What drives private non-financial sector borrowing in emerging market economies?*

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Abstract

The last decade has been characterised by a considerable increase in private nonfinancial sector borrowing. Through a panel data analysis performed with quarterly data over the period 1993:Q1 to 2014:Q3, I show that, in emerging market economies (EMEs), the build up phase of the high private non-financial borrowing is associated with an increase in credit demand, real currency appreciation, accommodative monetary policy stance, low long-term interest rates and reduced macroeconomic vulnerabilities, complemented by a healthy and large domestic banking system. In addition, global factors, such as the US dollar appreciation, high global financial market volatility, the US monetary policy stance and global economic growth, are found to explain the recent increase in private non-financial sector borrowing in EMEs.

JEL Classification: F34, G15, G21 Keywords: emerging market economies, cross-border borrowing

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1 Introduction

Why should we care about private non-financial sector (NFS) indebtedness in emerging market economies?

The overall picture is that of a significant increase in private NFS debt over the last decade, all over the world. In EMEs, this upward trend raises concerns, given that the large majority of the previous emerging market financial crises have been preceeded by rapid leverage growth (as documented among others by Kaminsky and Reinhart, 1999; Gourinchas, Valdes and Landerretche, 2001). The buildup of corporate leverage has often been associated with boom-bust cycles (as noted in Mendoza and Terrones, 2008) and, more generally, with financial turbulences (as illustrated by Elekdag and Wu, 2011; and Schularik and Taylor, 2012).

Today, the perspectives are of an economic (persistent) slowdown in EMEs and of a tightening of the US monetary policy stance that would trigger more restrictive global funding conditions. In this context, interrogations arrise related to the potential risk of financial instability in EMEs in the near future.

From a financial stability point of view, it is important to have a better understanding of the role played by domestic and external factors in the recent dynamics of NFS borrowing, as this can help shed light on potential risks.

Basically, the non-financial corporations (NFC) face four categories of risks: maturity mismatches (i.e. funding beeing shorter term than investment); currency mismatches (i.e. liabilities being denominated in different currencies as opposed to revenues); rollover risk caused by a fickle investor base; and transaction risks caused by speculative activities. A shock of stress/failure in a global NFC will affect not only the domestic economy and the domestic financial system, but will equally have cross-border effects. For the domestic economy the consequences will be: a decrease in aggregate demand and investment that would potentially trigger the recession; additional pressure on sovereign; and contagion to sectors/industries through production chains. As regards the domestic financial system, the main effects of a stress in a global NFC are: impaired banking system assets through losses associated with loans and securities issued domestically; a run on banking system liabilities¹, especially where there is a strong reliance on corporate deposits for the wholesale funding; and an increase in bank funding from banks (i.e. higher interconnectedness among banks). As for the cross-border spillover effects, they are related, among others, to losses associated with the cross-border loans and the securities issued abroad.

Once these risks and spillovers detected, what should be done from a policy point of view? To date, the existing policy responses are conceived and implemented at the domestic level and take the form, among others, of fiscal policy measures and macroprudential tools. As regards the fiscal policy measures, in the presence of financial frictions in the corporate sector, the governments will limit the amount of tax revenue that can be raised domestically². As far as

¹Corporates proceed to withdrawals so as to meet their obligations vis-à-vis creditors.

 $^{^{2}}$ The two-way contagion channel between government and firms should be kept in mind. The probability of corporations default could be amplified by higher taxes set by the government to respond to a debt crisis,

macroprudential tools are concerned, instruments expected to mitigate and prevent excessive credit growth and leverage are the most appropriate (i.e. countercyclical capital buffers, sectoral capital requirements, macroprudential leverage ratio, loan-to-value requirements, or loan-to-income/debt (service)-to-income requirements). In addition to policy responses, an important aspect that should not be ignored is that of cross-border spillovers. In this respect, a key issue is the need of coordinating the policies implemented at the national level, so as to consider their potential spillover effects.

The issue of non-financial corporates (NFC) debt in EMEs has been largely debated lately, given its implications, both in terms of financial stability and economic growth. The G-20 recommended the examination of factors that "shape the liability structure of corporates focusing on its implications for financial stability". An interim report³ on "Corporate funding structures and incentives" has been prepared, showing that the structure of corporate funding is affecting both the resilience and the decision-making of individual corporates⁴ and, at the aggregate level, the stability of the financial system. In addition, the IMF has recently addressed the issue of corporate leverage in emerging markets in its October 2015 Global Financial Stability Report. The IMF analysis concludes that corporate leverage is explained by a higher role of global factors and, as a consequence, stresses the need for emerging markets to prepare for the implications of global financial tightening.

My paper adds to the recent work of international organizations and seeks to assess the drivers of private NFS borrowing in EMEs. Country-specific macroeconomic conditions, funding conditions⁵ and banking systems' performance, could have an effect on private NFS borrowing. Moreover, perceived country risk, global financial market volatility, as well as external factors such as the US monetary policy tightening and/or the US dollar appreciation are expected to affect it.

Furthermore, my work completes the existing empirical literature on the determinants of foreign bank lending to EMEs that uses the BIS international banking statistics. I focus on a sub-component of the overall cross-border bank lending, namely the cross-border bank lending to private NFS and carry out the analysis from the perspective of recipient EMEs. In EMEs, cross-border bank lending is only a part of the overall borrowing of private NFS, being completed by domestic bank credit and international debt securities.

I use a panel regression framework with quarterly data. The main results are that of private NFS borrowing in EMEs being explained, over the period 1993:Q1 to 2014:Q3, by a high credit demand, real currency appreciation, an accommodative monetary policy stance, low long-term interest rates, reduced macroeconomic vulnerabilities, a healthy and large domestic banking system. In addition, the high global financial market volatility, the US

thus increasing forms' borrowing costs. Moreover, the ability of the government to issue debt on international financial markets will be affected by financial frictions in the corporate sector, thus lowering the level of sovereign debt and making it more sustainable.

³The report has been prepared by the FSB Secretariat, based on the contributions made by the staff of IMF, OECD, BIS, IOSCO and World Bank.

⁴The corporate sector's sensitivity to macroeconomic and financial shocks increases in case of higher debt loads and lower debt-servicing capacity (IMF, 2015b).

⁵The conventional of unconventional monetary policy affect bank's funding costs. This will have consequences on the funding conditions of private NFS.

monetary policy stance and the global GDP growth are found to have an impact on private NFS borrowing.

The remainder of the paper is organized as it follows. Section 2 presents some stylized facts, while an overview of the literature is presented in Section 3. In Section 4 there is a description of the econometric model and the data, as well as of the empirical results. The last section summarizes the main conclusions.

2 Private sector borrowing in EMEs: stylized facts

As stressed in the introduction, a key challenge for EMEs is the increase in the indebtedness of private NFS, driven by a combination of low yields in international debt markets with strong demand from international investors.

First, stress on corporate balance sheets could rapidly spill over into other sectors, inflicting losses on the corporate debt holdings of global assets managers, banks and other financial institutions. This could be a source of powerful feedback loops in response to interest rate and/or exchange rate shocks, especially if credit risk concerns prevent the rollover of existing bank or bond market funding.

Second, recent increases in corporate debt levels and lower debt-servicing capacity in certain countries have increased the sensitivity of corporates to macroeconomic and financial shocks (Giroud and Muller, 2015). In addition, the high private-sector debt can have a negative impact on economic growth (Liu and Rosenberg, 2013), and can potentially reinforce recessions (through a reduction in aggregate demand) and hamper recovery.

