6386	-0.00302	-0.00072	-0.02771	-11.6118	-0.00329	-0.00094	-0.00271
6	-0.126883	0.580508	2.083783	1.574329	-0.004313	-0.000117	0.065468	-1.338824	-0.00348	-0.00109	0.001508
	-0.46965	-0.45796	-3.86384	-2.49641	-0.003	-0.0006	-0.02946	-9.37246	-0.00326	-0.00091	-0.00256
7	0.04197	0.491291	2.407515	1.475936	-0.002945	0.000467	0.059377	-1.430944	-0.00426	-0.00062	-6.32E-05
	-0.46541	-0.49016	-3.93739	-2.23562	-0.00293	-0.00051	-0.0309	-7.8077	-0.00312	-0.00086	-0.00229
8	0.225253	0.446311	1.762916	1.721652	-0.001087	0.000262	0.054172	-3.731401	-0.00452	-8.14E-05	-0.00068
	-0.45292	-0.50576	-3.88548	-1.99527	-0.00277	-0.00045	-0.03236	-6.50381	-0.00285	-0.0008	-0.00198
9	0.340946	0.447256	0.880274	2.165171	0.000205	0.000297	0.048326	-5.016127	-0.00418	0.000353	-0.0005
	-0.44028	-0.5147	-3.80198	-1.93057	-0.00254	-0.00041	-0.03433	-6.06179	-0.00261	-0.00076	-0.0018
10	0.351558	0.47019	0.083294	2.722458	0.000944	0.00014	0.045249	-6.623353	-0.00343	0.000635	-0.00018
	-0.43196	-0.52045	-3.72705	-2.01326	-0.00232	-0.00039	-0.03649	-5.93091	-0.00253	-0.00075	-0.00184

We have to note that the multipliers for these variables are quite small. The response of *bonds stock* and *bonds issued* is positive though being small. *IFIGDP* responds positively to total debt inflow shocks. *Efficiency* also responds positively after an initial negative reaction.

Regarding the impulse responses of the control variables to capital flows shocks, *number of firms listed* was the most responsive control variable (table 10 and figure 9). The response of number of listed firms listed to total capital inflow shocks is significantly large and permanently positive. It has an initial increase after the shock and then decreases but the multiplier does not go below 10. The effect reaches a steady state after period 4 and the multiplier stays around 10. The response does not die down. The graph for the response to the FDI inflows is similar in terms of its peak and the shape however the reaction of number of firms listed is negative this time. The response is still large but smaller compared to that for total capital inflows. It has a sharp decline to -7.73 after period 1 but recovers at period 4. The multiplier stays around 4 at the steady state. Again, the graph for the response for total equity and total debt inflow shocks is similar to that for the total inflows and FDI inflows but the effect is quite small relatively. It is mainly around zero. There is an initial increase and the reaction reaches a steady state after that. The peaks are at periods 2 and 3 and the multipliers are 0.0072 and 0.0089 respectively. The response to the PEQ inflow shocks is very similar to that for total capital inflows. It is as large and it is positive.

There is a sharp increase in the number of firms listed at period 2. It reaches a steady state at period 5 and the multiplier stays in the 5-8 band. The response to PDL shocks is quite limited compared to the response to the other functions. After an

initial increase at the beginning, there is a negative peak at period 2. It stays around zero after period 3.

The reaction of another control variable, *broad money* is worth noting. It is not as powerful as the results for the number of listed firms but it still is large relative to the other control variables. The response graphs for total debt and equity inflows are very similar in shape, with its peak and the increase and decrease patterns. However, the response to total equity inflows is negative in all periods but the response to total debt inflow shocks is positive with only a negative multiplier at period 2 (Figure 10). The effect does not die down in each case and reaches a steady state after period 4.

Variance decompositions

Unlike impulse responses, variance decomposition separates the variation in the endogenous variables into each variables shock. Thus, the relative significance of each variable in explaining the variation in the endogenous variable is provided. Starting with the variables explaining capital inflows may also be useful for further understanding the analysis in the paper. Similar to the results we got from the impulse response tables and the granger causality test result, an important part of the variation in total capital inflows is explained by *investment, IFIGDP* and *traded value*. An interesting result for FDI inflows is that 77% of the variation in FDI inflows is explained by itself. Only a small portion is explained by t*urnover*, *IFIGDP* and *efficiency*. *Distributed profits* are explained largely by investment (23%), and traded value (26%) and IFIGDP (15%). Since portfolio inflows are closely related to financial market variables, *PEQ inflows* are explained by stock market *traded value* (11%). In addition to stock market *traded value*, *IFIGDP* also explains a significant percentage of *PD inflows* (19%). *PD inflows* are explained 27% by *traded value*, 22% by *IFIGDP* and 37% by its own shocks. *Investment*,

Table 9 Impulse response table for Total Debt inflow shocks

The table presents the impulse response of the variables to the Total Debt inflow shocks. The analytic standard errors are shown below the responses. *TOTAL_DL* denotes the total debt inflows/ GDP. The definitions of the variables included in this VAR model are given in table 1.

Period	INVESTMENT	SAVINGS	TURNOVER_ RATIO	TRADED_ VALUE	EFFICIENCY	COC	IFIGDP	SEGMENTATION	BOND_ STOCK	BONDS_ ISSUED	TOTAL_DL
1	0.6563	0.1814	0.0588	4.5500	-0.0018	0.0018	0.0872	-13.2485	-0.0017	0.0009	0.0364
	-0.2626	-0.2043	-2.0635	-1.7467	-0.0021	-0.0009	-0.0224	-7.9769	-0.0018	-0.0009	-0.0032
2	0.9978	0.4946	-1.2648	2.3837	0.0027	-0.0017	-0.0058	-17.3958	0.0020	0.0009	0.0087
	-0.3927	-0.2990	-2.7518	-2.6855	-0.0027	-0.0012	-0.0293	-12.6650	-0.0028	-0.0011	-0.0060
3	-0.1067	0.1800	-2.8508	1.3613	0.0012	0.0009	0.0732	4.8564	0.0025	0.0017	0.0085
	-0.4156	-0.3154	-2.9451	-2.4733	-0.0026	-0.0013	-0.0272	-13.5582	-0.0027	-0.0010	-0.0060
4	0.0898	0.4888	-1.5341	0.9921	-0.0004	-0.0012	0.0384	-5.3197	0.0046	0.0003	0.0016
	-0.4188	-0.3673	-3.3312	-2.4044	-0.0024	-0.0011	-0.0301	-12.9407	-0.0028	-0.0009	-0.0055
5	-0.4782	0.3878	-2.7869	0.3269	0.0010	0.0008	0.0609	4.8668	0.0029	0.0006	0.0009
	-0.3869	-0.3896	-3.2583	-2.1259	-0.0023	-0.0009	-0.0276	-10.7616	-0.0027	-0.0008	-0.0048
6	-0.2157	0.4902	-1.2048	1.0738	0.0004	0.0000	0.0467	-8.8294	0.0033	0.0002	0.0029
	-0.3764	-0.4174	-3.3037	-1.8604	-0.0022	-0.0008	-0.0302	-9.5358	-0.0025	-0.0007	-0.0042
7	-0.3542	0.4358	-2.8179	0.6736	0.0019	0.0002	0.0514	4.2401	0.0024	0.0001	0.0013
	-0.3588	-0.4418	-3.1910	-1.7214	-0.0020	-0.0007	-0.0308	-8.1641	-0.0024	-0.0006	-0.0035
8	-0.2923	0.4752	-2.2907	0.7447	0.0015	-0.0002	0.0500	-3.3049	0.0023	0.0000	0.0019
	-0.3647	-0.4639	-3.1602	-1.7024	-0.0019	-0.0006	-0.0333	-6.5611	-0.0023	-0.0006	-0.0031
9	-0.3636	0.4292	-2.4840	0.5338	0.0019	0.0001	0.0499	-0.7606	0.0018	-0.0001	0.0006
	-0.3740	-0.4848	-3.1120	-1.7445	-0.0018	-0.0005	-0.0355	-5.8382	-0.0023	-0.0005	-0.0028
10	-0.3648	0.4145	-2.1570	0.6722	0.0017	-0.0001	0.0505	-3.0847	0.0016	-0.0001	0.0010
	-0.3879	-0.5032	-3.1232	-1.7975	-0.0018	-0.0004	-0.0383	-4.9580	-0.0022	-0.0005	-0.0027

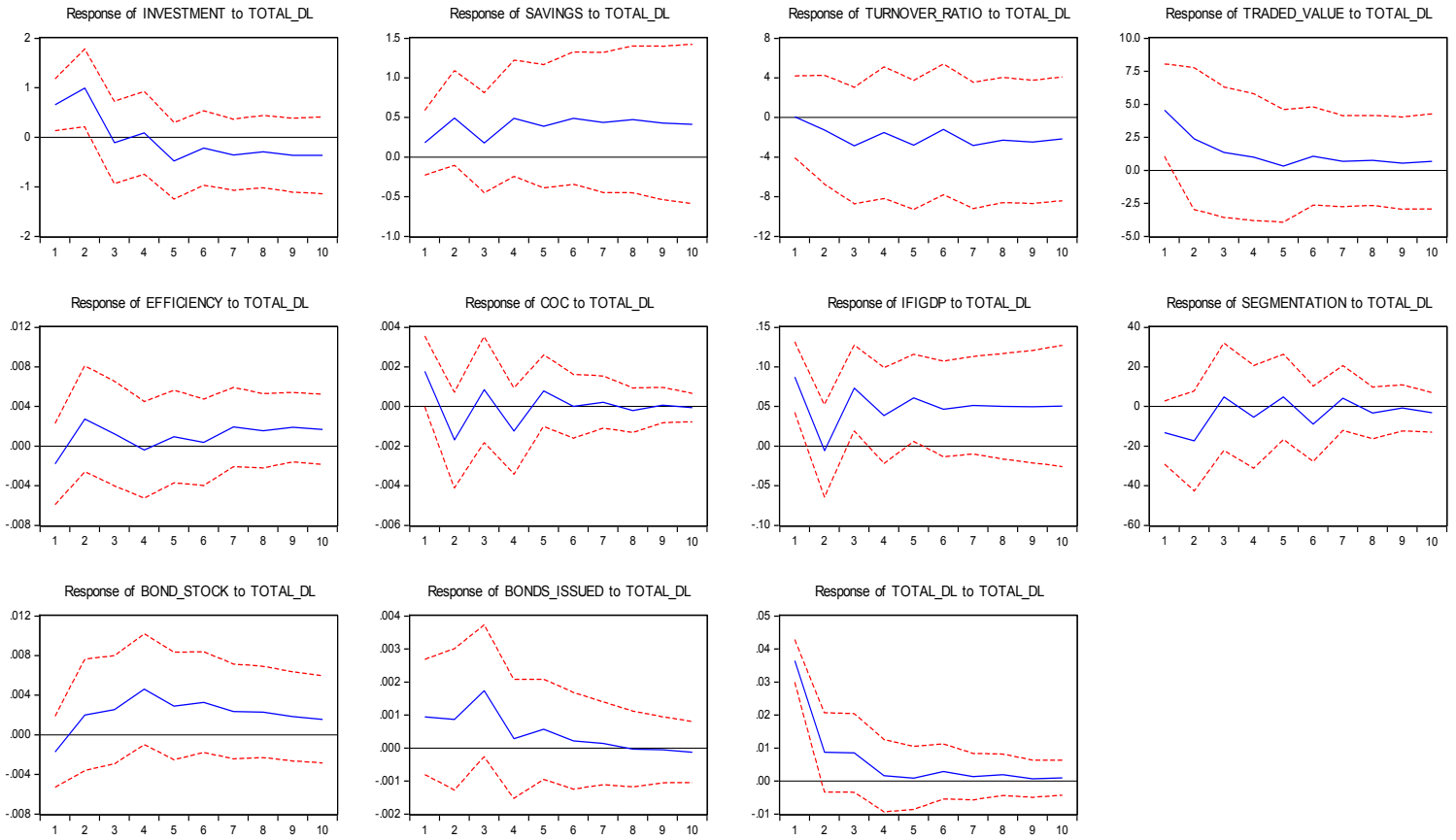


Figure 8 The impulse responses to the Total Debt inflow shocks

The figure presents the impulse response of the variables to one standard deviation PD inflow shocks, shown in table 9. *TOTAL_DL* denotes the total debt inflows/ GDP. The definitions of the variables included in this VAR model are given in table 1.

Table 10 The response of number of firms listed to shocks in capital inflows

The table presents the impulse response of the number of firms listed to the capital inflow shocks. *TOTAL_FL* is the total capital inflows/ GDP. *FDIL* is total FDI inflows/GDP. Portfolio equity and portfolio debt inflows are shown as a percentage of GDP and denoted by *PEQL* and *PDL*, respectively. Total equity and total debt inflows are also tested as a part of the instrumental classification of the Balance of Payments reporting. *TOTAL_EQ_L* denotes total equity inflows/ GDP and *TOTAL_DL* denotes the total debt inflows/ GDP. The analytic standard errors are shown below the responses.

Period	TOTAL_DL	TOTAL_EQ_L	PDL	PEQL	FDIL	TOTAL_FL
1	10.925	8.113	8.917	9.102	- 1.020	11.527
	- 2.405	- 2.477	- 2.324	- 2.197	- 2.665	- 2.290
2	15.992	12.274	7.924	18.090	- 7.736	15.980
	- 5.009	- 4.861	- 4.782	- 4.400	- 5.211	- 4.670
3	16.355	12.391	- 0.845	12.830	- 6.396	14.342
	- 6.894	- 6.672	- 7.006	- 6.426	- 7.150	- 6.627
4	15.719	11.680	- 4.397	8.360	- 5.220	12.948
	- 8.664	- 8.242	- 8.339	- 7.789	- 8.894	- 8.234
5	14.348	9.769	- 7.397	5.595	- 4.918	10.948
	- 10.095	- 9.523	- 9.240	- 8.144	- 10.430	- 9.286
6	13.723	8.604	- 9.469	5.940	- 4.126	10.418
	- 11.122	- 10.537	- 9.900	- 7.974	- 11.721	- 9.887
7	13.309	7.602	- 11.083	6.922	- 3.772	10.116
	- 11.867	- 11.317	- 10.464	- 7.798	- 12.688	- 10.253
8	13.160	6.952	- 12.437	7.858	- 3.663	10.025
	- 12.442	- 11.946	- 10.976	- 7.897	- 13.400	- 10.521
9	13.087	6.513	- 13.536	8.442	- 3.742	10.002
	- 12.934	- 12.491	- 11.474	- 8.226	- 13.918	- 10.746
10	13.009	6.197	- 14.609	8.667	- 3.972	9.948
	- 13.397	- 12.999	- 11.964	- 8.674	- 14.320	- 10.956

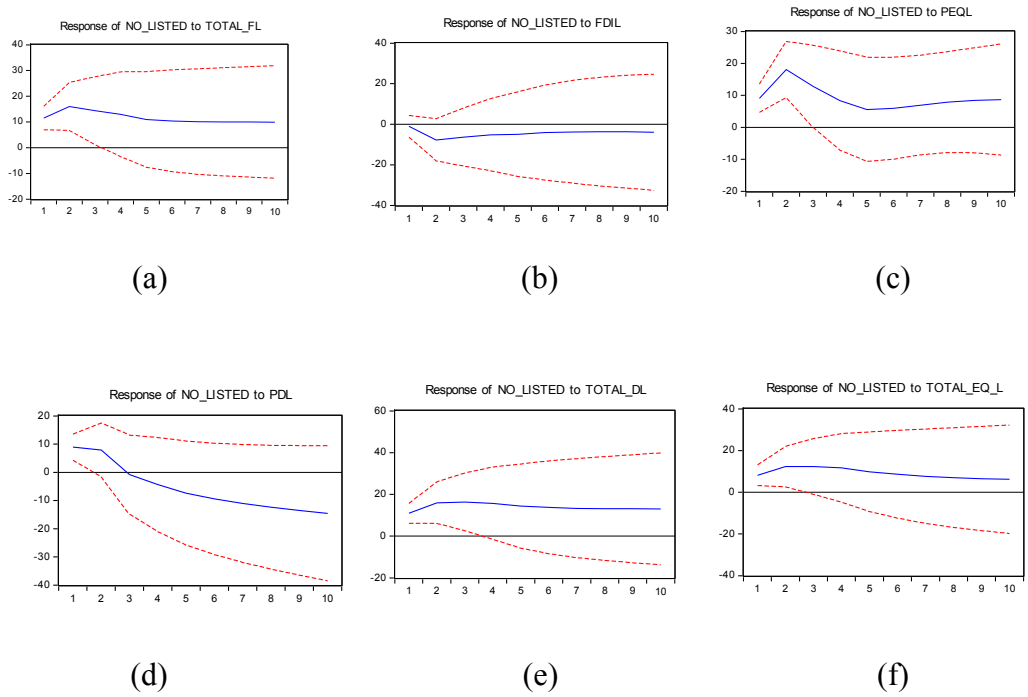


Figure 9 The impulse responses of number of firms listed to the capital inflow shocks

The figure presents the impulse response of the number of firms listed to one standard deviation capital inflow shocks, shown in table 10. *TOTAL_FL* is the total capital inflows/ GDP. *FDIL* is total FDI inflows/GDP. Portfolio equity and portfolio debt inflows are shown as a percentage of GDP and denoted by *PEQL* and *PDL*, respectively. Total equity and total debt inflows are also tested as a part of the instrumental classification of the Balance of Payments reporting. *TOTAL_EQ_L* denotes total equity inflows/ GDP and *TOTAL_DL* denotes the total debt inflows/ GDP. The definitions of the variables included in this VAR model are given in table 2.

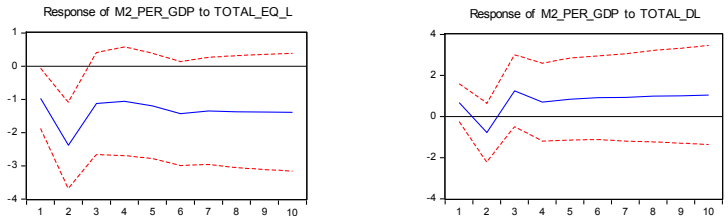
bonds issued and *turnover* ratio also have a limited explanatory power. In explaining *total equity inflows*, we observe the effect of both *FDI* and *PEQ* inflows such that total equity inflows are explained significantly by *investment, traded value* and *coc*. However, *total debt inflows* are explained in large by financial market variables and the international integration variable- *IFIGDP,* as well as *investment.*

Total inflows explain rising percentage of *Investment* and international *segmentation* variables. It reaches 8.7% for *investment* and 4% for *segmentation* at maximum. *Total inflows* also explain *traded value* and external debt variables; to some extent.*FDI inflows* explain rising per cent of *cost of capital* (4.8%), *turnover ratio* (5%) and *bonds stock* (12%) and *bonds issued* (6%). *PEQ inflows* explain 9% of the variance in the international integration measure, *IFIGDP* and 5% of that of *segmentation*. They also explain the variation in *coc, traded value* and *savings*. *PD inflows* explain rising percentage of the variance in stock market *traded value*. They also explain around 3% of the variance in *turnover ratio* and *segmentation*.

Total equity inflows explain an important part of the variation in *bonds stock* towards the end of the period. They also contribute in explaining *turnover ratio, traded value, efficiency* and *bonds issued*. *Total debt liabilities* help explain the variation in *bonds stock* and *investment* relatively in large compared to other variables. They also explain *efficiency* and *bonds issued*, however, the explanatory power is limited.

Control variables are also checked for variance decomposition. The results for the variables that have limited explanatory power are not reported. Regarding the results for our variance decomposition analysis of the control variables, the capital inflows' explanatory power on the variation in the *number of firms listed* has to

	IMPULSE	
Period	TOTAL_EQ_L	TOTAL_DL
1	- 0.968	0.679
	- 0.455	- 0.460
2	- 2.382	- 0.784
	- 0.650	- 0.710
3	- 1.127	1.252
	- 0.769	- 0.872
4	- 1.061	0.698
	- 0.820	- 0.947
5	- 1.199	0.844
	- 0.793	- 0.997
6	- 1.434	0.916
	- 0.782	- 1.017
7	- 1.352	0.928
	- 0.805	- 1.063
8	- 1.374	0.991
	- 0.842	- 1.112
9	- 1.384	1.003
	- 0.868	- 1.155
10	- 1.392	1.047
	- 0.889	- 1.206



(a) (b)

Figure 10 The response of broad money to shocks in capital inflows
The figure presents the impulse response of the broad money/GDP to the one standard deviation capital inflow shocks . *TOTAL_EQ_L* denotes total equity inflows/ GDP and *TOTAL_DL* denotes the total debt inflows/ GDP

noted. Although decreasing, *PEQ inflows* explain 18- 26 percent of the variance in the *number of firms listed* initially. *PD inflows'* explanatory power increases and reaches 23% at the end of period 10. Relatively small but *total debt inflows* do explain rising percentage of the variance in the number of listed firms and reaches 5% in the last period. A macroeconomic variable, *tbill*, is explained by *total capital inflows* and the percentage rises every period. The effect does not reach a steady state. *Total equity inflows* explain 7% of the variance in *tbills* and reached a steady state after period 6. Among all the functional categories, *FDI inflows* has largest power in explaining *Tbills*. It rises to 15% at the end of the last period. The explanatory power of *total capital inflows* in the size of the trade is large compared to the other variables; 15% and the effect reaches a steady state after period 7. Similarly, *total debt inflows* explanatory power is 10% at the steady state.

FDI inflows and *total debt inflows* become more important every period in explaining the variation in *WGI*. The effect reaches 10% and 6% for *FDI inflows* and *total debt inflows*, respectively, in 10 periods.

Testing procedures

Granger causality test:

Granger Causality test shows causality relationship between series. It determines if an increase/ decrease in one series causes a similar increase/ decrease in other series. If variable y causes variable z, then, the lags of y1 should be significant in the equation for z. when this is true, y is said to granger-cause z. however, Granger causality means only a correlation between the current value of y and the past values of z; it does not imply that the movements of y cause the movements of z.

Testing analysis:

We studied the Granger causality test and the results are as follows: To get a better understanding of the capital inflows, they were used as the dependent variables, too. The results show a granger causality relationship between *FDI inflows* and *turnover ratio*; *PEQ inflows* and *savings* and *IFIGDP*; and *total debt inflows* and *efficiency*, *investment* and *bond stock* (Table 11).

First of all, we used capital inflows as the dependent variable and the results are interesting. *Investment, volatility* and *efficiency* granger cause *total capital inflows* while stock market *traded value* is found to granger cause *PEQ inflows*. Between *total equity inflows* and many variables, granger causality relationship is observed. We can say that i*nvestments, savings, volatility, efficiency, segmentation* and *bonds issued* granger cause *total equity inflows*. Similarly, financial markets measures, *volatility* and *efficiency*, and *investments* granger cause *total debt inflows*. It is observed that when the dependent variable is the *coc* and the cause variable is *FDI inflows*, the p value of the test is 0. FDI inflows granger cause *coc* with a significance of 5%. On the other hand, *distributed profits* are found to granger cause *investment* and *bonds issued* with 10% and 5% significance respectively. The p-value of the tests are 0.0052 and 0.0391.

