The Impact of the Global Financial Safety Net on Emerging Market Bond Spreads

Jenny Kilp, Vafa Anvari, Samantha Springfield and Crystal Roberts

South African Reserve Bank

South African Reserve Bank Working Papers are written by staff members of the South African Reserve Bank and on occasion by consultants under the auspices of the Bank. The papers deal with topical issues and describe preliminary research findings, and develop new analytical or empirical approaches in their analyses. They are solely intended to elicit comments and stimulate debate.

The views expressed in this Working Paper are those of the author(s) and do not necessarily represent those of the South African Reserve Bank or South African Reserve Bank policy. While every precaution is taken to ensure the accuracy of information, the South African Reserve Bank shall not be liable to any person for inaccurate information, omissions or opinions contained herein.

South African Reserve Bank Working Papers are externally refereed.

Information on South African Reserve Bank Working Papers can be found at
http://www.resbank.co.za/Research/ResearchPapers/WorkingPapers/Pages/WorkingPapers-Home.aspx

Enquiries

Head: Economic Research and Statistics Department
South African Reserve Bank P O Box 427
Pretoria 0001

Tel. no.: +27 12 313-3911
0861 12 SARB (0861 12 7272)

The Impact of the Global Financial Safety Net on Emerging Market Bond Spreads

Jenny Kilp[*], Vafa Anvari, Samantha Springfield and Crystal Roberts[†]

July 06, 2018[‡]

Abstract

Following the 2007/08 global financial crisis, it became evident that there was a need for a strengthening of the global financial safety net (GFSN). However, the manner in which this should be achieved became a polarising issue of debate in international institutions such as the International Monetary Fund (IMF) and the G20. The empirical evidence concerning the impact of the GFSN remains scarce, therefore, this paper seeks to contribute to the debate by investigating the potential impacts that the various layers of the GFSN can have on sovereign borrowing costs in emerging markets. After initially replicating common methodologies in the literature concerned with identifying determinants of foreign currency sovereign spreads in emerging markets, the analysis is expanded to include elements of the GFSN. The results indicate that whilst the liquidity buffers provided by the overall GFSN appear to lower sovereign spreads, the impact of individual layers of the safety net are more ambiguous.

---

[*] Financial Counsellor, Embassy of the Federal Republic of Germany and Representative of Deutsche Bundesbank
[†] All from the South African Reserve Bank
[‡] This paper should not be reported as representing the views of the South African Reserve Bank or the Deutsche Bundesbank. The views expressed are those of the authors and do not necessarily reflect those of either institution.

Contents

`

Introduction

In the aftermath of the 2007/08 Global Financial Crisis (GFC), a vibrant debate emerged regarding what countries can do to enhance their resilience to external shocks. Specifically, policy makers have questioned what, on a regional and global level, could be done to better insulate countries against global financial market volatility and to prevent international spill-over effects of financial crises.

As a consequence, the GFC has once again placed the Global Financial Safety Net (GFSN) - traditionally comprised of IMF resources and a country's foreign exchange reserves - in the spotlight. The turmoil in financial markets, the hesitation to use IMF resources during crisis periods and the perceived need for better crisis prevention and resolution has led to new instruments being added to the GFSN[1]. Concomitantly, financial resources available within the safety net, have increased substantially, not only on a global and regional level, but also domestically as countries continued to accumulate foreign exchange reserves.

The discussion regarding how the GFSN should further evolve remains controversial, especially with respect to its size, coverage and access. Many emerging markets (EMs) argue that GFSN coverage is uneven, which is perceived as a hindrance to effective crisis prevention and resolution. However, the global financial safety net is invariably a complex issue – particularly given the potential for moral hazard - from the perspective of both market participants and policy makers. This raises a number of policy issues, such as the optimal design of the GFSN, the interaction of the different instruments and the degree of cooperation that is required multilaterally and with international organisations such as the IMF. These issues remain pertinent given the persistence of financial market volatility in the face of enduring global financial, economic and policy uncertainty, especially since many countries are left with significantly reduced macroeconomic policy buffers relative to before the GFC.

In order to facilitate a more robust policy debate around these issues, this paper contributes to the limited body of empirical work on the GFSN. The paper investigates whether countries' diverse access to the various layers of the GFSN – in terms of volume and overall availability – has had an influence on the perceived riskiness of the country. This is achieved by analysing the impact that the different layers of the GFSN have had on foreign currency denominated sovereign bond spreads, after controlling for domestic economic fundamentals and external conditions.

---

[1] Such as an increased number of regional/multilateral financing arrangements (RFA/MFA); a broader network of swap line facilities and the IMF Flexible Credit Line and Precautionary Liquidity Line.

Overview of the literature on Emerging Market Bond Spreads

There is a vast body of literature concerned with understanding the drivers of EM foreign currency bond spreads. Whilst differing on certain details, many of the conclusions drawn from said literature can be summed up as follows: (i) global and domestic factors are both relevant; (ii) global conditions are more important in the short-term while macroeconomic fundamentals are more important in the long term; (iii) better macroeconomic fundamentals can reduce the impact of global risk factors on spreads; and (iv) misalignments can play a substantive role.

In his seminal paper on the subject, Edwards (1983) found that country specific fundamentals tend to be the main drivers of spreads, including; external debt, debt service ratios and foreign exchange reserves. More recently, studies have determined that global factors such as global liquidity, the level of international interest rates, risk aversion and uncertainty are equally important. Additionally, the extent of foreign participation in a country's local bond market plays a role, as does fiscal variables and political risk.

The influence of global factors on EM bond spreads have become more significant, given the increased level of financial integration worldwide coupled with the development and increased issuance in emerging market fixed income markets since the late 1990s. Emerging market macroeconomic fundamentals have similarly improved over time, with a resultant improvement in sovereign credit ratings, leading to increased investor demand. In addition, since the GFC, the search for yield - combined with greater liquidity in global financial markets - increased the appetite for and issuance of emerging market debt. The Bank for International Settlements (BIS) has noted that, as emerging markets become ever more integrated in the global economy, and with the rise of "crossover investors', global, or common factors may become more important determinants of EM bond spreads relative to idiosyncratic factors[2].

An IMF staff study by Bellas, Papaioannou and Petrova (2010) incorporated an Emerging Markets Financial Stress Index (FSI)[3] to capture the state of a country's financial health, and found that it is a crucial factor in determining short-term spread movements. Other factors such as political risk and macroeconomic factors were found to be more significant determinants in the long-run. Csonto and Ivaschenko (2013) find that global factors play a more prominent role in the short-run, while the strength of fundamentals affect the sensitivity of the country risk premium to global factors in the long-run. Furthermore, there are often misalignments between observed emerging market bond spreads and those implied by country

---

[2] Mc Guire & Schrijvers (2003)

[3] The FSI comprises five variables; the banking sector beta (or the standard capital asset pricing model beta); stock market returns; time varying stock market return volatility; sovereign debt spreads and an exchange market pressure index which captures exchange rate depreciations and declines in international reserves.

macroeconomic fundamentals. For example, instances of under-pricing of emerging market debt tend to increase in periods of severe stress, exacerbated by limited understanding of country specific developments. In this regard, Csonto and Ivaschenko find that declines in spreads post the GFC and inflows of funds to emerging markets reflect an improvement in fundamentals only to a limited extent.