A statistical examination of the data, with a focus on private sector credit developments in EMEs⁶, shows that, like in the advanced economies, they were characterized by financial deepening and boom-bust episodes. However, we should note the existence of regional differences. Thus, private NFS indebtedness is high in Emerging Asia (superior to 120 percent of GDP at Q2 2014); and has continuously increased since the beginning of 2000 in Latin America and Emerging Europe (where it remained inferior to 90 percent of GDP at Q2 2014, countries like Mexico lagging behind).

An interrogation that arises is that of the role played by banks in the financing of private NFS. Intuitively, one should expect domestic banks to become a less important source of financing along with the deepening of financial intermediation. If this is the case for advanced economies, the relationship seems less clear-cut in the case of EMEs.

In Latin America domestic and cross-border banks have become more important providers of credit over time, especially in Argentina and Brazil where the share of bank credit in the total of credit to private NFS is superior to 90 percent. As regards Asian economies,

⁶I use the BIS long series on total credit and domestic bank credit to private NFS. 17 out of the 40 economies covered by this database are EMEs. The series account for credit from all sources, not only that extended by domestic banks; thus, securitized credits held by the non-bank financial sector and cross-border lending are equally taken into account. Trade credit (as well as other accounts payable and receivable) is excluded from the new total credit series given the poor quality of the underlying data.

the role of banks (domestic and cross-border) has considerably diminished in China, Hong Kong SAR and South Korea (to roughly 65-80 percent), while it continues to be high in India, Indonesia, Malaysia, Singapore and Thailand (more than 85 percent in Q2 2014). In Emerging Europe, the role of domestic and cross-border bank credit is lower compared to Asia and Latin American, bank credit representing less than 70 percent of the total credit to private NFS. A striking aspect is that of the continuous decrease in the provision of credit by banks in Hungary (to 38 percent of total credit to private NFS in Q2 2014). As for other EMEs (i.e. Russia, Turkey and South Africa), bank credit is equally an important source of financing, representing more than 75 percent of the total credit in Q2 2014.

The above mentioned statistical elements illustrate the persistence of domestic and crossborder bank credit as main sources of financing of EMEs' private NFS (as shown in Figure 1).



Figure 1: Developments in private NFS borrowing (% of GDP): emerging market vs. advanced economies.

Source: Author, based on BIS and national sources data.

Going further with the descriptive analysis, I assess the developments in household and corporate sector credit, with some constraints due to data availability. Overall, NFC indebtedness (both vis-à-vis banks and through the issuance of debt securities) largely overpassed that of households (see Figure 2). There are, however, several exceptions: Mexico and Thailand, where household credit has overpassed credit to NFC; and South Africa, where household credit has persistently been larger than credit to NFC.

Figure 2: Developments in private NFS borrowing by sector (% of GDP): emerging market vs. advanced economies.



Source: Author, based on BIS and national sources data.

As far as other sources of financing are concerned, NFC' issuances of debt securities kept on increasing in recent years. As illustrated in Figure 3, despite the rapid growth of bond issuance, the overall quantities are still not at all large given that the initial level of corporate bond issuance was quite limited. This way equally underlined by Acharya et al. (2015) and the IMF (2015a). The expansion of corporate bond markets indicates a deepening and diversification of capital markets, with overall benefits for funding of the real economy (FSB, 2015). The greater access to bond finance presents a key benefit, as it can provide financing to the real economy even when the banking sectors are distressed. As a drawback, companies are exposed to more volatile funding conditions.

Figure 3: Debt securities issued by NFC over the period 1993 Q1 - 2015Q2 (amounts outstanding, USD bn).



Source: Author, based on BIS securities statistics.

One common feature for all regions is that of the predominance of domestic securities issuances, despite the recent increase in foreign currency bond issuance (IMF, 2015a). Differences of magnitude exist indicating different degrees of development of EMEs' domestic financial markets. For instance, NFC domestic issuances in Asia-Pacific are 6 times larger than in Latin America and 21 times larger compared to Emerging Europe. Moreover, according to Acharya et al. (2015)⁷, in Emerging Asia the corporate sector has been the largest issuer of foreign currency bonds in recent years. Through the issuance of debt securities in both foreign and domestic currencies, NFCs have become highly exposed to interest rate and exchange rate risks. According to CGFS (2014), the main relevant issues for EME corporates are the interest rate and rollover risks, currency mismatch risks being considered as a lesser concern.

3 Brief overview of literature

My paper adds to the recent work on NFC borrowing in EMEs. It has the particularity of analyzing not only the domestic but also the cross-border bank lending of the private NFS. I therefore make reference, in this section, to some existing recent studies on private sector indebtedness and cross-border bank lending in EMEs, as well as on credit growth drivers.

On private sector indebtedness

Chui, Fender and Susko (2014) have examined the risks related to EME corporate balance sheets and their possible implications for the broader financial system. They underlined the difficulty of assessing EME corporate vulnerabilities, especially in a cross-country context⁸. As regards financial system implications, two channels are illustrated as potential scope for spillovers: i) the liability-side exposures (i.e. high exposure of local institutions relying on corporate deposits for their wholesale funding); and ii) the asset-side exposures (i.e. direct credit exposures of banks to corporates via lending and bond holdings).

Avdjiev, Chui and Shin (2014) have presented evidence of an increase in capital flows to EMEs associated with NFC over the past few years through three channels: i) a surge in transfers between firms' headquarters and their offshore affiliates; ii) a significant increase in "non-bank" trade credit flows; and iii) a considerable increase of the amount of external loan and deposit financing provided by non-banks.

Acharya et al. (2015) have published a report on financial risks associated with the increase in corporate debt in EMEs. It is highlighted the need of ensuring that financial intermediaries are sufficiently resilient to withstand a substantial shock to their capital and liquidity. Moreover, monetary and fiscal authorities need to have the capacity to respond so as to avoid the collapse of aggregate demand in situations when large global corporates come under stress.

⁷The authors proceed to the sectoral composition of foreign currency bonds for Emerging Asia, based on data from Asian Development Bank.

⁸Internationally comparable measures of corporate sector leverage are hard to compute due to the lack of financial accounts data at the national level for many EMEs.

The IMF (2015a) has addressed the issue of corporate leverage in EMEs, with a focus on NFC leverage, bond issuance and spreads. The analysis was carried out over the period 2004-2014 and was based on country, bond and firm-specific indicators⁹. According to the findings, in recent years, i) the role of firm and country-specific characteristics in explaining corporate leverage growth has diminished, while global factors played a larger role; ii) the increase in leverage took place mainly in more cyclical sectors (the construction sector benefiting of the highest increase); iii) the issuance of bonds by emerging market firms took place in better terms (lower yields and longer maturities) triggered by favorable financial conditions.

The IMF (2015b) has analyzed the balance sheet risks in emerging market corporates using annual firm level balance sheet information¹⁰ from 16 EMEs (China, India, Indonesia, Malaysia, Thailand, Philippines, Brazil, Mexico, Chile, Argentina, Peru, Russia, Poland, Hungary, Bulgaria and South Africa). A sensitivity analysis was conducted in a stressed scenario of a 30 percent increase in borrowing costs, a 20 percent decline in earnings and an exchange rate depreciation of 30 percent against the dollar. The combination of the three shocks was found to significantly increase debt at risk¹¹, especially in countries with high shares of external debt and low natural hedges (Hungary and Bulgaria). Moreover, shocks to earnings, interest rate and exchange rates were found to affect commodities related firms (in Argentina, Brazil and Indonesia) and state owned enterprises (in Malaysia, Hungary and India). In addition, a 15 percent default on total debt at risk owed to banks would lead to an important deterioration of banks' buffers in the large majority of countries in the sample.