PEQ granger cause integration measures, *IFIGDP* and *coc* with 5% and 10% significance levels respectively. *PDL inflows* granger cause *traded value* at 10% significance level while these inflows granger cause *segmentation* with 10% significance. *Total equity inflows* granger cause *coc* with 5% significance. *Total debt inflows* granger cause *efficiency* with 1% significance.

Table 11 Granger causality test results for the main variables

The table presents the Granger causality test results for the VAR model. *FDI inflows* is total FDI inflows/GDP. Portfolio equity and portfolio debt inflows are shown as a percentage of GDP and denoted by *PEQ inflows* and *PD inflows*, respectively. Total equity and total debt inflows are also tested as a part of the instrumental classification of the Balance of Payments reporting. *Total equity inflows* denotes total equity inflows/ GDP and *Total debt inflows* denotes the total debt inflows/ GDP. Distribution of profits is also another variable, *Distributed profits* and is classified under FDI inflows. The definitions of the variables are given in table 1. Chi-square, and p-values are given.

	Chi-square	p-value	Null hypothesis	Decision
FDI inflows	6.92945	0.0313	FDI inflows do not Granger-cause coc	Reject the null hypothesis
Distributed profits	4.924346	0.0852	Distributed profits do not Granger-cause investment	Reject the null hypothesis
Distributed profits	11.92817	0.0026	Distributed profits do not Granger-cause Bonds issued	Reject the null hypothesis
PEQ inflows	4.716929	0.0946	PEQ inflows do not Granger-cause coc	Reject the null hypothesis
PEQ inflows	7.582988	0.0226	PEQ inflows do not Granger-cause IFIGDP	Reject the null hypothesis
PD inflows	5.144169	0.0764	PD inflows do not Granger-cause traded value	Reject the null hypothesis
PD inflows	5.976397	0.0504	PD inflows do not Granger-cause segmentation	Reject the null hypothesis
Total equity inflows	8.665712	0.0131	Total equity inflows do not coc	Reject the null hypothesis
Total debt inflows	4.604593	0.1	Total debt inflows do not Granger-cause efficiency	Reject the null hypothesis
Savings	6.174619	0.0456	Savings do not Granger-cause PEQ inflows	Reject the null hypothesis
IFIGDP	11.36115	0.0034	IFIGDP do not Granger-cause PEQ inflows	Reject the null hypothesis
Investment	6.142824	0.0464	Investment do not Granger-cause Total debt inflows	Reject the null hypothesis
Efficiency	6.64521	0.0361	Efficiency do not Granger-cause Total debt inflows	Reject the null hypothesis
Bond stock	5.129246	0.0769	Bond stock do not Granger-cause Total debt inflows	Reject the null hypothesis
Turnover Ratio	4.781226	0.0916	Turnover ratio do not Granger-cause FDI inflows	Reject the null hypothesis

The results for the control variables confirm that *WGI, number of listed firms, size of trade* and the ratio of *broad money to GDP* granger cause *total capital inflows* (Table 12). There is also a causal relationship between *FDI inflows* and the *size of trade* and *broad money*; these variables granger cause *FDI inflows*. Also, an increase in *WGI* leads to an increase in *PEQ inflows*.

Our results for the impact of capital inflows on macroeconomic, financial and *segmentation* variables suggest that *PD inflows* granger *cause broad money* and *number of listed firms* with 5% significance. The p values of the tests are 1% and 5% respectively. *Total equity inflows* as well as *total debt inflows* also granger cause *broad money* with 5% significance. *Total equity inflows* granger cause another macroeconomic variable which is the *tbill* rate. We also find that there is a two way relation between *broad money* and *total debt inflows*. The variables granger cause one another.

Cointegration tests

For robustness of our international integration results, we will use the risk diversification measures and calculate the rate of return as explained previously. Cointegration tests are used to find the long-term relationship between the variables. Cointegration test shows the variables whose linear combination is stationary. This implies that these series might be non-stationary and their cointegration might deviate in the short run but they will be move together over time.

The cointegration test between *rate of return* on FDI assets and domestic stock market return indicate a low degree a risk sharing for the developed emerging countries because null hypothesis is of no cointegration is rejected with 1%

Table 12 Granger causality test results for the control variables

The figure presents the variance decompositions for the VAR model. Portfolio equity and portfolio debt inflows are shown as a percentage of GDP and denoted by *PEQ inflows* and *PD inflows*, respectively. Total equity and total debt inflows are also tested as a part of the instrumental classification of the Balance of Payments reporting. *Total equity inflows* denotes total equity inflows/ GDP and *Total debt inflows* denotes the total debt inflows/ GDP. The definitions of the variables are given in table 1. Chi-square, and p-values are given.

Cause variable	Chi-square	p-value	Dependent variable	Decision
WGI	6.671021	0.0356	Total capital inflows	Reject the null hypothesis
No listed firms	7.30301	0.026	Total capital inflows	Reject the null hypothesis
Size of trade	4.612931	0.0996	Total capital inflows	Reject the null hypothesis
Size of trade	7.502198	0.0235	FDI İnflows	Reject the null hypothesis
Broad money/ GDP	7.128842	0.0283	FDI İnflows	Reject the null hypothesis
WGI	7.878735	0.0195	PEQ inflows	Reject the null hypothesis
PD inflows	7.100623	0.0287	Broad money/ GDP	Reject the null hypothesis
PD inflows	13.53776	0.0011	No listed firms	Reject the null hypothesis
Total equity inflows	8.621598	0.0134	Tbill	Reject the null hypothesis
Total equity inflows	7.677801	0.0215	Broad money/ GDP	Reject the null hypothesis
Total debt inflows	8.356043	0.0153	Broad money/ GDP	Reject the null hypothesis
Total debt inflows	7.746552	0.0208	Size of trade	Reject the null hypothesis
Broad money/ GDP	8.375972	0.0152	Total debt inflows	Reject the null hypothesis

significance level (Table 13). Thus, we can conclude that FDI assets do not provide diversification against fluctuations in the domestic financial market. When we do same analysis for PEQ assets, the results are similar. No cointegration hypothesis is rejected with 1% significance that implies that PEQ assets do not provide any risk sharing.

The cointegration tests for foreign liabilities and domestic stock market return give interesting results (Table 14). The real *rate of return* on FDI liabilities are observed to co-move strongly with the domestic stock market that implies that there is space for international risk sharing in the developed emerging markets. Similarly, PEQ liability real rates of return commove with domestic stock market returns. We can conclude that international risk sharing exists and that selling shares to foreign investors hedges the domestic equity market risk. Diversification can be attained via investing in these developed emerging countries.

Results

The capital inflows gave satisfactory results in explaining the international segmentation and financial markets measures. Consistent with our hypothesis, *segmentation* was observed to decrease with increased flows while *stock market turnover ratio* and the stock market *value traded/ GDP* increase with increased flows. Although the results for the effect of flows on *volatility* are not strong, we can say that the coefficient of PD inflows is negative as well as the response of volatility to total capital inflows. We have contradictory results for *investment* and *savings*. Inline with our hypothesis and the literature, savings and investments are found to rise with increasing capital inflows except for total debt inflows. *Efficiency* is found to increase with total capital inflows that also proves our hypothesis. We also

Table 13 Cointegration test – Rate of return on FDI and PEQ assets and domestic stock market return

The table reports the cointegration test results for the rate of return on FDI assets and Portfolio equity assets. Panel A shows the results for the FDI assets and the domestic stock market return. Panel B shows the test results for the Portfolio equity assets and the domestic stock market return. *domesticR* is the domestic stock market return. *RORonFDIA* is the rate of return on the FDI assets. *RORonPEQA* denotes the rate of return on portfolio equity assets.

Panel A

Series: *domesticR, RORonFDIA*

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.285	24.754	15.495	0.002
At most 1 *	0.165	8.675	3.841	0.003

Trace test indicates 2 cointegrating eqn(s) at the 0.05 level

* denotes rejection of the hypothesis at the 0.05 level

**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.285	16.079	14.265	0.026
At most 1 *	0.165	8.675	3.841	0.003

Max-eigenvalue test indicates 2 cointegrating eqn(s) at the 0.05 level

* denotes rejection of the hypothesis at the 0.05 level

**MacKinnon-Haug-Michelis (1999) p-values

Panel B

Series: *domesticR, RORonPEQA*

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.326	28.602	15.495	0.000
At most 1 *	0.135	7.684	3.841	0.006

Trace test indicates 2 cointegrating eqn(s) at the 0.05 level

* denotes rejection of the hypothesis at the 0.05 level

**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.326	20.918	14.265	0.004
At most 1 *	0.135	7.684	3.841	0.006

Max-eigenvalue test indicates 2 cointegrating eqn(s) at the 0.05 level

* denotes rejection of the hypothesis at the 0.05 level

**MacKinnon-Haug-Michelis (1999) p-values

Table 14 Cointegration test – Rate of return on FDI and PEQ liabilities and domestic stock market return

The table reports the cointegration test results for the rate of return on FDI liabilities and Portfolio equity liabilities. Panel A shows the results for the FDI liabilities and the domestic stock market return. Panel B shows the test results for the Portfolio equity liabilities and the domestic stock market return. *domesticR* is the domestic stock market return. *RORonFDIL* is the rate of return on the FDI liabilities. *RORonPEQA* denotes the rate of return on portfolio equity liabilities.

Panel A

Series: *domesticR, RORonFDIL*

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.441	42.906	15.495	0.000
At most 1 *	0.181	10.961	3.841	0.001

Trace test indicates 2 cointegrating eqn(s) at the 0.05 level

* denotes rejection of the hypothesis at the 0.05 level

**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.441	31.945	14.265	0.000
At most 1 *	0.181	10.961	3.841	0.001

Max-eigenvalue test indicates 2 cointegrating eqn(s) at the 0.05 level

* denotes rejection of the hypothesis at the 0.05 level

**MacKinnon-Haug-Michelis (1999) p-values

Panel B

Series: *domesticR, RORonPEQL*

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.369	50.231	15.495	0.000
At most 1 *	0.211	17.104	3.841	0.000

Trace test indicates 2 cointegrating eqn(s) at the 0.05 level

* denotes rejection of the hypothesis at the 0.05 level

**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.369	33.127	14.265	0.000
At most 1 *	0.211	17.104	3.841	0.000

Max-eigenvalue test indicates 2 cointegrating eqn(s) at the 0.05 level

* denotes rejection of the hypothesis at the 0.05 level

**MacKinnon-Haug-Michelis (1999) p-values

predicted that the *bonds issued* and the *bond stock* should increase with capital inflows and our results confirm our hypothesis. The results for *cost of capital* are significant for only portfolio flows. According to our hypothesis, *coc* declines with increased flows. In our study, we observed that *coc* decreases with PEQ inflows. The results for *IFIGDP* and *IFIGDPEQ* are similar in all the tests. Consistent with the hypothesis, international integration variables increase with increased capital inflows. Regarding our risk diversification hypothesis, we also predicted that foreign liabilities do provide risk sharing and we proved this with cointegration analysis in our study.

All in all, we see a significant impact of the capital inflows in advanced emerging markets and we will study further the capital structure effects focusing on corporate financial flexibility in these markets.

CHAPTER 3

THE IMPACT OF SEGMENTATION ON FIRM FINANCIAL FLEXIBILITY

Literature on Corporate Financial Flexibility

Financial flexibility is the ability of the firm to respond to cash flow and investment shocks. Graham & Harvey (1999) argues that informal criteria such as financial flexibility and credit ratings are the most important debt policy factors for capital structure. Measuring financial flexibility of firms is important in the sense that it has important implications for capital structure. Basically, the financial flexibility hypothesis (FFH) says that:

"Small developing firms characterized by negative or low earned capital, negative or low operating cash flow-to-value ratios, low cash holdings, no

dividend payouts, and no credit ratings are in the most need of financial flexibility and hence issue more equity and maintain lower leverage ratios. Growth firms characterized by mediocre earned capital, mediocre cash flow-to-value ratios, low cash holdings, low dividend payouts, and low credit ratings issue debt and hence maintain high leverage ratios. Large mature firms characterized by large earned capital, large cash low-to-value ratios, moderate cash holdings, large dividend payouts, and high credit ratings mainly rely on internal equity and safe debt and maintain moderate leverage ratios." (Byoun 2011).

Survey results in the literature from Bancel and Mittoo (2004), Brounen, De Jong, and Koedijk, (2004), Graham and Harvey (2001) and Pinegar and Wilbricht (1989) all confirm that it is financial flexibility (FF) what drives CFOs' leverage decision. They add that firms may follow conservative leverage policies to keep untapped borrowing power for periods of possible positive investment opportunity shocks. Especially, Graham and Harvey (2001) suggest that, for CFOs, financial flexibility is the single most important determinant of capital structure. DeAngelo and DeAngelo (2007) state that financial flexibility is the missing link for the theory of capital structure. The literature on financial flexibility theory and the unused debt capacity is with the "modified" tradeoff model. The optimal level of debt incorporates the ex-ante opportunity cost of borrowing (Mura and Marchica, 2010).

However, to be able to investigate these effects on financial flexibility on capital structure, we first have to measure financial flexibility. There is no well-defined measure for financial flexibility in the literature. Denis and McKeon (2010), and Mura and Marchica (2010) suggest untapped borrowing power and low leverage as a proxy for financial flexibility. Some other scholars suggest cash holdings (e.g.,

Almeida and Campello, 2007), bank lines of credit (Sufi , 2009), and commercial paper (Kahl, Shivdasani, and Wang , 2008) as drivers of financial flexibility. An optimal measure for flexibility should include all these drivers of financial flexibility. Secondly, an appropriate measure of FF should also cover debt overhang of the risky short-term debt in the sense that risky short-term debt can impose a larger overhang than long-term debt for investments. Diamond and He (2010) prove this argument by developing a model of debt maturity. They show that short-term debt overhang effect the firms' investment decision more than long-term debts overhang in the case on bad news on the firm's assets-in-place. Consistently, Almeida et al. (2010) study firms with large current portion of long-term debt and find that they cut back their investments more than that of firms with smaller current portion. Lastly, FF is also related to firms' operating flexibility in the sense that FF helps preserving operating flexibility (Shapiro, 1990). He argues that highly leveraged firms, subject to more restrictive debt covenants, have more obstacles in operating, financial and investment decisions. This reduces the firm's capacity to react to business environment changes. That's why the firms keep unused debt capacity, large liquid assets, excess lines of credit, and access to fund sources.

Recently, Denis (2011) argues that firms do not use outstanding cash balances as a source of flexibility. This may imply firstly that at any point in time, a firm's leverage ratio is made up of permanent and transitory components representing the company's long-run target and the evolution of the firm's cash flows and operating needs respectively. When the firms' internal funds are not enough for investments, they borrow. When their cash flows exceed the investment opportunities, they pay down debt and try to get to their long-run target leverage ratio. This pecking order behavior gives the impression that the managers do not

give importance to the costs and benefits of debt. Secondly, the argument in Denis (2011) may also imply that the models should consider all the costs and benefits of leverage. Assuming this interpretation correct, we can conclude that his paper's findings complement recent studies that evaluate and stress the role of transitory debt sources (lines of credit, commercial paper programs, etc.) in capital structure.

Another measure for financial flexibility is studied by Kahl, Shivdasani, and Wang (2008). They conclude that commercial paper provides financial flexibility to firms with uncertainties and capital needs. This outcome has implications on capital strucure decisions. Consistent with DeAngelo, DeAngelo, and Whited (2011) study, the use of these types of transitory debt sources implies that firms utilize unused debt capacity for financial flexibility. DeAngelo, DeAngelo, and Whited (2011) and Denis (2011) study financial flexibility in the form of unused debt capacity as well.

Mura and Marchica (2010) also use unused debt capacity as a measure for financial flexibility. They estimate the leverage equation following (Frank and Goyal, 2009) and the level of predicted debt using that equation. The demand for financial flexibility is measured in the residual of the estimated model, and generates a systematic deviation between observed and estimated leverage. Mura and Marchica (2010) classify a firm as financially flexible if it has spare debt capacity for a minimum number of consecutive years.

This model takes into account the endogeneity of the regressors and the fixed effects that may be correlated with the explanatory variables (Blundell and Bond, 1998; Lemmon et al., 2008). The lagged dependent variable reflects the firm's targeting behavior. As stated before, the fitted values are compared with the actual values and an unused debt capacity is estimated for those firms that exhibit a

negative deviation between actual and predicted leverage. To minimize the impact of unobserved effect of financial flexibility, they require the deviation to be larger than 10%. Finally, firms that have unused debt capacity for a minimum number of consecutive periods (2-6 years) are classified as financially flexible firms. With this method, Mura and Marchica observe more than just a transitory shock to the capital structure of the firm; indeed a policy. As a result of these analyses, they report strong evidence of significant links between financing and investment decisions. After a period of unused debt capacity, financially flexible firms invest more. Similarly, Denis and McKeon (2010) argue that companies use spare debt capacity to be able to invest when opportunities are met.

Lamont, Polk, and Saa-Requejo (2001) use KZ index (Kaplan and Zingales, 1997) to rank firms according to how financially constrained they are. They classify top 33% of firms ranked on the index as financially constrained and the bottom 33% as financially unconstrained.

Bonaime, Hankins and Harford (2012) use payout flexibility and risk management as two determinants of financial flexibility. They find that these two strategies are used as substitutes. They calculate payout flexibility by the ratio of repurchase to the total payout yield.

Bancel and Mittoo (2010) used another measure to proxy for FF. They also tested the robustness of their measure by directly asking managers several questions about their firms' access to internal and external financing. They created a FF index using those FF variables that are similar to the ratios used in the Altman Z-score. However, following the results in their survey, they used only four of the ratios used in the Altman Z-scores.

The literature for the capital structure effects of financial flexibility is quite limited to recent years. Under the assumptions of the static trade-off theory of capital structure, firms take advantage of the tax shield of debt and prefer debt rather than equity. However, the use of debt increases the bankruptcy risk. So, there is a limit to the use of debt to decrease the expected value of bankruptcy costs. However, the effect of globalization on the capital structure and debt especially is a relatively new issue. Baggs & Brander's (2005) results demonstrate falling export tariffs increase profits at domestic firms. The trade-off theory suggests increasing profits after declining foreign tariffs and increased access to foreign markets. This will end up with decreased expected value of bankruptcy costs and increased leverage (Baggs & Brander, 2005). Following the classic trade-off theory, we predict higher leverage and lower financial flexibility after globalization.

Schmukler & Vesperoni (2001) study globalization and its impact on firms' financing choices in emerging markets. Their results provide evidence for higher leverage,long term debt and longer debt maturity structure after access to international equity markets. Joliet and Muller (2013) study the impact of internationalization on the capital structure of a firm from the window of opening up new operations in foreign markets. Their results are for some developed countries and they show that the domestics firms and the firms that are initially active only in developed markets increase their leverage ratio after a new foreign entry. However, when the target country is developed, the new market entry did not turn out to lead to a significant change in the capital structure of the entrant firm. Some other studies (Lee & C. Kwok, 1988) (T. Burgman, 1996); (C. Chen, A. Cheng, J. He, & J. Kim, 1997) (J. Doukas & C. Pantzalis, 2003); (Ramirez & Kwok, 2010)) indicate less long-term debt for multinational firms compared to domestic firms. Singh &

Nejadmalayeri (2004) study French firms and they find that the degree of international diversification relates positively to the total and long term debt ratios and negatively to the equity and debt cost of capital. Baggs & Brander (2009) take the internationalization issue at the country level and address the changes in capital structure after trade policy changes. It is one of the few papers to study globalization and firm-level outcomes. The authors explicitly show the effects of trade liberalization on firm leverage. In contrast to the other studies, their results show evidence in line with the pecking order theory and predict lower leverage after export tariff reductions. We are not aware of any paper particularly dealing with the impact of international market segmentation on firm financial flexibility.

Research Design and the Sample

Our literature survey tells us that international capital flows do have impact on country level financial measures. However, we will analyze the firms after accumulation of capital inflows to the advanced emerging countries. We will specifically look through the spare debt capacity window of firm capital structure to analyze corporate financial flexibility. We hypothesize:

HYPOTHESIS 4: Firm financial flexibility increases with international market segmentation of the domestic stock market.

6,857 active equity firms from advanced emerging markets were identified from Thompson Worldscope between 2000 and 2012. The firms are classified into industries according to the Industry Classification Benchmark (ICB) of FTSE. The database used for this study listed 37 industries from advanced emerging markets; Brazil, Czech Republic, Hungary, Malaysia, Mexico, Poland, South Africa, Taiwan, Thailand, and Turkey. Firms from specific industries are excluded due to their

different capital structure and regulations they have. Banking, insurance, financial services and real estate investment trusts are the excluded sectors. Only primary quotes and major securities are included in the study to reduce noise. Firms with wrong or inconsistent data (negative total assets, sales lower than zero, negative number of shares outstanding) are also excluded. Firms with more than 2 consecutive years of missing data are eliminated. We also had to make sure that we have all the variables for the model. The firms with missing variables are excluded. For the remaining 1262 firms, we collected yearly accounting and stock market data from Thompson Datastream and Worldscope for the years 2000- 2012. Furthermore, we use the consumer price index (CPI) by the World Bank[10] to convert absolute financial data[11] to real values as of 2005. The dependent and the independent variables are trimmed at the 1% tails to reduce the impact of outliers. The result is a sample of 229,260 firm- year observations. Technology Hardware and Equipment, Chemicals, Industrial Metals and Mining, General Industrials, Industrial Engineering, Food Producers and Personal Goods industries are the industries with the biggest number of constituent firms in this study. The details of all the data cleaning processes are given in tables 15, 16 and 17.

Methodology

Yearly data on advanced emerging markets will be used for this analysis. However, since there is no single measure for financial flexibility in the literature, we will start with a measure developed by Mura and Marchica (2010) will be used:

[10] The data from World Development Indicators (WDI) is used for CPI values for all the advanced emerging markets.

[11] There are two absolute variables used for the financial flexibility analyses; total assets and the median industry leverage. All the rest is ratios.

Table 15 Sample Generation Process

This table presents the data generation process for the firm financial flexibility model. The starting point is the Thompson Worldscope universe for the advanced emerging markets. Advanced emerging markets are specified according to the FTSE[12] classification. Accounting data is taken from Thompson Worldscope. For the same list of the firms from Thompson Worldscope, stock market data is taken from Thompson Datastream. Industry classification benchmark (ICB)[13] of FTSE is used for aggregating the industries from all 10 different industries. It is the same benchmark that Thompson Datastream uses. Fourth level industry classification is used for this study and the total universe is 37 industries for the advanced emerging markets.