Similar to much of the literature regarding emerging market sovereign bond spreads, this paper investigates the determinants of the JP Morgan Emerging Market Bond Index Global (EMBIG)[4] – considering global and domestic macroeconomic fundamentals; financial variables; political risk factors; and the role of the GFSN in explaining emerging market bond spread movements. In essence, this paper's contribution to the literature can be considered as an extension of Maurini (2017) who focused on the impact of IMF resources and programmes on EMBIG spreads.

The Global Financial Safety Net

There is no single definition of the term "Global Financial Safety Net", however, most authors define the GFSN from a purely financial point of view, including in its definition some combination of foreign exchange reserves and official arrangements (Bilateral Swap Arrangements (BSAs), Regional Financial Arrangements[5] (RFAs), and IMF resources)[6]. A recent IMF definition also includes market-based instruments, such as commodity price hedges and catastrophe or GDP-linked bonds (IMF 2016). The ECB takes a much broader perspective by defining the GFSN as "a diverse set of institutions and mechanisms which can contribute to preventing and mitigating the effects of economic and financial crisis" (ECB, 2016:36). This broad definition could also encompass a country's institutions, policies and economic fundamentals. As the research question of this paper requires the ability to distinguish between the impact of a country's economic fundamentals on the one hand and the financial alternatives available to reduce liquidity risk in times of stress on the other, it is practical to adhere to the more narrow definition of the GFSN, comprising of foreign exchange reserves, BSAs, RFAs and IMF resources.

International Reserves

The concept of self-insurance, and specifically the role of foreign exchange reserves, has always been key to any discussion of the GFSN. In essence, foreign exchange reserves serve as an instrument to reduce perceived vulnerabilities. The notion is that foreign exchange reserves may help a country to transitionally

---

[4] The EMBIG tracks the total returns for traded external emerging market debt instruments. It includes US dollar denominated Brady bonds, loans and Eurobonds with an outstanding face value of at least US$500 million and 2.5 years to maturity at the time it is added to the index.

[5] These also include Multilateral Financing Arrangements, such as the Contingent Reserve Arrangement which exists within the BRICS grouping.

[6] Scheubel and Stracca (2016) provide an in depth primer into the origins and rationale of the GFSN, together with a comprehensive dataset for analytical work.

satisfy the demand for foreign exchange in case the supply is disrupted by shocks to the trade or capital account balance (IMF, 2015). In conjunction with sound economic and financial policies, a strong buffer of foreign exchange reserves may provide some level of assurance to foreign investors that they will be paid back in times of crisis, potentially decreasing a country's risk premium.

A primary argument in favour of increasing the scope and coverage of RFAs is that foreign exchange reserves as an instrument for self-insurance can be costly to accumulate and inefficient in terms of utilisation. The common practice of investing in liquid public liabilities provides lower returns relative to other investment opportunities and is not without risks (Aizenman, et. al., 2010). Additionally, sterilisation costs accompanying foreign exchange acquisition can sometimes carry a higher interest cost than the return earned on the reserve assets (Dominguez, et. al., 2011). A number of authors claim, however, that the cost of holding reserves might be significantly overstated by just looking at interest rate differentials. For example, Levy Yeyati (2006, 2010) point out that foreign currency reserves are usually purchased in times of low risk spreads and appreciated exchange rates and sold in times of high risk spreads and depreciated exchange rates, leading to positive valuation gains. Moreover, he illustrates in his analysis that higher reserves holdings tend to decrease the risk of a sovereign default and thereby reduce the risk spread paid on the stock of sovereign debt and potentially also the spread for private borrowers – a result this paper hopes to test/replicate.

Foreign exchange reserves are a country's own resources that can be used without conditions or repayment obligations attached and provide strong incentives for a country to rely to some extent on this form of self-insurance. Indeed, foreign exchange reserve buffers started increasing rapidly after the East Asian Financial Crisis, with emerging markets and developing countries (EMDCs) doubling their foreign exchange reserves holdings as a percent of GDP since the beginning of the 1990s (IMF, 2016). In fact, individual country's foreign exchange reserves are the largest component of the GFSN, having risen from US$6.5 trillion in 2005 to just under US$11.3 trillion in 3Q2017[7]. Over half of these reserves are held in US dollars, although this proportion has declined steadily from around 75% in the mid-1990s.

International Monetary Fund (IMF)

The IMF has traditionally been at the centre of the GFSN, having the mandate to review the policies of its member countries with regard to achieving external stability (surveillance) as well as its task to provide foreign exchange financing in cases of transitional balance of payments needs. In the past, the IMF has typically been an important source of foreign exchange support to satisfy a transitory balance of payments requirement. Through its conventional programs, the IMF provides financing at interest rates that are independent of a country's risk profile in cases when market financing is either not accessible or not

---

[7] IMF, Currency composition of Official Foreign Exchange Reserves

affordable. Macroeconomic conditionality is attached to the program in order to solve a country's transitory liquidity problems and to ensure the repayment of debt. However, the conditionality attached is increasingly seen as a disadvantage and deterrent to using IMF financing, as it is perceived by many as an undesirable interference in domestic policies. Others also believe that the determination of such conditionality is not always approached in an even handed or objective manner. Furthermore, access to resources under conventional IMF programs is generally limited, depending on a country's quota at the IMF, even though exceptional financial access can be granted under specific circumstances.

The IMF's surveillance, lending capacity and its financing instruments have been enhanced and expanded considerably as a result of the GFC. Due to the international contagion effects experienced during the GFC, in 2009 the IMF added precautionary instruments to its toolkit to protect those members who were affected by spillovers resulting from regional or global stress. Subsequently, the Flexible Credit Line (FCL), for countries with very strong macroeconomic fundamentals and policies, and the Precautionary Liquidity Line (PLL), for countries with sound policies and only low vulnerabilities, were created. The commitment of resources under both facilities is based upon pre-qualification criteria and against a commitment fee. Once a country has been approved for a precautionary facility, resources can be drawn without further justification, thereby assuring market participants that liquidity will be provided quickly in times of stress, avoiding a rush to exit.

Since its introduction in 2009, only three countries have used the FCL and one country the PLL. This low utilisation is often attributed to the stigma that remains attached to IMF financing. On the one hand, it appears that member countries fear signalling vulnerabilities to capital markets by applying for an FCL or a PLL. On the other hand, there is some uncertainty regarding the signals that will be sent when exiting such instruments, taking into account that financial markets might perceive the relevant country's creditworthiness lower as a consequence of lower available "reserves"[8].

