New spare tires: local currency credit as a global shock absorber[1]

Stefan Avdjiev
Bank for International Settlements

John Burger
Loyola University Maryland

Bryan Hardy
Bank for International Settlements

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Abstract

It is well-known that dollar credit to emerging market (EM) corporates has expanded dramatically in the past two decades. However, the concurrent expansion of local currency credit, facilitated by more developed domestic financial systems, has been less recognized. This paper first uses data on EM corporates' borrowing through bonds and syndicated loans to show the considerable rise of their local currency debt. It then utilizes comprehensive firm-level data to document that EM corporates' local currency borrowing can offset shocks to their dollar debt, and how this varies across firms and countries. A broad dollar appreciation is associated with a decline in credit to ''local'' firms (smaller, non-exporting, with low profitability) but has no significant impact on ''global'' firms (larger, exporting, highly profitable). Firms in the mid-range (of these dimensions) see lower dollar debt in response to a stronger dollar, but replace it with local currency debt, thus offsetting the shock.

Keywords: *Emerging markets, local currency debt, foreign currency debt, global factors, dollar debt*
JEL Codes: *F30, G30*

"The failure to have backup forms of intermediation was of little consequence. The lack of a spare tire is of no concern if you do not get a flat. East Asia had no spare tires." – Alan Greenspan (19 October 1999)

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1. Introduction

It is well known that US dollar debt of emerging market economy (EME) non-financial corporates (NFCs) has increased dramatically over the past 20 years. However, EME financial systems have expanded and developed considerably during this time, facilitating greater levels of local currency debt. Most of the attention has been given to the important development of local currency sovereign debt markets which has attracted increased participation from foreign investors (contrary to the "original sin" hypothesis). The growing importance of local currency debt for corporates is often overlooked, especially when one focuses on "external" debt, which is more frequently denominated in foreign currency (especially USD) for corporates and is strongly influenced by global factors.

The sensitivity of dollar debt to global factors has been well established in the literature. Studies have shown that increases in the broad dollar index – an indicator for tightening global financial conditions – are associated with declines in cross-border and dollar lending by banks (Bruno and Shin (2015); Avdjiev et al (2019b)). In theory, the development of local currency debt markets, supported by domestic investors, could provide an alternative source of funding that reduces the sensitivity of EME firms to global factors, and the dollar exchange rate in particular.[2] Such a "spare tire" could cushion a blow from shocks to international credit.[3] Nevertheless, there is not much research on the impact of global factors on local currency corporate funding.

This paper addresses these gaps in the literature. It documents the growing importance of local currency debt for emerging market corporates and examines its links to global factors, and the dollar exchange rate in particular. We obtain two key sets of results. First, local currency debt of emerging market corporates has grown by at least as much as, and in some cases by more than, their dollar debt. This is especially the case for firms in non-tradable sectors. Second, the impact of the broad dollar exchange rate on US dollar debt varies considerably across firms and can also affect their local currency borrowing. Specifically, the debt of "local" (smaller, less profitable, non-exporting) firms is most impacted by the dollar, global (large, profitable, exporting) firms are largely unaffected by the dollar, and medium (along the above three dimensions) firms see a decline in their dollar borrowing but offset this with increased

[2] There is evidence that local lending in local currency by foreign banks is more stable than cross-border bank lending (Ehlers and McGuire (2017); McCauley et al (2010)).

[3] In his original use of the phrase "spare tires", Greenspan (1999) contemplated whether more developed capital markets could have helped offset the shock from the domestic banking system during the Asian financial crisis.

local currency borrowing.[4] Thus, the development and availability of local currency debt markets allows some, but not all, emerging market firms to offset global shocks.

We use data from Dealogic, containing global bond and syndicated loan issuances, to document long-term trends in debt by currency. We aggregate this by currency and borrowing sector for our sample of 22 emerging markets over 2000-2020. We further use firm-level data from Capital IQ to analyze the response of local and foreign currency corporate borrowing to US dollar exchange rate shocks. In contrast to the Dealogic data – and most studies examining how global factors affect corporate debt – this dataset captures all sources of debt.[5] In addition to the standard balance sheet information, we utilize two additional segments of the data that contain detail on the currency composition of the firm's debt and on the location of the firm's assets and sales. Our benchmark dataset contains 11,151 firms in 18 emerging market economies (EMEs).

An expansion of domestic banks led the development of emerging market financial systems. Between 2001 and 2020, banking system assets of the typical emerging market rose from below 50% of GDP up to nearly 80%. The development of EME financial systems was coincident with a period of low rates in advanced economies, pushing dollar credit to emerging markets in a search for yield (Hardy and von Peter (2023)). The rapid rise in dollar and cross-border credit, with its attendant financial stability implications (CGFS (2011)), thus overshadowed the equally large increase in local currency corporate borrowing. Examining bonds and syndicated loans – vehicles typically used for dollar borrowing – both tradable and non-tradable firms saw comparable increases in dollar and local currency debt, with local currency debt of non-tradable sector firms rising even faster. These trends were common to both bonds and syndicated loans, though recently loans have driven the local currency debt and bonds the dollar debt. The increase in local currency debt was most pronounced in Asian EMEs.

Such an increase in local currency debt should mean that firms are less vulnerable to dollar funding shocks, which tend to be significantly correlated with the strength of the US dollar (Bruno and Shin (2015); Avdjiev et al (2019a, 2019b)). When hit by such dollar funding shocks, firms will have better access to local currency debt markets to replace any lost funding.

We examine at the firm-level how global factors, and the dollar exchange rate in particular, affect dollar and local currency debt of emerging market corporates. Using Capital IQ data, we regress debt growth on growth in the broad dollar index, along with firm fixed effects and other firm and macro

[4] Since our sample consists primarily of listed firms, "small firms" is a relative term, which does not overlap with SMEs.

[5] While firms included in Capital IQ tend to be relatively large, our sample includes both publicly listed and private firms.

controls. We confirm findings in the literature that when the dollar strengthens, dollar credit for EME corporates contracts.

In a novel contribution to the literature, we show important heterogeneity across firms for both their dollar *and* local currency borrowing. Our analysis reveals a distinct pattern in the impact of global financial conditions on firm financing which is uncovered when one examines both dollar and local currency borrowing. The borrowing of firms that are less financially constrained or otherwise hedged - larger, more profitable or exporting firms - is not affected by global financial conditions. Firms in the mid-range of these dimensions are impacted in their dollar borrowing but are able to access local currency debt to replace the lost dollar debt, thus leaving total debt unaffected. For the most financially constrained (small, non-profitable, non-exporting) firms, dollar debt is restricted as global dollar funding conditions tighten, but they are not able to shift to local currency debt to make up for it. This pattern is present for all three of these dimensions (trade intensity, size, and profitability), and even more prominently for their interactions (e.g. for firms that are both non-profitable and non-exporting). There appears to be a consistent difference between global firms, local firms, and firms in between, which matters for how global factors affect their borrowing and thus real outcomes. These results are reminiscent of the experience of firms around the great financial crisis (GFC): large firms resorted to the bond market when bank funding dried up, while smaller firms where effectively shut out (Adrian et al (2013)).

Extending the analysis, we find the same general pattern of results when we disaggregate total debt into bank loans and bonds. Although our primary focus is on firm level heterogeneity, we also consider country-level factors. Motivated by our descriptive finding that the development of local currency credit markets varies starkly across EMEs, we split the sample based on the degree of dollar reliance in each country. We find that only firms located in less dollar reliant countries are able to substitute into local currency debt during periods of broad dollar appreciation.