Feyen et al. (2015) have analyzed the external bond issuance (by corporates and sovereigns) in EMEs over the period 2000-2014, showing that it was synchronized with the global financial cycle. The tendency for industries in EMEs to issue external bonds above their own historical average was found to be strongly correlated with global push factors such as the US expected equity market volatility, the US corporate risk spreads, the US interbank funding costs and the size of Federal Reserve's balance sheet. Similarly, favorable push conditions were found to bring down bond yields and contribute to maturity extension.

On cross-border bank lending in EMEs

The most exhaustive data on national banking systems' cross-border positions is provided by the BIS international banking statistics.

McGuire and Tarashev (2008) have studied the way the health of individual national banking systems affected foreign lending to EMEs, with the use of BIS consolidated data. According to their findings, in the past, negative shocks to bank health were associated with slowdowns in credit growth.

McGuire and von Peter (2009) have used the BIS international banking statistics (both consolidated and locational) to identify cross-country and counterparty funding patterns for

⁹Thomson Reuters Worldscope (for publicly listed firms) and Orbis (for unlisted small and medium-sized enterprises).

¹⁰The sample consisted of 40,000 firms and included public and private, large and small companies. The coverage of firms' total assets was around two thirds of total GDP of the sample countries. The dataset used was Orbis.

 $^{^{11}\}mathrm{Debt}$ at risk is defined as the debt of firms with interest coverage ratios below 1.5.

the largest banking systems and to assess the causes of US shortage during the critical phases of the crisis.

Takáts (2010) has used the BIS locational data for analyzing the key drivers of crossborder bank lending to EMEs. The sharp drop in cross-border bank lending during the financial crisis was found to be due to both demand and supply factors, with a stronger impact for the latter.

Avdjiev, Kuti and Takáts (2012) have combined the locational data by residence with the consolidated data and showed that the 2011 contraction in cross-border bank lending to EMEs was largely connected to the deterioration of the euro area banks' health.

Avdjiev and Takáts (2014) have analyzed the drivers of the sharp slowdown in crossborder bank lending to EMEs during the tapering tantrum. By using the BIS newly available data¹², they showed that EMEs' specific factors explained the bulk of the variation of the slowdown across lender-borrower pairs.

On drivers of credit growth

Mendoza and Terrones (2008) have proposed a methodology for measuring credit booms in emerging and industrial economies over the past four decades. They have identified the key empirical regularities of credit booms in macroeconomic aggregates and micro-level data through event study methods. Based on macro data, a systematic relationship was found between credit booms and economic expansions, rising asset prices, real appreciations, widening external deficits and managed exchange rates. As for micro data, a strong association was shown between credit booms and firm-level measures of leverage, firm values, and external financing, and bank-level indicators of banking fragility. According to their findings: i) credit booms and the associated macro and micro fluctuations are larger in EMEs, particularly in the nontradables sector; ii) not all credit booms end in financial crises, but most EMEs crises were associated with credit booms; and iii) credit booms in EMEs are often preceded by large capital inflows (but not by financial reforms or productivity gains).

Elekdag and Wu (2011) have proceeded to a comprehensive event study focusing on 99 credit booms, 60 of which originated in EMEs. According to their results: i) loose monetary policy stances have contributed to the build-up of credit booms; domestic policy rates were low during the pre-peak phase of credit booms and likely fuelled macroeconomic and financial imbalances; ii) for EMEs, while credit booms were associated with episodes of large capital inflows, international interest rates (a proxy for global liquidity) were virtually flat during these periods. Thus, despite the increasing importance of external factors (such as global liquidity conditions), domestic factors (especially monetary policy) were found to be important drivers of real credit growth across EMEs.

Bruno and Shin (2014) have investigated the global factors associated with bank capital flows. Through a theoretical model of the international banking system where global banks interact with local banks, the bank leverage cycle was highlighted as a determinant of the

¹²The new data (i.e. the recently implemented Stage 1 Enhancements to the BIS international banking statistics) contain three dimensions: the nationality of the lending bank, the location of the borrower and the currency composition of the claims.

transmission of financial conditions across borders, through banking sector capital flows. Moreover, local currency appreciation was shown to be associated with higher leverage of the banking sector. The key predictions of their model were supported by a panel study of 46 countries (both developed and EMEs) with the use of BIS locational banking statistics.

Igan and Tan (2015) have investigated the association between capital inflows and credit growth by exploiting a granular panel dataset¹³ of 33 countries over the period 1980-2011. Non-FDI capital inflows were found to boost credit growth and increase the likelihood of credit booms in both household and corporate sectors. According to their findings, for household credit growth, the composition of capital inflows appeared to be more important than financial system characteristics. In contrast, for corporate credit growth, both the composition and the financial system were found to matter. In addition, regardless of sectors and financial systems, net other inflows were found to be always linked to rapid credit growth. These findings were confirmed by firm-level data, hinting at a causal link: net other inflows were related to more rapid credit growth for firms relying more heavily on external financing. Further explorations on how capital flows translated into more credit has shown that both demand and supply side factors played a role.

4 Empirical exercise

4.1 Data

The analysis is undertaken for a sample of 20 economies (17 emerging¹⁴ and 3 advanced¹⁵) over the period 1993:Q1 - 2014:Q3, with quarterly data. The definitions and the sources of indicators, as well as the summary of the statistics related to each indicator are presented in Appendix (Tables 4 and 5).

4.2 Estimating the drivers of private NFS borrowing in EMEs

The regression estimated is similar to bank capital flows regressions in Bruno and Shin (2014):

$$\Delta L_{i,t} = \alpha + \beta_j Local Factor(i, j)_{t-1} + \gamma_w Global Factor(w)_{t-1} + \alpha_1 Advanced + \\ + \beta_{1j} Advanced * Local Factor(i, j)_{t-1} + \gamma_{1w} Advanced * Global Factor(w)_{t-1} + \\ + \psi_i + \phi_t + \epsilon_{i,t}$$
(1)

where

• $\Delta L_{i,t}$ is the growth in private NFS borrowing in country *i* and in quarter *t*, as given by the quarterly log difference in the outstanding amount of private NFS borrowing (both borrowing from all sectors and borrowing from domestic banks are considered);

¹³Capital inflows were broken down into FDI, portfolio and other categories. Moreover, a distinction was made between credit to the household sector and to the corporate sector.

¹⁴Argentina, Brazil, China, Czech Republic, Hong Kong SAR, Hungary, Korea, India, Indonesia, Malaysia, Mexico, Poland, Russia, Singapore, Thailand, Turkey and South Africa.

¹⁵The United States, Japan and the Euro area.

- Local Factor $(i, j)_{t-1}$ is the Local Factor j in country i. Here I consider several indicators: the real GDP growth rate (GDP_i) , the nominal exchange rate against the US dollar (X_i) , the funding conditions (Funding_i; the log of monetary policy rate and the log of longterm interest rates are used), the macroeconomic conditions (Macro_i; some commonused indicators for assessing macroeconomic vulnerabilities are considered, namely the log of unemployment rate and the log of external debt¹⁶), bank-specific characteristics (Banking_i; indicators used for assessing financial vulnerabilities, namely the log of the ratio of non-performing loans (NPLs) to total loans and the log difference of the size of the banking sector¹⁷ are considered), ψ_i are country-specific fixed effects, ϕ_t are timespecific fixed effects, and $\epsilon_{i,t}$ is the error term.
- $GlobalFactor(w)_{t-1}$ is the Global Factor w that encompass the global financial market conditions, the US monetary policy stance and global economic growth. These variables are introduced in the regression in log and lagged by one period for the US monetary policy rate and in log difference for VIX and global GDP.
- Advanced is a dummy variable introduced to account for the existing differences between EMEs and advanced economies. It takes the value one for the US, Japan, the Euro area, Hong-Kong SAR and Singapore, and zero for the remaining countries in the sample¹⁸. All the Local and Global Factors are interacted with Advanced and are included in the regression¹⁹.