The empirical evidence concerning the effectiveness of IMF resources and instruments on emerging market bond spreads is mixed. Maurini (2017) finds a positive impact from the overall size of IMF resources, measured by its Forward Commitment Capacity (FCC), on the risk outlook and borrowing costs of emerging markets, regardless of the type of IMF-program used by members. The evidence with regard to the effectiveness of the new precautionary facilities (FCL, PLL) remains, however, inconclusive. Izquierdo and Talvi (2009) and IMF (2014) find a significant positive impact from the introduction of the new precautionary IMF instruments on the bond spreads of countries that either received access or were deemed eligible by the investment community for the new facilities. On the other hand Maurini (2017), as well as

---

[8] In November 2017, Poland decided to end its arrangement under the FCL, with seemingly limited negative impact on its financial markets or perceived strength in managing external vulnerabilities.

Fernandez-Arias and Levy-Yeyati (2010), fail to find a significant impact from the introduction of these programmes.

In another recent study, Essers and Ide (2017) try to evaluate the impact of the FCL on EMBIG spreads and gross capital inflows. They use a counterfactual approach that relies on comparing the evolution of these variables in each country that has access to an FCL against a synthetic control group, consisting of a group of global or regional emerging market countries. The conclusion is that the FCL has moderate beneficial effects which, 'in the case of spreads became visible only a considerable time after the respective FCLs were first approved'.

Bilateral Swap Line Agreements (BSAs)

Swap lines between central banks are contingent arrangements that enable a receiving central bank to obtain foreign currency funding from another central bank, at a fee. Usually, the issuing central bank provides its domestic currency for a fixed term at the market exchange rate in exchange for the domestic currency or other assets pledged by the receiving central bank. At maturity, the same exchange rate is used to reverse the transaction, with an interest cost charged by the issuing central bank. However, there can also be arrangements where one central bank lends its currency reserves to another central bank, the exchange rate may be predetermined and terms are in some cases not limited. The liquidity providing central bank usually carries the credit risk of the receiving central bank, meaning that it is exposed to exchange rate risk in case the receiving central bank is not able to repay in foreign exchange (Denbee, Jung and Paterno, 2016, ECB, 2016).

While originally used to influence the domestic liquidity situation or foreign exchange rates, more recent BSAs were used to provide foreign currency liquidity to the domestic financial system, usually against collateral. They are thus primarily seen as an instrument to ensure the functioning of foreign currency markets in times of stress and to mitigate the potential spillover effects of dysfunctional markets on financial stability and the real economy within and across jurisdictions.

During and in response to the GFC, the use of BSAs between central banks increased rapidly between the reserve issuing central banks, other Advanced Economies (AE) and a few Emerging Markets[9]. Most of the agreements were short-term in nature and have already been terminated or expired. However, an unlimited and standing bilateral swap network has been established between the European Central Bank, the Federal Reserve Bank of the United States, the Bank of England, the Bank of Canada, the Bank of Japan and the Swiss National Bank. This network mirrors the concentrated global banking network among AEs, in particular the UK, US and Japan as well as several other countries from the European Union (IMF, 2016,

---

[9] For example, the Federal Reserve Bank of the United States set up a swap line with Brazil, the ECB with Hungary, Latvia and Poland (IMF 2016).

ECB, 2016). The People's Bank of China (PBoC) appears to be the most active provider of BSAs, and according to Volz (2016), the PBoC had 31 active swap lines amounting to US$500 billion in February 2016.

BSAs do not have macroeconomic conditionalities attached to their activation, making them more attractive than other layers of the GFSN to some countries; however, they do incorporate established risk management factors. In this regard, BSAs take into account credit risk through collateral requirements, the amount of the haircuts or the interest rate costs associated with them. Despite these risk management factors, and because there are no macroeconomic conditionalities attached, there appears to be less stigma involved in case they are used. However, every central bank has its own preconditions when it enters into an agreement with a central bank requesting assistance through swap lines, largely dependent on the mandate of the lending central bank. Therefore, the world-wide coverage of the network of BSAs remains limited and the conditions that have to be met in order for a lending central bank to agree to a BSA are seldom fully transparent. Most reserve currency issuing central banks do not see BSAs as a substitute for other elements of the GFSN, in particular, they do not view them as an appropriate instrument to finance balance of payments needs (EBC, 2016).

Regional Financing Arrangements (RFAs)

The IMF defines RFAs as "financing mechanisms through which a group of countries in a region pledges financial support to members that are experiencing, or might experience, a liquidity shortage or balance of payments difficulties" (IMF, 2013). They can be seen as arrangements that range between self-insurance and multilateral assistance from the IMF[10].

These RFAs differ not only with regards to their purpose and set up but also with a view to the conditions under which they disburse financial resources. Some arrangements have lending instruments suitable for different financing problems, for example the European Stability Mechanism (ESM), the Fondo Latino Americano de Reservas (FLAR) or the Arab Monetary Fund (AMF). Others have agreements to provide bilateral swap lines in times of a member's need for foreign currency. While the latter usually involves the provision of the member's foreign exchange reserves, other RFAs are funded from the fiscal budget, in some cases leveraged with capital market borrowing. Most of the RFAs attach some form of macroeconomic conditionality to a disbursement; at least in the case of the disbursement exceeding a certain threshold. Furthermore, obtaining financing beyond a pre-stipulated threshold also often requires the

---

[10] The RFA that currently exist are the European Stability Mechanism (ESM), the Chiang Mai Initiative Multilateralisation (CMIM), the BRICS Contingent Reserve Arrangement (CRA), the Arab Monetary Fund (AMF), the Eurasian Fund for Stabilization and Development (EFSD), the European Union BoP assistance facility (EU BoP) The Fondo Latinoamericano de Reservas (FLAR), the North American Framework Agreement (NAFA) and the South Asian Association for Regional Cooperation (SAARC) (IMF, 2016).

existence of a parallel IMF program, as is the case in the CMIM or the CRA for example. The amount of resources available under the RFAs also varies significantly, ranging from about US$2 billion in smaller arrangements like the SAARC to EUR500 billion currently available under the ESM (ECB, 2016). At the same time, the total resources committed under RFAs, about US$1.3 trillion, are above the currently available IMF resources of approximately US$1 trillion (IMF website, 2017).

