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

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

August 31, 2017[‡]

Abstract

As a consequence of the global financial crisis, the need for an improvement of the global financial safety net (GFSN) has become a polarising issue of debate in international institutions and fora such as the International Monetary Fund (IMF) and the G20. Many have argued that a strong GFSN with the IMF at its centre is vital to building a more resilient global financial system in order to prevent a recurrence of past mistakes. The counter argument relates to the problems associated with systems of multilateral insurance, primarily moral hazard. Whilst this paper does not directly address these specific issues, it seeks to investigate the potential positive impact that 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 expands to include elements of the GFSN. Our 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 is more ambiguous. It is necessary, however, due to the nature and coverage of the GFSN, to temper any conclusions drawn from this analysis.

JEL Classification: F33; F55; F32

Keywords: Global Financial Safety Net, Sovereign yields, Emerging markets

[*] Deutsche Bundesbank
[†] All from the South African Reserve Bank
[‡] The views expressed are those of the author(s) and do not necessarily represent those of the South African Reserve Bank, the Deutsche Bundesbank or the policies of either institution. While every precaution is taken to ensure the accuracy of the information, neither the South African Reserve Bank or the Deutsche Bundesbank shall be liable to any person for the inaccurate information of the opinions contained herein.

Contents

Introduction

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

The GFC has placed the Global Financial Safety Net (GFSN) - traditionally comprised of IMF resources and a country's foreign exchange reserves - in the spotlight once again. As a result of the turmoil in financial markets, the hesitation to use IMF resources and the perceived need for better crisis prevention and resolution, new instruments have been added to the GFSN[1]. Concomitantly, financial resources on an international and regional level have been increased.

The discussion regarding how the GFSN should further evolve is ongoing and controversial, especially with respect to its size, coverage and access[2]. Multilateral financial safety nets are always sensitive issues given the concerns of potential moral hazard from the perspective of both market participants and policy makers. This raises the question of how the GFSN can best fulfil its crisis prevention role. How should the different instruments interact? What degree of cooperation is required multilaterally and with international organizations such as the IMF? These questions remain pertinent given the persistence of financial market volatility in the face of enduring global economic and policy uncertainty, especially since many countries are left with much lower macroeconomic policy buffers compared to before the GFC.

This paper contributes to the empirical work on the GFSN by trying to ascertain whether countries' diverse access to the various elements of the GFSN – in terms of volume and overall availability – has had an influence on the perceived riskiness of the country. This is

[1] Such as regional/multilateral financing arrangements (RFA/MFA) and swap line facilities.
[2] Many EMs argue that GFSN coverage is uneven, which is perceived as a hindrance to effective crisis prevention and resolution.

done by analysing the impact that the different elements of the GFSN have had on sovereign bond spreads, after controlling for economic fundamentals and external conditions, where sovereign bond spreads serve as a proxy for a country's risk premium stemming from market, credit, liquidity and other risks.

Overview of the literature on Emerging Market Spreads

Over the years, many attempts have been made to understand the drivers of emerging market foreign currency bond spreads. Much of the conclusions drawn from work conducted by institutions such as the Banca D'Italia (Maurini, 2017) and the IMF (Csonto & Ivaschenko, 2013) on the determinants of emerging market bond spreads can be summed up as follows: (i) global and domestic factors both matter; (ii) global conditions are more important in the short-term and macroeconomic fundamentals are more important in 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 tended to be the main drivers of spreads, including external debt, debt service ratios and 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.

It comes as no surprise that global factors are becoming more important given the increased level of financial integration globally, the development and increased issuance in emerging market fixed income markets since the late 1990s, which have also contributed to the greater depth and liquidity in these markets. Emerging market macroeconomic fundamentals have similarly improved over time, with a resultant improvement in sovereign credit ratings, leading to increased demand from investors. In addition, since the GFC, the search for yield - combined with greater liquidity in global markets - increased the appetite for and issuance of emerging market debt. The Bank for International Settlements (BIS) has noted that indeed, 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 emerging market bond spreads relative to idiosyncratic factors[3].