To reduce endogeneity concerns and maximise the period coverage, all independent variables are lagged by one quarter.

The feasible general least squares (FGLS) technique is applied to account for both the heteroskedastic error structure between panels and the panel-specific autocorrelation²⁰. According to the Hausman test, computed to differentiate between random and fixed effects, the fixed effects model is the most appropriate. After testing the relevance of time-fixed effects²¹, both country and time fixed effects are included in the regressions. As a robustness check exercise, I perform the Prais Winstein regression²² (the results are presented in Appendix, Tables 6 to 8).

¹⁶In a previous version, the current account balance has been taken into account. Given the rather scarce availability of this indicator, it was dropped out.

¹⁷The size of the banking sector is defined as the ratio of total assets to GDP.

¹⁸I considered innapropriate to include Hong-Kong SAR and Singapore in the category of emerging countries, given that they are more developped from an economic point of vue.

¹⁹The coefficients for the advanced economies are obtained by computing the sum of the coefficients corresponding to each class of explanatory variables: $\beta_j + \beta_{1j}$ for Local Factors, $\gamma_w + \gamma_{1w}$ for Global Factors.

²⁰The overall and inter-individuals heteroscedasticity, as well as the presence of contemporaneous correlation between individuals and the autocorrelation within have been tested. The presence of both heteroskedasticity and panel-specific autocorrelation that were revealed by the tests has been corrected for with the FGLS method (Wooldridge 2002; Ouellet, 2005).

 $^{^{21}}$ I apply a joint test to see if the dummies for all quarters are equal to 0. Under the null hypothesis, the coefficients for all quarters are jointly equal to zero. In this case, the null hypothesis is rejected, meaning that time fixed effects are needed.

 $^{^{22}}$ The Prais Winsten estimation is a procedure meant to consider the existence of serial correlation of type AR(1) in a linear model. It was conceived in 1954 (by Prais and Winsten) and represents a modification of Cochrane Orcutt estimation leading to more efficiency.

4.3 Results

As mentioned before, private NFS borrowing is captured by two different indicators: the private NFS borrowing from domestic banks and, respectively, from all sectors (banks and non-banks), in all currencies. To take into account that private NFS equally borrows from abroad, a third dependent variable is used, namely the international claims vis-à-vis the private NFS, proxied by the international claims of BIS reporting bank vis-à-vis the non-bank sector.

I consider that it is important to assess lending to the domestic economy (here the private NFS) provided by foreign banks from abroad. The assessment of a country's domestic credit conditions should include credit provided cross-border and special attention should be given to the monitoing of cross-border flows, from the point of view of recipient countries and the global system as a whole (Cerutti, 2013; Hills and Hoggarth, 2013; Schoenmaker and Wagner, 2013).

In the BIS data the 'non-bank sector' makes reference to NFCs, households and non-bank financial institutions. Given that, in EMEs, claims on non-bank financial institutions are less than 3% of cross-border claims (Avdjiev, McGuire and Wooldridge, 2015), this variable could indeed be used as a proxy for international claims vis-à-vis private NFS.

Another issue related to BIS international banking statistics is that international claims represent the sum of consolidated cross-border claims in all currencies and of local claims in foreign currencies. It would have been interesting to use only the cross-border component so as to gauge solely the borrowing from abroad; unfortunately, this way of splitting the data between cross-border and local claims in foreign currencies is unavailable.

In what follows, I estimate the equation (1) for each of the three dependent variables and I seek to detect whether there is a different impact of the determining factors depending on whether private NFS borrows domestically or abroad. The results are presented in Tables (1) to (3) below, with a focus on the coefficients related to EMEs.

Real GDP is used as a proxy for credit demand. Its coefficient is statistically significant and positive, as expected. Stronger GDP growth in a given EME implies higher borrowing for the private NFS from domestic banks (Table 1) and from all sectors, including non-banks (Table 2). Indeed, higher levels of output require more credit, including from all sources. This result is in line with Avdjiev et al. (2012). According to the findings, a 100% increase in real GDP growth rates generates an increase of 34.1 to 48.1 percent in the growth rate of NFS borrowing from domestic banks (Table 1) and, respectively, of 27.4 to 28.5 percent in the growth rate of NFS borrowing from all sectors (Table 2). No statistically significant impact has been found in the case of cross-border lending by BIS reporting banks to NFS in EMEs (Table 3).

Independent variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
LOCAL FACTORS								
Real GDP_{t-1}	0.465^{***}	0.096	0.385^{**}	0.468^{***}	0.481^{***}	0.437^{**}	0.341^{**}	0.344^{**}
	(0.166)	(0.163)	(0.185)	(0.174)	(0.167)	(0.173)	(0.153)	(0.154)
Nominal exchange	-4.899***	-5.110***	-5.518***	-2.828***	-5.047***	-2.668***	-5.141***	-5.096***
$rate_{t-1}$	(0.687)	(0.809)	(0.803)	(0.596)	(0.695)	(0.590)	(0.651)	(0.657)
Funding conditions		. ,		. ,	. ,	· · ·	. ,	. ,
Monetary policy	-0.300	0.385^{**}	-0.483*	-0.558*	-0.185	-0.700**		
$rate_{t-1}$	(0.280)	(0.173)	(0.290)	(0.305)	(0.295)	(0.289)		
10-year government		. ,		. ,	. ,	· · ·	-1.874***	-1.891***
bond $yield_{t-1}$							(0.440)	(0.450)
Macroeconomic condita	ions							
Unemployment	-1.076^{**}	1.620^{***}	-0.282	-1.969^{***}	-0.936*	-2.081***	-0.625	-0.665
$rate_{t-1}$	(0.487)	(0.531)	(0.644)	(0.447)	(0.497)	(0.442)	(0.453)	(0.462)
External $debt_{t-1}^1$			-2.950^{***}					
			(0.583)					
Banking characteristic	s							
Δ Total assets/GDP	0.056^{***}				0.057^{***}		0.062^{***}	0.062^{***}
	(0.017)				(0.017)		(0.016)	(0.016)
$NPLs_{t-1}^2$		-1.458^{***}						
		(0.350)						
GLOBAL FACTORS								
Global funding	-0.059**	-0.071^{***}	-0.751^{**}	0.012	-0.024	0.023	-0.049**	-0.021
conditions (ΔVIX)	(0.027)	(0.025)	(0.326)	(0.045)	(0.041)	(0.039)	(0.0246)	(0.040)
US monetary policy				-0.219	-0.643			-0.399
$rate_{t-1}$				(0.475)	(0.686)			(0.643)
$\Delta \ Global \ GDP_{t-1}$						0.892		
						(2.937)		
Dummy advanced	-3.436*	1.054	-10.97^{**}	-5.852^{***}	-2.969	-6.243^{***}	-6.188^{***}	-6.277^{***}
	(1.802)	(1.976)	(4.376)	(1.721)	(1.834)	(1.700)	(1.829)	(1.886)
Observations	952	502	661	1,019	952	1,019	969	969
No. of countries	20	19	18	20	20	20	20	20
Country FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Table 1: The drivers of private NFS borrowing from domestic banks in EMEs.