While the ESM has been actively used during the Eurozone sovereign debt crisis, the next two largest RFAs, the CMIM and the CRA, have not been used so far. It is therefore difficult to assess RFAs effectiveness in crisis resolution. On the other hand, questions arise as to why so many RFAs are either not used or have been used rather sporadically, especially since several of the arrangements also offer precautionary credit lines and swap lines respectively. The advantages of RFAs are usually seen in a potentially faster decision making process in times of crisis as the limited number of members of an RFA might have a deeper knowledge of the problem facing the member that is usually located in the same geographical region Furthermore members of the RFA have a self-interest in preventing potential spill-over effects to their own economies. Also, there might be less of a negative stigma associated with turning to a "neighbour" for funding rather than asking the IMF for financial resources. The major disadvantage of RFAs are seen in the limited amount of resources most of them have available, which makes them more suited to respond to idiosyncratic rather than to regional-wide shocks. Furthermore, RFAs in general tend to be rather new constructs and thus have not yet been tested. Acknowledging theses disadvantages, the G20 countries have set out the objective to improve the cooperation between the IMF and RFAs. Such cooperation has so far only been tested during the Eurozone sovereign debt crisis, where both the IMF as well as the European RFAs (EFSF, ESM) contributed financial assistance to Euro area countries.

Controversy around the GFSN

There appears to be a common understanding that prudent economic and financial policies together with sound institutions are of utmost importance to shield a country against excessive market volatility and to prevent and mitigate the impacts of a financial crisis. However, there is also a general understanding that financial backstops from the IMF and from RFAs as well as BSAs are useful and necessary to help prevent and mitigate the impacts of an economic or financial crisis. Given the increased role and weight of emerging markets in the global economy, it is necessary to ensure appropriate and sufficient access to the GFSN for emerging market countries.

At the same time, contrasting opinions exist as to whether there is a need for a more centralised GFSN, including new instruments and higher resources at the IMF in order to improve the coverage, effectiveness and certainty of the safety net. The root of this controversy can partly be explained by the potentially conflicting goals that the GFSN is expected to achieve. Firstly, it is expected to be a means for crisis prevention by reassuring investors that money will be available to repay outstanding debt in times of a

liquidity crisis. Through this role, spill-over effects from a crisis should be contained and innocent bystanders ring-fenced. Secondly, it is supposed to provide sufficient financing in the event that a crisis occurs. Thirdly, the GFSN is expected to set the right incentives to foster prudent policies for the sake of crisis prevention or macroeconomic adjustment in case a crisis presents itself.

Providing financing whilst simultaneously setting the right incentives is a complex task. In one extreme scenario, if one assumed that the IMF had access to unlimited resources and offered uncapped swap lines with no macroeconomic conditionality attached to its members, the likely outcome is a situation where governments and investors have perfect certainty that financing will be available in times of crisis. At the same time, the incentives for the governments to build up their own buffers for crisis prevention and resolution would decrease with all the liquidity and credit risks being shifted to the international community that funds the IMF. Additionally, it is also likely that investors would rely on this promise given by the IMF rather than pricing a country's risk premium according to its economic fundamentals.

On the other hand, a scenario where GFSN coverage is structurally uneven, with large gaps existing particularly amongst emerging market economies, is clearly not optimal. Such gaps allow for a faster and more costly transmission of spillovers in the event of crisis. The GFC is a case study in the consequences of a crisis that originated in AEs who have the broadest access to the GFSN, but which spread to EMs who were perhaps ill-equipped to deal with the external headwinds. This sentiment was well encapsulated by a recent IMF study (2016:2) "Reserve currency-issuing advanced economies (AEs) are best served by the current GFSN, while non-systemic, non-gatekeeper EMs are the least adequately served. Systemic and gatekeeper EMs also have inadequate predictability and reliability (from BSAs and RFAs), and high financial costs (from reserve accumulation) or political costs (from stigma associated with Fund financing)".

The relevance of these concerns around the incentives and the current size of the GFSN, including all elements, to safeguard global financial stability remains debated. Taking into account the existing bilateral, regional and multilateral financing mechanism and instruments, there appears to be an understanding, however, that some kind of qualification criteria and/or ex-post conditionality need to remain in place in order to reduce the credit risks for the counterparties and to set appropriate incentives concerning countries own crisis prevention efforts. In this context, studies such as this could be useful to shed some light on how investors actually take account of different elements of the GFSN in their risk pricing.

Empirical Model and Data

In line with one of the standard approaches in the literature, a simplified version of the empirical model developed by Edwards (1983) is adopted. The equilibrium condition for a price taking risk-neutral investor who invests in a country with a non-zero probability of default is the following[11]:

$$(1 - p)(1 + i^* + s) = (1 + i^*) \tag{1}$$

Where p is the probability of default, i^* is the risk-free interest rate and s is the county-specific risk premium. Based on this condition, the investor receives compensation in the form of the country-specific risk premium to account for the non-zero probability of default, represented as the following:

$$s = \frac{p}{1-p} * (1 + i^*) \tag{2}$$

Under common assumptions regarding the nature of p, the country risk premium (or spread) can be written as a linear function of the determinants of p:

$$\ln s = \ln(1 + i^*) + \sum_i \beta_i X_i \tag{3}$$

where X_i represents a matrix of the determinants of the probability of default[12].

With this framework in mind, an unbalanced panel of quarterly data from 21 emerging market economies[13] is considered, spanning from 1997 to 2016. A quarterly average of the sovereign bond spread, taken from the J.P. Morgan EMBIG, is used as the dependent variable. The EMBIG considers market capitalization weighted averages of spreads above a comparable U.S. government bond for debt instruments issued by sovereigns or quasi sovereigns which meet certain liquidity criteria. The EMBIG is widely used in the relevant literature as it provides continuous time series which serves as a good proxy for the evolution of market perceived sovereign risk.

With respect to the risk-free rate, the yield on 10-year US government bonds (US10) emerges as the obvious candidate. For robustness, other candidate interest rates further down the yield curve, including the 3-month US government bond yield and the Fed Funds rate, were also tested.

The explanatory variables used in the various equation specifications fall into three broad categories: global factors; country specific fundamentals; and the GFSN factors. Each of these are discussed below:

---

[11] Assuming that the recovery rate in the case of default is zero
[12] Including determinants of solvency and liquidity risk
[13] The following countries are included in the dataset: Argentina, Brazil, Bulgaria, Chile, China, Colombia, Croatia, Ecuador, Hungary, India, Indonesia, Malaysia, Mexico, Peru, Philippines, Poland, Russia, South Africa, Thailand, Turkey and Ukraine

Global Factors

There are broadly two categories of external factors which are frequently identified in the literature as driving sovereign spreads: risk aversion and global liquidity. For simplicity the Chicago Board Options Exchange Volatility Index (VIX) is used, which measures implied volatility of S&P index options. This widely utilised variable is expected to be positively correlated with sovereign spreads as an increase in global volatility serves as a proxy for risk appetite in this scenario. As a measure of EM specific sentiment, annual returns on the Morgan Stanley Capital International (MSCI) EM index are also considered.

Country Specific Fundamentals

In agreement with Comelli (2012), Csonto and Ivaschenko (2013) and others, it is suggested that country specific fundamentals driving sovereign spreads can be divided into three categories: economic risk factors, financial risk factors and political risk factors. However, unlike much of the recent literature in this area, third party risk indicators are avoided (for the most part) and country level data collected from national authorities is used instead.