Our analysis has important policy implications. First, concerns about the rapid rise in dollar denominated debt for EME corporates should be placed in the context of equally rapid growth in local currency credit. Second, the concentration of dollar debt in large tradeable/exporting firms, who are least likely to suffer from balance sheet mismatches and appear less sensitive to global conditions, should ease financial stability concerns. Third, policymakers should focus their attention on the most vulnerable firms whose overall access to credit appear most sensitive to global conditions. Last but not least, development of domestic financial systems is crucial, as access to local currency credit can insulate many EME firms from fluctuations in global financial conditions. More generally, the (real and financial) effects of

international monetary policy spillovers on EMEs depend critically on the capacity of domestic financial systems to provide local currency credit to firms.

The rest of this paper proceeds as follows. Section 2 reviews the relevant literature and articulates our contribution. Section 3 presents the data used in the analysis. Section 4 lays out the key stylized facts about the expansion of local currency corporate debt alongside dollar debt. Section 5 analyzes the impact of global factors on local and dollar corporate borrowing. Section 6 concludes.

2. Literature Review

The development of EME local currency sovereign bond markets has been well documented (see e.g. Burger and Warnock (2006) and Claessens et al (2007)). And contrary to the original sin hypothesis (Eichengreen and Hausmann (1999)), cross-border investors are increasingly willing to lend to EME sovereigns in local currency (Burger et al (2012); Onen et al. (2023)). For many EMEs lower inflation and improved policy credibility have fostered the ability to borrow from abroad in local currency and increased macroeconomic resilience in the face of global shocks (Alvarez and De Gregorio (2014); Kalemli-Özcan and Unsal (2023); Ogrokhina and Rodriguez (2018); Végh and Vuletin (2014)).

While currency mismatches for many EME sovereigns have abated, a surge in dollar borrowing by EME corporates has raised financial stability concerns (Acharya et al (2015); Alfaro et al (2019); Du and Schreger (2022)). Corporate reliance on foreign currency debt raises the possibility of adverse balance sheet impacts in the event of a depreciation (Hardy (2023); Kalemli-Özcan et al (2016); Kim et al (2015)). Much of the existing literature documenting rapid growth in USD-denominated credit to EME corporates has focused on external debt. Less attention has been paid to the impressive growth in private local currency debt markets, especially in emerging Asia (Abraham et al (2021); Avdjiev et al (2012)); Burger et al (2018); Hale et al (2020)). What is missing from the literature is a more comprehensive evaluation of credit to EME corporates. Our analysis includes debt across sources (domestic + external), instruments (loans + bonds), and currencies (local + foreign).[6]

Financial globalization and integration of emerging markets has fostered research into financial spillovers including the global financial cycle (Rey (2013, 2016)), the risk-taking channel of monetary policy (Bruno and Shin (2015)), and the dollar as a global risk factor (Avdjiev et al (2019a)). The macroeconomic literature on global spillovers is extensive, but our paper builds on a smaller but growing literature using granular data to highlight heterogeneities in financial spillovers to emerging markets. Müller and Verner

[6] There is a separate literature on the development of banking systems. See McCauley et al (2021) for a long-run view that highlights the growth of local currency denominated bank lending.

(2023) study credit booms across a wide range of countries and highlight an important heterogeneity across sectors. Credit expansions in non-tradable sectors predict subsequent growth slowdowns and financial crises, while credit expansions in the tradable sector are associated with output and productivity growth. In a firm-level EME study, Bacchetta et al (2023) find dollar debt issuance is more sensitive to US monetary spillovers for domestic oriented firms. We extend this analysis to consider the full balance sheet (bonds and loans) in all currencies (USD and local).

Our use of the broad dollar index to capture global financial conditions connects us to an extensive literature debating the impact of exchange rate movements on macroeconomic outcomes. The classic Mundell-Fleming argument is that a depreciation of the local currency is expansionary because net exports rise. Several decades of emerging market currency crises, however, have clearly demonstrated that depreciations also have significant negative effects. Subsequent research has demonstrated that currency mismatches could amplify shocks which cause depreciation of the local currency (Céspedes, Chang and Velasco (2004)).

Empirical work that followed sought to causally identify the impact of such balance sheet shocks with micro data. The results showed that considerable nuance was required: sometimes the measured effect was negative, sometimes absent, sometimes positive (see Hardy (2023) for a summary of diverging results). These nuances include that firms with natural hedges (i.e. FX revenues from exports) select more into FX debt (Bleakley and Cowan (2008)), larger firms are less constrained and so less impacted by balance sheet shocks (Kim, Tesar and Zhang (2015); Hardy (2023)), foreign ownership enable some firms to better maintain access to external financing (Kalemli-Özcan et al (2016)) and more productive or higher quality firms select into FX debt, either because they can better bear the risk (Salamao and Varela (2022)) or to signal their type (Eren, Malamud, and Zhou (2023)). Our work demonstrates again that heterogeneity in firm characteristics is crucial to understanding the impact of currency shocks, specifically noting the role of export intensity, firm size, and firm profitability.

Recent papers have illustrated that the financial channel of exchange rates operates through the balance sheets of both, lenders and borrowers (Bruno and Shin (2023); Erik et al (2020); Jansen et al (2023); Ma and Schmidt-Eisenlohr (2023)). Most notably, Bruno and Shin (2015) show theoretically and empirically that a stronger dollar increases bank leverage (through mismatched counterparties), constraining the bank and leading it to contract credit. Fukui, Nakamura, and Steinsson (2023) compare countries that peg to the US dollar and those that do not to show that an appreciation of the US dollar is expansionary, but through a capital channel (net capital inflows as investment becomes cheaper) rather than a trade channel. Our results suggest that the financial channel remains relevant in the context of

exchange rate movements from global shocks, as some firms see decreased debt, but that options for local currency borrowing may affect the relative strength of this channel for macroeconomic outcomes.

Closest to our paper is a small literature examining local currency corporate debt and global factors. Ayala et al (2017) focus on the shift between bank and bond financing but note that greater foreign currency bond market borrowing makes the country more sensitive to global factors. Hale et al (2020) document a significant increase in the share of bonds issued in local currency, and that shocks in the global market can affect this share. Bruno et al (2024) evaluate corporate bond issuance during periods of global financial stress and find increased local currency issuance during the COVID-19 pandemic. We add to this literature strand by examining all sources of debt in both local and foreign currency and examine how global shocks jointly affect firm borrowing by currency.

A few papers find evidence for the substitution effect to local currency borrowing. Hardy (2023) shows that while balance sheet shocks from FX exposure result in lower FX debt growth for non-exporting Mexican firms, larger Mexican firms are able to substitute to local currency debt to offset this decline. Bonomo et al (2003) find earlier evidence of this for firms in Brazil. Our results show that this substitution is important for a range of EMEs in the context of global shocks.

3. Data

We use two main sources of data in our study: firm-level balance sheet data from Capital IQ, and debt issuance data from Dealogic. We describe each in turn.

Capital IQ

Capital IQ captures corporate balance sheet data for large publicly listed and privately held firms in many countries. This is our primary data source for our regression analysis described below. We focus on non-financial firms located in the following 18 emerging markets: Argentina, Brazil, Chile, Colombia, Czech Republic, Hungary, India, Indonesia, Korea, Malaysia, Mexico, Peru, Philippines, Poland, Russia, South Africa, Thailand, and Turkey. We drop financial firms, and also exclude state-owned firms from the sample, which are identified as firms that have "Government Institution," "Sovereign," or "Supranational" as the sector of their current ultimate corporate parents.