Notes: Cross-sectional time-series FGLS regression, correcting for heteroskedasticity across panels and autocorrelation within panels. The dependent variable is the quarterly log difference in the stock of private NFS borrowing from domestic banks. All the explanatory variables are in log and lagged by one quarter. Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. 1) External debt data missing for China and South Africa. 2) NPLs data missing for China. Country and time dummy variables, as well as coefficients corresponding to advanced countries indicators not shown.

Another indicator of country-specific macroeconomic conditions is the *nominal exchange* rate against the US dollar. As expected, the appreciation of the US dollar is found to be negatively related to cross-border bank lending and, all things being equal, to diminish the overall NFS borrowing. As a matter of fact, the dollar appreciation increases the value of dollar debt and, as a consequence, it triggers a decrease in the indebtedness capacity of private NFS. It should be equally mentioned that, in the case of foreign currency borrowing, exchange rate depreciation will engender rollover risks for NFC²³. Thus, a 100% increase in the nominal exchange rate against the US dollar (i.e. a depreciation of domestic currencies) generates a

 $^{^{23}\}mathrm{Data}$ on currency composition of cross-border bank lending is unavailable.

decrease of 266.8 to 551.8 percent in the growth rate of NFS borrowing from domestic banks (Table 1); of 345.1 to 495.2 percent in the growth rate of NFS borrowing from all sectors (Table 2) and, respectively, of 557 percent in the growth rate of cross-border lending by BIS reporting banks to NFS in EMEs (Table 3).

Independent variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
LOCAL FACTORS								
Real GDP_{t-1}	0.155	-0.138	0.076	0.094	0.174	0.071	0.274^{*}	0.285^{*}
	(0.165)	(0.174)	(0.179)	(0.170)	(0.166)	(0.169)	(0.150)	(0.151)
Nominal exchange	-4.790***	-4.896***	-4.952^{***}	-3.527***	-4.871***	-3.451***	-4.869***	-4.866***
$rate_{t-1}$	(0.664)	(0.868)	(0.757)	(0.581)	(0.668)	(0.577)	(0.651)	(0.653)
Funding conditions								
Monetary policy	0.0318	0.183	-0.213	-0.0406	0.124	-0.142		
$rate_{t-1}$	(0.229)	(0.184)	(0.258)	(0.253)	(0.245)	(0.237)		
10-year government							-1.514^{***}	-1.473^{***}
bond $yield_{t-1}$							(0.400)	(0.418)
Macroeconomic condit	ions							
Unemployment	-1.452^{***}	0.799	-0.680	-1.721^{***}	-1.334^{***}	-1.807^{***}	-0.849**	-0.853**
$rate_{t-1}$	(0.461)	(0.500)	(0.603)	(0.412)	(0.473)	(0.406)	(0.408)	(0.412)
External $debt_{t-1}^1$			-2.901^{***}					
			(0.566)					
Banking characteristic	cs							
Δ Total assets/GDP	0.047^{**}				0.047^{***}		0.065^{***}	0.065^{***}
	(0.018)				(0.013)		(0.017)	(0.017)
$NPLs_{t-1}^2$		-1.285^{***}						
		(0.337)						
GLOBAL FACTORS								
Global funding	-0.017	-0.018	-0.511*	0.019	-0.008	0.007	-0.013	-0.017
conditions (ΔVIX)	(0.024)	(0.024)	(0.263)	(0.048)	(0.045)	(0.035)	(0.022)	(0.042)
US monetary policy				0.018	-0.216			0.043
$rate_{t-1}$				(0.460)	(0.696)			(0.646)
$\Delta \ Global \ GDP_{t-1}$						-0.621		
						(2.846)		
Dummy advanced	-3.439**	-1.238	-7.677**	-4.188***	-3.048*	-4.698***	-5.838***	-5.748***
	(1.648)	(2.139)	(3.732)	(1.594)	(1.685)	(1.575)	(1.704)	(1.760)
Observations	952	502	661	1,016	952	1,016	969	969
No. of countries	20	19	18	20	20	20	20	20
Country FE	Yes							
Time FE	Yes							

Table 2: The drivers of private NFS borrowing from all sectors, in all currencies in EMEs.

Notes: Cross-sectional time-series FGLS regression, correcting for heteroskedasticity across panels and autocorrelation within panels. The dependent variable is the quarterly log difference in the stock of private NFS borrowing from all sectors (banks and non-bank) in all currencies. All the explanatory variables are in log and lagged by one quarter. Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. 1) External debt data missing for China and South Africa. 2) NPLs data missing for China. Country and time dummy variables, as well as coefficients corresponding to advanced countries indicators not shown.

The *funding conditions*, proxied by both the monetary policy and the long-term interest rates²⁴, are found to have a negative and statistically significant impact on private NFS borrowing in EMEs. An increase in long-term interest rates is thought to signal funding

²⁴These indicators are included separately in the regressions, given their high correlation (of roughly 0.83).

Independent variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
LOCAL FACTORS	. ,							
Real GDP_{t-1}	0.002	-0.358	-0.881**	0.187	-0.032	0.275	0.299	0.262
	(0.394)	(0.476)	(0.416)	(0.393)	(0.393)	(0.397)	(0.380)	(0.380)
Nominal exchange	-0.035	-5.57***	0.486	-0.908	0.212	-1.138	0.218	0.444
$rate_{t-1}$	(1.412)	(1.96)	(1.541)	(1.279)	(1.412)	(1.296)	(1.439)	(1.444)
Funding conditions								
Monetary policy	0.521	0.747	0.719	0.409	0.275	0.648		
$rate_{t-1}$	(0.548)	(0.784)	(0.584)	(0.555)	(0.556)	(0.558)		
10-year government							-0.779	-0.826
bond $yield_{t-1}$							(0.814)	(0.809)
Macroeconomic conditi	ions							
Unemployment	-5.034^{***}	-0.637	-4.557***	-4.816***	-5.324^{***}	-4.603***	-4.034***	-4.158^{***}
$rate_{t-1}$	(1.246)	(1.427)	(1.581)	(1.164)	(1.245)	(1.168)	(1.132)	(1.137)
External $debt_{t-1}^1$			-6.722***					
			(1.149)					
Banking characteristic.	s							
Δ Total assets/GDP	0.117^{***}				0.114^{**}		0.138^{***}	0.136^{***}
	(0.046)				(0.045)		(0.045)	(0.045)
$NPLs_{t-1}^2$		-2.404^{**}						
		(0.934)						
GLOBAL FACTORS								
Global funding	0.014	0.007	1.213	0.361^{**}	0.353^{**}	0.449^{***}	0.012	0.349^{**}
conditions (ΔVIX)	(0.015)	(0.011)	(0.882)	(0.148)	(0.146)	(0.170)	(0.015)	(0.145)
US monetary policy				-11.14**	-10.74^{**}			-5.011^{**}
$rate_{t-1}$				(5.364)	(5.261)			(2.526)
$\Delta \ Global \ GDP_{t-1}$						4.178^{***}		
						(1.536)		
Dummy advanced	-5.846	-6.307	-37.47***	-5.570	-6.238	-5.995	-4.590	-4.886
	(4.304)	(5.889)	(12.64)	(4.189)	(4.262)	(4.308)	(4.301)	(4.278)
Observations	843	460	613	895	843	895	860	860
No. of countries	19	18	17	19	19	19	19	19
Country FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Table 3: The drivers of international claims of BIS reporting banks vis-à-vis the private NFS in EMEs.