In order to capture economic risk, annualised growth in real GDP (rGDP), annual consumer price inflation (CPI), the seasonally adjusted current account balance (CAB) as a percentage of GDP and a four quarter moving average of the fiscal balance (FB) as a percentage of GDP are considered. It is anticipated that both rGDP and FB will be negatively correlated with sovereign spreads as they both directly impact the sovereign's balance sheet. Consumer inflation has a well-established positive relationship with domestic currency bond yields, however, with respect to foreign currency bonds a positive relationship is anticipated if it can serve as a proxy for macroeconomic policy stability.

There is mixed literature on the impact of the current account balance on sovereign spreads. Giordano, Linciano & Soccorso (2012) and De Grauwe & Ji (2012) find a negative relationship between the CAB and sovereign spreads. They suggest that an improvement in the CAB signals competitiveness and an ability to raise funds for the servicing of debt, and therefore spreads are likely to decline. While a worsening CAB could imply an increase in net-foreign debt which undermines the government's ability to (directly or indirectly) meet its obligations, resulting in an increase in spreads. Conversely, Malritz (2012) finds that the relationship could also be positive arguing that a current account surplus is offset by a capital account deficit, therefore the associated capital outflow may signal capital flight or an inability of a country to borrow from abroad, thereby causing sovereign spreads to rise.

To measure financial risk determinants, a measure of external debt (ExD) and gross government debt (GvD), both as a percentage of GDP, are included, in addition to a measure of domestic currency volatility calculated using a standard GARCH model (GVol). The debt measures are expected to have the standard positive relationship with sovereign spreads, whilst GVol is expected to act as a measure of domestic financial stability.

It is somewhat more challenging to measure political risk quantitatively, therefore The Economist Intelligence Unit's political risk index (EIP) is included in the dataset as a proxy. This index tracks political risk on a scale from 1(low) to 100(high) for each country in the sample and the a priori expectation is for it to be positively correlated to bond spreads.

GFSN Factors

The impact of the GFSN is captured by variables (or proxies) for each of the four layers of the GFSN discussed above. Data on international reserves (IntRes) and bilateral swap lines (BSA) are collected from national central banks and expressed as a percentage of GDP. Information on regional financing arrangements (RFA) was collected from publicly available sources – scaled to represent each member's access to the RFA rather than the total size of the arrangement – and similarly represented as a percentage of GDP.

There are a number of possible approaches to measuring the impact that IMF resources have on sovereign spreads. One such approach was put forward by Maurini (2017) who collected information on the IMF's forward commitment capacity (FCC) from regularly published IMF statements[14]. Maurini argues that the overall signalling effect of IMF resources has the effect of lowering sovereign spreads across EMs. Since the FCC variable exhibits potential evidence of a unit root, it is expressed as a ratio of world GDP – which is in turn taken from the IMF World Economic Outlook database. Furthermore, information on IMF programs is also considered, with dummies to represent countries that had active IMF programs (IMFprog) as well as a subset thereof which only considers precautionary IMF programs (IMFprec). Finally, data on the three countries that took up IMF FCLs is included to test the hypothesis that these new precautionary instruments can lower perceived risk. FCL access is included as a percentage of local GDP (FCL) and as a dummy variable (FCLdum).

Edwards (1983) referred to international reserves holdings as a likely determinant of the cost of repudiating debt, as foreign assets may be claimed easily by foreign creditors in case of default and penalties of the international community may be harsher on countries that default, but still maintain liquid reserves. It is also often argued that international reserve holdings should lower the liquidity risk of a country. Accordingly, a negative relationship between international reserve and spreads is anticipated. In this vein, it is similarly expected that the other GFSN variables could serve as potential liquidity indicators. Access to IMF and RFA resources are obvious candidates to form a liquidity buffer. Concerning BSAs, one could argue that they are intended to provide liquidity to central banks that are then able to provide such liquidity to financial market participants to ensure that markets are able to function smoothly. Ultimately, BSAs are

---

[14] It is also possible to scale available IMF resources by each member's quota voting share to find a floor for potential access and express as a percentage of domestic GDP (FCCq).

commonly included as part of the GFSN because of their role in reducing the probability of default of financial institutions, and therefore decrease the probability of a need for a public bail out, which, in turn, would reduce the sovereign probability of default.

Since the a priori expectation is for each layer of the GFSN to have a negative correlation with sovereign spreads, it is also possible to consider a measure which pools access from each of the GFSN layers into one variable representing aggregated GFSN access (GFSNacc)[15].

Methodology

Sections of the literature (such as Csonto and Ivaschenko (2013)) suggest that country specific factors may differ in the short and long term. To account for this potential dynamic nature of the problem (and to accommodate any heterogeneity in the panel) they propose the use of the pooled mean group (PMG) estimator developed by Pesaran, Shin and Smith (1999) which essentially allows for country specific short-run estimates. However estimators of this type have difficulty in dealing with panels which include dummy variables. This is left as a potential area for future research.

In line with the vast majority of the literature, equation (3) is estimated using panel ordinary least squares regression with fixed effects. The validity of this approach is confirmed using a Hausman test. Furthermore, to control for any potential endogeneity issues, relevant domestic variables are lagged in the estimation.

To replicate in part the results of papers such as Bellas et. al. (2010), Comelli (2012) and Csonto and Ivaschenko (2013), initially only global and domestic factors are considered (specifications [1] to [4] in table 2) before adding the measure of aggregated GFSN access. Thereafter, in order to assess the disaggregated impacts of each layer of the GFSN, specifications with individual GFSN layers are presented in table 3. Finally, the impact of various measures of IMF programmes is put forward in table 4.

Results

The results confirm that a country's economic fundamentals and global market conditions play a key role in influencing the EMBI spread of the emerging markets in the specified sample.

In line with the theoretical model, the data confirms the positive influence of government and external debt positions on spreads and the spread reducing impact of a higher (positive) fiscal balance. It is notable that throughout the various specifications, the coefficient of external debt is roughly double that of government debt. Given that a sizeable proportion of emerging market external debt is government debt (see the pairwise correlation in table 1) this should not be overly surprising, but it does support the notion that

---

[15] GFSNacc = IntRes + BSA + RFA + FCCq

markets are generally more concerned about government debt that is held by non-residents, as this results in both solvency and liquidity considerations. The current account balance on the other hand does not appear to be significant. Given the conflicting results (and arguments in support thereof) in the literature, this is not particularly surprising. Furthermore, in line with expectations, exchange rate volatility and political stability are highly significant in explaining the spreads in the panel.