In addition to standard balance sheet information, we leverage two additional data modules provided by Capital IQ. The first is the capital structure module, which has debt by debt information for each firm, including amount of the debt, currency of the debt, and type of the debt (e.g. term loan, security). The currency dimension allows us to compute the amount of each firm's debt in local currency, US dollars, Euros, etc. One important thing to note with this measure is that we capture the total debt of

the firm, regardless of the type of the debt (e.g. bonds vs loans) or the location of the lender (e.g. local vs foreign).[7] We aggregate the debt-by-debt data to the currency-instrument level for each firm-year observation. We keep only firms where the sum of this debt-by-debt data matches (within 5%) the total debt from the core balance sheet data. This is the case for 95% of firm-year observations with capital structure data. We compute flows of debt by adjusting the change in debt stocks for currency valuation effects.

The second data module is the geographic segments module. This dataset splits the sales and assets of each firm by country or region.[8] We use this to obtain measures of export intensity (share of sales outside of the home country) and foreign currency assets (assuming assets held outside the home country are denominated in foreign currency). We are able to compute these measures for 85% of our sample.

Our final dataset consists of 11,151 firms spanning 2010-2019.[9] We focus on annual observations, as not all firms report the capital structure data at a quarterly frequency. Since coverage of firms improves over time, we start the sample in 2010 despite having earlier observations. Hence, this data is less suited to showing global, aggregate trends over a long horizon. For this, we turn to our other dataset.

Dealogic

Dealogic captures issuance-level data for debt securities and syndicated loans. We select the same sample of countries as for the Capital IQ data, and extend it to include China, Hong Kong, Singapore, Chinese Taipei, and Saudi Arabia.[10] Dealogic captures most debt issued on major exchanges, with consistent coverage over time. It does not have good coverage of short-term debt (eg commercial paper) or sovereign debt but captures well international debt and has some additional coverage of domestic debt. We focus on non-financial borrowers over 2000q1-2020q4.

[7] We clean this data for duplicate entries. For duplicates with annual observations, we prioritize observations where the period end date is closer to the calendar year end.

[8] The splits are not harmonized across firms, so some firms may report individual countries, others may report broad regions or groups of countries, and still others may report different cities. We identify which locations refer to a domestic country, region, or city, and classify all others as foreign.

[9] There are 18,714 firms in the capital IQ dataset for this sample, 14,409 of which have capital structure data. Our sample is further restricted by the availability of export intensity data and by requiring at least 3 years of data.

[10] In order to demonstrate that China (which experienced very strong local currency corporate debt growth) is not the sole driver of the observed aggregate patterns, we exclude it from the aggregate figures presented in the main text. For the sake of completeness, we have also presented the full-sample (including China) counterparts to Graphs 2-4 in the Appendix.

The Dealogic data include detail on the volume of issuance, currency denomination, maturity, and industry classification of the issuer. We utilize this information to aggregate debt issues by currency and sector. We drop financial firms and holding companies. We group issuers into tradable sector firms and non-tradable sector firms, by sector of the ultimate parent of the firm.[11] We group currencies into local currency (relative to the location of the firm's ultimate parent), US dollars, Euros, and other.[12]

4. Growth of EME corporate local currency debt

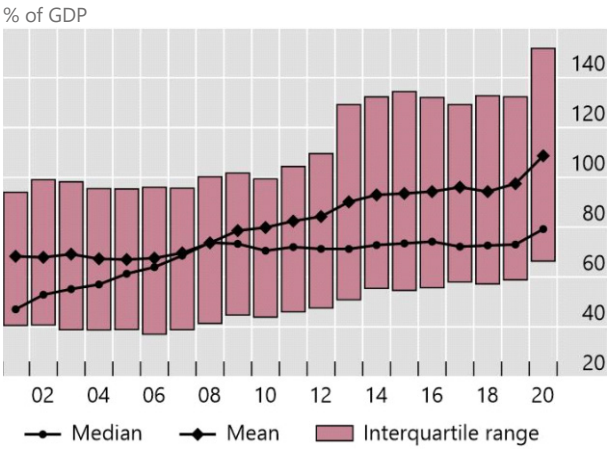
Emerging market financial systems have developed considerably over the past 25 years. Between 2001 and 2020, the banking system assets of the median EME rose from below 50% of GDP up to nearly 80%, with the average moving from below 70% up to nearly 110% (Graph 1.A). This growth led emerging markets to become much less reliant on foreign banks as domestic lenders increased credit, including in local currency (Hardy (2019)). The IMF's financial development index also rose steadily for the average EME. The respective rise in the financial institution development subcomponent was even sharper (Graph 1.B). This reflects a dramatic expansion of emerging market banks, enabling them to provide much more credit to the corporate sector, especially local currency credit.

[11] We classify firms in the following sectors as tradable: aircraft, autos, chemicals, communications, forestry, manufacturing, machinery, metals, mining, oil, textiles, transportation, agriculture, and food. All others are non-tradable (e.g. retail, wholesale, etc.).

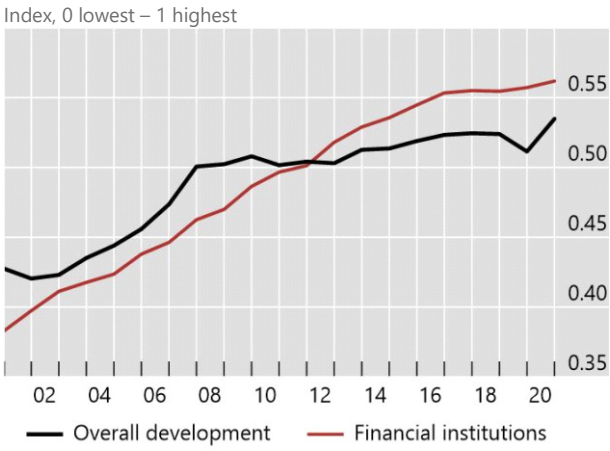
[12] Because we organize the debt around the ultimate parent, we capture both onshore and offshore borrowing of these firms (McGuire et al (2024)). Thus, the trends we document account for the possibility of firms increasingly issuing dollar bonds via offshore subsidiaries (Aldasoro et al (2021); Mizen et al (2021)).

Financial development indicators Graph 1

A. Banking sector assets[1]



B. Financial development index[2]



[1] Balanced panel of 20 countries. Excluding AR, SA, and TW due to data availability. [2] Simple average of the index for 22 emerging markets. Excluding TW due to data availability.

Sources: IMF; World Bank; authors' calculations.

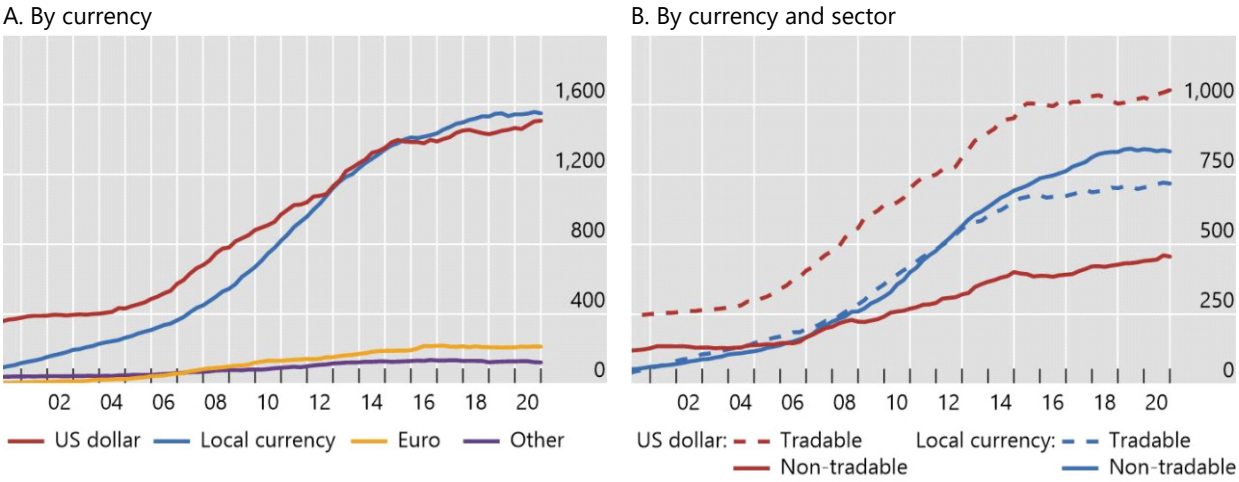
Much of the development of most EME financial systems occurred in a period of easy dollar credit, as low rates in advanced economies led investors to search for yield in emerging markets (Hardy and von Peter (2023)). This led to a rapid increase in EME dollar debt, which raised serious financial stability concerns, mainly due to the currency mismatches that it could generate on the balance sheets of EME borrowers (Acharya et al (2015); Aldasoro and Ehlers (2018)). Thus, it overshadowed the coincident growth of local currency corporate debt, which was at least on par with, and in many cases even exceeded, that of dollar debt, measured as the sum of bonds and syndicated loans (Graph 2.A).[13] These trends hold for tradable sector firms, which saw parallel increases in dollar and local currency debt, and non-tradable sector firms, which saw local currency debt rise much faster than dollar debt (Graph 2.B).[14]