	Description	Observations (firm- year)	Firms	Industries
1	List of all active equity firms in all 10 advanced emerging countries (Brazil, Czech Republic, Hungary, Malaysia, Mexico, Poland, South Africa, Taiwan, Thailand, Turkey) for the years 2000- 2012.	89,141	6,857	37
2	1,112 firms from specific industries (banking, financial services, insurance and real estate) were excluded	74,685	5,745	34
3	769 of the remaining firms were eliminated because of not being included in the primary quote listing	64,688	4,976	33
4	For reducing noise in the data analysis process, only major securities are studied. 334 firms are excluded.	60,346	4,642	33
5	2,179 firms, which have missing data for at least 3 consecutive years or inconsistent data (sales lower than zero, common equity lower than zero, negative number of shares outstanding, etc.) are excluded.	32,019	2,463	33
6	1,190 firms which have missing variables are also excluded	16,549	1,262	33
	Total observations (for all the variables)	229,260	1,262	33

[12] At the beginning of the study, FTSE Global Index Series Country Classification Report for September 2010 was used for selecting the emerging countries to be studied. Brazil, Hungary, Mexico, Poland, South Africa and Taiwan were already in the Advanced Emerging markets category. According to 2010 results, it was stated that, Turkey, Malaysia and Czech republic were promoted to Advanced Emerging market status in June 2011. Thailand was in the watch list for 2011. It was also possible for Thailand to be promoted to the Advanced Emerging markets category in 2011. So, it is also included in the sample. However, in January 2014, Thailand is still in the Secondary Emerging market status.
http://www.ftse.com/Indices/Country_Classification

[13] ICB classification enables comparison of firms across four levels of classifications.
http://www.ftse.com/Indices/Industry_Classification_Benchmark

Table 16 Final Sample Composition

The table shows the final number of observations after the data is cleaned and the firms with missing variables are excluded. We have a total of 1,262 firms from 10 countries. The sample covers 13 years.

Year	Brazil	Czech R.	Hungary	Malaysia	Mexico
2000	52	39	156	4,277	260
2001	52	39	156	4,927	286
2002	156	39	169	5,109	286
2003	156	39	169	5,161	299
2004	156	39	169	5,148	312
2005	156	39	169	5,148	312
2006	156	39	169	5,135	312
2007	156	39	169	5,122	312
2008	156	39	169	5,122	312
2009	156	39	169	5,122	312
2010	156	39	169	5,122	312
2011	156	39	156	5,122	312
2012	156	39	130	5,122	312

Year	Poland	South Africa	Taiwan	Thailand	Turkey	*Grand Total*
2000	195	1,014	4,173	2,730	130	*13,026*
2001	273	1,079	5,590	2,886	156	*15,444*
2002	468	1,196	5,772	2,990	117	*16,302*
2003	468	1,222	5,746	3,003	182	*16,445*
2004	468	1,209	5,746	3,016	182	*16,445*
2005	468	1,209	5,746	3,016	195	*16,458*
2006	468	1,209	5,746	3,016	195	*16,445*
2007	468	1,209	5,746	3,016	195	*16,432*
2008	468	1,209	5,746	3,016	195	*16,432*
2009	468	1,209	5,746	3,016	195	*16,432*
2010	468	1,209	5,746	3,016	195	*16,432*
2011	468	1,209	5,746	3,016	195	*16,419*
2012	468	1,222	5,772	2,990	195	*16,406*

Table 17 Industry compositions

The table represents the results of the industry classification for the firms in our final sample. It shows the number of firms in each industry group.

Industry name	# of firms
Oil & Gas Producers	12
Oil Equipment, Services & Distribution	2
Chemicals	74
Forestry & Paper	20
Industrial Metals & Mining	62
Mining	16
Construction & Materials	143
General Industrials	175
Industrial Engineering	62
Industrial Transportation	58
Support Services	12
Automobiles & Parts	45
Beverages	14
Food Producers	89
Household Goods & Home Construction	48
Leisure Goods	21
Personal Goods	88
Tobacco	2
Health Care Equipment & Services	26
Food & Drug Retailers	10
General Retailers	37
Media	13
Travel & Leisure	41
Fixed Line Telecommunications	5
Mobile Telecommunications	6
Electricity	19
Gas, Water & Multiutilities	11
Software & Computer Services	24
Technology Hardware & Equipment	127
Aerospace & Defense	1

Spare Debt Capacity. Another measure for financial flexibility will be introduced later for robustness.

Since financial flexibility depends on the manager's own assessment of future growth options, Mura and Marchica (2010) state that, it is the unobservable factor embedded in the residuals of the model. It is predicted to cause systemic deviations between estimated and observed leverage values. As a result, spare debt capacity (SDC) is calculated as the negative deviation of the predicted leverage values from the actual values in the function (Mura & Marchica, 2010; Denis, 2011). The Spare Debt Capacity in Mura and Marchica is calculated by using Frank and Goyal's (2009) baseline model. The variables Frank and Goyal (2009) are found to be the most reliable factors influencing leverage decisions among U.S. publicly traded firms are median industry leverage, market-to-book ratio, size, asset tangibility, profitability, and expected inflation. Leverage is found to increase with median industry leverage, tangibility, expected inflation and the firms size; and decrease with market to book ratio and profitability. To begin with, we can say that the debt market conditions affect the leverage level. Trade-off theory predicts a positive relation due to the fact that as inflation expectations increase, the real value on tax deductions is higher (Taggart, 1985). Frank and Goyal also predict higher leverage with higher expected inflation. At the firm level, fixed asset are easy to collateralize and this decreases the probability of default. So, leverage is expected to increase with tangibility. Another reason for the positive relation between leverage and tangibility is that the higher the ratio of tangibles over total assets, the easier it is for the outsiders to value[14]. This brings lower expected distress costs and Frank and Goyal predict increasing leverage with tangibility. The same applies to size as well.

[14] Such as the case of the value of goodwill from an acquisition. Valuing is easier for the tangible assets. (Frank and Goyal, 2009)

Firm size is expected be a proxy for inverse probability of default. Another reason they found a positive effect of firm size on leverage is that older and larger firms have better reputations and they face lower agency cost of debt. Regarding the industry conditions, following the Trade-off theory, Frank and Goyal (2009) hypothesize that higher median industry leverage should result in higher leverage for firms. However, inline with the pecking order theory, the more profitable the firms become, the use less debt-financing and they are less levered. Frank and Goyal's (2009) results prove a negative relation between profitability and leverage. A similar relation is found between leverage and the firm growth options. Inline with the trade-off theory's predictions that growth increases the cost of financial distress, the authors predict that growth reduces leverage. Following Adam and Goyal (2008)

[15], they use market to book ratio as their measure for firm growth options.

These variables are all included in Frank and Goyal's model to estimate leverage. Following the work of Arellano and Bond (1991) by first differencing the model and lagging the dependent variable, we will estimate the leverage model using the GMM-SYS methodology. This model allows us to control for endogeneity and firm fixed effects (η_i) simultaneously (Blundell and Bond, 1998; Lemmon et al., 2008). The value of Lev_{it} is predicted to change cross- sectionally so we included firm fixed effects. The lagged dependent variable (Lev_{it}) captures the firm target leverage. All the variables are described in Table 19. The model is as follows:

[15] Adam and Goyal (2008) show that market to book ratio is the most reliable measure for firm growth options.

Eq 1 $$Lev_{it} = \propto Lev_{it-1} + \beta_1 IndLev_{it} + \beta_2 MtBv_{it} + \beta_3 lnTA_{it} +$$

$$\beta_4 Tangibility_{it} + \beta_5 Profitability_{it} + \beta_6 Infl_{it} + \eta_i + u_{i,t}$$

Following the estimation results, the fitted values will be found for each firm. They will be compared with the actual values and firms that exhibit negative deviation between actual and predicted leverage will be assigned to have SDC. To reduce noise, the deviations are required to be greater than 10%. For sensitivity, results for a minimum of 5% and 25% deviations for SDC can also reported on demand. A regression analysis will be run to find the impact of international market segmentation on SDC.

Eq 2 $$SDC_{it} = \propto + \beta SEG_{it} + \eta_{jt} + \partial X_{it} + \varphi V_{it} + e_{it}$$

where SDC_{it} is the Spare Debt Capacity and SEG_{it} is the international market segmentation measure for the firm. The value of SDC changes both over time and cross-sectionally so η_{jt} denotes the industry and time fixed effects. We tried to control for the firm specific factors with Dividends, Depreciation and Cash ratios (X_{it}). To control for country specific factors, Antidirector rights index and Creditor's rights index (V_{it}) will be used. These variables are further explained below.

After defining SDC, we will define another measure for financial flexibility following Mura and Marchica (2010). A dummy variable for financial flexibility will be created for firms that have SDC for a minimum number of consecutive periods. We will classify firms that have SDC for at least 2 years behind as financially flexible firms

(FF2). This method will help us make sure that the SDC result is due to a deliberate firm policy rather than a capital structure shock. However, there is no theoretical rational for developing this method. So, to ensure that the results are not sensitive to the time horizon chosen, we will use a range of time periods, 2 to 5 years.

The main question for this analysis is how the firm's financial flexibility changes with the level of international market segmentation. In this part of the analysis, our dependent variable will be the firm financial flexibility dummy, a binary variable that is either one or zero. Therefore, logistic regression analyses will be run for measuring the effect of the international segmentation on firm financial flexibility.

Eq 3 $$\ln\left(\frac{p}{1-p}\right) = \propto + \beta SEG_{it} + \eta_{it} + \partial X_{it} + \varphi V_{it} + e_{it}$$

where p is the probability that the firm is financially flexible (FF), X_{it}. describe the firm specific factors and V_{it} describe country specific factors. η_{it} describe firm and time fixed effects. SEG_{it} is the international segmentation of the selected firm (Bekaert, 2011) which is :

Eq 4 $$SEG_{it} = |EY_{it} - EY_{wt}|$$

where ;

E_{ijt}: individual firm earning yield

EY_{wt}: world index industry average earning yield

As already explained in chapter 1 of this paper, following Bekaert , Harvey, Lundblad and Siegel (2011)[16], the difference between EY_{ijt} and the EY_{wt} is taken as the measure of segmentation for the firm. EY_{ijt} is defined as the earning yields for industry i, firm j at time t and it is the inverse of the price-earnings ratio[17]. EY_{wit} is the median earning yields for the Datastream industry i at time t. There are 33 industries in our sample and the industries for these advanced emerging markets are classified according to the ICB taxonomy. For calculating the country and industry-specific market segmentation, the market weights are used as the ratio of each firm's market capitalization to the total market capitalization of the industry in the country in our sample. The earning yields are weighted according to these ratios and an industry segmentation measure is found for each industry. The same way, the industry weights are found for each country as the ratio of the market capitalization of the industry to the ratio of total market capitalization of the country. Country specific market segmentation is the weighted sum of these industry earning yield differentials. Here, the industry and the country define only the firms we use in our sample. We do not use the entire listed firms universe in the country due to the availability of the other variables in our financial flexibility analysis. For EY_{ijt}, the earning yield data is collected for 10 advanced emerging countries from Thompson

[16] The authors use an industry-level aggregated measure. However, since the analysis in our sample is seeking firm based results, we used firm earning yields. The earning yield differential is the basic measure for market segmentation in our study.

[17] Price-earnings ratios are not used because of several reasons. First, price- earning ratios are skewed and possess outliers. Secondly, these ratios are not defined when earnings are zero. In that case, many observations could be dropped and this would affect the sample size negatively. Lastly, the authors mention that earning yields are easier to interpret when used as percentages.

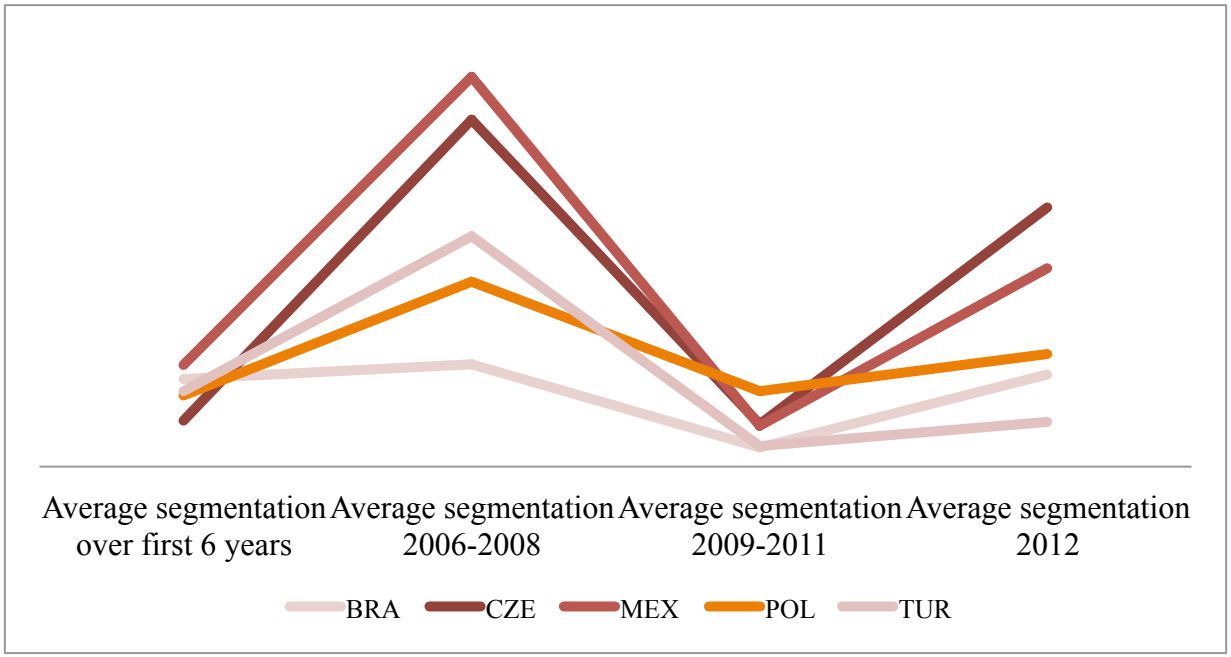


Figure 11 The market segmentation measure and its evolution

Our earning yield based measure of market segmentation is calculated again for taking the country, industry and firm effects into account. The segmentation measure is given in percentages for all 10 advanced emerging countries we studied. The segmentation figures are given in more detail in table 18.

Datastream. The database calculates earning yields by adding twelve-month non-negative firm earnings. We, then, aggregated the earning yields according to the industry classification benchmark (ICB) taxonomy of Datastream.

The international market segmentation measure also needs the global industry earning yields. So, we also collected global industry earning yields. For EY_{wit}, fourth level industry portfolio of Thompson Datastream is used (Appendix tables 2-1 and 2-2). Level four industry classification was the most suitable level for our sample. It has 33 industries when banking, financial services, real estate investment and insurance sectors are excluded. The number of firms in each industry is shown in table 17. For calculating the median earning yield for each "*level four industry*", the earning yields for all 5,114 constituent firms are collected. After collecting the earning yields for the level four global industry constituent firms' earnings data, the median is calculated for each industry.

The international market segmentation measure is calculated annually given the availability of the financial flexibility variables in the model. We have 13 years annual data for the countries. Although our sample for the financial flexibility analysis does not cover most of the market capital, it covers a representative composition and we deliver similar results to Bekaert, Harvey, Lundblad, & Siegel (2011). The country-specific segmentation analysis delivers evidence that, before the world financial crises in 2008, the international market segmentation in advanced emerging markets have increased significantly. During the crises period, until 2010, the international market segmentation declines and the international markets seem to be more homogenous. However, during country specific economic crises, as in the case of Turkey (2001), international market segmentation of that specific country increases. So, the general shape of the international market segmentation for the

advanced emerging countries is that it has risen in 2006, just before the crisis, for all countries, and the recovery period took 3 years. It is the end of 2008 when the international market segmentation goes down to its previous lower levels. In 2012, we see another rise in the measure. In our sample, we represented most of the market capital for Thailand, Thailand, South Africa and Malaysia samples and these have been the countries where we see most significant country effects. This is expected taking into account a greater number of firms and the noise accompanied with it. Brazil and Turkey's market segmentation has declined very significantly in 2009-2011 and the earning yields in these countries have been moving very closely with the world earning yields. In general, the average market segmentation between 2000-2005 is lower than that during 2009-2012. We can infer from the results that after the crisis, the advanced emerging countries have had closer earning yields with the world. The only exceptions are the European advanced emerging countries, Hungary, Czech Republic and Poland. They had lower market segmentation levels before the crisis. And, even after the global financial crisis, they still seem to have more segmented financial markets.

Although we know that country effects dominate industry effects[18], we also included the industry –specific market segmentation results. According to our results, Chemicals, Electronic and Electrical equipments, Industrial Metals, Personal Goods ad Travel & Leisure are the most segmented industries. These sectors are also among the 10 most segmented industries between 2000-2005 in Bekaert, Harvey, Lundblad, & Siegel's (2011) paper.

As mentioned before, a set of control variables are included in the model to resolve country and firm differences in estimating financial flexibility. For cross-

[18]Bekaert, Harvey, Lundblad, & Siegel (2011)

Table 18 Annual segmentation 2000- 2012

The sample includes 10 developed emerging countries. The segmentation measure is the earning yield differential between the firm and the corresponding world industry earning yield for 2000- 2012. For the latter, Datastream *level four* industry earning yields are used. The earning yield differentials are weighted averaged to find country- level segmentation. *Segmentation between effects* show the results studied for the between country, industry and firm effects. We regress the annual country segmentation variable onto a set of country, industry and firm dummies and report the between effect for each country. The last column shows the results from the latest study of Bekaert et al. (2011) regarding country segmentation levels and is used for comparison.

	Segmentation		Literature
Country	Between effects	St. Dev.	Segmentation 1980- 2005
BRA	7.9%*	0.052*	9.2%
CZE	2.8%	0.085	4.2%
HUN	3.6%	0.046	5.7%
MYS	2.1%	0.025	4.8%
MEX	5.2%	0.033	6.6%
POL	0.8%	0.032	6.5%
ZAF	2.4%	0.028	4.5%
TWN	4.7%	0.054	-
THA	4.6%	0.025	6.5%
TUR	3.8%	0.028	6.5%

* Averages.

country differences, we included two different measures. For controlling for the differences in corporate government regulations in individual countries, Antidirector rights index (ADR_{it}) and Creditor's rights index (CRI_{it}) (further explained below) are going to be used.

ADR_{it} is developed by La Porta et al. (1998) and updated and revised by (Djankov, McLiesh, Shleifer, & Hart, 2006; Djankov, McLiesh, Shleifer, & Hart, 2006). It measures the level of investor protection. It mainly serves to the protection of minority shareholders against expropriation by insiders. The index has 6 variables: *vote my mail, shares not deposited, cumulative voting, oppressed minority, pre-emptive rights* and *capital to call a meeting*. The variable vote by mail equals one if the law enforces a notice to the meetings and promotes the voting of the shareholders by mail. Another variable requires the restriction to deposit with the company before a general shareholder's meeting. *Cumulative voting* necessitates a rule that shareholders owning 10% or less of the capital are represented in the board of directors or supervisory board. *Oppressed minority* is a check for the challenges the minority shareholders face in resolutions of the shareholders and the board.

ADR measure controls the shareholder's rights to hold the first opportunity to buy new issues of stock at listings as well ad the minimum percentage of share capital that the law requires to call a shareholders' meeting. The highest level in the anti-director rights index is a score of 6.

CRI_{it} is originally developed by (La Porta, de Silanes, Shleifer, & Vishny, 1998) and shows the strength of creditors rights. They used 4 creditor's rights variables to come up with a CRI index: *automatic stay on assets, secured creditor's rights, restrictions for going reorganization* and *management stay in reorganization*.

First variable indicates whether the reorganization rules impose an automatic stay on the assets or not. This protects secured creditors in the sense that they are protected from loan collaterals. The second variable checks if the regulations give the secured creditors the right to collateral in reorganization. The third variable is seeking protection of the creditors from reorganization without their consent. This kind of protection makes sure that the managers cannot escape the creditor's demands. The last variable is the control for a procedure for the existence of the same management team after reorganization. A value of 1 for the resulting Creditor's Rights Index (CRI) implies creditor protection is the law in the country. Although we do not have yearly data for these two indices, it is updated with the data from (Spamann, 2008) and used the natural logarithm of these variables is used for the regression analysis.

Another variable should be cash holdings for the company. The value of financial flexibility is associated with preserving debt capacity and the need for financial flexibility depends on the need for unexpected cash requirements and the ability to compensate for this need without external financing. Marginal value of cash can be used as a proxy for financial flexibility (Killi, Rapp , & Schmid , 2011) (Clark B. , 2010). In that sense, a study by Faulkender & Wang (2006) show those constrained firms value cash holdings more than unconstrained firms do. Also, Killi, Rapp , & Schmid (2011) find that firms with higher marginal value of financial flexibility have lower target and observed leverage ratios. Following these studies, we expect a positive relation between cash holdings and financial flexibility. They also predict a positive relation between cash returned to customers in the forms of repurchases rather than dividends and the marginal value of cash. This implies decreasing marginal value of financial flexibility with dividends. Another study by Flannery and Rangan (2006) state that firms with more depreciation expense need

less debt financing to get the interest proceeds. We expect a negative relation between depreciation expense and firm financial flexibility. To sum up, another set of control variables will include depreciation ($Depr_{it}$), total cash ($Cash_{it}$) and total dividends paid (Div_{it}) to control for firm differences.

The endogeneity of the regressors and the time effects that may be correlated with the explanatory variables will be checked for the SDC analysis. Firm fixed effects will not be included in the analyses. These effects are important but the interpretation is ambiguous (Frank & Goyal, 2009). The largest effect would be on one of the leverage variables, the median industry leverage. So, we have excluded these effects.

Spare Debt Capacity

As a first step for finding Financial Flexibility, Spare Debt Capacity is estimated using Frank and Goyal's (2009) baseline leverage model. Financial Flexibility will end up in the residuals of the Leverage model (Eq 5).

The accounting and stock market data needed for the leverage model is taken from Thompson Worldscope and Thompson Datastream. The variables used for the model are *market leverage*, *median industry leverage*, *market to book value*, *total assets*, *tangibility*, *profitability* and the *expected inflation* (Table 19). *Leverage* (Lev_{it}) is the market debt ratio. It is total debt over total debt plus the market value of equity. The market value of equity is the number of common shares outstanding multiplied by the year-end stock market price. *Median industry leverage* ($IndLev_{it}$) is the median of the market leverage of firms in the same industry in the same fiscal year. Industry Classification Benchmark (ICB) taxonomy is used

Table 19 Definition of the Variables for the Spare Debt Capacity Model

Panel A: Variables used to estimate Spare Debt Capacity (SDC)

Variable	*Description*
Lev_{it}	Market debt ratio for the individual firms. It is the total debt over total debt plus the market value of equity.
$IndLev_{it}$	Median industry leverage calculated for each FTSE industry. Median of Lev_t for the firms in the same industry over each period is calculated. Industry classifications of FTSE International are implemented covering all the firms in the sample. We have 33 industries in our sample according to this Industry Classification Benchmark (ICB) Taxonomy of FTSE.
$MTBV_{it}$	Market value of equity over the book value of common equity of the firms at every fiscal year t.
$lnTA_{it}$	Natural logarithm of total assets.
$Tangibility_{it}$	The ratio of net plant, property and equipment to total assets.
$Profitability_{it}$	The measure is defined as the ratio of EBITDA to total assets.
$Infl_t$	The measure of expected inflation. 3 monthly T-bill rates are used.