In addition, the results of this study confirm those of numerous similar studies, which show that global factors have an important bearing on emerging market bond spreads. The results show that a higher risk free US interest rate tends to reduce spreads while the expectations of increasing volatility, as measured by the VIX, tend to increase spreads. These global factors remain significant throughout the various regressions. Specifications [4] and [5] in table 2 show that emerging market specific sentiment (MSCI) is a relevant predictor of sovereign spreads, but these specifications force the exclusion of the risk free rate (US10). The risk free rate is preferred as a variable, given its relevance in the theoretical framework.

With regard to the GFSN, the study finds a small, but statistically significant risk-reducing correlation between the GFSN access indicator and spreads, in line with a priori expectations. When the separate elements of the GFSN are considered in table 3, the results indicate that the level of foreign exchange reserves[16] when considered in isolation has a higher risk reducing impact on spreads than GFSNAcc. These results are interesting, particularly given the question proposed by Edwards (1983) who mused as to how the perceived probability of default would be affected if countries increased their indebtedness to finance the accumulation of international reserves. Considering outcomes in table 3, it appears that increasing external debt to finance foreign reserve accumulation would not decrease spreads, whilst the same appears to hold for using the government funds (even without a variable to account for debt servicing costs).

The results also point to a statistically significant negative correlation between the access to an RFA and a country's risk spread, even though it appears smaller than the impact of foreign exchange reserves. This supports the recent increased attention RFAs have received since the GFC and lends further credence to the G20's efforts to improve communication and cooperation amongst RFAs and between RFAs and the IMF.

BSAs on the other hand appear to have no statistically significant impact on spreads. This outcome could be as a result of the limited number of swap lines available to emerging markets or the small size of such swap lines relative to the rest of the GFSN. On the other hand it may also be an indication that swap lines are not seen as a liquidity buffer that the sovereign may use to repay the foreign debt obligations. Furthermore, the bulk of swap lines available to emerging markets are through the Peoples Bank of China,

---

16 No consideration is made for "adequate levels" of reserves, instead the impact on spreads from the overall level of international reserves as a percentage of GDP is estimated.

which are not strictly to be used in times of balance of payments crises, but are also often used for trade facilitation purposes.

With respect to available IMF resources, there appears to be a significant negative correlation between FCC and spreads in specification [11]. This result should however be interpreted with caution as available IMF resources depend on various factors including the uptake of IMF programs and changes in available IMF funding. Both may be directly driven by financial market and global macroeconomic developments. Therefore, even as the correlation is theoretically sound, it is difficult to draw conclusions regarding causality.

The specifications which investigate the impact of IMF programmes are particularly interesting. The positive and significant coefficient for the IMF program dummy in specification [16] in table 4 suggests that – whilst controlling for macroeconomic and global factors – IMF programmes in general[17] appear positively correlated with risk premiums[18]. At the same time however, the results indicate that access to the new precautionary programs, as measured through the FCL access dummy as well as the volume committed under the FCL as a percentage of GDP appears to have a statistically significant risk-reducing impact on spreads.

Naturally this result could suffer from bias considering the limited number of countries which took up the FCL and the confirmation bias related to the fact that FCLs were only offered to countries with strong fundamentals in the first place. In order to correct for potential issues of endogeneity, the panel is limited to 13 countries which are believed to have qualified for the FCL in specifications [17] and [18]. The IMF does not publicly release information regarding which countries qualified for the FCL, so the study identifies a list of countries – using a similar methodology as Maurini (2017) – which essentially identifies countries with fundamentals at least as strong as the weakest country which took up an FCL. Even though the coefficients for the FCL access dummy and the volume committed under the FCL in these specifications did decrease, the results remained significant. While it cannot be excluded that there might be other economic or political variables at play, the results indicate that there is a negative relationship between access to an FCL and a country's risk premium.

Conclusion

The objective of this paper was to analyse whether different layers of the GFSN have had an impact on emerging market bond spreads when controlling for a set of domestic and global conditions. Generally, the results underline the significant role that economic fundamentals such as economic growth and the level of

---

[17] Including all conventional and precautionary credit facilities
[18] For robustness this specification was tested with up to 12 lags of the dummy variable, the correlation remains significant throughout.

indebtedness play in the determination of emerging market spreads. At the same time, it becomes evident that sovereign's financing costs are not only in the hands of the respective governments but also dependent on global economic and financial conditions. The significance and magnitude of the coefficients of external variables in all the various specifications confirms this view.

In addition, the results also provide valuable information concerning the correlation of the GFSN and country's risk premiums. However, caution needs to be exercised in the interpretation of the results given that the endogeneity problem with regard to certain GFSN variables and the risk spread cannot be completely resolved. Furthermore, the analysis did not account for the heterogeneity in RFAs and that there are limited observations to date for access to the FCL, available for consideration in the study.

With these caveats in mind, the results indicate that liquidity buffers provided either through self-insurance or access to an RFA tend to decrease the risk premium, with the former being more effective. The results furthermore indicate that standard IMF programmes appear positively correlated to risk premiums. Taking into account that these programs are usually entered into when a country is already in crisis, it is reasonable to assume that spreads already increased before an IMF program was set up. However since these upward forces on spreads should be captured by the domestic variables in the lead up to a program being announced, the results suggest, that in the specified country sample, a standard IMF program does not necessarily help to decrease risk spreads at least over the short term. The result instead supports the existence of stigma attached to conventional IMF programs.

In contrast to standard IMF programs, access to the new precautionary IMF FCL is negatively correlated with the risk spread of the country concerned. This finding is in line with the "insurance" role that the precautionary instrument is intended to play. Furthermore, by limiting the sample to countries that are assumed to have been eligible for an FCL arrangement, it may be possible to conclude a causal relationship. Taking into account that there are a number of papers that could not find a significant influence of the FCL on spreads, the findings of this study may be an indication that investors' perception and awareness of the FCL has changed over time. Considering that three countries have now had access to the credit line since 2009, investors' might have become more familiar with the instrument. Unclear, however, remains the question of whether investors' primarily value the financial resources that are committed under the FCL or whether they take up the signal about the strong policies and fundamentals that the IMF intends to send. The fact that both the dummy variable and the volume variable are statistically significant could be an indication that both factors matter. Nonetheless, the results from this study support the findings of Essers and Ide (2017) and suggest that the perceived stigma surrounding precautionary IMF facilities – and the FCL in particular – appear unwarranted.

Turning to the policy implications of the results, it can be concluded that risk spreads appear to be mainly determined by a country's economic fundamentals and global market conditions. A sustainable level of external debt, the build-up of a strong foreign exchange reserve buffer as well as a stable financial and

political environment are factors that lie directly in the hands of governments themselves and appears very effective in reducing risk spreads. At the same time, the results confirm the correlation between global conditions and risk spreads, highlighting the vulnerability of Emerging Markets during times of stressful external conditions, particularly as the global financial system has become more integrated over time. Besides the positive impact of accumulating foreign exchange reserves, the results also suggest that access to the GFSN through an RFA and/or an FCL can be meaningful in reducing a country's perceived riskiness. Given this result, questions surrounding the provision of financial resources on a regional and global level, including access criteria, remain relevant in order to avoid unintended consequences of the GFSN.