[13] The expansion of local currency debt markets for sovereigns has been extensively documented (Burger and Warnock (2006); Burger et al (2012); Du and Schreger (2022); Onen et al (2023)).

[14] Note that the series plotted in Graph 2 are obtained from a sample of 22 EMEs that excludes China. This is done in order to illustrate that the rapid growth of local currency EME corporate debt is not driven solely by China but is instead a much broader phenomenon affecting a wide set of EMEs. Due to China's size and unusual reliance on local currency debt, including it in the sample makes the above trends (related to the rapid growth of local currency EME corporate debt) even more pronounced (Graphs A1-A3).

Aggregate EME corporate debt[1]

Outstanding amount of debt securities and loans, in billions of US dollars — Graph 2



[1] Tradable: ultimate parent of the issuing firm is in a tradable sector such as manufacturing or agriculture. Non-tradable: ultimate parent of the issuing firm is in a non-tradable sector such as construction. For an unbalanced panel of firms headquartered in 22 emerging markets since Q1 2000. Includes debt securities and syndicated loans.

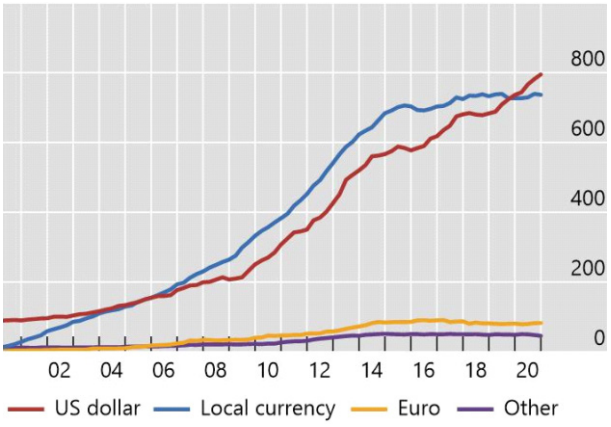
Sources: Dealogic; authors' calculations.

These aggregate trends are also present for both bonds and syndicated loans. Local and dollar bond debt both grew rapidly for EME corporates (Graph 3.A). Syndicated loans similarly saw concurrent increases, with local currency debt surpassing dollar debt in 2018 (Graph 3.B). Breaking bonds and syndicated loans further by tradable and non-tradable sectors reveals that most of the increase in dollar bonds was driven by tradable firms, whereas both tradable and non-tradable firms had similar increases in local currency bonds (Graph 4.A). For syndicated loans, non-tradables took the lead in local currency issuance and nearly equaled the outstanding amounts of dollar syndicated loans among tradable firms by end-2020 (Graph 4.B). Notably, the plots in Graphs 2-4 are based on a sample of EMEs that does not include China, where the growth in local currency debt is also very strong. When China is included in the sample the growth of EME local currency corporate debt becomes even steeper (Appendix Graphs A1-A3).

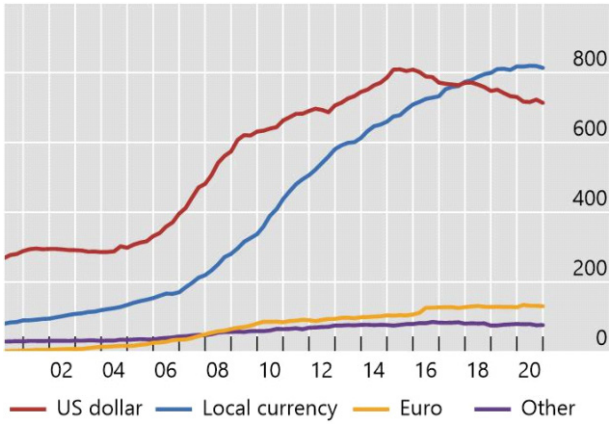
EME corporate debt by currency[1]

Outstanding amounts, in billions of US dollars — Graph 3

A. Bonds



B. Syndicated loans



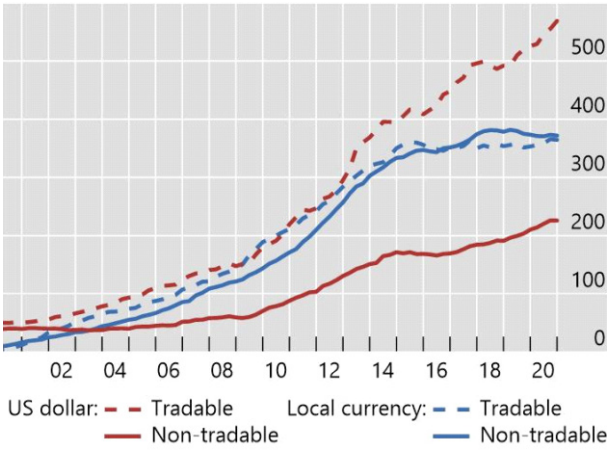
[1] For an unbalanced panel of firms headquartered in 22 emerging markets (excluding China) since Q1 2000. Includes debt securities and syndicated loans.

Sources: Dealogic; authors' calculations.

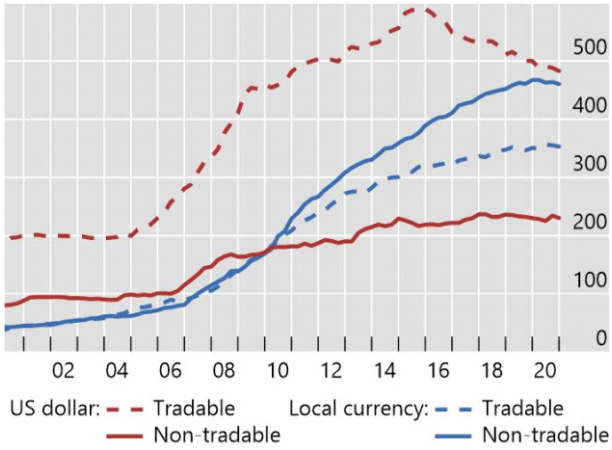
EME corporate debt by currency and sector[1]

Outstanding amounts, in billions of US dollars — Graph 4

A. Bonds



B. Syndicated loans



[1] Tradable: ultimate parent of the issuing firm is in a tradable sector such as manufacturing or agriculture. Non-tradable: ultimate parent of the issuing firm is in a non-tradable sector such as construction. For an unbalanced panel of firms headquartered in 22 emerging markets (excluding China) since Q1 2000. Includes debt securities and syndicated loans.