Panel B: Other Variables

Variable	*Description*
Div_{it}	Control variable. The ratio of total dividends paid to total assets.
$Depr_{it}$	Control variable. The ratio of total depreciation to total assets.
$Cash_{it}$	Control variable. The ratio of total cash and cash equivalents to total assets.
CRI_{it}	Control variable. Creditor's Rights Index. It shows the strength of creditor's rights. Ranges from 0-4 and the countries in which creditor protection is the law get a score 1. *La Porta et al. (1998)*
ADR_{it}	Control variable. Revised antidirector Index. It shows the strength of investor protection. Ranges from 1 to 6. Countries in which the investors are protected get higher scores. *Djankov et al. (2008)*

for the industry classification of the firms. *Market to book value* ($MTBV_{it}$) is the ratio of market value of equity to book value of common equity. Natural logarithm of *total assets* ($lnTA_{it}$) is used as a proxy for size. World Bank's Consumer Price Index (CPI) data is used for deflating total assets to 2005 prices. *Tangibility* ($Tangibility_{it}$) is defined as the net property, plant and equipment over total assets. *Profitability* ($Profitability_{it}$) corresponds to EBITDA over total assets. Lastly, following Frank and Goyal (2009), *expected inflation* ($Infl_{it}$) is proxied using three monthly T-bill rate for each country and time period. They stated in their paper that replacing expected inflation with the Treasury bill rate will not change the results and that these variables are highly correlated. Firm related effects are controlled by *dividends, depreciation* and *cash*. To control for the institutional environment ADR_{it} and CRI_{it} are used.

The descriptive statistics for the leverage model show that the median (30.3%) and the mean (33.38%) for *leverage* are close values but still the distribution of leverage is positively skewed (19, panel A). The median *industry leverage ratio* of 29.93% and the mean *industry leverage* ratio of 30.88% of the total debt plus market value of equity are slightly higher[19] than Opler et al. (1999) and Faulkender and Wang (2006) reflecting the fact that we are studying emerging markets in this study. $Tangibility_{it}$ and $Profitability_{it}$ have symmetric distributions. The tangible assets are equivalent to 37.21% of total assets while EBITDA is 9.6% of total assets. Market-to-Book-value shows a right- skewed distribution. *Expected inflation* is right skewed while the natural logarithm of *total assets* has a symmetric

[19] Faulkender and Wang (2006) presented median industry leverage ratio of 22.65% and mean industry leverage ratio of 27.78% , consistent with Opler et al. (1999). Faulkender and Wang (2006) studied US firms in their paper.

Table 20 Descriptive Statistics for SDC estimation

Panel A of table 20 shows the descriptive statistics for the variables used to estimate spare debt capacity (SDC) for the advanced emerging market firms for each fiscal year *t*. The leverage equation variables are included. Panel B presents the summary statistics for the SDC regression. The independent variable is international market segmentation (SEG_{it}). For sensitivity reasons, SDC_{it} is calculated for 3 different tresholds and the results are presented at Panel B. The control variables for the SDC regression are also included in Panel B: Dividends paid (Div_{it}), depreciation ($Depr_{it}$), cash ratio ($Cash_{it}$), Antidirector rights index (ADR_{it}) and Creditors rights index (CRI_{it}). Detailed descriptions of all variables are given in table 19.

Panel A: *Leverage equation variables*

	Mean	1st Quartile	Median	3rd Quartile	Std. Dev.
Lev_{it}	0.3338	0.1360	0.3030	0.4975	0.2326
$IndLev_{it}$	0.3088	0.2339	0.2993	0.3882	0.1135
$MTBV_{it}$	1.4390	0.6600	1.0300	1.6500	3.6143
$lnTA_{it}$	14.5680	13.0063	14.7123	15.9790	2.1185
$Tangibility_{it}$	0.3721	0.2144	0.3610	0.5134	0.2020
$Profitability_{it}$	0.0961	0.0484	0.0934	0.1455	0.2542
$Infl_{it}$	0.0506	0.0135	0.0285	0.0495	0.0839

Panel B: *Variables used for SDC estimation*

	Mean	1st Quartile	Median	3rd Quartile	Std. Dev.
SEG_{it}	0.1444	0.0227	0.0432	0.0914	0.4955
$SDC_{it\ 5\%}$	2.3509	-0.3722	0.0761	0.7988	19.1963
$SDC_{it\ 10\%}$	2.5139	-0.3939	0.1367	0.8986	19.8376
$SDC_{it\ 25\%}$	3.1502	-0.4689	0.3329	1.2566	22.1297
Div_{it}	11.753	1.0041	2.7550	8.9031	37.038
$Depr_{it}$	0.0350	0.0176	0.0297	0.0458	0.0278
$Cash_{it}$	0.0628	0.0161	0.0397	0.0852	0.0701
ADR_{it}	1.4070	1.3863	1.6094	1.6094	0.2589
CRI_{it}	0.8757	0.6931	0.6931	1.3863	0.3895

distribution. The mean *expected inflation* for the sample period is 5.06%. All of the variables have been increasing over time during the sample period.

Following the estimation results of the leverage equation, we trimmed the Spare Debt Capacity (SDC_{it}) at 10%, excluding the firms with SDC lower than 10%. The mean *spare debt capacity* is 2.5%. The descriptive statistics for Spare Debt Capacity (SDC_{it}) estimation show that SDC_{it} is dispersed widely and right-skewed (table 19, panel B). This shows the tendency of the listed firms in advanced emerging markets to arrange their capital structures to undershoot their leverage ratios and stay financially flexible. Although we base our results on the 10% level Spare Debt Capacity estimations, for sensitivity reasons, we report the results 5% and 25% level SDC as well. When we exclude firms with negative deviations between observed and predicted leverage less than 25%, the skewness of the SDC_{it} distribution moves even more to the right.

The *international market segmentation* measure is skewed to the right with the mean as 9.8% and the median as 4.9%. The quartile analysis of *market segmentation* reveals the fact that market segmentation increased in the second and third quartiles. Variables to control for firm effects, *cash ratio* and *depreciation* are symmetric while *dividends* paid is skewed to the right. *Dividends* are increasing over time while *depreciation* and *cash ratio* are quite stable. The natural logarithms of ADR_{it} and CRI_{it} have symmetric distributions and they are stable, mostly because our data for these variables do not change yearly; we have ADR_{it} and CRI_{it} data valid for a period.

Firm Financial Flexibility

Firms are classified as Financially Flexible after SDC estimation. The financial flexibility measure (FF2) takes on a dummy of one when the firm has SDC for at least two years. So, firms have the first FF2 status in their third year. We also used FF3 (FF4- FF5) for robustness indicating that the firm had SDC status for at least 3 (4-5) consecutive years and reported the results in Tables 21 and 22. Tables 21 and 22 report the descriptive statistics for the financial flexibility estimation variables; separately listed for financially flexible firms and not-financially flexible firms. As expected, financially flexible firms have more spare debt capacity than the firms that are notfinancially flexible (Table 22).

Table 21 reports the descriptive statistics for understanding the characteristics of the firms after filtering the firms for 10% or greater deviation between their actual and target leverage ratios. As stated before, the spare debt capacity of the financially flexible firms is greater than firms that are not classified as financially flexible. Because we get better results for FF3 regressions, we will focus on FF3 statistics. The distribution of $SDC_{it,10\%}$ is skewed to the right. We can infer that FF3 firms have a tendency to carry less debt and have more SDC than that of NFF3 firms. The mean value for $SDC_{it,10\%}$ is 8.6% and the median is 1.5% for FF3 firms. Similar to the regression results, the descriptive analyses also indicate that the international market segmentation figure for $FF3_{10\%}$ firms is higher than that of $NFF3_{10\%}$ firms. The mean of *segmentation* (SEG_{it}) is 18.2% and the median is 3.8% for $FF3_{10\%}$ firms while the mean is 15.56% and the median is 4.5% for $NFF3_{10\%}$ firms. Proved by results of the t-tests with unequal variances, these differences are still significant when they are calculated from SDC results screened for 5% and 25% deviations of actual leverage

Table 21 Descriptive Statistics for Financial Flexibility I

The table shows the descriptive statistics for the *leverage* model. The results are analyzed in two groups; financially flexible and not-financially flexible firms. FF2 $_{10\%}$ denotes financial flexibility dummy equal to one if the firm has negative deviation from its target leverage ratio larger than 10% for at least two consecutive years. NFF2 $_{10\%}$ denotes financial flexibility dummy equal to zero. FF3$_{10\%}$ (FF4-FF5) is a financial flexibility dummy equal to one for all undershooting firms at 10% level for 3 (4-5) consecutive years. Detailed descriptions of all variables are given in table 19.

	FF2 $_{10\%}$					NFF2 $_{10\%}$				
	Mean	1st Quartile	Median	3rd Quartile	Std. Dev.	Mean	1st Quartile	Median	3rd Quartile	Std. Dev.
Lev_{it}	0.2062	0.0707	0.1607	0.3076	0.1699	0.3641	0.1705	0.3450	0.5335	0.2320
$IndLev_{it}$	0.3186	0.2408	0.3096	0.3917	0.1140	0.3013	0.2308	0.2916	0.3760	0.1075
$MTBV_{it}$	1.9204	0.9700	1.4400	2.1200	3.3694	1.3155	0.6200	0.9500	1.5200	3.8927
$lnTA_{it}$	16.7037	15.6248	16.6101	17.7490	1.6215	14.1215	12.7048	14.2769	15.4735	1.8372
$Tangibility_{it}$	0.4143	0.2507	0.4132	0.5637	0.2047	0.3544	0.2019	0.3436	0.4897	0.1970
$Profitability_{it}$	0.1274	0.0773	0.1206	0.1742	0.0910	0.0872	0.0411	0.0847	0.1342	0.2020
	FF3 $_{10\%}$					NFF3 $_{10\%}$				
	Mean	1st Quartile	Median	3rd Quartile	Std. Dev.	Mean	1st Quartile	Median	3rd Quartile	Std. Dev.
Lev_{it}	0.1963	0.0644	0.1534	0.2848	0.1663	0.3565	0.1633	0.3362	0.5223	0.2302
$IndLev_{it}$	0.3125	0.2365	0.3036	0.3884	0.1139	0.3005	0.2295	0.2916	0.3760	0.1069
$MTBV_{it}$	1.9543	0.9900	1.4900	2.2000	3.2554	1.3539	0.6300	0.9700	1.5400	4.0337
$lnTA_{it}$	16.9454	15.8708	16.8499	18.0130	1.5735	14.2543	12.8557	14.4089	15.6013	1.8471
$Tangibility_{it}$	0.4180	0.2557	0.4180	0.5666	0.2031	0.3534	0.2017	0.3423	0.4882	0.1965
$Profitability_{it}$	0.1304	0.0772	0.1221	0.1774	0.0876	0.0881	0.0423	0.0858	0.1352	0.2002
	FF4 $_{10\%}$					NFF4 $_{10\%}$				
	Mean	1st Quartile	Median	3rd Quartile	Std. Dev.	Mean	1st Quartile	Median	3rd Quartile	Std. Dev.
Lev_{it}	0.1916	0.0612	0.1503	0.2758	0.1652	0.3510	0.1556	0.3284	0.5170	0.2305
$IndLev_{it}$	0.3091	0.2321	0.3005	0.3843	0.1160	0.3000	0.2288	0.2916	0.3760	0.1081
$MTBV_{it}$	2.0100	1.0100	1.5300	2.2300	3.5986	1.3782	0.6300	0.9800	1.5700	4.1801
$lnTA_{it}$	17.1369	16.0934	17.0326	18.1765	1.5374	14.3626	12.9739	14.5118	15.6846	1.8560
$Tangibility_{it}$	0.4196	0.2561	0.4187	0.5678	0.2027	0.3516	0.2007	0.3401	0.4861	0.1956
$Profitability_{it}$	0.1321	0.0781	0.1234	0.1798	0.0883	0.0894	0.0426	0.0859	0.1354	0.1876
	FF5 $_{10\%}$					NFF5 $_{10\%}$				
	Mean	1st Quartile	Median	3rd Quartile	Std. Dev.	Mean	1st Quartile	Median	3rd Quartile	Std. Dev.
Lev_{it}	0.1909	0.0566	0.1473	0.2744	0.1663	0.3454	0.1507	0.3210	0.5109	0.2307
$IndLev_{it}$	0.3079	0.2285	0.2997	0.3840	0.1180	0.2981	0.2285	0.2908	0.3747	0.1094
$MTBV_{it}$	2.0511	1.0300	1.5400	2.2600	3.9415	1.4155	0.6300	1.0000	1.6100	4.3945
$lnTA_{it}$	17.2996	16.2531	17.1736	18.3332	1.5115	14.4535	13.0719	14.5879	15.7705	1.8625
$Tangibility_{it}$	0.4210	0.2563	0.4193	0.5749	0.2029	0.3481	0.1984	0.3365	0.4820	0.1945
$Profitability_{it}$	0.1306	0.0781	0.1230	0.1774	0.0886	0.0909	0.0430	0.0859	0.1353	0.1891

from target leverage. Internationally more segmented firms carry more cash. The mean for *cash* holdings is equivalent to 7.1% of total assets and the median is equivalent to 4.8% for $FF3_{10\%}$ firms. This ratio is slightly lower for $NFF3_{10\%}$ firms; with the mean of 6.4% and the median of 4.2%. It can also be inferred from the table that firms that are internationally more segmented, pay more dividends; the results are robust at 5% SDC estimations (table 22). $SDC_{25\%}$ results are not inline with this outcome, however, when tested by the mean equality test, we see that $SDC_{25\%}$ estimation t test results are not significant (table 26).

Table 21 reports the descriptive statistics for leverage model variables. This is a more detailed table than table 20, especially prepared for financially flexible (FF) and NFF firms. Total assets of financially flexible firms is higher than that of the firms that are not financially flexible (table 21). Financially flexible firms are found to have more tangible assets and are also more profitable. The descriptive analysis also states that, in line with the leverage regression results, firms with greater profitability and tangibility borrow less. Similar to the results in Mura and Marchica (2010), financially flexible firms pay higher dividends than firms that are not financially flexible.

The table also indicates that FF3 firms have greater depreciation expense ratio in their total assets relative to NFF firms as the test of difference in means reveals a p-value of zero. Financially flexible firms pay higher dividends than the firms that are not financially flexible. This result is inline with the evidence by Mura and Marchica (2010). Graham and Harvey (2001) also state that financial flexibility is more important for dividend paying firms. They also hold more cash.

Table 22 Desciptive Statistics for Financial Flexibility II

The table shows the descriptive statistics for the *financial flexibility* variables. $FF2_{10\%}$ denotes financial flexibility dummy equal to one if the firm has negative deviation from its target leverage ratio larger than 10% for at least two consecutive years. $NFF2_{10\%}$ denotes financial flexibility dummy equal to zero for the same class firms. $FF3_{10\%}$ (FF4- FF5) is a financial flexibility dummy equal to one for all undershooting firms at 10% level for 3 (4-5) consecutive years. Detailed descriptions of all variables are given in table 19.

	FF210%					NFF210%				
	Mean	1st Quartile	Median	3rd Quartile	Std. Dev.	Mean	1st Quartile	Median	3rd Quartile	Std. Dev.
SEGit	0.1618	0.0209	0.0388	0.0780	0.5836	0.1453	0.0238	0.0435	0.0934	0.4834
Divit	33.8849	0.8199	1.6564	3.0452	811.5392	18.8407	1.3365	2.8460	9.0958	633.7713
Deprit	0.0381	0.0207	0.0329	0.0493	0.0259	0.0338	0.0165	0.0285	0.0440	0.0286
Cashit	0.0707	0.0211	0.0484	0.0967	0.0727	0.0629	0.0169	0.0409	0.0863	0.0681
logADR	1.3579	1.0986	1.6094	1.6094	0.2931	1.4069	1.3863	1.3863	1.6094	0.2507
SDCit 10%	7.8863	0.6243	1.3989	3.5075	33.9419	1.0415	-0.4506	-0.1941	0.3930	13.6078
	FF310%					NFF310%				
	Mean	1st Quartile	Median	3rd Quartile	Std. Dev.	Mean	1st Quartile	Median	3rd Quartile	Std. Dev.
SEGit	0.1825	0.0215	0.0388	0.0826	0.6517	0.1556	0.0251	0.0449	0.1059	0.5005
Divit	29.9050	0.7546	1.6039	2.9245	765.3564	22.6983	1.2743	2.6679	8.3894	710.0789
Deprit	0.0385	0.0212	0.0335	0.0495	0.0260	0.0336	0.0164	0.0283	0.0438	0.0286
Cashit	0.0710	0.0218	0.0488	0.0960	0.0729	0.0645	0.0181	0.0428	0.0884	0.0678
logADR	1.3451	1.0986	1.3863	1.6094	0.2929	1.3987	1.0986	1.3863	1.6094	0.2544
SDCit 10%	8.6774	0.6929	1.5481	3.9622	36.2554	1.2851	-0.4325	-0.1671	0.4753	15.0416
	FF410%					NFF410%				
	Mean	1st Quartile	Median	3rd Quartile	Std. Dev.	Mean	1st Quartile	Median	3rd Quartile	Std. Dev.
SEGit	0.1917	0.0212	0.0382	0.0877	0.6984	0.1622	0.0242	0.0425	0.1082	0.5184
Divit	37.0792	0.6745	1.5514	2.7887	864.4365	23.1927	1.2394	2.5871	8.0306	734.2889
Deprit	0.0387	0.0213	0.0336	0.0500	0.0259	0.0332	0.0163	0.0282	0.0435	0.0285
Cashit	0.0722	0.0222	0.0491	0.0982	0.0741	0.0656	0.0187	0.0441	0.0904	0.0679
logADR	1.3346	1.0986	1.3863	1.6094	0.2922	1.3885	1.0986	1.3863	1.6094	0.2573
SDCit 10%	9.0592	0.7961	1.6194	4.3054	35.9656	1.6152	-0.4160	-0.1434	0.5471	17.0960
	FF510%					NFF510%				
	Mean	1st Quartile	Median	3rd Quartile	Std. Dev.	Mean	1st Quartile	Median	3rd Quartile	Std. Dev.
SEGit	0.1922	0.0213	0.0379	0.0782	0.6774	0.1690	0.0247	0.0419	0.1097	0.5465
Divit	22.9130	0.6465	1.5284	2.7137	649.2280	29.9300	1.2064	2.5020	7.6307	850.0879
Deprit	0.0386	0.0216	0.0336	0.0497	0.0257	0.0329	0.0161	0.0279	0.0432	0.0287
Cashit	0.0722	0.0223	0.0491	0.0966	0.0752	0.0666	0.0191	0.0451	0.0922	0.0683
logADR	1.3229	1.0986	1.3863	1.6094	0.2885	1.3764	1.0986	1.3863	1.6094	0.2598
SDCit 10%	8.8323	0.8073	1.7013	4.6024	34.3851	1.9606	-0.4053	-0.1261	0.6121	19.0310

Empirical Analysis

This section reports the results of the leverage and the Spare Debt Capacity estimations. Hypothesis 4 is tested for the advanced emerging markets for 2000-2012. The robustness of the results are tested using another financial flexibility measure, Financial Flexibility Z (FFZ).

Spare debt capacity model

Table 23 presents Arellano- Bond baseline regression results for the leverage model (Eq 5). The GMM estimation uses regression coefficients with heteroskedasticity robust standard errors. The results from Lemmons et al. (2008) show that most of the variation in leverage ratios is driven by unexplained time-invariant factor. So, we also included firm fixed effects to have higher explanatory power in our regression analysis. The GMM estimation results show that the coefficient on the lagged leverage variable is positive and statistically significant. The adjustment coefficient λ is 0.58.

The results are inline with most of the findings in the capital structure literature.[20] SDC, as mentioned before, is defined as the negative deviation between the firm's target and actual leverage ratios. However, we do not have the firm's target leverage level needed for our calculations. This is where the leverage model helps us. Using the coefficients in the leverage model in table 23, we estimate the target leverage level for each firm at each time *t* and then define SDC_{it} as another variable for each firm *i* at time *t* . After including SDC_{it} as a new variable to our sample, we run another regression on SDC_{it} this time (Eq 6). Here, we try to find the impact of SEG on firm financial flexibility proxied by SDC. Table 24 shows us the

[20] Rajan and Zingales (1995), Flannery and Rangan (2006), Frank and Goyal (2009) and Mura and Marchica (2010) all report similar results for the baseline leverage models.

Table 23 Regression Results for the Leverage Model

The table presents the baseline Arellano- Bond (1991) estimation results used to predict Firm Book Leverage (Lev_{it}) as in equation 5. The independent variables are median industry leverage ($IndLev_{it}$); market to book value ($MTBV_{it}$); natural logarithm of total assets ($lnTA_{it}$); $tangibility_{it}$; $profitability_{it}$ and inflation (inf_{it}). Descriptions and the summary statistics are given in tables 19 and 20. Heteroscedasticity robust standard errors are used for the regression. The number of observations for each regression is indicated below. The probabilities are provided in italics. Wald Chi square and the probabilities are also provided.

$L.Lev_{it}$	0.4176
	0.0000
$IndLev_{it}$	0.7523
	0.0000
$MTBV_{it}$	-0.0008
	0.0160
$lnTA_{it}$	0.0640
	0.0000
$Tangibility_{it}$	0.1736
	0.0000
$Profitability_{it}$	-0.0987
	0.0000
$Infl_{it}$	0.3456
	0.0000
Constant	-1.0413
	0.0000
Firm fixed effects	yes
Observations	12121
Prob Chi-sq	0.000
Wald Chi-sq	4463.420

baseline SDC estimation results along with the results for the augmented models including control variables. After data cleaning, with the new sample size, 33 industries did not turn out to be enough for achieving significant results in terms of fixed industry effects. To reduce the noise in our results, we used ICB level 2 industry definitions (Appendix table 2-2) for the industry fixed effects and reduced the number of industries to 9.

For sensitivity, linear fixed effects regression results are provided together with Arellano-Bond regression results. The dependent variable is SDC_{it}, defined as the negative deviation of the actual firm leverage from the target leverage and the independent variable, $SEG_{it,}$ is the market segmentation.

The control variables include $Cash_{it}$ is the ratio of cash flow to total assets; $Depr_{it}$ is the ratio of depreciation to total assets and Div_{it} is the ratio of dividends to total assets. We conducted all estimations using the GMM.