A study by Bellas, Papaioannou and Petrova (2010), incorporated the Emerging Markets Financial Stress Index (FSI)[4] of the IMF, to capture the state of a country's financial health, and finds 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 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. Furthermore, there are often misalignments, for example, instances of underpricing of emerging market debt tends to increase in periods of severe stress and limited understanding of country specific developments. In this regard, Csonto and Ivaschenko find that recent declines in spreads since the GFC and inflows of funds to emerging markets reflect an improvement in fundamentals only to a small extent. Spreads are, in fact, lower than implied by domestic and global conditions in some countries.

Similarly to much of the literature regarding EM sovereign spreads, this paper seeks to investigate the determinants of the JP Morgan Emerging Market Bond Index Global (EMBIG)[5]. We consider global and domestic macroeconomic fundamentals; political risk factors; and assess the role of the GFSN both in its totality and in its individual parts to explain the movement in emerging market bond spreads. In essence, this paper's contribution to the literature can be considered as an extension of Maurini (2017) who limited their consideration to the role of IMF resources in explaining the impact of the GFSN on EMBIG spreads.

[3] Mc Guire & Schrijvers (2003)
[4] 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.
[5] 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.

The Global Financial Safety Net

There is not a 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 foreign exchange reserves and official arrangements (Bilateral Swap Arrangements (BSA's), RFAs/MFAs and IMF resources)[6]. A recent IMF definition also includes market-based instruments, such as commodity price hedges, 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 we would like 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, we 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 central 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 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 generally provide assurance to foreign investors that they will be paid back in times of crisis, thereby potentially decreasing a country's risk premium.

A primary argument in favour of increasing the scope and coverage of regional and multilateral arrangements is that foreign reserves as an instrument for self-insurance are considered costly. The common practice of investing in liquid public liabilities usually provides lower returns relative to other investment opportunities and is not without risks

[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

(Aizenman, et. al (2010)). Additionally, sterilisation costs that often accompany 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) points 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.

Nonetheless, the fact that foreign exchange reserves are a country's own resources that can be used without conditions or repayment obligations attached, provides 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 trillion in 1Q2017[7]. Over half of these reserves are held in US dollars, although this proportion has declined steadily from around 75% in the mid-1990s.

Questions have arisen whether this acceleration in reserves accumulation has been excessive. As a result the assessment of reserve adequacy at a country level has become increasingly sophisticated, moving from traditional simple 'rules of thumb' to more complex metrics, that include a range of variables that describe a country's external vulnerability. Regression analysis, cost-benefit models and scenario analysis are different methods that can be applied in order to estimate country-specific "optimal" foreign exchange reserve buffers.

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

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 the first port of call for foreign exchange support in case a member's own foreign exchange reserve buffers are insufficient to satisfy a balance of payments requirement.

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 spill-over effects experienced during the GFC, the members of the IMF decided in 2009 that additional precautionary instruments were needed to protect those members who were not likely to be at risk of crisis from being 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 and resources can be drawn without further justification. These mechanisms were intended to ensure 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 considerable 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".

The addition of precautionary programs should not detract from the fact that there are several advantages associated with conventional IMF financing. First of all, the "interest rate" on IMF loans is not dependent on the country's risk profile. The IMF provides financing at reasonable rates in cases when market financing is either not accessible or not affordable

for the member country as long as the adjustment program is projected to successfully solve a country's transitory liquidity problems. The associated adjustment program is meant to improve investor confidence in the countries capacity to solve the crisis and to repay outstanding debt. Simultaneously however, the conditionality attached to these programmes is increasingly seen as a disadvantage, as it is perceived by many as an undesirable interference in domestic policies. 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 efforts to make IMF-programs more attractive for precautionary purposes by reducing or even foregoing on ex-post conditionality and by eliminating a predefined access limit, were only partially successful when measured by the use of the FCL and PLL.