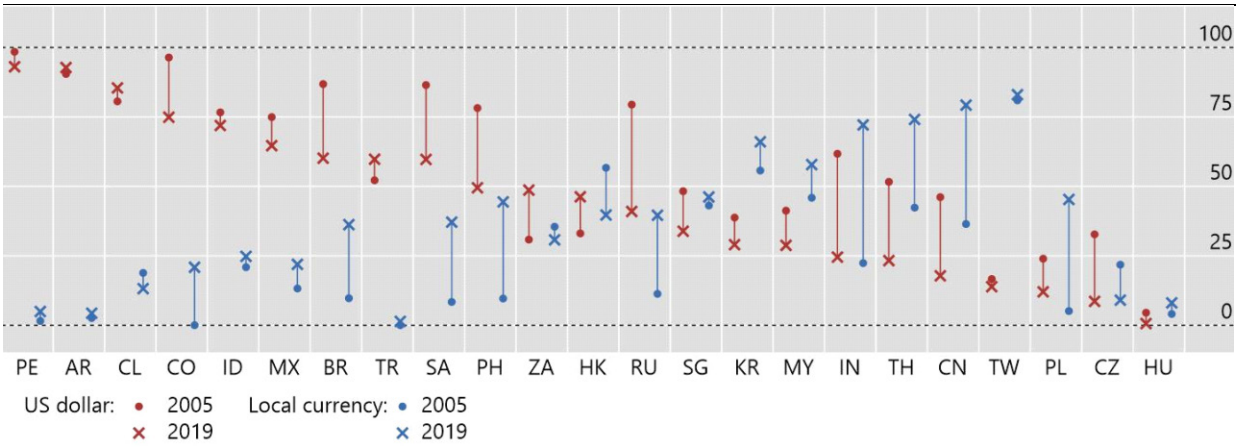
Sources: Dealogic; authors' calculations.

The shift towards relatively more local currency debt was broad based in our sample (consisting of 23 EMEs). Only 4 (CL, CZ, HK, ZA) saw declines in the share of debt in local currency over 2005-2019 (Graph 5). The largest increases in this share came mainly from Asian EMEs such as IN, CN, PH, TH, though

in PL, SA, RU, BR and CO this share also rose considerably (by more than 20% in each case). Asian EMEs end the sample with much more local currency debt than foreign currency. This is not the case for Latin American firms, which despite increasing their share of debt in local currency, still had high levels of dollar debt amongst their bond and syndicated loan debt.

US dollar and local currency share in total debt[1]

As a percentage of total debt outstanding — Graph 5

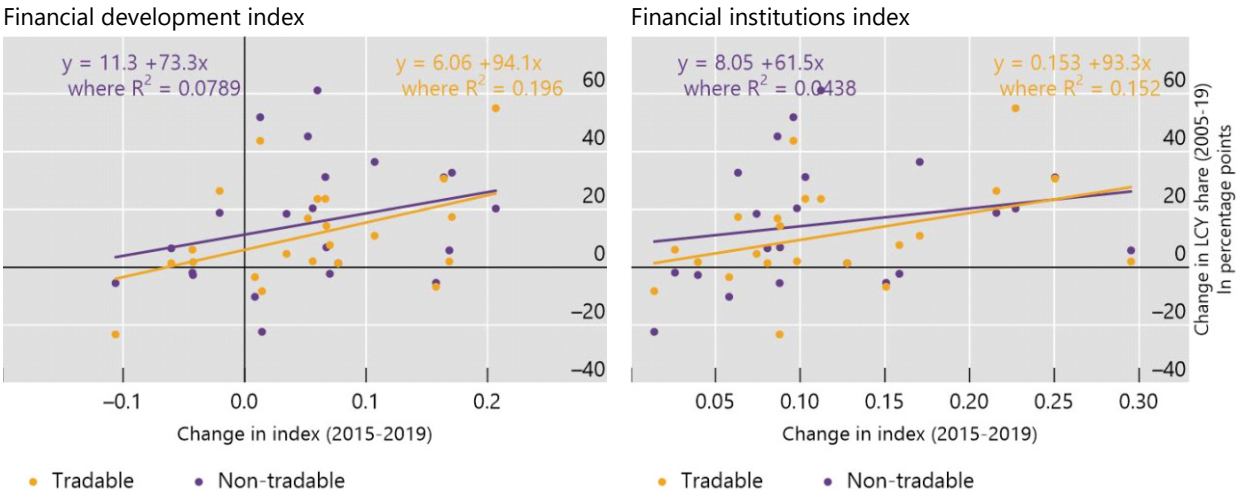


[1] Dates correspond to the fourth quarter of 2005 and 2019. Total debt represents the total outstanding amount of bonds and syndicated loans in the Dealogic dataset.

Sources: Dealogic; authors' calculations.

Having documented the rise in local currency debt for EME firms, we next explore whether the relative rise in local v. foreign currency borrowing can be linked to measures of financial development at the country level. The goal of this empirical exercise is not to establish a causal relationship but rather to investigate whether broader financial development indicators are correlated with the trend toward local currency borrowing. At first blush, there does seem to be a positive association across countries. When we plot the change in the financial development index over 2005-2019 against the change in the local currency share of debt, we find an upward sloping relationship for both tradable and non-tradable sectors (Graph 6).

Financial development and change in local currency borrowing[1] Graph 6



[1] Excluding AR, SA, and TW due to data availability. HK and SG are also excluded as outliers from their status as financial centres.

Sources: IMF; World Bank; Dealogic, authors' calculations.

To further investigate this connection, we regress the share of debt in local currency on the above measures of financial development at the country-industry level. This enables us to control for shocks to individual industries (j) which may affect their borrowing in dollars or local currency (e.g. due to commodity price changes) through industry-time fixed effects (α_{jt}). We employ the following regression:

$$\frac{LC\ Debt_{cjt}}{Total\ Debt_{cjt}} = \alpha_{cj} + \alpha_{jt} + \theta\ FinDev_{ct} + \varepsilon_{cjt}$$

The presence of country-industry fixed effects (α_{cj}) implies that we are comparing changes in financial development within each country (c) against changes in the local currency share of debt for each country-industry (cj) unit. Since the explanatory variable varies at the country-time level, but the outcome variable varies at the country-industry-time level, we cluster our standard errors at the country-level to account for correlated errors across sectors within the same country and over time.

The results from this specification confirm that greater financial development (overall, or for banking institutions in particular) is associated with a larger share of corporate debt in local currency (Table 1). From the estimate in the first column, a 10-point increase in the financial development index (ranging from 0-100) [15] correlates with a 9 pp increase in the local currency share of debt. When we examine this share for loans and bonds, we see that the loan share correlates more strongly with a higher financial institutions index, whereas the bond share correlates better with the overall financial development index.

[15] To make the coefficients easier to read, we norm the financial index to range between 0-100 instead of 0-1.

To sum up, in this section we employ Dealogic data to explore trends and establish some stylized facts regarding EME corporate borrowing. We find growth in local currency debt has matched and, in many cases, exceeded growth in USD-denominated borrowing. Growth in local currency debt is particularly strong for firms in non-tradable sectors and for Asian EMEs. At the country level, growth in local currency debt appears linked with broader measures of financial development. It is important to note, however, that our finding of an expanding role for local currency debt by EME firms is likely understated due to the coverage of Dealogic data, which does not capture the full balance sheet of firms. In particular, Dealogic data excludes bilateral bank debt, which tends to be extended by domestic banks and is primarily denominated in local currency. It may also miss some domestic corporate debt, such as short-term commercial paper or other bonds not traded internationally. Thus, the Dealogic data tends to skew the distribution towards cross-border and foreign currency debt and likely understates the trend toward increased local currency borrowing. In section 5 we transition to Capital IQ data, which allow a comprehensive firm-level analysis of debt (by currency and instrument) on the balance sheets of EME corporates, and examine how the availability of local currency debt changes the impact of global financial conditions on firm borrowing.