As hypothesized, as international market segmentation variable (SEG_{it}) increases, SDC of firms increases, too. According to the coefficients in table 24, $SDC_{it,10\%}$ increases by 22.15% with 1% increase in international market segmentation. In the augmented model, as we include variables controlling for firm effects, we can report betterments in the model. SDC of firms increase 0.02% with an increase in dividends paid. This outcome for dividends was documented by Faulkender & Wang (2006). The authors stated a decrease is marginal value of cash[21] with an increase in cash dividends. Similarly, in line with previous research, as cash holdings increase, SDC increases as well. The estimated coefficient

[21] Marginal Value of Cash is associated with the Marginal Value of Financial Flexibility and it is used as a proxy fo the firm's need to stay financially flexible by Killi, Rapp , & Schmid (2011).

Table 24 Regression Results for Estimating Spare Debt Capacity

The table presents the Arellano- Bond (1991) and fixed effect regression estimations used to predict Spare Debt Capacity (SDC_{it}) as in equation 6. The firms are assigned to have SDC if the negative deviation from their target leverage larger than 10%. Descriptions and summary statistics for all variables are given in table 19 and table 20, respectively. The models use fixed time and industry effects. Industries are classified according to ICB of FTSE. The dependent variable is the Spare Debt Capacity, SDC_{it}. The independent variable is international market segmentation (SEG_{it}). The control variables are depreciation ($Depr_{it}$), dividends paid (Div_{it}), cash ratio ($Cash_{it}$), CRI_{it} and ADR_{it}. Heteroscedasticity consistent robust standard errors are reported below the coefficients. The t statistics are provided in italics. Bold coefficient estimates denote statistical significance at the 10% level. Number of observations for each regression is indicated below. Wald Chi square R2 and the probabilities are also provided.

	$SDC_{it,\ 10\%}$					
	Arellano-Bond	fixed effects regression	Arellano-Bond	fixed effects regression	Arellano-Bond	fixed effects regression
	I	I	II	II	III	III
$L.SDC_{it}$	0.1311		0.1040		0.1058	
	0.0987		0.0804		0.0789	
	1.3300		*1.2900*		*1.3400*	
SEG_{it}	0.0712	**0.2220**	0.1325	0.0155	0.2457	0.0424
	0.2127	0.1744	0.5807	0.2799	0.5759	0.2867
	0.3300	*1.2700*	*0.2300*	*0.0600*	*0.4300*	*0.1500*
$Depr_{it}$			-55.472	4.683	-48.469	8.340
			39.553	33.560	39.747	33.885
			-1.4000	*0.1400*	*-1.2200*	*0.2500*
Div_{it}			**0.0002**	0.0001	**0.0002**	0.0001
			0.0001	0.0001	0.0001	0.0001
			1.6100	*0.8600*	*1.5900*	*0.8300*
$Cash_{it}$			**23.871**	**9.002**	**23.646**	**9.749**
			10.089	5.526	10.461	5.704
			2.3700	*1.6300*	*2.2600*	*1.7100*
CRI_{it}					-	-
					-	-
					-	-
ADR_{it}					**-8.9209**	-7.9740
					5.3112	4.4312
					-1.6800	*-1.8000*
Constant	**4.833**	**1.912**	2.155	**3.558**	**16.009**	**3.560**
	1.200	0.466	2.671	0.915	7.987	0.980
	4.0300	*4.1100*	*0.8100*	*3.8900*	*2.0000*	*3.6300*
Industry fixed effects	yes	yes	yes	yes	yes	yes
Time fixed effects	yes	yes	yes	yes	yes	yes
SE	Robust	Robust	Robust	Robust	Robust	Robust
Observations	7790	12127	3320	4272	3223	4162
Prob Chi-sq	0.000		0.000		0.000	
Wald chi-sq	13710		36166		26517	
R2		0.012		0.098		0.128

corresponding to $Cash_{it}$ is positive and is statistically significant. This result is consistent with the existing literature that states that as cash holdings increase, firm's default risk decreases as well as the debt holders' risk (Faulkender and Wang, 2006). As cash holdings increase, the value of cash decreases for the firm and so does marginal value of financial flexibility. When ADR_{it} and CRI_{it} added in the augmented regression model (model III in table 24), the results indicate that $SDC_{it,10\%}$ decreases by 8.92% with 1% increase in ADR_{it}. The CRI_{it} results are not reported since the missing data did not let us deliver reliable results on this measure.

Firm Financial Flexibility Model

Following Eq 7, we studied the Financial Flexibility estimation at the firm level after defining Financial Flexibility dummies for each firm *i* at time *t*.

Table 25 presents logistic regression results for the financial flexibility estimation. We report logistic baseline and augmented regression models; we use two fixed effects; time fixed effect and firm fixed effect. Panel A gives the coefficients and Panel B gives the odds for the model. The dependent variable is financial flexibility; FF2 is a dummy equal to one for all firms undershooting their target leverage ratio by 10% or more for at least 2 consecutive years, and zero otherwise. Similarly, FF3 is a dummy equal to one if a company has a negative deviation from its target larger than at least 10% for at least three consecutive years. The same rule applies to FF4 and FF5. We show regression coefficients with heteroskedasticity robust standard errors. The t statistics are provided in italics below the t statistics.

Table 25 Regression Results for Financial Flexibility Estimation

The table presents financial flexibility logistic regression estimation results for FF variables (FF2 and FF3) calculated based on Spare Debt Capacity exceeding 10%. FF2 is a dummy variable and is equal to one if the firm has SDC_{it} in the previous 2 years; and FF3 gets a dummy of one when the firm has SDC_{it} in the previous 3 years. Descriptions and summary statistics for all variables are given in table 19 and table 20, respectively. The models use fixed time and firm effects. The dependent variable is the financial flexibility dummy. The independent variable is international market segmentation (SEG_{it}). The control variables are depreciation ($Depr_{it}$), dividends paid (Div_{it}), cash ratio ($Cash_{it}$), and ADR_{it}. Heteroscedasticity consistent robust standard errors are reported below the coefficients. The t statistics are provided in italics. Bold coefficient estimates denote statistical significance at the 10% level. Number of observations for each regression is indicated below.

Panel A: Coefficients	FF2						FF3					
	I	I	II	II	III	III	I	I	II	II	III	III
SEG_{it}	0.0464	0.0721	0.0624	0.1158	0.0605	0.1291	**0.1307**	**0.1521**	**0.2845**	**0.339**	**0.2724**	**0.3491**
	0.066	0.0619	0.1495	0.1337	0.1517	0.1369	0.0768	0.0696	0.1955	0.1799	0.1977	0.1857
	0.7	*1.16*	*0.42*	*0.87*	*0.4*	*0.94*	*1.7*	*2.19*	*1.46*	*1.88*	*1.38*	*1.88*
$Depr_{it}$			-11.1889	-9.5943	-11.5519	-9.845			-3.0585	-1.3685	-2.9703	-1.4223
			7.8978	7.2668	7.9408	7.3288			9.3094	8.3663	9.3722	8.4629
			-1.42	*-1.32*	*-1.45*	*-1.34*			*-0.33*	*-0.16*	*-0.32*	*-0.17*
Div_{it}			**0.0414**	**0.0326**	**0.0406**	**0.032**			0.0079	0.0168	0.0083	0.0164
			0.015	0.0138	0.015	0.0138			0.0189	0.0173	0.019	0.0172
			2.75	*2.36*	*2.7*	*2.33*			*0.42*	*0.97*	*0.44*	*0.95*
$Cash_{it}$			0.6692	0.1915	0.4644	-0.0099			-1.2743	-1.4545	-1.4436	-1.6595
			1.1773	1.1169	1.1901	1.1322			1.3888	1.3354	1.4162	1.3685
			0.57	*0.17*	*0.39*	*-0.01*			*-0.92*	*-1.09*	*-1.02*	*-1.21*
ADR_{it}					0.2838	0.1638					-0.0631	-0.1832
					0.6917	*0.5132*					*0.785*	*0.5465*
					0.41	0.32					-0.08	-0.34
Year fixed effects	yes		yes		yes		yes		yes		yes	
Firm fixed effects		yes		yes		yes		yes		yes		yes
Observations	4292	4292	1815	1815	1773	1773	2868	2868	1409	1409	1370	1370
p chi-sq	0	0.243	0	0.071	0	0.116	0	0.028	0	0.089	0	0.134
LR chi2(1)	200.91	1.37	151.73	8.64	141.07	8.84	169.17	4.83	141.68	8.08	131.6	8.44
log likelihood	-1648.1	-1747.9	-666.5	-738.1	-651.4	-717.5	-1090.8	-1173	-501.9	-568.7	-488.1	-549.7

Panel B: odds	FF2						FF3					
	I	I	II	II	III	III	I	I	II	II	III	III
	10	10	10	10	10	10	10	10	10	10	10	10
SEG_{it}	1.0475	1.0748	1.0644	1.1228	1.0624	1.1378	1.1397	1.1643	1.3291	1.4035	1.3132	1.4177
$Depr_{it}$			0	0.0001	0	0.0001			0.047	0.2545	0.0513	0.2411
Div_{it}			1.0423	1.0331	1.0415	1.0326			1.0079	1.0169	1.0083	1.0165
$Cash_{it}$			1.9527	1.2111	1.5911	0.9901			0.2796	0.2335	0.2361	0.1902
ADR_{it}					1.3282	1.178					0.9388	0.8326
Year fixed effects	yes		yes		yes		yes		yes		yes	
Firm fixed effects		yes		yes		yes		yes		yes		yes
Observations	4292	4292	1815	1815	1773	1773	2868	2868	1409	1409	1370	1370
p chi-sq	0	0.243	0	0.071	0	0.116	0	0.028	0	0.089	0	0.134
LR chi2(1)	200.9	1.4	151.7	8.6	141.1	8.8	169.2	4.8	141.7	8.1	131.6	8.4
log likelihood	-1648.1	-1747.9	-666.5	-738.1	-651.4	-717.5	-1090.8	-1173	-501.9	-568.7	-488.1	-549.7

The baseline and the augmented logistic regression models indicate the best fit for the dependent variable FF3. So, even though having the results for 4 different levels of financial flexibility, we will focus on FF3 results.

Table 25 shows that international market segmentation is significantly positively related to $FF3_{10\%}$ and the odds of financial flexibility increases by 13.9% with a 1% increase in international market segmentation in the time fixed effects baseline model and 16.4% in the firm fixed effects model. The results improve pretty much for the augmented logistic regression results. This odds of financial flexibility increases up to 32% in the time fixed effects model and 41% in the firm fixed effects model. Another significant result is delivered for the financial flexibility and dividends. The odds of financial flexibility increase by 3% and 4% respectively with a one-unit dividend increase in the time and firm fixed effects models, respectively. We also estimated FF3 at 5% and 25% levels indicating that we gave a dummy $FF3_{5\%}$ when the firm has greater than 5% SDC at least for consecutive 3 years and $FF3_{25\%}$ when the firm has greater than 25% SDC at least for consecutive 3 years. These results are similar to our previous results for $FF3_{10\%}$. The odds to financial flexibility increases by 29% and 42% in the time and firm fixed effect augmented models.

Table 26 T test results for the Financial Flexibility variables

The table presents the mean equality test results for the financial flexibility variable tested at two levels: FF2 indicating that the firms had SDC for at least two consecutive years and FF3 indicating that the firms had SDC for at least three consecutive years. FF2 and FF3 are tested for different levels of Spare Debt Capacity calculations; $SDC_{it\ 5\%}$, $SDC_{it\ 10\%}$ and $SDC_{it\ 25\%}$. $FF2_{\%5}$ is a dummy variable that takes a value of one when the firm has 5% negative deviation from its target leverage ratio for at least two consecutive years. $FF2_{\%10}$ is a dummy variable that takes a value of one when the firm has 10% negative deviation from its target leverage ratio for at least two consecutive years. $FF2_{\%25}$ is a dummy variable that takes a value of one when the firm has 25% negative deviation from its target leverage ratio for at least two consecutive years. $FF3_{\%5}$ ($FF2_{\%10}$, $FF2_{\%25}$) is a dummy variable that takes a value of one when the firm has 5% (10%, 25%) negative deviation from its target leverage ratio for at least three consecutive years. NFF2 indicates the firms that are not in the financially flexible status. Descriptions for all variables are given in table 19.

		FF2 10%	NFF2 10%		FF2 5%	NFF2 5%		FF2 25%	NFF2 25%	
SEG_{it}	mean	0.1618	0.1453		0.1668	0.1403		0.1636	0.1482	
	t stat			0.1556			-2.4207			-0.8150
	p value			*0.1799*			*0.0155*			*0.4153*
$Depr_{it}$	mean	0.0381	0.0338		0.0373	0.0335		0.0448	0.0341	
	t stat			-7.5403			-7.3379			-9.1943
	p value			*0.0000*			*0.0000*			*0.0000*
Div_{it}	mean	33.8849	18.8407		40.9698	10.6943		2.0285	25.2744	
	t stat			-0.7611			-1.5416			0.7861
	p value			*0.4467*			*0.1233*			*0.4318*
$Cash_{it}$	mean	0.0707	0.0629		0.0724	0.0608		0.0592	0.0653	
	t stat			-4.7433			-7.8738			2.3291
	p value			*0.0000*			*0.0000*			*0.0201*
SDC_{it}	mean	7.8863	1.0415		6.7865	0.4551		12.6159	2.5537	
	t stat			-10.2636			-12.5806			-5.7220
	p value			*0.0000*			*0.0004*			*0.0000*
		FF3 10%	NFF3 10%		FF3 5%	NFF3 5%		FF3 25%	NFF3 25%	
SEG_{it}	mean	0.1825	0.1556		0.1822	0.1524		0.1834	0.1596	
	t stat			-1.7335			-2.2733			-0.9598
	p value			*0.0831*			*0.0231*			*0.3376*
$Depr_{it}$	mean	0.0385	0.0336		0.0375	0.0334		0.0459	0.0339	
	t stat			-7.7130			-7.3325			-8.6848
	p value			*0.0000*			*0.0000*			0.0000
Div_{it}	mean	29.9050	22.6983		50.5173	9.8673		1.8646	26.0914	
	t stat			-0.3337			-1.6277			0.6696
	p value			*0.7386*			*0.1037*			0.5031
$Cash_{it}$	mean	0.0710	0.0645		0.0727	0.0628		0.0587	0.0663	
	t stat			-3.5888			-6.1346			2.4970
	p value			*0.0003*			*0.0000*			0.0128
SDC_{it}	mean	8.6774	1.2851		7.5645	0.6813		14.8755	2.6935	
	t stat			-9.0863			-11.1196			-5.1990
	p value			*0.0005*			*0.0000*			0.0000

Table 27 T test results for the Leverage equation variables

The table presents the mean equality test results for the financial flexibility variable tested at 2 levels: FF2 indicating that the firms had SDC for at least two consecutive years and FF3 indicating that the firms had SDC for at least three consecutive years. FF2 and FF3 are tested for different levels of Spare Debt Capacity calculations; $SDC_{it\ 5\%}$, $SDC_{it\ 10\%}$ and $SDC_{it\ 25\%}$. $FF2_{\%5}$ is a dummy variable that takes a value of one when the firm has 5% negative deviation from its target leverage ratio for at least two consecutive years. $FF2_{\%10}$ is a dummy variable that takes a value of one when the firm has 10% negative deviation from its target leverage ratio for at least two consecutive years. $FF2_{\%25}$ is a dummy variable that takes a value of one when the firm has 25% negative deviation from its target leverage ratio for at least two consecutive years. $FF3_{\%5}$ ($FF2_{\%10}$, $FF2_{\%25}$) is a dummy variable that takes a value of one when the firm has 5% (10%, 25%) negative deviation from its target leverage ratio for at least three consecutive years. NFF2 indicates the firms that are not in the financially flexible status. Descriptions for all variables are given in table 19.

		FF2 10%	NFF2 10%		FF2 5%	NFF2 5%		FF2 25%	NFF2 25%	
Lev_{it}	mean	0.2062	0.3641		0.2172	0.3812		0.1869	0.3384	
	t stat			40.0927			44.3817			24.0768
	p value			*0.0000*			*0.0000*			*0.0000*
$IndLev_{it}$	mean	0.3186	0.3013		0.3139	0.3010		0.3343	0.3032	
	t stat			-7.2536			-6.1401			-6.7715
	p value			*0.0000*			*0.0000*			*0.0000*
$MTBV_{it}$	mean	1.9204	1.3155		1.8912	1.2437		2.0692	1.4091	
	t stat			-8.1516			-8.9132			-3.0860
	p value			*0.0000*			*0.0000*			*0.0000*
$lnTA_{it}$	mean	16.7037	14.1215		16.3258	13.9311		17.8578	14.4898	
	t stat			-72.6845			-73.8505			-56.1748
	p value			*0.0000*			*0.0000*			*0.0000*
$Tangibility_{it}$	mean	0.4143	0.3544		0.4040	0.3507		0.4720	0.3611	
	t stat			-13.8725			-14.0838			-14.5395
	p value			*0.0000*			*0.0000*			*0.0000*
$Profitability_{it}$	mean	0.1274	0.0872		0.1247	0.0828		0.1413	0.0932	
	t stat			-15.2526			-15.6180			-13.9008
	p value			*0.0000*			*0.0000*			0.0000
		FF3 10%	NFF3 10%		FF3 5%	NFF3 5%		FF3 25%	NFF3 25%	
Lev_{it}	mean	0.1963	0.3565		0.2088	0.3708		0.1799	0.3346	
	t stat			37.1991			40.7957			15.4394
	p value			*0.0000*			*0.0000*			*0.0000*
$IndLev_{it}$	mean	0.3125	0.3005		0.3093	0.3003		0.3292	0.3014	
	t stat			-4.4394			-3.8847			-5.7933
	p value			*0.0000*			*0.0001*			*0.0000*
$MTBV_{it}$	mean	1.9543	1.3539		1.9614	1.2811		1.7987	1.4463	
	t stat			-7.3406			-8.1116			-2.0347
	p value			*0.0000*			*0.0000*			*0.0419*
$lnTA_{it}$	mean	16.9454	14.2543		16.5693	14.0760		18.1484	14.5778	
	t stat			-68.9700			-71.3760			-41.5686
	p value			*0.0000*			*0.0000*			*0.0000*
$Tangibility_{it}$	mean	0.4180	0.3534		0.4072	0.3498		0.4735	0.3599	
	t stat			-13.3291			-13.7820			-12.9554
	p value			*0.0000*			*0.0000*			*0.0000*
$Profitability_{it}$	mean	0.1304	0.0881		0.1269	0.0844		0.1446	0.0934	
	t stat			-15.1430			-15.3406			-6.2290
	p value			*0.0000*			*0.0000*			0.0000

Robustness

Since there are no single definite financial flexibility measures in the literature, we will use another measure to check for the robustness of our results from the previous sections; Financial Flexibility Z by Bancel and Mittoo (2010). FFZ will be regressed on international market segmentation and the impact of SEG will be studied on FF. We will compare our measure of financial flexibility, SDC and FF3, with the robustness variable, FFZ.

Financial Flexibility Z:

Bancel and Mittoo (2010) tried several FF variables and found that each of these variables explain a unique effect on financial flexibility, so, they came up with a measure covering all of these measures (Table 28). For Financial Flexibility Z (FFZ), the authors used four ratios according to their survey results and put the Altman Z score weights for these four variables. Altman Z score has already been used as a proxy for firm's financial constraints by many researchers and Bancel Mittoo approximated four of the Altman Z score ratios for their FF measure. The measure is tested to be a good measure of financial flexibility and is a more reasonable measure than individual ratios. They calculated the FF index as follows:

Eq 9 $$FF\ index\ Z = 1.2\ X_1 + 1.4\ X_2 + 3.3\ X_3 + 0.6\ X_4$$

where X_1 = Cash ratio minus Trade payable ratio, X_2 = % of internal financing , X_3 = % return on assets, and X_4 = shareholder equity/ total liabilities (long term plus short term debt ratios). All the variables and the definitions are defined in table 28

Table 28 Robustness: Financial Flexibility Z - Definition of the variables

The table presents the variable definitions for the financial flexibility model in equation 9. In the equation, the variables are as follows: X_1 = Cash ratio minus Trade payable ratio, X_2 = % of internal financing , X_3 = % return on assets, and X_4 = shareholder equity/ total liabilities (long term plus short term debt ratios).

Variables used to estimate Financial Flexibility Z (FFZ)

Variable	*Description*
$Cash_{it}$	Cash ratio. The ratio of total cash holdings to total assets.
$Trade_{it}$	Trade payable ratio. The ratio of accounts payable to total assets.
$intf_{it}$	Internal financing. Cash flows from operations over total cash flows from investing, operating and financing activities.
ROA_{it}	Percentage of return on equity. Net income over total assets.
SE_{it}	Shareholder's equity
$Liab_{it}$	Total liabilities. Short term liabilities plus long term liabilities.

Other Variables	*Description*
Div_{it}	Control variable. The ratio of total dividends paid to total assets.
$Depr_{it}$	Control variable. The ratio of total depreciation to total assets.
CRI_{it}	Control variable. Creditor's Rights Index. It shows the strength of creditor's rights. Ranges from 0-4 and the countries in which creditor protection is the law get a score 1. *La Porta et al. (1998)*
ADR_{it}	Control variable. Revised antidirector Index. It shows the strength of investor protection. Ranges from 1 to 5. Countries in which the investors are protected get high scores. *Djankov et al. (2008)*

Table 29 Robustness: Descriptive Statistics for FFZ estimation

The table shows the descriptive statistics for the variables used to estimate FFZ for the advanced emerging market firms for each fiscal year *t*. The independent variable is Financial Flexibility Z (FFZ_{it}). Detailed descriptions of all variables are given in table 28.

Variables used for FFZ calculation

	Mean	1st Quartile	Median	3rd Quartile	Std. Dev.
$Cash_{it}$-$Trade_{it}$	-0.0400	-0.0810	-0.0270	0.0110	0.1180
$intf_{it}$	0.5550	0.0910	0.4860	0.9660	3.4900
ROA_{it}	0.0480	0.0110	0.0490	0.0930	0.1930
SE_{it}-$Liab_{it}$	2.2430	0.6750	1.1520	2.3110	4.0220
$lnFFZ_{it}$	0.6560	0.1179	0.6755	1.2686	1.0322

.

Financial Flexibility Z model:

After FFZ calculations for each firm at each time period, based on Eq 9, the FFZ is regressed on international market segmentation (SEG) to measure the impact. The model is as follows:

Eq 10 $$FFZ_{it} = \propto + \beta SEG_{it} + \eta_i + \partial X_{it} + \varphi V_{it} + e_{it}$$

where FFZ_{it} is the Financial Flexibility Z and SEG_{it} is the international market segmentation measure for the firm. η_i is the firm fixed effects. We tried to control for the firm specific factors Dividends, Depreciation and Cash ratios (X_{it}). To control for country specific factors, *Antidirector rights index* and *Creditor's rights index* (V_{it}) will be used.