Notes: Cross-sectional time-series FGLS regression, correcting for heteroskedasticity across panels and autocorrelation within panels. The dependent variable is the quarterly log difference in the stock of international claims of BIS reporting banks vis-à-vis private NFS. All the explanatory variables are in log and lagged by one quarter. Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. 1) External debt data missing for China and South Africa. 2) NPLs data missing for China. Country and time dummy variables, as well as coefficients corresponding to advanced countries indicators not shown.

pressure in the interbank market, and the expected consequence is that of less borrowing for the private NFS. Thus, a 100 % increase in long-term interest rates causes a decrease of 187.4 to 189.1 percent in the growth rate of NFS borrowing from domestic banks (Table 1) and, respectively, of 147.3 to 151.4 percent in the growth rate of NFS borrowing from all sectors (Table 2). In the case of cross-border lending by BIS reporting banks to NFS in EMEs (Table 3), long term interest rates do not have a statistically significant impact.

As regards the monetary policy rate, its increase, signal of more restrictive funding conditions, is diminishing private NFS borrowing. Usually, firm leverage increases when interest rates are low. According to my findings, a 100% increase in the monetary policy rate triggers a decrease of 38.5 to 70 percent in the growth rate of NFS borrowing from domestic banks (Table 1). In addition, monetary policy rate does not have a statistically significant impact on NFS borrowing from all sectors (Table 2) nor on the cross-border lending of BIS reporting banks to NFS in EMEs (Table 3).

Domestic macroeconomic vulnerabilities are equally influencing the borrowing behavior of the private NFS. Unemployment is found to present a statistically significant and negative coefficient, as the higher the share of unoccupied population, the lower is their demand and consumption and, therefore, the lower will be their borrowing. Thus, a 100% increase in unemployment rate determines a decrease in NFS borrowing of 93.6 to 208.1 percent if borrowing comes from domestic banks (Table 1), of 84.9 to 180.7 percent for the borrowing coming from all sectors (Table 2) and, respectively, of 403.4 to 532.4 percent in the case of cross-border borrowing (Table 3).

Additionally, a negative link is found between external debt and the borrowing of private NFS, the high external indebtedness being associated with lower borrowing both domestically and abroad. In the case of borrowing from domestic banks (Table 1), a 100% increase in external debt triggers a decrease in NFS borrowing of 295 percent. In the case of borrowing from all sectors (Table 2), a 100% increase in external debt triggers a decrease in NFS borrowing of 290.1 percent. In addition, in the case of cross-border lending by BIS reporting banks to NFS in EMEs (Table 3), a 100% increase in external debt triggers a decrease in NFS borrowing of 672.2 percent.

The performance of the banking system is proxied by each national banking system' size and the ratio of NPLs to total loans. The ratio of NPLs to total loans is a backward-looking measure of bank risk that captures the asset risk of banks. According to the findings, a 100% increase in NPLs ratio, signaling the deterioration in banks' health, is associated with slower credit growth to EMEs, i.e. a decrease of 145.8 percent of NFS borrowing from domestic banks (Table 1), of 128.5 percent of NFS borrowing from all sectors (Table 2) and, respectively, of 240.4 percent of cross-border borrowing from BIS reporting banks (Table 3)²⁵. In addition, the increase in NPLs generates more losses associated with loans to firms and securities issued by firms, thus impairing the banking system assets.

As for the size of the banking sector, the results show a statistically significant and positive coefficient, signaling that the larger the change in the share of banking system in terms of GDP, the higher would be the borrowing of private NFS be it from domestic banks, crossborder banks or all sectors taken together. Thus, a 100% increase in the banking system size growth rate triggers an increase in NFS borrowing of 5.6 to 6.2 percent if the borrowing comes from domestic banks (Table 1), of 4.7 to 6.5 percent if the borrowing comes from all the sectors (Table 2) and, respectively, of 11.4 to 13.8 percent if the borrowing comes from abroad (Table 3).

The global financial market volatility is proxied by the quarterly volatility of S&P 500 financial index (VIX, which is usually used as a global supply factor). Volatility tends to be higher in periods of stress, being negatively related to credit supply. Lower volatility in financial asset prices reduce banks' measured market risk and the amount of capital they need

²⁵These findings should be treated with caution given the rather scarce availability of data on NPLs.

to hold to meet regulatory requirements; thus, lower volatility is expected to be associated with higher credit supply. According to the findings, the higher the volatility on the global financial market, the lower the borrowing of private NFS in EMEs. A 100% increase in the change of VIX will trigger a decrease of 4.9 to 7.1 of NFS borrowing from domestic banks (Table 1). In the case of cross-border borrowing from BIS reporting banks, the coefficient of VIX is statically significant and positive. This is rather counterintuitive; it would mean that the higher the volatility the higher will be the cross-border borrowing.

Another global factor taken into account is the US monetary policy. The US monetary policy stance has indeed global implications; its changes will affect liquidity conditions in global financial markets through changes in term premiums, exchange rates and risk aversion. According to my findings, the US monetary policy rate change affects only the cross-border borrowing of private NFS (Table 3). Thus, a 100% increase in the US monetary policy rate triggers an important decrease in cross-border borrowing.

I equally considered the impact of *global economic growth*. In a context of high world economic growth, private NFS borrowing is expected to be high. This variable has a statistically significant and positive coefficient only in the case of cross-border borrowing (Table 3).

The robustness of the results is checked by applying the panel data Prais Winstein regression technique (see Tables 6 to 8 in the Appendix).

The occurrence of the 2007 global financial crisis has been equally controled for (by building a dummy variable and interacting it with the independent variables). In this respect, I apply the Brunnermeier (2009) definition of the 2007 crisis. Thus, $crisis_{07}$ takes the value 1 over the period 2007:Q2 - 2009:Q2 and 0 otherwise. The results (not reported here) show that during the 2007 crisis the impact of the determining factors was the same though larger in magnitude.

Overall, as shown by the results, there is no difference in the key drivers when NFS borrows domestically from banks (Table 1) or from all sectors (Table 2).

It should be however stressed that, according to my findings, global factors like the US monetary policy stance and global economic growth have an impact only on cross-border bank borrowing (Table 3). Moreover, cross-border borrowing from BIS reporting banks is found not to be affected by domestic factors like credit demand and domestic funding conditions. These findings are in line with Cetorelli and Goldberg (2012), according to which lending by global banks is likely to be more insulated from domestic liquidity shocks, and Cerutti, Claessens and Puy (2015) that have illustrated the sensitivity to push factors for countries relying on global banks.

In light of these findings, it would be interesting to go further with the analysis of NFS borrowing in EMEs, with a focus on global drivers. As underlined by the IMF (2015a), in the post crisis period, global factors have become more important drivers of emerging market corporate leverage growth. However, the precise identification of the role of individual global factors is difficult.

One limitation of the present study is that it focusses on the broad category of "private NFS". As a matter of fact, the distinction between sectors (households and NFCs, respectively) has proved difficult, given the lack of data availability for all the countries in the sample. Further work will seek to overcome this limitation by exploring the national sources.

5 Conclusions and policy implications

In this paper I assess the drivers of private NFS borrowing in EMEs, through a panel data analysis carried out with quarterly data for a sample of 20 economies over the period 1993:Q1 - 2014:Q3. It is important to improve our understanding of the role played by domestic and global factors in its recent dynamics, especially from the perspective of financial vulnerabilities. In addition, it is paramount to assess the risks posed by the increased indebtedness of the private NFS and the consequences for a country's financial system and economy in case these risks materialize.

According to my findings, the increase in private NFS borrowing in EMEs has been associated, over the period 1993 to 2014, with an increase in credit demand, real currency appreciation, accommodative monetary policy stance, low long-term interest rates, reduced macroeconomic vulnerabilities, a healthy and large domestic banking system. As regards global factors, the appreciation of the US dollar, the high global financial market volatility, the US monetary policy stance and the global economic growth are found to have had an influence on private NFS borrowing in EME.