The paper's findings cannot address the question of whether GFSN access actually reduces a sovereign's risk, or simply reduces the perception thereof. This issue warrants attention, as this would help prevent misalignments and mispricing of risk, which would in fact be counter-productive to the GFSN's purpose.

Nonetheless, the issues discussed here are clearly rather complex and further research on the topic is warranted, especially with regards to the characteristics of effective RFAs and the effectiveness of non-financial programs, such as the newly introduced non-financing Policy Coordination Instrument (PCI) of the IMF and the extent to which such programmes could assist in providing positive signalling effects to market participants even without the provision of financial resources.

References

Aizenman, J.; Jinjarak, Y., Park, D. (2010), "International Reserves and Swap Lines: Substitutes or Complements?", NBER Working Paper 15804.

Bellas, D., Papaioannou, M. G., Petrova, I. (2010), "Determinants of Emerging Market Sovereign Bond Spreads: Fundamentals vs Financial Stress", IMF Working Paper, WP/10/281.

Comelli, F. (2012), "Emerging Market Sovereign Bond Spreads: Estimation and Back-testing", Institute for Capacity Development, WP/12/212.

Csonto, B, Ivaschenko, I. (2013), Determinants of Sovereign Bond Spreads in Emerging Markets: Local Fundamentals and Global Factors vs. Ever-Changing Misalignments, IMF Working Paper, WP/13/164.

De Grauwe, P., and Ji, Y. (2012), "Self-Fulfilling Crises in the Eurozone: An Empirical Test", CEPS Working Document.

Denbee, E, Jung, C., Paterno, F. (2016), "Stitching together the global financial safety net", Questioni die Economia e Finanza Nr. 322, Banca d' Italia.

Dominguez, K. M. E., Hashimoto, Y., Ito, T. (2011), "International Reserves And The Global Financial Crisis", NBER Working Paper 17362.

ECB (2016); "The layers of the global financial safety net: taking stock", Economic Bulletin, Issue 5.

Edwards, S. (1983); "LDC's Foreign Borrowing and Default Risk: An Empirical Investigation 1976-1980", NBER Working Paper Series, No. 1172.

Essers, D., Ide, S., (2017), "The IMF and precautionary lending: An empirical evaluation of the selectivity and effectiveness of the flexible credit line", Working paper research, No. 323, National Bank of Belgium.

Fernandez-Arias, E., Levy Yeyati, E. (2010); "Global Financial Safety Nets: Where Do We Go from Here?", Documento de Trabajo 06/2010, Centro de Investigacion en finanzas, Universidad Torcuato die Tella.

Giordano, L., Linciano, N., Soccorso, P. (2012), "The Determinants of Government Yield Spreads in the Euro Area", CONSOB, Paper no 71.

IMF (2013), "Stocktaking the Fund's Engagement with Regional Financing Arrangements", IMF Policy Paper.

IMF (2014), "Review of the Flexible Credit Line, the Precautionary and Liquidity Line, and the rapid Financing Instrument", IMF Policy Paper.

IMF (2016), "Adequacy of the Global Financial Safety Net", IMF Policy Paper.

Izquierdo, A., Talvi, E. (2009), "A stability pact a la Maastricht for emerging markets", voxeu.org.

Levy Yeyati, E.; "The Cost of Reserves", Documento de Trabajo 10/2006, Centro de Investigacion en Finanzas, Universidad Torcuato die Tella.

Maurini, C. (2017), "The IMF Safety Net and Emerging Markets Sovereign Spreads", Questioni di Economia e Finanza, Occasional Paper, Number 370.

Mc Guire, P; Schrijvers, M (2003), "Common factors in emerging market spreads", Bank for International Settlements Quarterly Review, December 2003.

Pesaran, M. H., Shin, Y. and Smith, R. P., (1999), "Pooled Mean Group Estimation of Nonstationary Panel Data", Cowles Foundation Paper No. 986.

Scheubel, B. Stracca, L. (2016), "What do we know about the global financial safety net? Rationale, data and possible evolution", ECB Occasional Paper No. 177.

Appendix

Table 1 – Pairwise Correlation

	rGDP	CPI	CAB	ExD	GvD	Gvol	EIP	US10	VIX	MSCI	IntRes	RFA	BSA	FCC	FB
rGDP	1.000														
CPI	-0.157	1.000													
CAB	0.159	-0.088	1.000												
ExD	-0.233	0.088	-0.054	1.000											
GvD	-0.079	-0.007	0.056	0.591	1.000										
Gvol	-0.299	0.250	-0.344	0.122	0.168	1.000									
EIP	0.067	0.265	0.182	-0.184	-0.059	-0.218	1.000								
US10	0.153	-0.049	0.146	0.004	-0.038	-0.222	0.099	1.000							
VIX	-0.169	0.090	-0.031	0.066	-0.037	0.109	0.025	0.097	1.000						
MSCI	0.301	-0.144	0.131	-0.052	-0.043	-0.179	0.018	0.372	-0.401	1.000					
IntRes	0.119	-0.199	0.382	0.236	0.040	-0.336	-0.148	-0.096	0.018	-0.021	1.000				
RFA	-0.031	-0.123	-0.195	0.428	0.198	-0.008	-0.144	-0.005	-0.022	0.033	0.280	1.000			
BFA	-0.075	-0.024	0.180	0.166	0.194	0.139	-0.243	-0.301	0.004	-0.111	0.239	-0.035	1.000		
FCC	-0.015	-0.020	-0.136	-0.017	0.006	0.157	-0.126	-0.740	-0.306	-0.217	0.091	-0.016	0.246	1.000	
FB	0.139	0.184	-0.008	-0.127	-0.295	-0.116	0.148	0.172	-0.031	0.052	-0.108	0.003	-0.238	-0.117	1.000