All the accounting data is taken from Thompson Worldscope. The first variable for the measure is the difference between *cash ratio* and *trade payables ratio*. *Cash ratio* is the ratio of cash to total assets. Trade payable ratio is the ratio of accounts payable to total assets. The second variable is the *percentage of internal financing* which is the ratio of cash flow from operations (net cash receipts and disbursements from operations) to total cash flow from investing, operating and financing activities. *The percentage of return on equity* is the third variable and it is net income over total assets. The last variable is *shareholder's equity* over *total liabilities*. The control variables used for this model are total *dividends* paid over total assets, (Div_{it}) and *depreciation* over total assets ($Depr_{it}$). We did not include *cash ratio* as another firm specific factor due to endogeneity concerns. Cash ratio is

already embedded in the first variable in FFZ. ADR_{it} and CRI_{it} are also used as control variables to check for antidirector rights and creditor rights respectively. However, as in the previous section, CRI_{it} does not deliver good results due to missing data and these results are not reported within the contents of this paper.

First, we use the *cash ratio*, *trade payable ratio*, *internal financing* ratio and *shareholders equity* over *total liabilities* to define an FFZ_{it} for firm *i* at time *t*. Descriptive statistics table report the mean, median, standard deviation and the 1st ad the 3rd quartiles (table 29). The mean for the natural log of financial flexibility Z (FFZ) is 2.3 while the median is 1.7 and FFZ is skewed to the right and it is increasing over time. The *return on equity* is distributed quite evenly and the mean and the median are both around 4.8%. The mean and the median for the difference between *cash ratio* and trade payables ratio is negative and the distribution is skewed.

The natural logarithm of FFZ is regressed onto the annual firm-level segmentation measure SEG to see the impact of international market segmentation on firm capital structure in terms of firm financial flexibility. The baseline and the augmented model results for the firm fixed effects regressions are provided in table 30. The coefficient estimates from GMM regressions, standard errors and t statistics are reported.

Inline with the SDC and financial flexibility estimation results, the coefficient for the international market segmentation (SEG_{it}) is positive. For every 1% increase in SEG_{it}, the natural logarithm of FFZ increases by 0.03. As expected, results improve when control

Table 30 Robustness: Regression Results for Financial Flexibility Z Model I
The table presents the Arellano- Bond (1991) and fixed effect regression estimations used to predict Financial Flexibility Z as in equation 10. Descriptions and summary statistics for all variables are given in table 28 and table 29, respectively. The models use firm fixed effects. The dependent variable is the Financial Flexibility Z, FFZ_{it}. The independent variable is international market segmentation (SEG_{it}). The control variables are depreciation ($Depr_{it}$), dividends paid (Div_{it}), cash ratio ($Cash_{it}$), and ADR_{it}. Heteroscedasticity consistent robust standard errors are reported below the coefficients. The t statistics are provided in italics. Bold coefficient estimates denote statistical significance at the 10% level. Number of observations for each regression is indicated below. Wald Chi square, F values, R2 and the probabilities are also provided.

	Arellano-Bond I	Fixed effects regression I	Arellano-Bond II	Fixed effects regression II	Arellano-Bond III	Fixed effects regression III
L.FFZ	**0.1045**		0.0339		0.0375	
	0.0281		0.0352		0.0356	
	3.7200		*0.9600*		*1.0500*	
SEG	-0.0480	0.0370	0.0111	0.0094	0.0068	0.0019
	0.0587	0.0518	0.0597	0.0669	0.0617	0.0688
	-0.8200	*0.7100*	*0.1900*	*0.1400*	*0.1100*	*0.0300*
$Depr_t$			-0.145	0.212	-0.290	0.129
			0.609	0.553	0.617	0.574
			-0.2400	*0.3800*	*-0.4700*	*0.2200*
Div_t			0.0009	0.0004	0.0009	0.0004
			0.0008	0.0006	0.0009	0.0006
			1.0400	*0.5600*	*1.0500*	*0.5700*
ADR_t					**-0.160**	**-0.182**
					0.099	0.103
					-1.6200	*-1.7700*
Constant	**0.630**	**0.652**	**0.715**	**0.722**	**0.955**	**0.726**
	0.029	0.005	0.048	0.007	0.153	0.007
	21.7100	*128.9100*	*14.8000*	*109.2300*	*6.2400*	*107.5300*
Firm fixed effects	yes	yes	yes	yes	yes	yes
SE	Robust	Robust	Robust	Robust	Robust	Robust
Observations	8485	12867	4791	6035	4713	5948
Prob F	0.001	0.475	0.706	0.920	0.461	0.466
F value	14.45	0.51	2.16	0.17	4.64	0.90
R2		0.003		0.009		0.005

Table 31 Robustness: Regression Results for Financial Flexibility Z Model II
The table presents the Arellano- Bond (1991) and fixed effect regression estimations used to predict Financial Flexibility Z as in equation 10. Descriptions and summary statistics for all variables are given in table 28 and table 29, respectively. The models use fixed time and industry effects. Industries are classified according to ICB of FTSE. The dependent variable is the Financial Flexibility Z, FFZ_{it}. The independent variable is international market segmentation (SEG_{it}). The control variables are depreciation ($Depr_{it}$), dividends paid (Div_{it}), cash ratio ($Cash_{it}$), and ADR_{it}. Heteroscedasticity consistent robust standard errors are reported below the coefficients. The t statistics are provided in italics. Bold coefficient estimates denote statistical significance at the 10% level. Number of observations for each regression is indicated below. Wald Chi square, F values, R2 and the probabilities are also provided.

	Arellano-Bond I	Fixed effects regression I	Arellano-Bond II	Fixed effects regression II	Arellano-Bond III	Fixed effects regression III
$L.FFZ_{it}$	**0.0507**		-0.0309		-0.0306	
	0.0272		0.0328		0.0332	
	1.8600		*-0.9400*		*-0.9200*	
SEG_{it}	-0.0024	0.0558	0.0009	-0.0197	-0.0085	-0.0209
	0.0734	0.0645	0.0719	0.0783	0.0743	0.0799
	-0.0300	*0.8600*	*0.0100*	*-0.2500*	*-0.1100*	*-0.2600*
$Depr_{it}$			0.539	0.696	-0.009	0.609
			0.690	0.610	0.074	0.635
			0.7800	*1.1400*	*-0.1100*	*0.9600*
Div_{it}			0.0007	0.0002	0.0007	0.0002
			0.0009	0.0007	0.0009	0.0007
			0.8200	*0.2900*	*0.8300*	*0.2900*
ADR_{it}					**-0.282**	**-0.265**
					0.134	0.121
					-2.1000	*-2.1900*
Constant	**0.800**	**0.563**	**0.693**	**0.729**	**1.330**	**0.727**
	0.046	0.032	0.073	0.040	0.211	0.040
	17.4800	*17.7500*	*9.4400*	*18.0500*	*6.3100*	*17.9900*
Industry fixed effects	yes	yes	yes	yes	yes	yes
Time fixed effects	yes	yes	yes	yes	yes	yes
SE	Robust	Robust	Robust	Robust	Robust	Robust
Observations	8485	12867	4791	6035	4713	5948
Prob F	0.000	0.000	0.000	0.000	0.000	0.000
F value	151	1.67	185.69	1.76	193.14	1.78
R2		0.010		0.008		0.023

variables are added. In the augmented model, SEG_{it} increases FFZ by 0.002 with every 1% increase. We also reported the baseline and augmented Arellano Bond and fixed effect regression results for the industry and time fixed effects models in table 31. These models also confirm the positive impact of market segmentation on financial flexibility. As a result, these results prove the robustness of our SDC measure for testing the international market segmentation effects on firm capital structure in terms of financial flexibility.

International listings:

Some of the listed companies in our sample also listed in foreign exchange markets. We studied the impact of these cross-listings of the firms on their financial flexibility and proved the significance of our results with mean comparison tests (t- tests). The results are shown in Table 32.

According to our results, the companies whose stocks are cross-listed in foreign exchanges have lower leverage ratios accompanied with higher Spare Debt Capacity (SDC) at all threshold levels. The mean $SDC_{10\%}$ for the internationally listed firms in our sample is 3.4% while it is 2.2% for domestically listed firms. Internationally listed firms hold more cash and their depreciation expense is higher. The mean industry leverage ratio for cross-listed firms is lower while the natural logarithm of their total assets, tangibility and profitability are significantly higher. The mean of profitability for the internationally listed firms is 14.5 while this value is 8.8 for domestically listed firms. The market to book value of the cross-listed firms is significantly higher and it is 2.14 while it is 1.32 for domestically listed firms. Our results are inline with the literature on cross listings and their impact on

Table 32 T-test results for internationally and domestically listed firms

The table shows the mean comparison test results for the financial flexibility model variables. Spare Debt Capacity is denoted with SDC and it is tested for three different thresholds. $SDC_{5\%}$ defines the Spare Debt Capacity (SDC) after trimming the data at 5% level. $SDC_{10\%}$ indicated SDC trimmed at 10% and $SDC_{25\%}$ indicated SDC trimmed at 25%. The rest of the varibles are explained in detail in table 19. The t-statistics and the p values are given in the table as well as the mean values, separately for domestically and internationally listed firms (cross-listed firms).

		domestically listed	crosslisted	
$SDC_{5\%}$	mean	2.195865	3.267048	
	t stat			-2.3602
	p value			*0.0183*
$SDC_{10\%}$	mean	2.358499	3.405127	
	t stat			-2.1809
	p value			*0.0292*
$SDC_{25\%}$	mean	3.00765	3.884159	
	t stat			-1.5202
	p value			*0.1285*
$Cash_{it}$	mean	0.0594315	0.0808238	
	t stat			-12.0624
	p value			*0*
$Depr_{it}$	mean	0.0341632	0.039982	
	t stat			-8.82
	p value			*0*
Lev_{it}	mean	0.3459344	0.2596338	
	t stat			16.1552
	p value			*0*
$IndLev_{it}$	mean	0.3138127	0.2781848	
	t stat			13.6431
	p value			*0*
$MTBV_{it}$	mean	1.323304	2.144846	
	t stat			-9.8474
	p value			*0*
$lnTA_{it}$	mean	14.43141	15.40151	
	t stat			-20.0314
	p value			*0*
$Tangibility_{it}$	mean	0.3708254	0.3798939	
	t stat			-1.9387
	p value			*0.0526*
$Profitability_{it}$	mean	0.0880988	0.1450072	
	t stat			-9.6994
	p value			*0*

capital structure. King and Segal (2000) state lower leverage levels for Canadian cross-listed firms in US. This increases the probability of bankruptcy and reduces the value of outstanding debt decreasing financial flexibility.

Results

The capital inflows to advanced emerging markets contribute to the globalization in capital markets. This impact on international market integration also affects the listed firms and their capital structure choice in many ways. Here, in this study, we focused on the financial flexibility effects of market integration. We had market integration as an outcome of international capital flows and we used international market segmentation measure as our independent variable in the firm capital structure analysis. Financial flexibility, though being one of the top decision making factors for managers, is quite subjective and there is not a one definite measure for it in the literature. We used, Spare Debt Capacity to measure firm financial flexibility.

Supporting the trade-off theory, our results show that firm financial flexibility increases with international market segmentation in advanced emerging markets for listed firms.

Our results regarding financial globalization and its capital structure impacts are inline with the literature. One of the very few papers, Schmukler and Vesperoni (2001), study East Asian and Latin American countries and find shortening of debt maturity. Their results imply a decline in financial flexibility after financial liberalizations.

Financially flexible firms have lower leverage levels. They have an average spare debt capacity level of 8.6% and this ratio is approximately 7% more than that of the firms that are not financially flexible.

Financially flexible firms, defined as firms with spare debt capacity for a certain period of time, undershoot their target leverage ratios and stay under-levered. They have larger cash holdings. This is in fact, inline with marginal value of cash arguments. Cash is also another measure used for financial flexibility in some studies. According to the marginal value of cash hypothesis, marginal value of cash decline with cash holdings and the marginal value of financial flexibility is also anticipated to decline. Following increases in cash levels, financial flexibility improves. In our study, we provide evidence that financially flexible firms, classified through spare debt capacity (*SDC)* measurements, hold more cash.

Market to book value and the total assets are higher for flexible firms. These firms also hold more tangible assets and are more profitable. Median industry leverage average is higher for financially flexible firms meaning that in relatively higher leveraged industries, firms keep low leverage to stay financially flexible.

Depreciation and international market segmentation is higher for firms holding more spare debt capacity. Our results gave similar results for most of the variables at different threshold levels for spare debt capacity. Average spare debt capacity difference between flexible firms and the ones that are not, is wider at the 25% threshold. Also, flexible firms at this threshold, keep more unused deb capacity. However, the same condition does not hold for cash holdings; they hold less cash.

Similar to our results for spare debt capacity (*SDC*) estimations, the gaps regarding financial measures between FF (financially flexible) and NFF (not

financially flexible) firms are wider at 25% threshold for spare debt capacity. Flexible firms are more tangible and profitable than the NFF firms at 25% SDC level. Another distinctive result at this threshold is that FF firms keep lower leverage but their market to book value is higher.

CHAPTER 4

SUMMARY AND CONCLUSIONS

In this study, we focused on the corporate financial flexibility effects of the capital inflows to advanced emerging markets. We measured segmentation with global earning yield differentials and defined financial flexibility for advanced emerging market firms to study the change in corporate financial flexibility with segmentation level changes.

Studies already showed that in integrated markets, the valuation differentials are very small and can be explained by the earnings volatility and leverage differentials (Bekaert G. , Harvey, Lundblad, & Siegel, 2011). In line with the studies for the emerging markets, our calculations prove that the integration assumption for the developed emerging markets is violated in reality. We tried to see if there exists a reverse causality in the case of segmented emerging markets. We named the targeted leverage behavior as financial flexibility and studied the impact of segmentation of the firm from world earning yields on its financial flexibility choice. The firm's leverage choice (undershooting or overshooting) is explained with the deviations in earning yields (*segmentation*) - the firm's earning yield differentials from world levels-.

The study as a whole shows that the capital inflows have international market integration effects. However, in line with the trade off theory, the impact of market segmentation on firm capital structure, in terms of financial flexibility, is negative. International flows and the integrated market structure it brings, disturbs the financial flexibility of the domestic firm in advanced emerging markets. In contrast, market segmentation increases unused debt capacity and improves firm financial flexibility.

We provide evidence that financially flexible firms are internationally more segmented when flexibility is measured in terms of staying under-levered. Economically, 1% increase in earning yield differentials at country levels increases the flexibility of the firm by 22.15% when spare debt capacity is the measure. Similarly, when measured with a financial flexibility dummy, the odds to being financially flexible increases by 13.9% with a 1% increase in international market segmentation.

Although these results confirm firms are in favor of staying segmented in capital inflows wise, firm cross-listings in international markets results show significant flexibility for cross-listed firms. This might indicate capital inflows as an obstacle to keeping spare debt capacity but, still, there is room for the benefits of international listings in terms of financial flexibility.

International integration is one of the important outcomes of the capital inflows to emerging countries. However, the integration of the financial markets has been volatile and now, there still seems to be some room for diversification benefits in advanced emerging markets studied in our sample.

Because of the noise accompanied with them, we do not prefer stressing the results for Thailand, Taiwan and South Africa. However, we should say that specific for Turkey and Brazil, our results indicate that these markets` movements are pretty much more inline with the developed markets in terms of earning yields in 2009-2011 and that the capital inflows to these countries have been decreasing the international market segmentation. With the latest world financial crisis, there is a general trend in segmentation to decrease and the earning yields for the sample emerging countries have converged. Recovery in world financial situation brings parallel increase in segmentation.

As an implication, from the firm point of view, the study does not suggest capital inflows to the country in the sense that these flows close the gap between global earning yields and the firm's earning yields. The integration it brings distorts the leverage balances of the firm, the target and actual leverage difference - unused debt capacity- decreases. However., another source of integration for the firm, cross-listings, is desired since it is found to bring additional financial flexibility to the firm. The implications for the policy makers are contradictory to these results in the sense that capital inflows are desired since they are proved to bring more liquid financial markets and lower cost of capital.

Further research should be done to see which effect dominates the firm's decisions. The relative importance and the impact of cost of capital & market liquidity and financial flexibility should be studied to see the final result. Also, the availability of all the variables for the firms in our sample was a limitation for this study. A better representation of the advanced emerging markets could be achieved with a database especially designed for emerging markets.

APPENDICES

Table 1-1 Capital Inflows to developed emerging markets (USD million)

	TOTAL_FL	TOTAL__FDIL	TOTAL_PEQL	TOTAL_PDL	TOTAL_DERL	TOTAL__OTHERL
1990	29,403	7,792	3,542	1,152	592	13,806
1991	40,577	11,204	6,762	12,152	567	11,846
1992	52,584	13,241	10,734	20,980	2,815	5,083
1993	104,450	14,385	28,281	32,993	3,910	21,645
1994	52,583	15,035	14,347	54,316	134	-21,792
1995	95,171	25,828	11,853	4,397	610	49,168
1996	103,534	31,239	17,440	30,095	1,755	20,987
1997	76,471	45,894	20,119	13,957	2,373	-10,059
1998	70,954	56,512	5,291	26,354	-4,511	-24,542
1999	79,614	60,677	36,825	14,544	1,755	-33,715
2000	82,838	63,912	18,636	5,162	-13	-12,633
2001	50,452	53,704	9,601	1,586	-5,270	-600
2002	39,494	41,891	7,509	-7	-2,091	-7,908
2003	91,836	28,322	35,789	18,599	-704	9,220
2004	153,433	51,579	42,760	30,947	5,449	17,453
2005	205,515	68,329	73,387	24,744	3,624	29,267
2006	265,985	100,900	67,534	23,881	4,348	51,233
2007	431,396	186,899	43,333	62,072	-13,021	121,411
2008	228,000	188,488	-47,532	-310	-25,185	73,945
2009	208,849	62,281	81,939	51,509	-12,355	36,419
2010	366,591	44,162	91,359	114,281	4,304	103,852
2011	310,913	131,803	4,410	86,937	9,770	77,601

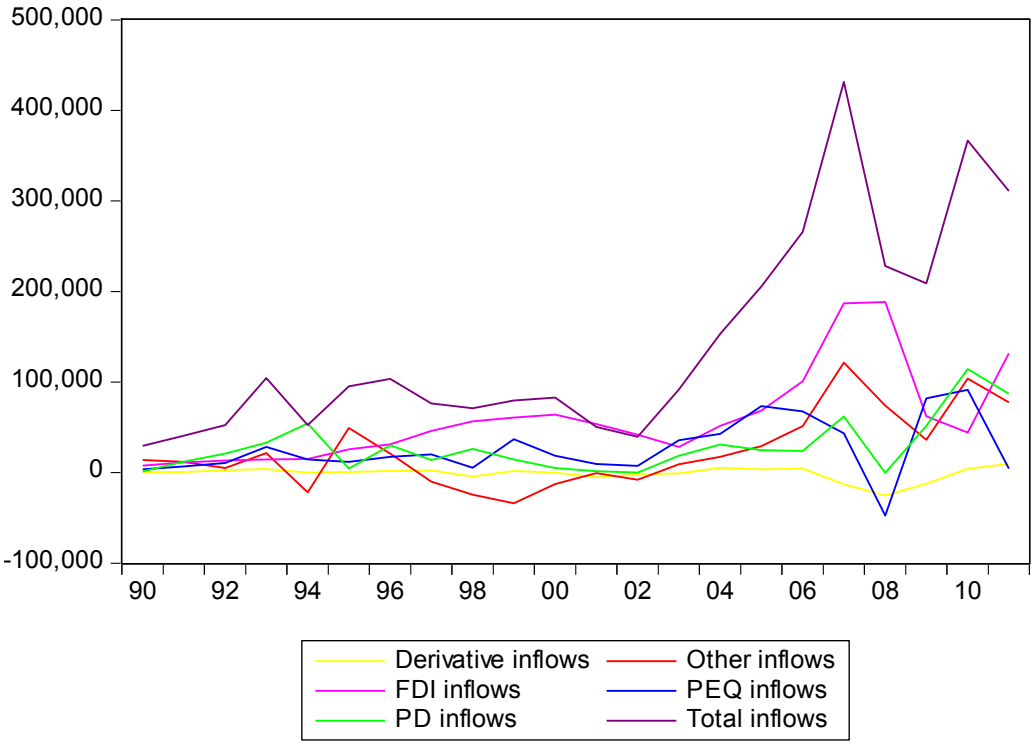


Figure 1-1 Cumulative capital inflows to developed emerging markets (USD million

Table 1-2 Total Capital Inflows to developed emerging markets- individually (USD million)

obs	TOTAL_FL_BR	TOTAL_FL_CZ	TOTAL_FL_HU	TOTAL_FL_MLY	TOTAL_FL_MX	TOTAL_FL_PL	TOTAL_FL_SA	TOTAL_FL_TAIW	TOTAL_FL_TH	TOTAL_FL_TR
1990	- 1,845		- 278	1,989	14,591	- 4,227	- 1,387	6,594	9,402	4,564
1991	- 714		1,487	4,664	21,395	- 2,693	- 604	5,183	11,575	284
1992	6,125		837	7,245	17,094	- 74	2,115	2,821	9,517	6,905
1993	11,397	6,947	5,221	11,738	32,973	1,511	1,070	6,562	14,200	12,831
1994	16,477	7,500	3,051	784	10,484	- 6,571	2,728	10,752	13,981	- 6,603
1995	33,409	11,538	6,692	6,628	- 12,657	5,945	7,470	5,093	25,448	5,605
1996	36,545	6,947	1,598	5,343	10,453	253	6,665	11,206	17,881	6,642
1997	24,044	6,510	3,760	6,801	4,899	7,394	16,604	5,950	- 9,171	9,680
1998	29,370	4,679	5,217	2,719	5,887	11,621	12,336	7,097	- 10,584	2,613
1999	13,245	8,119	6,519	3,604	4,709	13,801	13,692	16,140	- 8,903	8,687
2000	35,957	5,122	4,164	3,568	- 5,344	14,191	4,133	17,134	- 8,073	11,986
2001	24,887	6,243	5,461	- 278	- 2,139	7,107	4,548	19,276	- 1,983	- 12,671
2002	1,173	10,746	2,693	4,095	- 5,183	6,680	53	17,329	- 2,280	4,188
2003	8,715	6,875	9,011	2,895	- 1,966	10,780	3,941	44,349	- 2,778	10,014
2004	8,622	16,669	11,762	19,715	- 3,319	22,282	10,083	36,572	4,194	26,853
2005	21,958	16,022	17,199	- 1,183	195	23,865	18,054	49,489	14,381	45,535
2006	51,225	11,493	31,538	4,885	- 7,858	30,997	30,131	30,789	21,707	61,079
2007	113,573	21,174	81,674	21,091	15,760	51,842	26,614	24,258	17,102	58,309
2008	51,824	13,654	82,072	- 18,553	9,788	36,077	7,434	- 7,110	2,256	50,558
2009	86,005	8,724	1,686	9,349	18,557	35,662	16,232	24,530	4,761	3,343
2010	157,471	17,834	- 43,892	9,167	39,755	48,551	16,502	31,809	32,489	56,905
2011	133,026	9,669	14,174	10,780	29,607	34,810	16,811	7,173	-	54,863