The empirical evidence concerning the effectiveness of IMF resources and instruments on EM spreads is mixed. Maurini (2017) finds a positive impact from the overall size of Fund resources, measured by its Forward Commitment Capacity (FCC), on the risk outlook and borrowing costs of EMs, 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, as well as Fernandez-Arias and Levy-Yeyati (2010), fail to find a significant impact from the introduction of these programmes.

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; in between a fee might be 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 to influence foreign exchange rates, more recent BSA's 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 BSA's between central banks increased rapidly between the reserve issuing central banks, other Advanced Economies (AE) and a few EMs[8]. 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 ECB, 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 fact that the global banking network remains concentrated among AEs, in particular the UK, US and Japan as well as several other countries from the European Union (IMF, 2016, ECB 2016). The People's Bank of China is apparently the most active provider of BSA's, as according to Volz (2016), 31 active swap lines amounting to US$500 billion were in place in February 2016.

The big advantage of BSA's is that they have no conditionality attached and they entail no further cost than the fee in case they are used. The disadvantage is that every central bank has its own preconditions on when it enters an agreement with a demanding central bank, largely depending on the mandate of the lending central bank. Therefore, the world-wide coverage of the network of BSA's 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. In any case,

[8] 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).

most reserve currency issuing central banks do not see BSAs as a substitute for other elements of the GFSN, in particular, they do not see them as an appropriate instrument to finance balance of payments needs (EBC, 2016).

Regional Financing Arrangements (RFAs)

The IMF defines RFA's 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[9].

These RFA's 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 ESM, the FLAR or the AMF while others have agreements to provide bilateral swap lines in times of a member's need for foreign currency. While the latter usually involve the provision of the member's foreign exchange reserves, other RFA's are funded with government's money, in some cases leveraged with capital market borrowing. Most of the RFA's attach some form of macroeconomic conditionality to a disbursement; at least in case the disbursement exceeds a certain threshold. Furthermore, obtaining financing beyond a pre-stipulated threshold also often requires the 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 RFA's 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 RFA's, about US$1.3 trillion, are even above the currently available IMF resources of approximately US$1 trillion (IMF Website).

[9] The RFA's 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).

While the ESM has been actively used during the Eurozone sovereign debt crisis, the next two largest RFA's, the CMIM and the CRA, are said to have not been used so far. It is therefore difficult to assess the RFA's effectiveness in crisis resolution. On the other hand, questions arise as to why so many RFA's 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 RFA's 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. 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 RFA's 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 been tested. Acknowledging theses disadvantages, the G20 countries have set out the objective to improve the cooperation between the IMF and RFA's. Such cooperation has so far only been tested during the Eurozone sovereign debt crisis, where both the IMF as well as the European RFA's (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 EMs in the global economy, it is necessary to ensure that existing gaps in the GFSN are plugged and that systemic EMs have appropriate and sufficient access to the GFSN.

At the same time, contrasting opinions exist as to whether there is a need for a more centralized safety net, 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 at least 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.

In the extreme case, if one assumed that the IMF had access to unlimited resources and offered uncapped swap lines with no macroeconomic conditionality attached to its members, we would arrive at a situation where governments and investors would 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 certainly 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. How relevant the concerns around the incentives are and whether the current size of the GFSN, including all elements, is in fact too small 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 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. This would always imply that not all countries will have access to all instruments available, depending on the economic and political circumstances. In this context, it should be noted that the IMF is currently reviewing its lending toolkit, including considering the addition of new instruments and whether the FCL and PLL remain necessary. In this context, our study 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, we follow a simplified version of the empirical model developed by Edwards (1983). 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[10]:

$$(1 - p)(1 + i^* + s) = (1 + i^*) \quad (1)$$

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:

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

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:

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

where X_i represent the determinants of the probability of default.

With this framework in mind, we consider an unbalanced panel of quarterly data from 17 emerging market economies[11], 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 for all 17 countries. 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.

[10] Assuming that the recovery rate in the case of default is zero

[11] 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

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, including 3-month US government bond yield, were also considered.