5. Global Factors and EME Corporate Debt

a. Hypotheses – expected effects of BDI on EME debt issuance

Our empirical work examines how global financial conditions (proxied by the broad dollar index) affect debt growth at the firm level in emerging economies. There is a significant literature linking the broad dollar to cross-border credit flows, risk appetite, and global economic activity (Bruno and Shin (2015); Avdjiev et al (2019a, 2019b)).

There are several channels through which fluctuations in the broad dollar could impact credit to EM corporates (Table 2). First, *the financial channel of exchange rates* works through currency mismatches on the balance sheets of EM firms. This channel has a *direct* and an *indirect* component. The former component is associated with the fact that a dollar appreciation has a negative impact on the balance sheets of firms with FX mismatches (i.e. firms that have borrowed in USD but lack dollar-denominated assets or future expected income flows to match their dollar liabilities). As a result, we expect a broad dollar appreciation will have a stronger (negative) impact on dollar-denominated borrowing for EM firms that are primarily domestic/local (and, therefore, lack dollar export revenue or dollar assets). The indirect component of the financial channel of exchange rates works through the balance sheets of internationally active banks. More concretely, a broad dollar appreciation tends to weaken the balance sheets of the

currency-mismatched borrowers in the global portfolio of internationally active banks. This increases the credit risk in the portfolios of those banks, which in turn tightens their value-at-risk (VaR) constraints. This results in a reduction in the supply of global dollar credit and a tightening of global financial conditions. This indirect component of the financial channel of exchange rates affects all firms (regardless of whether they have currency mismatches).

A second channel through which the broad dollar impacts the debt of EME corporates is the *dominant currency invoicing channel* (Gopinath et al, 2020). Since the majority of international trade is denominated in US dollars, a dollar appreciation is typically associated with a contraction in global trade, which in turn leads to a slowdown in global economic activity. This has a negative impact on both the supply of credit to EME corporates and on their demand for credit. As a consequence, a strengthening of the dollar has a negative impact on the debt of all EME corporates (regardless of whether they are exporters or non-exporters).[16]

On top of the above general effect, the *dominant currency invoicing channel* also has two additional effects on exporting firms. These two effects work in opposite directions and thus offset each other (at least partially). On the one hand, the contraction in global trade induced by a broad dollar appreciation has a direct negative effect on the profitability and the financial health of exporting corporates, which ultimately results in less credit being extended to them. On the other hand, a broad dollar appreciation increases the local currency value of each unit of exports. This increases the profitability and improves the financial health of exporting firms, which should (ceteris paribus) boost lending to them.

Third, there is also a *currency substitution channel*, which works indirectly – through interest rate differentials. More specifically, a USD appreciation is usually associated with a rise in USD interest rates relative to the interest rates on debt denominated in other currencies. As a consequence, borrowers have an incentive to substitute (at least on the margin) USD debt (which has become relatively more expensive) for local currency debt (which has become relatively cheaper).

The coexistence of the above channels and their heterogeneous impact on different types of EME firms generates several testable hypotheses. First, a broad dollar appreciation should have a negative (or

[16] Note that the *dominant currency invoicing channel* works in the opposite direction to the classical (Mundell-Fleming) trade channel. In the former channel, a dollar appreciation increases the relative prices of traded goods (since they are invoiced in dollars), which results in a contraction in trade and a decline in global economic activity. In the latter channel, a dollar appreciation vis-à-vis the currency of a given country reduces the relative prices of the goods produced in that economy (making its exports less expensive and its imports more expensive), which boosts that economy's next exports and, ultimately, its GDP.

insignificant) impact on dollar-denominated debt and a positive (or insignificant) impact on debt denominated in local currencies.[17] Second, the negative impact of the broad dollar on dollar debt should be most pronounced for EME firms with a large share of dollar debt and firms in non-tradeable sectors since those firm types are most likely to have large currency mismatches (not offset by future dollar revenues) and therefore be more exposed to the direct component of the financial channel of exchange rates. Third, the negative impact of a broad dollar appreciation on dollar debt should be stronger for smaller and less profitable firms since these firm types are most likely to be rationed away from credit markets during a tightening of global financial conditions (triggered by the indirect component of the financial channel). Fourth, the positive impact of a dollar appreciation on local currency debt should be most pronounced for global (exporting, larger and more profitable) firms since these firms should be best positioned to tap local currency debt markets when dollar debt becomes more expensive relative to local currency debt (i.e. due to the substitution channel).

b. Empirical Approach

We employ firm-level data (as described in Section 3) to evaluate the channels through which the broad dollar impacts emerging market corporate debt. Note that addressing this question entails a distinct shift from the analysis in the first half of the paper, both in terms of data and empirical approach. We switch to the Capital IQ dataset so we can take a firm-level approach to distinguish the channels, capturing heterogeneity among firms and covering all sources of foreign currency borrowing. The previous analysis was focused on long-term trends, but the task at hand requires us to examine how firms respond to exchange rate developments. Thus, we adjust the empirical specification to match the firm level data and examine how shifts in dollar strength impact the growth of firm debt. The dependent variable in our analysis is therefore the annual growth rate in total debt (including loans, bonds, leases, etc.) by currency at the firm-level:

$$DG_{i,c,t} = \frac{DebtFlow_{i,c,t}}{DebtStock_{i,t-1}}$$

[17] The impact on local currency debt could also be negative if a high share of the local currency debt is held by foreign investors with high exposure to global shocks. The existence of this channel has been documented for sovereign debt - the so-called “original sin redux” (Carstens and Shin (2019)).

where $DebtFlow_{i,c,t}$ represents new debt issuance (+) or repayments (-) by firm (i), denominated in currency (c), at time (t) and $DebtStock_{i,t-1}$ is total debt stock from the previous period.[18] Our baseline regression specification is:

$$DG_{i,c,t} = \alpha_i + \beta \Delta BDI_t + \delta X_{i,t-1} + \varphi Y_{i,t} + \varepsilon_{i,t}$$

where α_i is a firm-level fixed effect, BDI_t is the annual growth rate in the broad dollar index, $X_{i,t-1}$ are a set of firm-level controls and $Y_{j,t}$ are country-level macroeconomic controls. Firm-level controls include the natural log of total assets, leverage ratio, and annual revenue growth.[19] Country-level controls include the change in the bilateral exchange rate (orthogonalized with respect to BDI), growth in Real GDP, MSCI stock return, local policy interest rate, and inflation. Firm-level fixed effects are also included, as well as a dummy variable for the year 2019 (to control for a change in international financial reporting standards).[20] The regressions are estimated using annual data over the 2010-2019 sample for all firms with at least 3 years of data.

The empirical analysis includes firms from 18 EMEs: Argentina, Brazil, Chile, Colombia, Czech Republic, Hungary, India, Indonesia, Korea, Malaysia, Mexico, Peru, Philippines, Poland, Russia, South Africa, Thailand, and Turkey.[21]

c. Baseline Results

Table 3 presents baseline regression results for annual firm-level debt growth by currency over the 2010-2019 sample period. In the left panel (first 3 columns) we restrict the sample to 4,842 firms that had USD-denominated debt on their balance sheet at some point during the sample period. While our primary focus is on the impact of the broad dollar, the coefficients on other country-level macroeconomic controls are largely intuitive. Firm-level debt growth is positively correlated with local real GDP growth and inflation rates, but negatively correlated with local monetary policy rates and stock returns. Depreciation of the bilateral exchange rate is associated with growth in local currency debt, consistent with a traditional trade channel.

[18] For the empirical analysis we winsorize $DG_{i,c,t}$ by capping growth at 100% (a symmetric treatment given that negative growth is, by definition, capped at -100%)

[19] Firm leverage is calculated as ratio of total debt to assets and winsorized at the 1% level.