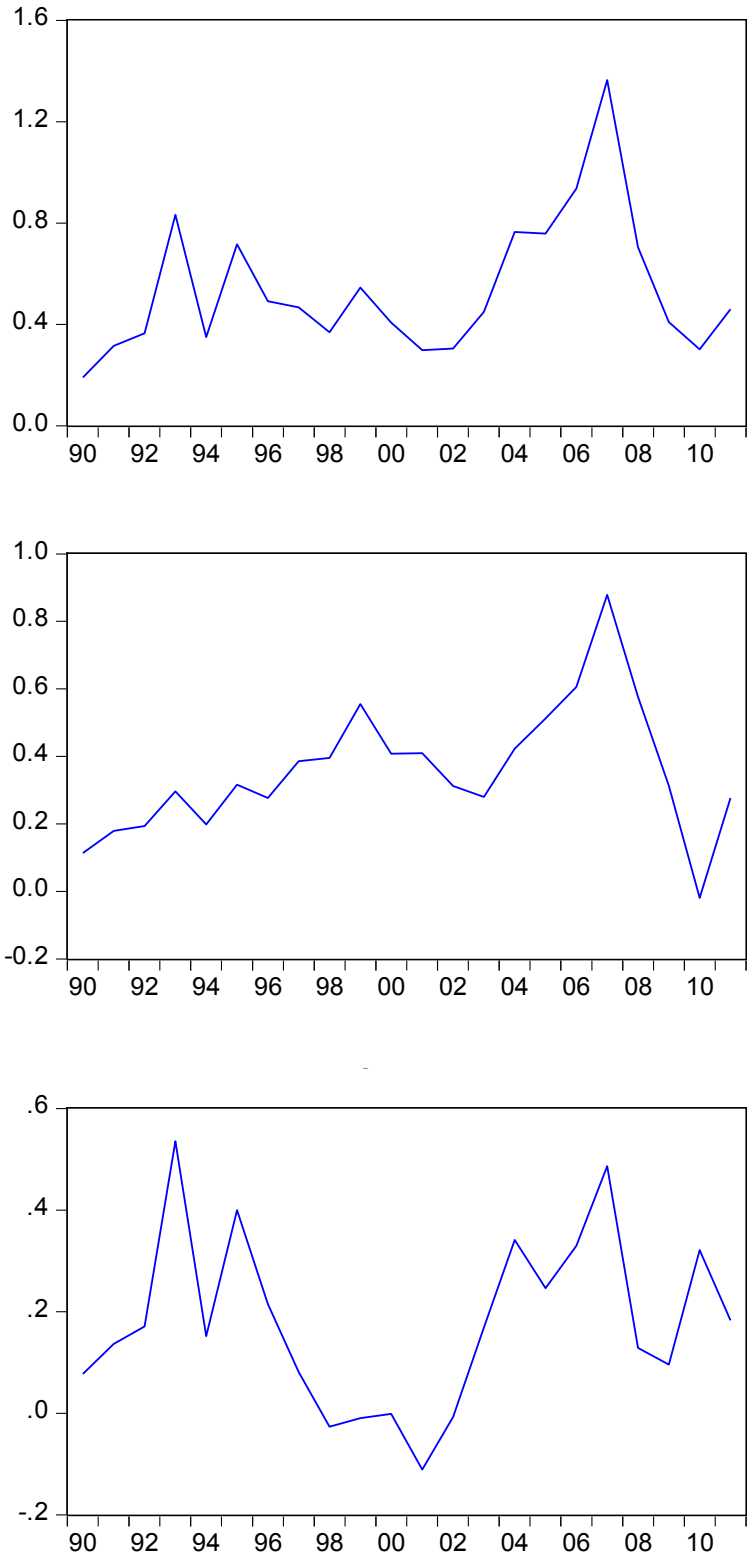


Figure 1-2 Total capital inflows, total equity and debt inflows (percentage of GDP)

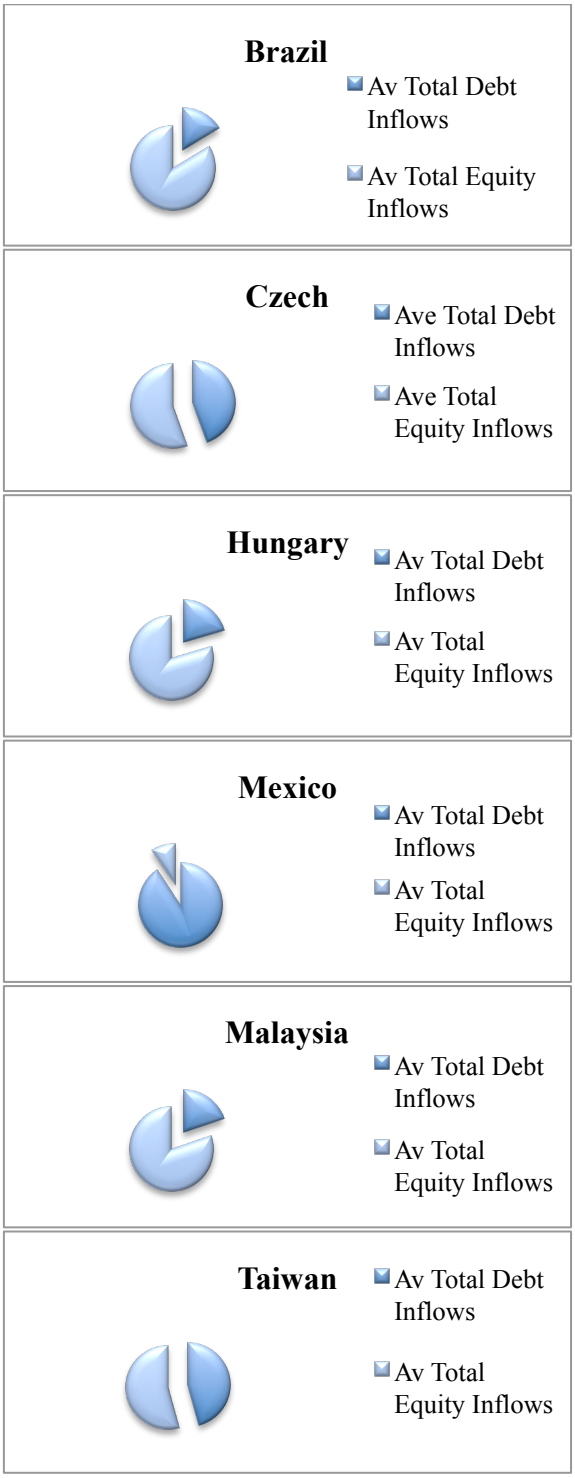


Figure 1-3 Countries' average debt and equity inflows (percentage of GDP)

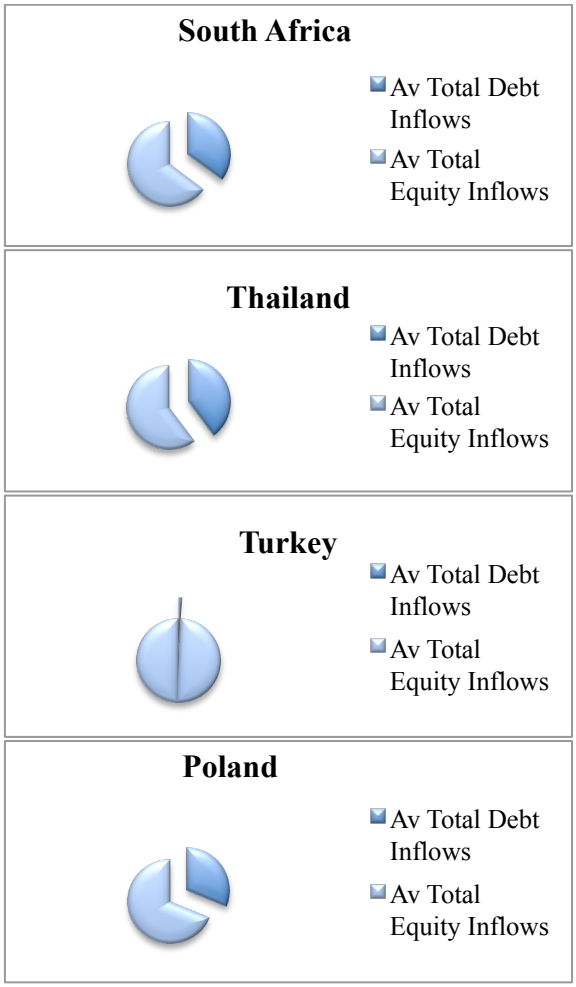


Figure 1-3 Cnt'd Countries' average debt and equity inflows (percentage of GDP)

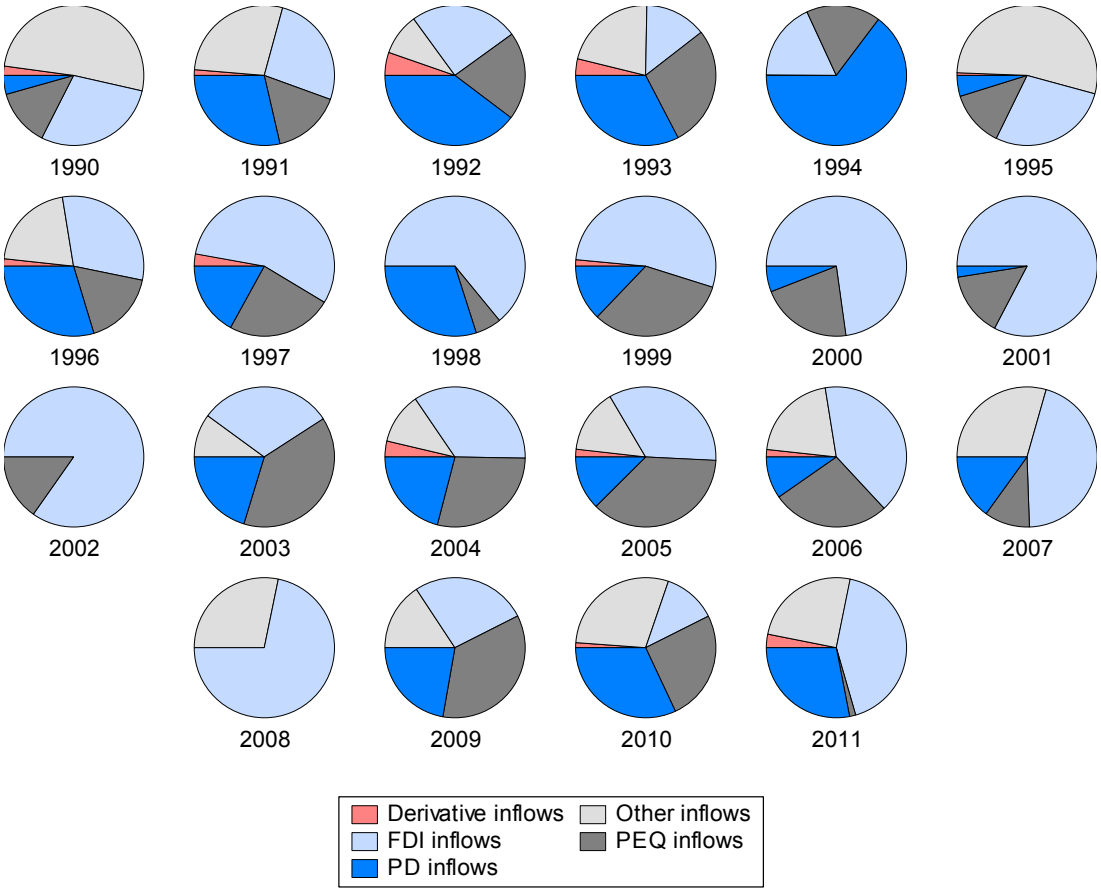
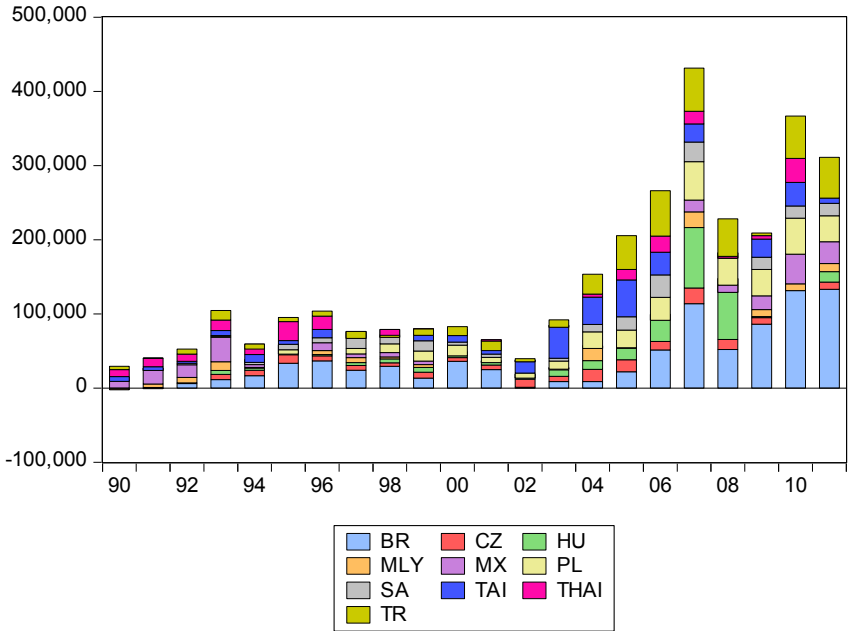
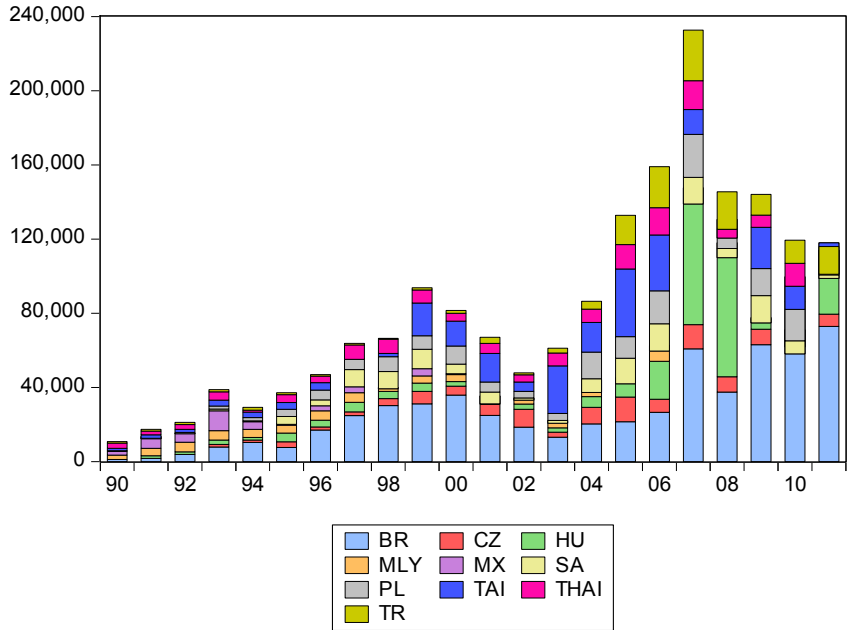


Figure 1-4 The share of the functional category of each inflows in total capital inflows (USD million)

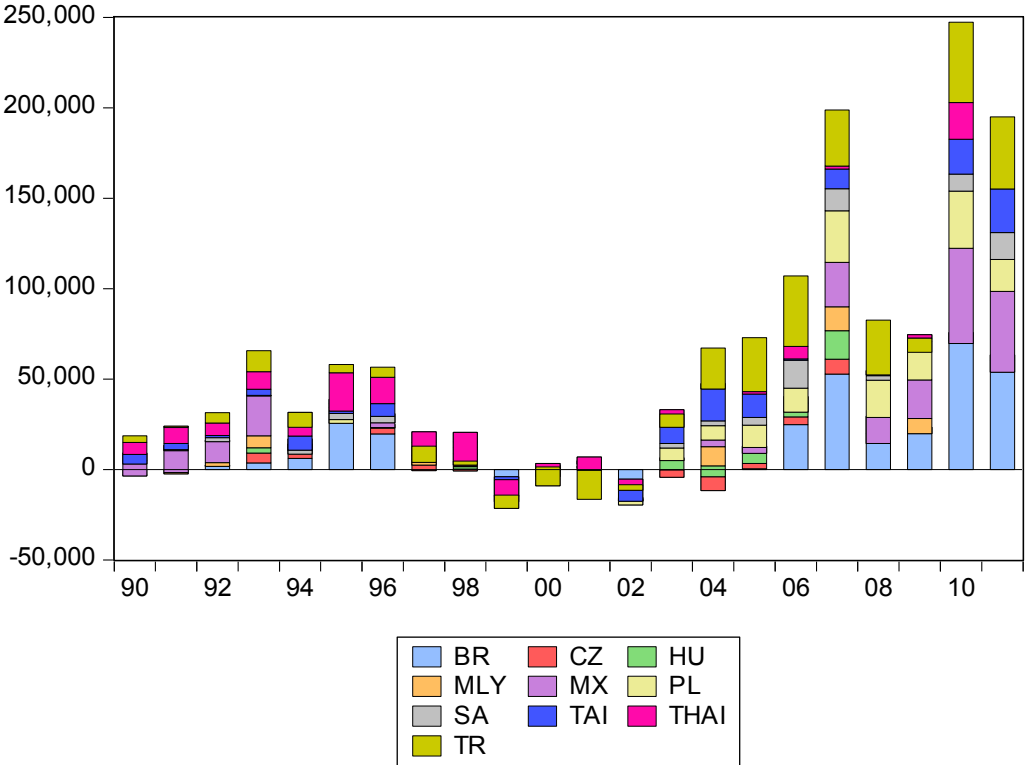


(a) Total capital inflows

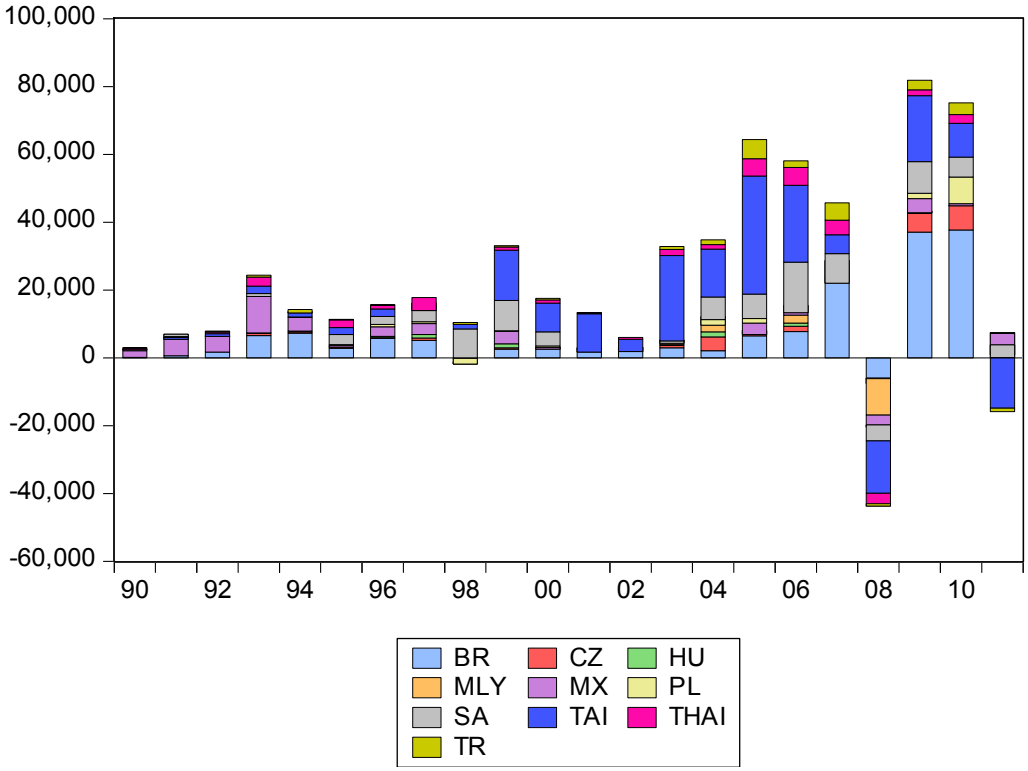


(b) Total equity inflows

Figure 1-5 Share of each country in cumulative functional category inflows (USD milion)

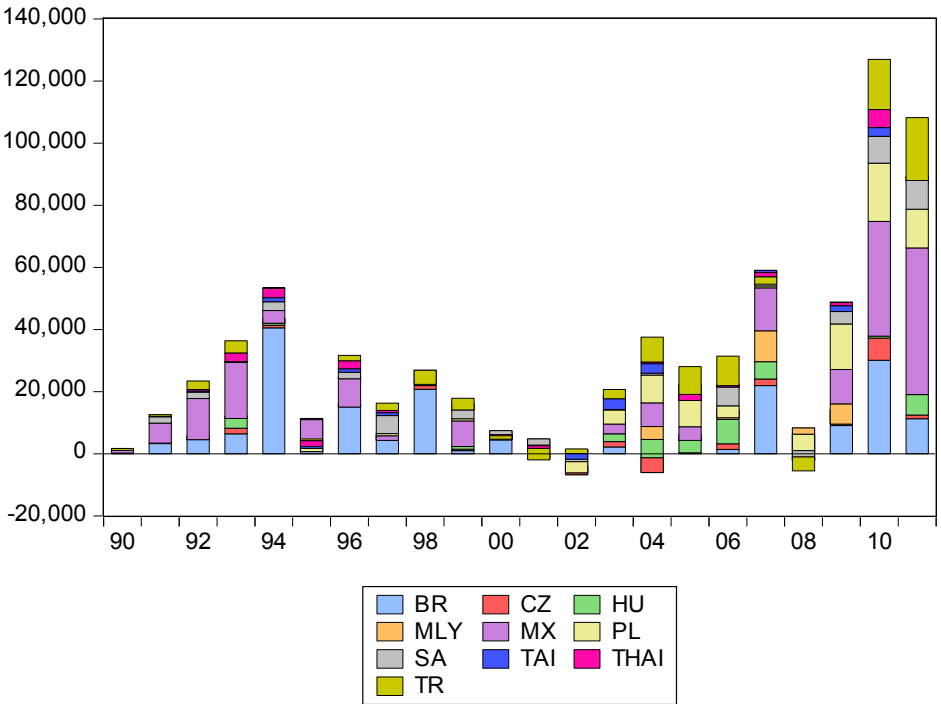


(c) Total debt inflows

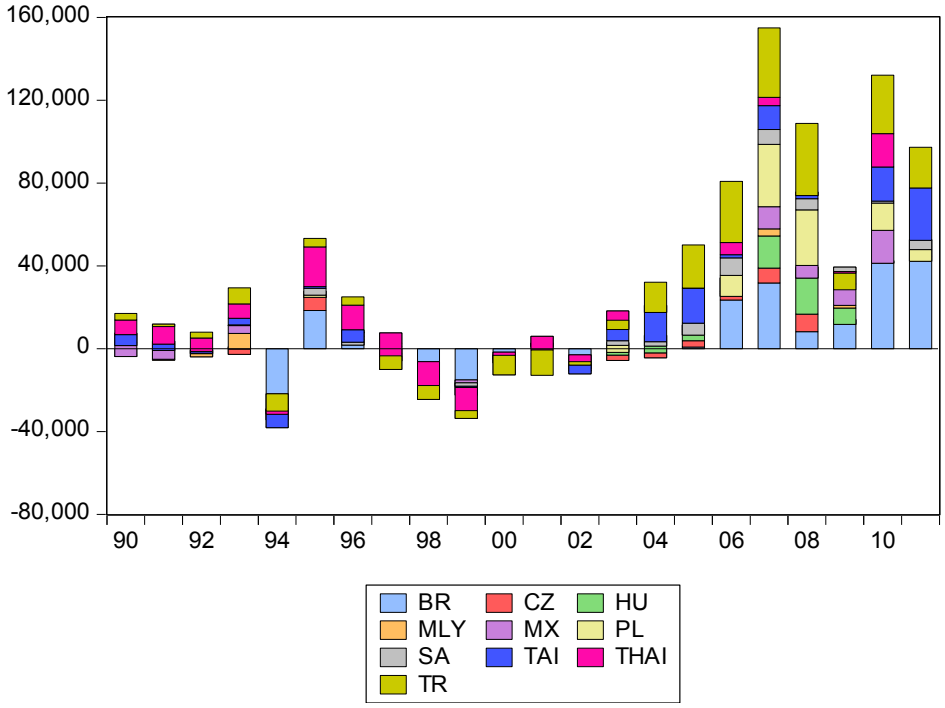


(d) PEQ inflows

Figure 1-5 Cnt'd Share of each country in cumulative functional category inflows (USD milion)