The explanatory variables used in the various equation specifications fall into three broad categories:

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 we consider the Chicago Board Options Exchange Volatility Index (VIX), which measures implied volatility of S&P index options. This widely used 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, we consider annual returns on the MSCI EM index.

Country Specific Fundamentals

Much like Comelli (2012), Csonto and Ivaschenko (2013) and others, we suggest 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, we refrained (for the most part) from using third party risk indicators and instead make use of country level data collected from national authorities.

To capture economic risk we consider annualised growth in real GDP (rGDP), annual consumer price inflation (CPI), 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. 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 we anticipate a positive relationship if it can serve as a proxy for macroeconomic policy stability.

There is mixed literature on the impact of CAB 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, we include external debt (ExD) and gross government debt (GvD), both as a percentage of GDP. We furthermore consider 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 and as a result we make use of The Economist Intelligence Unit's political risk index (EIP). This index tracks political risk on a scale from 1(low) to 100(high) for each country in our sample.

GFSN Factors

We include variables (or proxies) for each of the four layers of the GFSN discussed above. International reserves (IntRes) and data on bilateral swap lines (BSA) as 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. We begin by adapting the approach of Maurini (2013) who collected information on the IMF's forward commitment capacity (FCC) from regularly published IMF statements. Maurini argues that the overall signaling effect of IMF resources

has the effect of lowering sovereign spreads across EMs. Since the FCC variable exhibits evidence of a unit root, we scale it by world GDP taken from the IMF world economic outlook. It is also possible to scale available IMF resources by each members' quota voting share to find a floor for potential access (FCCq). Furthermore, we also consider information on IMF programs, 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 limits are 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. We furthermore assume that international reserve holdings should lower the liquidity risk of a country. Accordingly, we expect higher reserves as a percentage of GDP to lead to a lower spread of a country. In this vein, we similarly expect 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 BSA's, one could argue that they are not intended to provide liquidity to governments but to financial market participants. We include them, however, as BSA's could, through the reduction of the probability of default of financial institutions, 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, we also consider a final measure which pools access from each of the GFSN layers (IntRes, BSA, RFA and FCCq) into one variable representing aggregated GFSN access (GFSNacc).

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. This is left as a potential area for future research.

In line with the vast majority of the literature, we estimate equation (3) 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), we initially consider only global and domestic factors (specifications [1] to [5] in table 2) before adding the measure of aggregated GFSN access. Thereafter we seek to assess the disaggregated impacts of each layer of the GFSN with the results represented in table 3. Thereafter we consider the impact of various measures of IMF programmes in table 4.

Results

Our results confirm that a country's economic fundamentals and global market conditions play a role in influencing the EMBI spread of the EMs in our sample.

In line with the theoretical model, the data confirms the positive influence of the 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 the fact that a fair proportion of EM 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 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 in the literature this is not particularly surprising. It is possible that much of the informational content carried in the CAB variable is included in the measures of external debt. There also exists the possibility that CAB might only drive short run variances

in spreads, a theory that could be tested with the PMG estimator mentioned earlier. Furthermore, in line with our expectations, the volatility of the exchange rate and political stability are highly significant in explaining the spreads in the panel.

In addition, the results in this paper conform to those of many other studies, which show that global factors have an important bearing on EM spreads. Our results show that a higher risk free US interest rate tends to reduce the spreads while the expectations of increasing volatility, as measured by the VIX, tend to increase the spreads. These global factors remain significant throughout our regressions. Specifications [4] and [5] in table 2 show that EM specific sentiment (MSCI) is a relevant predictor of sovereign spreads, but these specifications force the exclusion of the risk free rate (US10). Given the relevance of the risk free rate in our theoretical framework, this variable is preferred.

With regard to the GFSN, we are able to find a small, but statistically significant risk-reducing impact of our GFSN access indicator on spreads, in line with a priori expectations. When the separate elements of the GFSN are considered in table 3, our results indicate that the level of foreign exchange reserves by itself has a higher risk reducing impact on spreads. 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 specification [8] in table 3, the results suggest 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 find a significant spread narrowing impact for access to an RFA, even though it appears smaller than the impact of foreign exchange reserves. This supports the recent increase in RFAs globally, and further lends credence to the G20 efforts to improve communication and cooperation among RFAs and between RFAs and the IMF.