[20] Due to a change initiated by the International Accounting Standards Board, as of January 2019 firms are required to eliminate nearly all off balance sheet accounting for leases. As a result, we observe a surge in leases on firm balance sheets during 2019 (which tend to be denominated in local currency).

[21] Notably, China, Hong Kong, and Singapore are excluded from our analysis because we lack firm-level data on export intensity.

As a proxy for global financial conditions, we focus our attention on the coefficient for the broad dollar index (BDI). As discussed above, the BDI has been found to closely track global liquidity conditions and global dollar funding, especially after the 2008 crisis. In the total (all currency) column the BDI coefficient is negative but statistically insignificant. Splitting by currency, we find broad dollar appreciation is associated with declines in USD-denominated credit (consistent with previous literature). In the local currency column, we find a statistically significant positive coefficient providing some preliminary evidence for a substitution channel – reduced global supply of dollar credit encourages firms to seek local currency funding. In the right-hand panel of Table 1 (final column) we analyze a sample of 6,309 firms that had no foreign-currency-denominated debt on their balance sheet within the sample period. For this sample of firms there is no evidence that the broad dollar impacts debt issuance. The lack of BDI significance likely reflects the fact that there are no FX balance sheet effects and no substitution across currencies for these firms.

The results in Table 3 indicate broad dollar appreciation is associated with reduced USD-denominated borrowing by EME firms and suggest a potential substitution channel into local currency debt. In our subsequent analysis, we focus on firms that had dollar debt on their balance sheet at some point in the sample in order to isolate the firms that are more likely to have a relevant tradeoff between borrowing in local currency versus dollars. Further, we posit that sensitivity to the broad dollar is related to the following firm characteristics: export intensity, size, and profitability.

One channel for the broad dollar to impact credit flows to emerging market firms is through currency mismatches that constrain global lending. Our primary results from Table 3, that the broad dollar specifically impacts USD-denominated credit and does not significantly impact firms without FX debt, are consistent with a balance sheet channel. However, it is important to consider that some foreign currency debt is operationally hedged if firms choose to match the currency denomination of debt to foreign currency revenues from exports. In Table 4, we therefore split the sample of firms by export intensity (export revenue as a share of total sales) such that the left panel presents results for firms with no exports, the middle panel includes firms with average export intensity less than 50%, and the right panel is for firms whose exports average greater than 50% of sales. The largest impact of BDI is on USD-denominated debt growth for non-exporters (1,299 firms) – potentially consistent with concerns by creditors for currency mismatches in this group of firms that lack operational hedging. For the middle group (consisting of 2,695 firms), we also find that broad dollar appreciation leads to a decrease in USD-denominated debt growth, but these firms significantly substitute into local currency debt thus alleviating the impact on total credit. Finally, the right panel presents results for 848 major exporters and finds that these firms appear

essentially immune from BDI effects.[22] This result suggests that operational hedging by major exporters allays concerns about currency mismatches to the point where USD-denominated credit supply remains steady for these firms even in the face of global shocks.

In the absence of operational hedging, firms may turn to financial instruments, but FX derivatives markets are less developed in EMEs and previous studies indicate most firms do not fully hedge their exposure. While FX derivatives trading in EME currencies has increased, this is mostly between dealer banks and counterparties outside of EMEs (Caballero et al (2022)) – implying that this activity does not reflect increased hedging by EME firms. Further, FX derivatives hedging is expensive at longer tenors (Alfaro et al (2023)), so they are typically only employed for short-term exposures like cash flows and not to hedge long-term exposures like FX debt. Our finding that debt flows are sensitive to exchange rates suggests firms do not appear to fully hedge their FX exposure, consistent with previous studies (Hardy (2023)). When FX derivatives are used, they are typically employed only by the very largest firms (Alfaro et al (2023)), suggesting that firm size may be an important distinguishing factor (which we explore next). Alternatively, firms may also hold FX denominated assets, which can serve as a hedge for exposures to exchange rate fluctuations. Proxying for FX assets with firm assets held in foreign countries, we find that firms with no FX assets are negatively affected by a strengthening dollar, seeing lower growth in their dollar debt, whereas other firms with FX assets are unaffected (Table A1).

Another dimension of heterogeneous fragility to global factors may be captured by firm size. The literature suggests that large firms maintain better access to cross-border/foreign currency credit (see e.g. Maggiori, Neiman, and Schreger (2020)). In Table 5, we split our sample by average firm size (measured by assets) such that results for the bottom 25% of the size distribution are presented in the left panel, middle 50% in the middle panel, and largest 25% in the right panel. The results suggest that a broad dollar appreciation is associated with a decline in USD-denominated debt for both small and medium sized firms. However, total debt declines only for small firms because medium firms appear better able to substitute into local currency when global financial conditions constrain USD credit. The impact of a broad dollar appreciation on the dollar borrowing of large firms is not significant – perhaps reflecting their better hedging of FX risk (Alfaro et al (2023)) – while the respective impact on their local currency debt is marginally positive. These results are consistent with large and medium firms crowding small firms out of local currency debt when global financial conditions tighten.

[22] This is consistent with the theory from Bougheas et al (2018).

Our final indicator for firm-level sensitivity to global factors is profitability. Plausibly, global credit conditions may differentially impact EME borrowers based on firm performance (and thus creditworthiness). In Table 6 we split the sample by average profit rate (measured as EBT/Total Assets) with bottom 25% in the left panel, middle 50% in middle panel, and top 25% in the right panel. In the left panel of Table 6 we find that appreciation in the broad dollar leads to a contraction in USD-denominated and total debt for the least profitable firms. In response to broad dollar fluctuations, firms in the middle of the profit distribution substitute across USD and local currency debt such that total debt is not significantly impacted. Debt for the most profitable firms is not significantly impacted by the broad dollar.

A common theme emerges from our exploration of firm-level heterogeneity in Tables 4-6. Along each dimension of fragility (export intensity, size, profitability) we find that the most fragile firms have the greatest sensitivity to the broad dollar, firms in the middle of the distribution substitute across currencies in response to BDI fluctuations, and the least fragile firms are not significantly impacted.

Next, we sharpen the analysis by exploring overlapping categories of firm-level fragility (Tables 7 and 8). In each case, we focus on non-exporting firms that in theory are most likely to suffer from adverse balance sheet effects in the face of a broad dollar appreciation. Table 7 explores differentiation by size across the sample of non-exporting firms. In the left panel we see our sample of 309 small non-exporters are very sensitive to BDI with total debt estimated to decline by 6.9% when the broad dollar appreciates by 10%. These small, local firms do not appear able to substitute across currencies as the estimated coefficient for BDI in the local currency column is also negative (albeit statistically insignificant). The 640 medium-sized non-exporters demonstrate evidence of currency substitution such that broad dollar appreciation leads to a decrease in USD-denominated debt but an offsetting increase in local currency debt. In the right panel we find large non-exporters are not significantly impacted by the broad dollar. Table 8 examines differentiation by profitability across the sample of non-exporting firms. It reveals a very similar pattern to the one emerging from Table 7. Namely, the least profitable non-exporters are most sensitive to the broad dollar, while firms in the middle of the profit distribution substitute across currencies. The most profitable non-exporters are not affected by fluctuations in the broad dollar index.[23]

d. Extensions

[23] As a robustness check we explore the use of broker-dealer leverage as an alternative measure of global dollar funding conditions and summarize the results in Annex Table 2. Relative to our preferred measure (broad dollar index) the results are not as consistently significant, but a similar pattern emerges. Notably, we find that USD-denominated debt for small firms and non-exporters is most sensitive to broker-dealer leverage.