From a policy point of view, given the implications for global growth and financial stability, it is essential to improve the analysis of the overall borrowing of private NFS by equally considering the cross-border component of bank lending. Not only the national authorities but also international bodies should focus on the assessment of risks driven by cross-border bank inflows and outflows. In addition, there is need of coordinating the policy responses conceived and implemented at the national level to mitigate and prevent excessive credit growth and leverage, so as to take into account their cross-border spillover effects.

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Appendix

Variable	Sources	Definition
NFS borrowing from	BIS Long series on total credit and	Private non-financial sector borrowing
all sectors	domestic bank credit to the private	from all sectors; end of period, adjusted
	nonfinancial sector	for breaks; billions, local currency.
NFS borrowing from	BIS Long series on total credit and	Private non-financial sector borrowing from
domestic banks	domestic bank credit to the private	banks, domestic; end of period, adjusted
	nonfinancial sector	for breaks; billions, local currency.
International claims	BIS Consolidated Banking Statistics	International claims vis-à-vis the non-bank
vis-à-vis non-bank private	(Table 9A: Consolidated claims of	private sector of country i; end of period
sector of country i	reporting banks, immediate	outstanding amounts; Millions, USD.
	borrower basis)	
GDP growth	Datastream/ National sources	Real gross domestic product growth rate,%.
GDP	Datastream/ National sources	Quarterly nominal GDP in current prices
		(billions, local currency).
Nominal exchange rate	Datastream, IMF-IFS/WM/Reuters	National currency unit to USD - market
		rate; end of period.
Monetary policy rate	Datastream/ National sources	Central bank policy rate; end of period;
		percent per annum. The target rate used
		by the central bank to conduct monetary
		policy. The monetary policy instrument
		varies across countries.
Long term interest rate	Datastream/National sources	10-year government bond yields, %.
Unemployment rate	Datastream/IMF-IFS	The concept of unemployment conforms to
		the recommendations adopted by the ILO:
		Thirteenth International Conference of
		Labor Statisticians, Geneva, 1982. For the
		euro area, EUROSTAT provides the data.
External debt	World Bank / National Sources	Gross external debt ($\%$ of GDP).
Size of the banking system	Authors calculations, based on	The ratio of total assets of the banking
	national sources.	system to GDP, %.
NPLs	National sources, IMF Financial	Non-performing loans (overall)/ Total
	Stability Indicators	loans; $\%$.
Global financial market	Datastream/ Chicago Board	CBOE SPX volatility VIX; price index
volatility	Options Exchange (CBOE)	
US monetary policy rate	Datastream/ National sources	Central bank policy rate; end of period;
		percent per annum.
Global GDP	Oxford Economics	World real GDP (PPP weights), current
		international dollars.

Table 4: Data sources.

Variables	No. of obs.	Mean	St. dev.	Min	Max
NFS borrowing from domestic banks	1,732	.344	4.411	-57.128	39.412
(log difference)					
NFS borrowing from all sectors	1,727	0.418	4.652	-57.128	47.381
(log difference)					
International claims of BIS banks vis-à-vis	1,735	2.731	7.883	-60.349	63.712
non-bank private sector (log difference)					
GDP growth $(\%)$ (log)	1,307	1.356	.840	-3.219	2.937
Nominal exchange rate $(\%)$ (log)	1,963	2.371	2.750	-13.816	9.609
Monetary policy rate $(\%)$ (log)	1,790	1.591	1.297	-2.996	5.401
10-year government bond yields $(\%)$ (log)	1,540	1.771	.686	654	4.573
Unemployment rate $(\%)$ (log)	1,481	1.796	.672	693	3.414
$\mathbf{F}_{\text{restance}} = 1 \mathbf{d}_{\text{rest}} \mathbf{d}_{\text{rest}} (0^{\prime} \mathbf{C} \mathbf{D} \mathbf{D}) \mathbf{d}_{\text{rest}}$	007	2 725	1.047	1 41 4	6 202
External debt ($\%$ GDP) (log)	887	3.720	1.047	1.414	0.303
Total assets (% CDP) (log difference)	1 /15	053	5 778	-30 686	40.220
Total assets (70 GDT) (log uniciclice)	1,410	.500	0.110	-30.000	40.223
Non-performing loans (% total loans) (log)	670	1 181	844	- 725	3840
iton performing found (70 total found) (108)	010	1.101	.011	.120	0.010
Global financial market volatility (VIX)	1 940	- 739	27 872	-66 388	105 218
(log difference)	1,010	.100	21.012	00.000	100.210
US monetary policy rate (%) (log)	2 000	683	1 260	-1 386	2.110
es monetary poney rate (70) (log)	2,000	.000	1.200	1.000	2.110
Global GDP (log difference)	1 980	884	795	- 1 013	3 626
	1,000	.004	.130	1.010	0.020

Table 5: Summary statistics for key variables.

Independent variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
LOCAL FACTORS								
Real GDP_{t-1}	0.570^{***}	0.185	0.505^{**}	0.664^{***}	0.575^{***}	0.656^{***}	0.511^{***}	0.502^{***}
	(0.202)	(0.217)	(0.218)	(0.209)	(0.204)	(0.208)	(0.188)	(0.190)
Nominal exchange	-3.686***	-5.350***	-4.907***	-2.370***	-3.720***	-2.309^{***}	-4.198***	-4.131***
$rate_{t-1}$	(0.806)	(0.938)	(0.903)	(0.696)	(0.814)	(0.689)	(0.764)	(0.769)
Funding conditions	. ,	. ,		. ,	. ,	. ,	. ,	, , , , , , , , , , , , , , , , , , ,
Monetary policy	-0.722**	0.258	-0.663**	-0.889***	-0.694**	-0.930***		
$rate_{t-1}$	(0.314)	(0.212)	(0.325)	(0.338)	(0.331)	(0.321)		
10-year government	× ,	× ,	· · · ·	· · · ·	· · · ·	· · · ·	-2.740***	-2.784***
bond $yield_{t-1}$							(0.532)	(0.541)
Macroeconomic condit	ions						· · · ·	· · ·
Unemployment	-1.468***	2.055^{***}	-0.189	-1.886***	-1.426**	-1.934***	-0.980*	-1.048**
$rate_{t-1}$	(0.569)	(0.622)	(0.756)	(0.537)	(0.587)	(0.528)	(0.524)	(0.532)
External $debt_{t=1}^1$	()	()	-3.786***	()	()	()	()	()
$\iota = 1$			(0.673)					
Banking characteristic	s		()					
Δ Total assets/GDP	0.075***				0.075***	0.089^{***}		0.089^{***}
	(0.021)				(0.021)	(0.020)		(0.020)
$NPLs_{\pm}^{2}$	()	-1.714***			()	()		
$\iota - 1$		(0.411)						
GLOBAL FACTORS		(01111)						
Global funding	-0.048**	-0.011	0.043**	0.003	0.007	0.009	-0.014	0.005
conditions (ΔVIX)	(0.021)	(0.015)	(0.018)	(0.011)	(0.010)	(0.010)	(0.016)	(0.004)
US monetary policy	(0.0=1)	(01010)	(01010)	-0.276	-0 743	(01010)	(01010)	-0.548
rate 1				(0.549)	(0.493)			(0.392)
$\Lambda Global GDP_{-1}$				(0.010)	(0.100)	-0.787*		(0.002)
Δ Grooter $\Delta D_{1} t^{-1}$						(0.478)		
Dummy advanced	-94 83***				-93 94***	-16 33**		_33 55***
Dunniy advanced	(8.713)				(8.727)	(8,309)		(8,080)
Observations	052	502	661	1.019	052	1 019	969	060
R-squared	0.286	0.515	0.303	0.259	0.286	0.259	0.313	0.313
Number of countries	0.200 20	10	18	0.209 20	20	0.209 20	0.010 20	20
Country FF	20 Vos	Vos	Vor	Z0 Vos	20 Vos	20 Vos	Z0 Vos	20 Vos
Time FF	Vos	Vos	Vog	Vog	Vog	Vog	Vog	Vog
тше г Б	res	res	res	res	168	res	res	res

Table 6: The drivers of private NFS borrowing from domestic banks in EMEs.