However, even at a 10% level, there is no significant result for the access to swap lines. This outcome could be as a result of the limited number of swap lines available to EMs 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 EMs are through the Peoples Bank of China, which are not strictly to be used in times of balance of payments crises, but are also often used for purposes of trade.

In contrast to Maurini (2017), we do not find a significant impact of the FCC on EM spreads. However, the results concerning IMF programmes are particularly interesting. The positive and significant coefficient for the IMF program dummy in specification [19] in table 4 suggests that – when controlling for macroeconomic and global factors – IMF programmes in general[12] send negative signals to markets with respect to perceived risk. At the same time however, our results indicate that both 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. Therefore in specifications [20] and [21] we limit the panel to countries which are believed to have qualified for the FCL. The IMF does not publicly release information regarding which countries qualified for the FCL, so we make use of a list compiled by Maurini (2017) which essentially identifies countries with macroeconomic fundamentals at least as strong as the weakest country which took up an FCL. Whilst the coefficients in these specifications did decrease, the dummy variable at least remained significant at a 1% level.

Conclusion

Our objective was to analyse whether different layers of the GFSN have had an impact on EM bond spreads when controlling for a set of domestic and global conditions. Generally, our results underline the significant role that economic fundamentals such as economic growth and the level of indebtedness play in the determination of EM 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 of external variables in all the various specifications confirms this view.

[12] Including all conventional and precautionary credit facilities

Without doubt, the results provide valuable information concerning the impact of the GFSN, however caution needs to be exercised in the interpretation thereof given that the analysis did not account for the heterogeneity in RFA's and the small number of observations for access to a swap line and the FCL that are available for consideration in the study.

With these caveats in mind, our results indicate that liquidity buffers provided either through self-insurance or access to an RFA tend to decrease the risk premium that financial markets demand for EMs. The results furthermore indicate that access to a precautionary IMF flexible credit line may reduce the risk spread of the country concerned, whilst IMF programmes in general appear to negatively impact investor confidence during times of crisis. The positive correlation between the IMF program dummy and spreads indicates that markets do not see an IMF program as a guarantor for a successful macroeconomic adjustment process, whilst suggesting that there may indeed be stigma attached to conventional IMF programs.

The findings in the paper more broadly point to the effectiveness of the GFSN with regard to reducing the perceived riskiness of the countries having access to financial buffers. Taking into account, however, that the reduction of risk spreads cannot be a goal in itself, the result illustrates that important questions surrounding the provision of financial resources on a regional and global level, including access criteria, remain highly 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.

In any case, the issues discussed here are clearly rather complex and further research on the topic is warranted, especially with regards to the characteristics of effective RFA's and the effectiveness of non-financial programs, such as the newly introduced non-financing Policy Coordination Instrument (PCI) at 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, March.

Al-Saffar, Y., Ridinger, W., Whitaker, S. (2013), "The role of external balance sheets in the financial crisis", Bank of England Financial Stability Paper No. 24, October.

Banca D'Italia

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, December.

Berkmen, P.; Gelos, G.; Rennhack, R., Walsh, J. (2009), „The Global Financial Crisis: Explaining Cross-Country Differences in the Output Impact", IMF Working Papier WP/09/208, December.

Bussiere, M., Cheng, G., Chinn, M. D., Lisack, N. (2015), "For a few dollars more: Reserves and growth in times of crises", Journal of International Money and Finance, Issue 52.

Caballero, J. A. (2016), "Do Surges in International Capital Inflows Influence the Likelihood of Banking Crises?", Economic Journal, 126, March.

Cardarelli, R., Elekdag, S., Kose, M.A. (2009), "Capital Inflows: Macroeconomic Implications and Policy Responses", IMF Working Paper, WP/09/40, March.

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, July.