Table 2

	[1]	[2]	[3]	[4]	[5]	[6]	[7]
rGDP	-0.01***	-0.011***	-0.01***	-0.006***	-0.008***	-0.009***	-0.009***
	[0.002]	[0.002]	[0.002]	[0.002]	[0.002]	[0.002]	[0.002]
CPI	-0.004*	0.002*		-0.006**	0.004**	-0.004	
	[0.002]	[0.001]		[0.002]	[0.002]	[0.003]	
CAB	-0.002		-0.001	0.001	0.004	0.001	0.001
	[0.003]		[0.003]	[0.003]	[0.003]	[0.003]	[0.003]
ExD	0.016***	0.015***	0.016***	0.016***	0.015***	0.016***	0.016***
	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]
GvD	0.007***	0.007***	0.007***	0.007***	0.008***	0.007***	0.007***
	[0.002]	[0.001]	[0.002]	[0.002]	[0.001]	[0.002]	[0.002]
FB	-0.011**		-0.013**	-0.017***		-0.01*	-0.011**
	[0.005]		[0.005]	[0.005]		[0.005]	[0.005]
lnGvol	0.061***	0.053***	0.056***	0.063***	0.059***	0.076***	0.069***
	[0.015]	[0.014]	[0.015]	[0.014]	[0.014]	[0.015]	[0.015]
lnEIP	0.936***	0.905***	0.914***	0.903***	0.718***	0.821***	0.796***
	[0.102]	[0.092]	[0.104]	[0.1]	[0.089]	[0.103]	[0.105]
lnUS10	-0.133***	-0.116***	-0.135***	-0.029	-0.055	-0.177***	-0.173***
	[0.032]	[0.031]	[0.033]	[0.035]	[0.036]	[0.036]	[0.036]
lnVIX	0.705***	0.704***	0.701***	0.584***	0.58***	0.698***	0.696***
	[0.032]	[0.031]	[0.031]	[0.034]	[0.033]	[0.031]	[0.031]
lnMSCI				-0.003***	-0.003***		
				[0]	[0]		
GFSNacc					-0.007***	-0.007***	-0.007***
					[0.002]	[0.002]	[0.002]
constant	-1.029***	-0.898***	-0.934**	-0.643*	0.257	-0.371	-0.289
	[0.377]	[0.347]	[0.386]	[0.372]	[0.352]	[0.395]	[0.405]
R Squared	0.851	0.841	0.85	0.856	0.853	0.849	0.849
Observations	1131	1201	1133	1131	1162	1109	1109

Fixed-effect regression. Robust 2-way clustered standard errors in parentheses. Dependant variable is the log of EMBIG spreads.
*** Significant at the 1% level; ** Significant at the 5% level; * Significant at the 10% level.

Table 3

	[8]	[9]	[10]	[11]	[12]	[13]
rGDP	-0.009***	-0.01***	-0.01***	-0.009***	-0.009***	-0.009***
	[0.002]	[0.002]	[0.002]	[0.002]	[0.002]	[0.002]
CPI	-0.003	-0.004*	-0.004*	-0.004**	-0.004	-0.004
	[0.003]	[0.002]	[0.002]	[0.002]	[0.003]	[0.003]
CAB	0.003	-0.002	-0.002	-0.002		
	[0.003]	[0.003]	[0.003]	[0.003]		
ExD	0.017***	0.016***	0.016***	0.016***	0.016***	0.016***
	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]
GvD	0.006***	0.007***	0.007***	0.006***	0.006***	0.006***
	[0.002]	[0.002]	[0.002]	[0.002]	[0.002]	[0.002]
FB	-0.01*	-0.011**	-0.011**	-0.012**	-0.01*	-0.01**
	[0.005]	[0.005]	[0.005]	[0.005]	[0.005]	[0.005]
lnGvol	0.074***	0.064***	0.059***	0.063***	0.08***	0.083***
	[0.015]	[0.015]	[0.017]	[0.015]	[0.016]	[0.018]
lnEIP	0.799***	0.955***	0.946***	0.896***	0.81***	0.797***
	[0.102]	[0.102]	[0.108]	[0.102]	[0.1]	[0.105]
lnUS10	-0.187***	-0.135***	-0.129***	-0.179***	-0.23***	-0.235***
	[0.036]	[0.032]	[0.032]	[0.04]	[0.041]	[0.042]
lnVIX	0.703***	0.701***	0.705***	0.681***	0.667***	0.668***
	[0.031]	[0.032]	[0.032]	[0.034]	[0.034]	[0.034]
IntRes	-0.011***				-0.009***	-0.009***
	[0.002]				[0.002]	[0.003]
RFA		-0.005*			-0.005*	-0.005*
		[0.003]			[0.003]	[0.003]
BSA			0.004			-0.004
			[0.008]			[0.008]
FCC				-0.093**	-0.103**	-0.102**
				[0.042]	[0.043]	[0.042]
constant	-0.27	-1.056***	-1.067***	-1.27***	-0.738*	-0.677
	[0.393]	[0.375]	[0.397]	[0.399]	[0.398]	[0.416]
R Squared	0.848	0.848	0.847	0.848	0.846	0.849
Observations	1119	1131	1131	1121	1128	1113

Fixed-effect regression. Robust standard errors in parentheses. Dependant variable is the log of EMBIG spreads.
*** Significant at the 1% level; ** Significant at the 5% level; * Significant at the 10% level.

Table 4

	[14]	[15]	[16]	[17]	[18]
rGDP	-0.009***	-0.009***	-0.01***	-0.01***	-0.01***
	[0.002]	[0.002]	[0.002]	[0.002]	[0.002]
CPI	-0.005	-0.004	-0.003	0.034***	0.036***
	[0.003]	[0.003]	[0.003]	[0.005]	[0.005]
CAB	0.001	0.001	0.001	0.007**	0.006*
	[0.003]	[0.003]	[0.003]	[0.003]	[0.003]
ExD	0.016***	0.016***	0.015***	0.018***	0.018***
	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]
GvD	0.008***	0.007***	0.006***	0.01***	0.01***
	[0.002]	[0.002]	[0.002]	[0.002]	[0.002]
FB	-0.009*	-0.01**	-0.011**	-0.013**	-0.015***
	[0.005]	[0.005]	[0.005]	[0.005]	[0.006]
lnGvol	0.073***	0.075***	0.075***	0.078***	0.08***
	[0.016]	[0.016]	[0.015]	[0.015]	[0.015]
lnEIP	0.753***	0.799***	0.803***	0.818***	0.848***
	[0.104]	[0.103]	[0.101]	[0.109]	[0.108]
lnUS10	-0.213***	-0.187***	-0.182***	-0.17***	-0.14***
	[0.036]	[0.036]	[0.036]	[0.04]	[0.04]
lnVIX	0.702***	0.698***	0.692***	0.671***	0.666***
	[0.031]	[0.031]	[0.031]	[0.032]	[0.032]
GFSNacc	-0.007***	-0.007***	-0.007***	-0.007***	-0.007***
	[0.002]	[0.002]	[0.002]	[0.002]	[0.002]
FCLdum	-0.23***			-0.176***	
	[0.046]			[0.042]	
FCL		-0.021**			-0.016*
		[0.009]			[0.009]
IMFprog			0.087***		
			[0.032]		
constant	-0.091	-0.291	-0.253	-0.713*	-0.838**
	[0.398]	[0.394]	[0.392]	[0.406]	[0.403]
R Squared	0.851	0.849	0.849	0.817	0.814
Observations	1109	1109	1109	778	778
Countries	21	21	21	13	13

Fixed-effect regression. Robust standard errors in parentheses. Dependant variable is the log of EMBIG spreads.
*** Significant at the 1% level; ** Significant at the 5% level; * Significant at the 10% level.