Notes: Cross-sectional time-series Prais-Winstein regression with heteroskedastic panels corrected standard errors. The dependent variable is the quarterly log difference in the stock of private NFS borrowing from domestic banks. All the explanatory variables are in log and lagged by one quarter. Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. 1) External debt data missing for China and South Africa. 2) NPL data missing for China. Country and time dummy variables, as well as coefficients corresponding to advanced countries indicators not shown.

Independent variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
LOCAL FACTORS								
Real GDP_{t-1}	0.295	0.003	0.209	0.335	0.303	0.332	0.301	0.297
	(0.203)	(0.246)	(0.218)	(0.211)	(0.205)	(0.209)	(0.188)	(0.189)
Nominal exchange	-3.549***	-4.639^{***}	-5.292***	-3.002***	-3.586***	-2.978^{***}	-4.161^{***}	-4.124***
$rate_{t-1}$	(0.818)	(1.078)	(0.928)	(0.700)	(0.821)	(0.696)	(0.796)	(0.797)
Funding conditions								
Monetary policy	-0.392	0.181	-0.374	-0.448	-0.356	-0.483*		
$rate_{t-1}$	(0.267)	(0.213)	(0.302)	(0.296)	(0.282)	(0.281)		
10-year government	· · · ·	× ,	· · · ·	· · · ·	· · · ·	· · · ·	-2.342***	-2.366***
bond $yield_{t-1}$							(0.514)	(0.527)
Macroeconomic condit	ions						()	()
Unemployment	-1.811***	0.982^{*}	0.081	-1.825***	-1.757***	-1.858***	-1.294***	-1.327***
$rate_{t-1}$	(0.539)	(0.592)	(0.727)	(0.514)	(0.552)	(0.505)	(0.468)	(0.471)
External $debt_{i}^{1}$	()	()	-4.453***	()	()	()	()	
- $t-1$			(0.696)					
Bankina characteristic	's		(0.000)					
ATotal assets/GDP	0.091***				0 091***		0 106***	0 106***
	(0.023)				(0.023)		(0.022)	(0.022)
$NPLs^2$.	(0.020)	-1 545***			(0.020)		(0.022)	(0.022)
101		(0.408)						
CLOBAL FACTORS		(0.400)						
Clobal funding	0.012	0.006	0.036**	0.004	0.010	0.004	0.005	0.000
Conditions (ΔVIX)	(0.012)	(0.015)	(0.030)	(0.004)	(0.010)	(0.004)	(0.015)	(0.003)
US monotory policy	(0.014)	(0.013)	(0.013)	(0.013)	(0.011)	(0.009)	(0.013)	(0.011)
US monetary poincy				-0.079	-0.092			(0.078)
$rate_{t-1}$				(0.569)	(0.474)	0 700		(0.441)
$\Delta Global GDP_{t-1}$						-0.706		
					0100***	(0.435)	00 11 ***	01 10***
Dummy advanced					-24.33***		-30.41***	-31.42***
					(7.738)		(7.371)	(7.415)
Observations	952	502	661	1,016	952	1,016	969	969
R-squared	0.263	0.446	0.354	0.233	0.263	0.234	0.290	0.289
Number of countries	20	19	18	20	20	20	20	20
Country FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Table 7: The drivers of private NFS borrowing from all sectors, in all currencies in EMEs.

Notes: Cross-sectional time-series Prais-Winstein regression with heteroskedastic panels corrected standard errors. The dependent variable is the quarterly log difference in the stock of private NFS borrowing from all sectors in all currencies. All the explanatory variables are in log and lagged by one quarter. Standard errors in parentheses. *** p < 0.01, ** p < 0.05, * p < 0.1. 1) External debt data missing for China and South Africa. 2) NPL data missing for China. Country and time dummy variables, as well as coefficients corresponding to advanced countries indicators not shown.

Independent variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
LOCAL FACTORS	(1)	(2)	(0)	(1)	(3)	(0)	(•)	(0)
Real GDP_{t-1}	-0.080	-0.302	-0.804*	0.057	-0.155	0.179	0.139	0.097
	(0.422)	(0.527)	(0.440)	(0.419)	(0.416)	(0.424)	(0.409)	(0.408)
Nominal exchange	-1.440	-5.441**	-0.715	-1.694	-1.230	-1.915	-0.396	-0.203
$rate_{t-1}$	(1.572)	(2.328)	(1.671)	(1.402)	(1.568)	(1.417)	(1.595)	(1.60)
Funding conditions	()	()	()	()			()	
Monetary policy	0.670	0.677	0.492	0.581	0.366	0.869		
$rate_{t-1}$	(0.594)	(0.858)	(0.623)	(0.593)	(0.595)	(0.598)		
10-year government	· · · ·	· /	· · · ·	()	· /	× /	-0.953	-1.025
bond $yield_{t-1}$							(0.925)	(0.919)
Macroeconomic condit	ions						· · · ·	· · · ·
Unemployment	-5.345^{***}	-0.653	-4.497***	-5.434***	-5.739^{***}	-5.160^{***}	-4.668***	-4.772***
$rate_{t-1}$	(1.302)	(1.499)	(1.698)	(1.209)	(1.292)	(1.216)	(1.195)	(1.197)
External $debt_{t-1}^1$			-6.199***					
			(1.240)					
Banking characteristic	cs							
Δ Total assets/GDP	0.140^{***}				0.137^{***}		0.162^{***}	0.159^{***}
	(0.049)				(0.049)		(0.049)	(0.049)
$NPLs_{t-1}^2$		-2.565^{***}						
		(0.975)						
GLOBAL FACTORS								
Global funding	-0.0442	-0.0378	-0.0595	-0.0370	-0.0256	-0.0587	-0.0832**	-0.0204
Conditions (ΔVIX)	(0.078)	(0.032)	(0.046)	(0.023)	(0.023)	(0.084)	(0.035)	(0.023)
US monetary policy				2.105	2.077			2.486
$rate_{t-1}$				(2.325)	(1.822)			(1.732)
$\Delta Global GDP_{t-1}$						-2.589		
						(2.722)		
Dummy advanced	-2.308				-16.27	-33.16	-13.41	
	(29.61)				(14.18)	(36.86)	(28.63)	
Observations	843	460	613	895	843	895	860	860
R-squared	0.426	0.493	0.442	0.361	0.431	0.355	0.431	0.431
Number of countries	19	18	17	19	19	19	19	19
Country FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Table 8: The drivers of international claims of BIS reporting banks vis-à-vis the private NFS in EMEs.

Notes: Cross-sectional time-series Prais-Winstein regression with heteroskedastic panels corrected standard errors. The dependent variable is the quarterly log difference in the stock of international claims of BIS reporting banks vis-à-vis private NFS. All the explanatory variables are in log and lagged by one quarter. Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. 1) External debt data missing for China and South Africa. 2) NPL data missing for China. Country and time dummy variables, as well as coefficients corresponding to advanced countries indicators not shown.