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

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

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

ECB (2014); "Experience with Foreign Currency Liquidity-Providing Central Bank Swaps", Monthly Bulletin, August.

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, July.

Eichengreen, B., Gupta, P., Mody, A. (2006), "Sudden Stops and IMF-Supported Programs, IMF Working Paper, WP/06/101, April.

Eichengreen, B., Gupta, P. (2016), "Managing sudden stops", World Bank Research Working Paper No. 7639.

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

Ghosh, R., Ostry, J, Qureshi, M. (2016), “When Do Capital Inflow Surges End in Tears?”, American Economic Review: Papers & Proceedings 2016.

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

Goldberg, L. S. , Kennedy, C.; Miu, J. (2010): „Central Bank Dollar Swap Lines and Overseas Dollar Funding Costs, NBER Working Paper Series 15763, February.

IEO (2012) “Reserve Accumulation and Global Financial Stability: A Critical Assessment of IMF Concerns”, August.

IMF (2011), “Assessing Reserve Adequacy”, February.

IMF (2012), “Liberalization and management of capital flows: an institutional view”, …

IMF (2013), “Stocktaking the Fund’s Engagement with Regional Financing Arrangements, April.

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

IMF (2015), “Assessing Reserve Adequacy – Specific Proposals”, April.

IMF (2016), “Adequacy of the Global Financial Safety Net”, March.

IRC Taskforce on IMF issues (2016), “Dealing with large and volatile capital flows and the role of the IMF”, ECB Occasional Paper Series, No. 180, September.

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

Jorda, O., Schularick, M.; Taylor, A (2010), “Financial Crises, Credit Booms, and External Imbalances: 140 years of Lessons”, NBER Working Paper Series, WP 16567, December.

Lane, P.R., Milesi- Ferretti, G.M. (2010), “The Cross-Country Incidence of the Global Crisis, IMF Working Paper, WP/10/171.

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

Maltritz, D., (2012), *“Determinants of sovereign yield spreads in the Eurozone: A Bayesian approach”*, Journal of International Money and Finance, 31:657-672.

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

Olafsson, T.; Petursson, T. (2010), “Weathering the financial storm: The importance of fundamentals and flexibility”, Working Paper No. 51, Central Bank of Iceland, October.

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

Rhee, C.; Sumulong, L; Vallee, S. (2013), “Global and Regional Financial Safety Nets: Lessons from Europe and Asia”, Bruegel Working Paper, June.

Rose, A. K.; Spiegel. M. M. (2009), “Cross-Country Causes and Consequences of the 2008 Crisis: Early Warning”, Federal Reserve Bank of San Francisco, Working Paper Series, July 2009.

Rose, A.K.; Spiegel, M. M. (2011), „Dollar Illiquidity and Central Bank Swap Arrangements During the Global Financial Crisis“, Federal Reserve Bank of San Francisco, Working Paper 2011-18, August.

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, September.

Shafik, M. (2015), “Fixing the global financial safety net: lessons from central banking”, September.