(e) PDL inflows



(f) Other inflows

Figure 1-5 Cnt'd Share of each country in cumulative functional category inflows (USD milion)

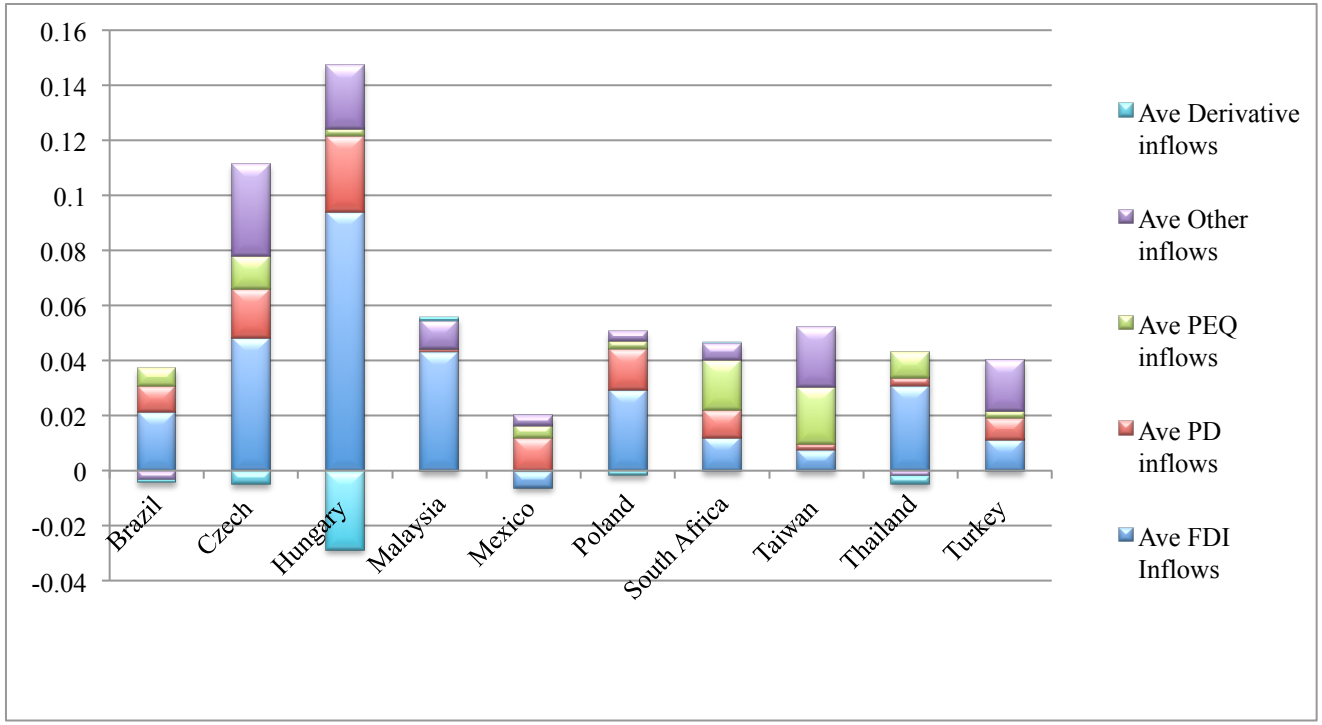


Figure 1-6 Average capital inflows to countries separated as functional categories (percentage of GDP)

Table 2-1 Thompson Worldscope fourth level Industry Constituents

The table shows the number of constituent firms for each industry from each country[22]. The industry classification is at level four. The total universe for the industries at this level is not used. The number of industries used for this study is 33.

Industries	ARE1[23]	ARG	AUS	AUT	BHR	BEL	BRA	BGR	CAN	CHL	CHN
Aerospace & Defense						1	1		3		
Alternative energy											1
Automobiles & Parts		1		3				1	3		4
Beverages		2	2	1		4	2			4	1
Chemicals		1	3	1		5	2	1	4	3	
Construction & Materials	3	2	11	4	1	2	3	2	4		6
Electricity		7	2	2		1	17	4	9	9	2
E/tronic & E/cal Equ.				1		3	1	1	2		
Food & Drug Retailers		1	2			2	2	1	8	1	
Food Producers	2	7	2	2	3	6	5	2	3		
Forestry & Paper		1			1		2		2	2	
General Industrials		1	2	1		2	1	1	4	2	1
General Retailers			11		3	1	10	1	9	2	
Gas, Water & Multiutilities	2	3	4	1			5		5	3	
Health Care Equipment & Services	1		6			2	1			1	1
Household Goods & Home Construction			2				1	2	2		
Industrial Engineering			1	6	1	4		3	4		2
Industrial Metals & Mining		2	5	2	1	1	6	1	10	2	2
Industrial Transportation	1	1	7	3		4	3	2	5		1
Leisure Goods				1							
Media		1	6			2			7		
Mining			13				2		25		5
Oil Equipment, Services & Distribution		1	3	1		1			15		1
Oil & Gas Producers		2	7	1			2	1	39	1	2
Personal Goods		1		2		2	3		1	1	
Pharm. & Biotech	1		2			7		2	3	1	
Software & Computer Services			2			4	1		5	1	
Support Services		1	6						11		
Technology Hardware & Equipment						1			2		
Fixed Line Telecommunications			3	1	1	1	3	1	4	1	1
Mobile Telecommunications	1	1	1			1	1		2		
Tobacco							1	2			
Travel & Leisure	3	1	12	1	6	1		2	5	1	1
Grand Total	14	37	115	34	17	58	75	30	196	35	31

[22] The ISO alpha-3 codes are used. These are the three-letter country codes defined in International Organization for Standardization (ISO) to represent countries.

[23] Abu Dhabi and Dubai are both cities in United Arab Emirates. Since Thompson Reuters Database used both cities individually, we named Abu Dhabi as ARE1 and Dubai as ARE.

Table 2-1 Cnt'd Thompson Worldscope fourth level Industry Constituents

Industries	COL	HRV	CYP	CZE	DNK	ARE[24]	EGY	FIN	FRA	DEU	GRC
Aerospace & Defense									5	1	
Alternative energy					1					5	
Automobiles & Parts		1					1	1	9	17	
Beverages		1	3		3	1		1	7		
Chemicals		1		1	1		3	1	3	13	1
Construction & Materials	9		4		3	3	9	4	10	6	5
Electricity	4		1	3	1			1	4	5	2
E/tronic & E/cal Equ.		2			2		1	2	7	6	
Food & Drug Retailers	2							2	4	2	
Food Producers	2	11	2		1		3	1	10	4	
Forestry & Paper				1				5			
General Industrials	1			2	1			1	3	4	1
General Retailers	2		3		1			2	6	10	1
Gas, Water & Multiutilities	1		1						4	4	2
Health Care Equipment & Services					4				9	10	1
Household Goods & Home Construction	1		1				1	1	5	7	1
Industrial Engineering								7	5	29	2
Industrial Metals & Mining							4	2	2	5	5
Industrial Transportation		3	1		5	1	1	1	6	6	2
Leisure Goods					1			1	4		1
Media				1				1	14	8	
Mining	1								1	2	
Oil Equipment, Services & Distribution	1	1							3		
Oil & Gas Producers	2	1	1	1			1	1	6		2
Personal Goods				1	2		1		6	6	1
Pharm. & Biotech					7		1	2	11	7	
Software & Computer Services			2		1			1	18	17	
Support Services	1	1	2	1			1	3	15	8	
Technology Hardware & Equipment			1					1	7	8	1
Fixed Line Telecommunications	2	1	1	1	1	1	1	1	1		1
Mobile Telecommunications		1					4			4	
Tobacco		3		1			1				1
Travel & Leisure	1	12	12	1	1	1	1	1	11	9	8
Grand Total	30	39	35	14	36	7	34	44	196	203	38

[24] Abu Dhabi and Dubai are both cities in United Arab Emirates. Since Thompson Reuters Database used both cities individually, we named Abu Dhabi as ARE1 and Dubai as ARE.

Table 2-1 Cnt'd Thompson Worldscope fourth level Industry Constituents

Industries	HKG	HUN	IND	IDN	IRL	ISR	ITA	JPN	JOR	KWT	LUX
Aerospace & Defense			1			1	1	1			
Alternative energy	1										
Automobiles & Parts	4		8	3			7	55			
Beverages	1	2	2	1	1		1	10			
Chemicals	1	1	6			4	1	52	2	2	
Construction & Materials	3	1	13	3	1	2	14	59	3	5	
Electricity	4	4	14			1	7	11	2		2
E/tronic & E/cal Equ.	2		4				5	47		1	
Food & Drug Retailers				1	2	2	1	21			
Food Producers	6	1	5	6	6	2	3	36	1	1	3
Forestry & Paper	2							5			
General Industrials	7	1	1		1		3	12			
General Retailers	6	3		1		1	3	61	4	2	
Gas, Water & Multiutilities	5		2	1			5	8			
Health Care Equipment & Services			2				3	20		2	
Household Goods & Home Construction	3				1		6	21			
Industrial Engineering	2	2	10	1			8	76			
Industrial Metals & Mining	3		10	1			1	27	2		1
Industrial Transportation	3		4	1			8	21		3	1
Leisure Goods	2		1					19			
Media	1		5	3	2		7	22			2
Mining			3	4	6			3			
Oil Equipment, Services & Distribution	1						2	2			
Oil & Gas Producers	2	2	10		5	9	4	8	1	2	
Personal Goods	7	1	13	1			7	28	1		
Pharm. & Biotech	2	5	17	2	2	1	2	45			
Software & Computer Services	1	5	13		1		2	29			1
Support Services	1	4	1	1	1		2	27	1		
Technology Hardware & Equipment	4					2	2	39			
Fixed Line Telecommunications	2	4	1	1		1	3	1	1		1
Mobile Telecommunications	2		4	3	1	2		5		2	
Tobacco			1	2				1	2		
Travel & Leisure	11	1	2		4	1	5	56	6	3	1
Grand Total	89	37	153	36	34	29	113	828	26	23	12

Table 2-1 Cnt'd Thompson Worldscope fourth level Industry Constituents

Industries	MYS	MLT	MEX	MAR	NLD	NZL	NOR	OMN	PAK	PER	PHL
Aerospace & Defense					1						
Alternative energy							1				
Automobiles & Parts	2			1					2		
Beverages	3	1	4	2	2	1		1		3	2
Chemicals	3		5	1	3	1	1	2	6		
Construction & Materials	4		10	5	7	1	2	4	3	3	2
Electricity	1			1		3	1	1	3	4	5
E/tronic & E/cal Equ.				1	3			2			
Food & Drug Retailers			3	1	2						2
Food Producers	10		7	4	6	3	8	3	5	5	3
Forestry & Paper			1		1						
General Industrials	1		4		2				1		4
General Retailers	4	1	10	2	3	7		2		2	1
Gas, Water & Multiutilities	3		1			1		4	1		2
Health Care Equipment & Services	4		1		1	4					
Household Goods & Home Construction			1		4						
Industrial Engineering	1				5	1	2		1	1	
Industrial Metals & Mining			4	3	2		1	1		7	
Industrial Transportation	5	3	3		4	5	5	2	1		1
Leisure Goods					1						
Media	2		4		5	1	1			1	
Mining			1	2						5	3
Oil Equipment, Services & Distribution	4	1			2		12	1			
Oil & Gas Producers	3			2	1	3	3	1	7	1	2
Personal Goods			2						2		
Pharm. & Biotech			1	2	3		1		2		
Software & Computer Services		3			13	2	2				
Support Services				1	9	1		2			
Technology Hardware & Equipment		1		1	6						
Fixed Line Telecommunications	1	1	1		2	2		1	1	1	
Mobile Telecommunications	3		2	1			1	1			2
Tobacco	1								2		
Travel & Leisure	10	1	6	1	2	2	1	1	1		4
Grand Total	65	12	71	31	90	38	42	29	38	33	33

Table 2-1 Cnt'd Thompson Worldscope fourth level Industry Constituents

Industries	POL	PRT	QAT	ROU	RUS	SGP	SVN	ZAF	KOR	ESP
Aerospace & Defense				2		1			1	1
Alternative energy									1	4
Automobiles & Parts	1	1		2			1		10	1
Beverages	1	1		2		1	1	1		4
Chemicals	4			2	3		5	2	6	1
Construction & Materials	1	7	2	4	1	1	3	1	8	11
Electricity	3	2		1	6				1	5
E/tronic & E/cal Equ.				2		2		1	4	
Food & Drug Retailers	1	2		2	1	1		4		1
Food Producers	3	1	3	1		12	4	5	4	7
Forestry & Paper		5		1				2		4
General Industrials		1	3	1		5		4	2	1
General Retailers	2	1	1			1	2	5	4	4
Gas, Water & Multiutilities			1			2			1	2
Health Care Equipment & Services			2			2		3		2
Household Goods & Home Construction		2		1			1	1	1	1
Industrial Engineering	1			3		2			5	4
Industrial Metals & Mining	2	1		2	6	1		2	5	4
Industrial Transportation			3		1	6	4	2	2	2
Leisure Goods						1			4	
Media	3	4	1			1	1	1	1	7
Mining	2				4			9		
Oil Equipment, Services & Distribution			1	4	1	6				1
Oil & Gas Producers	3	1		3	12	1	1	1	4	1
Personal Goods	1						2		3	1
Pharm. & Biotech		1		3	1	1	2	1	1	6
Software & Computer Services	1	4				1	1		2	2
Support Services		1					1		4	5
Technology Hardware & Equipment									3	3
Fixed Line Telecommunications	2	1			1		1		1	3
Mobile Telecommunications		1	2		3	3		2	2	1
Tobacco									1	
Travel & Leisure	2	6		2	1	5	4	1	2	3
Grand Total	33	43	19	38	41	56	34	48	83	92

Table 2-1 Cnt'd Thompson Worldscope fourth level Industry Constituents

Industries	LKA	SWE	CHE	TWN	THA	TUR	GBR	USA	VEN	Grand Total
Aerospace & Defense		1					9	19		50
Alternative energy								2		16
Automobiles & Parts			1	3		3	1	18		165
Beverages	4					2	5	10	1	102
Chemicals		1	4	4	2	1	8	28	3	209
Construction & Materials	2	5	10	3	3	5	11	21	4	339
Electricity			6		3		2	27	1	195
E/tronic & E/cal Equ.		2	3	5	1		11	21		145
Food & Drug Retailers	1	2	2	1	2	1	6	14		103
Food Producers	5	1	7	2	2	2	10	24	3	286
Forestry & Paper		2	1				1	2	1	42
General Industrials	2		2		1		6	19	3	115
General Retailers	1	1	2	2	3	2	22	52		280
Gas, Water & Multiutilities						1	5	18		98
Health Care Equipment & Services	1	2	6		2		5	47		145
Household Goods & Home Construction	2	3	1		1	4	12	20		110
Industrial Engineering	1	10	17	1		1	11	33		263
Industrial Metals & Mining		1	1	1		1	2	10	1	153
Industrial Transportation	1		3	1	1	1	6	14	4	174
Leisure Goods				2			2	8		48
Media	1	1	2		1		19	41		180
Mining		1			1	1	21	5		120
Oil Equipment, Services & Distribution							7	51	1	124
Oil & Gas Producers	1	2		1	5	3	16	49		240
Personal Goods	2	2	3	4			4	17	1	129
Pharm. & Biotech		2	9				8	43		207
Software & Computer Services			2				12	56		205
Support Services	1	2	4				49	38		206
Technology Hardware & Equipment		3	6	21	2	1	8	48		171
Fixed Line Telecommunications	1		1	1		1	5	7	1	78
Mobile Telecommunications	1	2		2	3	1	2	5		75
Tobacco	1	1					2	4		27
Travel & Leisure	3		3		4	2	31	35		314
Grand Total	31	47	96	54	37	33	319	806	24	5114

Table 2-2 Industry Classification Benchmark (ICB) used by Thompson Datastream (DS)

ICB Industry DS Level 2	ICB Supersector DS Level 3	ICB Sector DS Level 4	ICB Subsector DS Level 6	DS Sector
Oil & Gas	Oil & Gas	Oil & Gas Producers	Exploration & Production	Exploration & Production
			Integrated Oil & Gas	Integrated Oil & Gas
		Oil Equipment & Services	Oil Equipment & Services	Oil Equipment & Services
			Pipelines	Pipelines
		Alternative Energy	Renewable Energy Equipment	Renewable Energy Equipment
			Alternative Fuels	Alternative Fuels
Basic Materials	Chemicals	Chemicals	Commodity Chemicals	Commodity Chemicals
			Specialty Chemicals	Specialty Chemicals
	Basic Resources	Forestry & Paper	Forestry	Forestry
			Paper	Paper
		Industrial Metals & Mining	Aluminum	Aluminum
			Nonferrous Metals	Nonferrous Metals
			Iron & Steel	Iron & Steel
		Mining	Coal	Coal
			Diamonds & Gemstones	Diamonds & Gemstones
			General Mining	General Mining
			Gold Mining	Gold Mining
			Platinum & Precious Metals	Platinum & Precious Metals
Industrials	Construction & Materials	Construction & Materials	Building Materials & Fixtures	Building Materials & Fixtures
			Heavy Construction	Heavy Construction
	Industrial Goods & Services	Aerospace & Defense	Aerospace	Aerospace
			Defense	Defense
		General Industrials	Containers & Packaging	Containers & Packaging
			Diversified Industrials	Diversified Industrials
		Electronic & Electrical Equipment	Electrical Components & Equipment	Electrical Components & Equipment
			Electronic Equipment	Electronic Equipment
		Industrial Engineering	Commercial Vehicles & Trucks	Commercial Vehicles & Trucks
			Industrial Machinery	Industrial Machinery
		Industrial Transportation	Delivery Services	Delivery Services
			Marine Transportation	Marine Transportation
			Railroads	Railroads
			Transportation Services	Transportation Services
			Trucking	Trucking
		Support Services	Business Support Services	Business Support Services
			Business Training & Employment Agencies	Business Training & Employment Agencies
			Financial Administration	Financial Administration
			Industrial Suppliers	Industrial Suppliers
			Waste & Disposal Services	Waste & Disposal Services

Table 2-2 Cnt'd Industry Classification Benchmark (ICB) used by Thompson Datastream (DS)

ICB Industry DS Level 2	ICB Supersector DS Level 3	ICB Sector DS Level 4	ICB Subsector DS Level 6	DS Sector
Consumer Goods	Automobiles & Parts	Automobiles & Parts	Automobiles	Automobiles
			Auto Parts	Auto Parts
			Tires	Tires
	Food & Beverage	Beverages	Brewers	Brewers
			Distillers & Vintners	Distillers & Vintners
			Soft Drinks	Soft Drinks
		Food Producers	Farming & Fishing	Farming & Fishing
			Food Products	Food Products
	Personal & Household Goods	Household Goods & Home Construction	Durable Household Products	Durable Household Products
			Nondurable Household Products	Nondurable Household Products
			Furnishings	Furnishings
			Home Construction	Home Construction
		Leisure Goods	Consumer Electronics	Consumer Electronics
			Recreational Products	Recreational Products
			Toys	Toys
		Personal Goods	Clothing & Accessories	Clothing & Accessories
			Footwear	Footwear
			Personal Products	Personal Products
		Tobacco	Tobacco	Tobacco
Health Care	Health Care	Health Care Equipment & Services	Health Care Providers	Health Care Providers
			Medical Equipment	Medical Equipment
			Medical Supplies	Medical Supplies
		Pharmaceuticals & Biotechnology	Biotechnology	Biotechnology
			Pharmaceuticals	Pharmaceuticals
Consumer Services	Retail	Food & Drug Retailers	Drug Retailers	Drug Retailers
			Food Retailers & Wholesalers	Food Retailers & Wholesalers
		General Retailers	Apparel Retailers	Apparel Retailers
			Broadline Retailers	Broadline Retailers
			Home Improvement Retailers	Home Improvement Retailers
			Specialized Consumer Services	Specialized Consumer Services
			Specialty Retailers	Specialty Retailers
	Media	Media	Broadcasting & Entertainment	Broadcasting & Entertainment
			Media Agencies	Media Agencies
			Publishing	Publishing
	Travel & Leisure	Travel & Leisure	Airlines	Airlines
			Gambling	Gambling
			Hotels	Hotels
			Recreational Services	Recreational Services
			Restaurants & Bars	Restaurants & Bars
			Travel & Tourism	Travel & Tourism

Table 2-2 Cnt'd Industry Classification Benchmark (ICB) used by Thompson Datastream (DS)

ICB Industry DS Level 2	ICB Supersector DS Level 3	ICB Sector DS Level 4	ICB Subsector DS Level 6	DS Sector
Telecommunications	Telecommunications	Fixed Line Telecommunications	Fixed Line Telecommunications	Fixed Line Telecommunications
		Mobile Telecommunications	Mobile Telecommunications	Mobile Telecommunications
Utilities	Utilities	Electricity	Conventional Electricity	Conventional Electricity
			Alternative Electricity	Alternative Electricity
		Gas, Water & Multiutilities	Gas Distribution	Gas Distribution
			Multiutilities	Multiutilities
			Water	Water
Technology	Technology	Software & Computer Services	Computer Services	Computer Services
			Internet Software	Internet Software
		Technology Hardware & Equipment	Computer Hardware	Computer Hardware
			Electronic Office Equipment	Electronic Office Equipment
			Semiconductors	Semiconductors
			Telecommunications Equipment	Telecommunications Equipment

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