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]	[0.004]	
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]	[0.004]		[0.005]	[0.005]
lnGvol	0.061***	0.053***	0.056***	0.063***	0.059***	0.076***	0.069***
	[0.015]	[0.013]	[0.016]	[0.014]	[0.013]	[0.014]	[0.015]
lnEIP	0.936***	0.905***	0.914***	0.903***	0.718***	0.819***	0.796***
	[0.127]	[0.116]	[0.135]	[0.127]	[0.108]	[0.121]	[0.132]
lnUS10	-0.133***	-0.116**	-0.135***	-0.029	-0.055	-0.179***	-0.173***
	[0.045]	[0.048]	[0.045]	[0.045]	[0.052]	[0.049]	[0.05]
lnVIX	0.705***	0.704***	0.701***	0.584***	0.58***	0.697***	0.696***
	[0.062]	[0.058]	[0.061]	[0.06]	[0.061]	[0.062]	[0.061]
lnMSCI				-0.003***	-0.003***		
				[0.001]	[0.001]		
GFSNacc					-0.007***	-0.007***	-0.007***
					[0.001]	[0.002]	[0.002]
constant	-1.029**	-0.898**	-0.934*	-0.643	0.257	-0.363	-0.289
	[0.481]	[0.446]	[0.506]	[0.475]	[0.417]	[0.462]	[0.493]
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 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***	-0.01***	-0.009***
	[0.002]	[0.002]	[0.002]	[0.002]	[0.002]	[0.002]
CPI	-0.003	-0.004*	-0.004	-0.004*	-0.003	-0.004
	[0.004]	[0.002]	[0.002]	[0.002]	[0.004]	[0.004]
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***	0.007***	0.006***
	[0.002]	[0.002]	[0.002]	[0.002]	[0.002]	[0.002]
FB	-0.01**	-0.011**	-0.011**	-0.012**	-0.011**	-0.01**
	[0.005]	[0.005]	[0.005]	[0.005]	[0.005]	[0.005]
lnGvol	0.074***	0.064***	0.059***	0.063***	0.072***	0.083***
	[0.014]	[0.015]	[0.016]	[0.015]	[0.014]	[0.016]
lnEIP	0.799***	0.955***	0.946***	0.896***	0.857***	0.797***
	[0.118]	[0.128]	[0.134]	[0.13]	[0.115]	[0.125]
lnUS10	-0.187***	-0.135***	-0.129***	-0.179***	-0.179***	-0.235***
	[0.05]	[0.045]	[0.045]	[0.068]	[0.048]	[0.071]
lnVIX	0.703***	0.701***	0.705***	0.681***	0.699***	0.668***
	[0.062]	[0.061]	[0.062]	[0.067]	[0.061]	[0.065]
IntRes	-0.011***				-0.008***	-0.009***
	[0.002]				[0.003]	[0.002]
RFA		-0.005**			-0.004***	-0.005*
		[0.003]			[0.003]	[0.003]
BSA			0.004			-0.004
			[0.007]			[0.007]
FCC				-0.093		-0.102
				[0.074]		[0.073]
constant	-0.27	-1.056**	-1.067**	-1.27**	-0.517	-0.677
	[0.441]	[0.482]	[0.502]	[0.52]	[0.435]	[0.498]
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]	[0.003]	[0.003]
CPI	-0.005	-0.004	-0.003	0.035***	0.037***
	[0.004]	[0.004]	[0.003]	[0.004]	[0.004]
CAB	0.001	0.001	0.001	0.004	0.004
	[0.003]	[0.003]	[0.003]	[0.004]	[0.004]
ExD	0.016***	0.016***	0.015***	0.017***	0.017***
	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]
GvD	0.008***	0.007***	0.006***	0.011***	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]	[0.006]	[0.006]
lnGvol	0.073***	0.075***	0.075***	0.075***	0.077***
	[0.014]	[0.014]	[0.014]	[0.017]	[0.017]
lnEIP	0.753***	0.799***	0.803***	0.834***	0.866***
	[0.123]	[0.123]	[0.117]	[0.132]	[0.131]
lnUS10	-0.213***	-0.187***	-0.182***	-0.17***	-0.14**
	[0.048]	[0.049]	[0.049]	[0.055]	[0.055]
lnVIX	0.702***	0.698***	0.692***	0.661***	0.654***
	[0.06]	[0.061]	[0.062]	[0.048]	[0.048]
GFSNacc	-0.007***	-0.007***	-0.007***	-0.007***	-0.007***
	[0.002]	[0.002]	[0.002]	[0.002]	[0.002]
FCLdum	-0.23***			-0.17***	
	[0.037]			[0.039]	
FCL		-0.021***			-0.014*
		[0.006]			[0.008]
IMFprog			0.087***		
			[0.029]		
constant	-0.091	-0.291	-0.253	-0.697	-0.829*
	[0.464]	[0.465]	[0.439]	[0.5]	[0.502]
R Squared	0.851	0.849	0.849	0.809	0.806
Observations	1109	1109	1109	749	749
Countries	21	21	21	12	12

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.