Our finding in Table 4 that credit to non-exporting firms is more sensitive to the broad dollar is consistent with a channel through FX mismatches on issuer balance sheets. As a further test of the balance sheet channel, in Table 9 we introduce an interaction term between the rate of broad dollar appreciation and firm-level dependence on USD debt. $USDshare_i$ is calculated as the share of total firm debt denominated in USD (averaged over time). We expect firms that are more reliant on USD-denominated debt to be more sensitive to broad dollar fluctuations. Consistent with the balance sheet channel, in the left-hand panel of Table 9 we find a significant interaction term indicating that non-exporters with higher shares of USD debt are particularly sensitive as broad dollar appreciation is associated with declines in USD-denominated and total debt. Results in the right panel suggest that major exporters are not significantly impacted by broad dollar fluctuations. And consistent with prior results, we find firms in the middle of the exporting spectrum (middle panel) are able to substitute across currencies as global dollar funding conditions vary.

Throughout the analysis we find that firms in the middle of the export/size/profitability distribution are able to offset global dollar shocks by substituting into local currency debt. The development of local currency debt markets (both bank loans and bond lending) highlighted in Section 4 has therefore reduced the vulnerability of EME firms to external funding shocks. However, it is important to note that access to local currency credit is uneven across EMEs (see Graph 5), suggesting that firms in some countries are more susceptible to global shocks. To evaluate the importance of cross-country heterogeneity, Table 10 splits our sample into countries that maintained a high level of dollar borrowing (AR, CL, PE, ID, and MX) compared to those that have a greater share of local currency debt. Our dollar reliant sample shows a negative impact of the broad dollar on total borrowing, driven by decreased dollar borrowing, but no compensating increase in local currency debt. For countries with more robust local currency markets (right panel) we see no significant impact of the broad dollar on their total debt, as the decrease in dollar debt is matched by an offsetting increase in local currency debt. The evidence in Table 10 suggests that the ability of EME firms to substitute across currencies varies significantly at the country level.[24]

Lastly, our baseline regressions focus on firm-level growth in total debt, but disaggregation into debt subcomponents (loans and bonds) is also possible. Table 11 presents the coefficient on the broad dollar index for bank loans and bonds based on the specifications employed in Tables 4, 5, 6, and 10. To conserve space, we report only the coefficient for the broad dollar index.

[24] Consistent with our results, Bruno et al (2024) find evidence that Asian EME firms (which tend to be less reliant on US dollar debt) increased local currency bond issuance during the COVID-19 pandemic.

The top panel of Table 11 reveals that for non-exporters dollar denominated borrowing in the form of loans and bonds are each constrained as the broad dollar appreciates. These firms are able to substitute the lost dollar loans with local currency loans, but their local currency bonds also fall, driving the overall decline in bond credit. For middle range exporters we find broad dollar appreciation is associated with decreased dollar bank loans and increased local currency bond issuance (substitution across currencies and instruments). Neither bank loans nor bond credit to major exporters appears sensitive to BDI.

The second panel of Table 11 suggests that for small firms the sensitivity of credit to BDI is concentrated in bank loans (perhaps because small firms are less likely to issue bonds). For medium sized firms the substitution between USD and LC credit becomes statistically insignificant when splitting debt into loans and bonds, but once again there is no evidence that credit to large firms is sensitive to BDI.
In the third panel of Table 11 we find evidence that low profit firms are constrained in dollar denominated bank and bond borrowing as the broad dollar appreciates, with no offsetting substitution to local currency credit. For medium profit firms there is statistically significant evidence of substitution across currencies for bank lending in response to BDI. For bond credit to medium profit firms there is a statistically insignificant hint of similar cross-currency substitution. For high profit firms there is some marginally significant evidence of a substitution from bank loans to bonds.

In the bottom panel of Table 11 we present results for the country-level dollar reliance split as explored in Table 10. The evidence suggests that in highly dollar reliant countries a BDI appreciation constrains both bank and bond lending as USD-denominated credit contracts and firms are not able to substitute into local currency loans or bonds. For firms in less dollar reliant countries, we find evidence of the ability to substitute across currencies for both bank loans and bonds as global conditions vary.

6. Conclusion

The rise in externally funded dollar-denominated debt on the balance sheets of EM corporates is commonly cited as a potential financial stability risk. In this paper, we note a few less appreciated points about debt on EM corporate balance sheets. First, local currency debt has grown at least as fast (and in some cases faster) than dollar debt. Second, the fastest growth in dollar-denominated credit has been in tradeable sectors, while domestic oriented firms have seen rapid growth in local-currency denominated debt. Third, in our examination of the sensitivity of debt growth to global factors we find that large/global/highly profitable firms are least sensitive to fluctuations in the broad dollar, while small/local/low profit firms are most sensitive. Firms in the middle of the distribution along each of these

dimensions appear able to substitute across currencies in response to changes in global financial conditions.

Our results have significant policy implications. First, evaluating the financial stability implications of debt growth in emerging markets requires a more granular examination of borrowing firm's balance sheets and other characteristics (size, export reliance and profitability). For example, small, domestically oriented and non-profitable firms are most vulnerable to shifts in global shocks. By contrast, the dollar borrowing of large global firms, which tend to be better operationally hedged, should be less of a concern. The fact that dollar credit flows to the latter set of firms are not significantly affected by the broad dollar exchange rate could be interpreted as a signal that international lenders do not view them as particularly vulnerable to global shocks. Second, the fact that a large share of firms substitute across currencies as global conditions change suggests the development of local currency credit markets provides a critical shock absorber, a "spare tire" to compensate for punctures in global credit. Policymakers should, therefore, focus on continued development of local currency debt markets (which is currently highly uneven across emerging market economies). Finally, our finding that small/local/less profitable firms are most sensitive to global financial conditions suggests that policymakers should focus their attention on that set of firms.

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Table 1: Financial Development and Local Currency Debt Share

Annual Data, Dealogic, 2000-2019

By Industry, Country, and Type of Debt

	All debt	All debt	Loans	Loans	Bonds	Bonds
Financial Development Index	0.907**		0.417		0.850**	
	(0.426)		(0.403)		(0.306)	
Financial Institutions Index		0.579*		0.734**		0.200
		(0.295)		(0.298)		(0.212)
R^2	0.74	0.74	0.73	0.74	0.77	0.76
N	8,546	8,546	8,027	8,027	5,519	5,519
Country-Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry-year FE	Yes	Yes	Yes	Yes	Yes	Yes

*Notes: Dependent variable is the local currency share of debt at the country-industry level. The local currency share is calculated for total debt, loans, and bonds. Country-industry and industry-year fixed effects are included in all specifications. Standard errors are clustered at the country-level and reported in parentheses. ***, **, * indicate statistical significance at the 1%, 5%, and 10% levels respectively.*

Table 2. Expected effects of a broad USD appreciation on EME NFC issuance

By currency of issuance (USD vs LC) and borrower industry (tradeable vs non-tradeable)

Channel	USD-All	USD-trade	USD-nontrade	LC-All	LC-trade	LC-nontrade	LC-nontrade/NoFXdebt
Financial Channel of FX rates	- -	- -	- - -	-	-	-	-
• Direct (*through FX mismatches on issuer balance sheets*)	-	-	- -	x	x	x	x
• Indirect (*through tightening of global financial conditions*)	-	-	-	-	-	-	-
Trade channel (dominant currency invoicing)	-	-	x	-	-	x	x
Substitution channel (*working indirectly, through the interest rate, rather than directly, through the FX rate*)	-	-	-	+	+	+	+
Overall impact	- -	- -	- - -	**?**	**?**	**?**	**?**

Notes: This table presents a stylized summary of the expected effects of a broad USD appreciation on EME NFC issuance, while conditioning on the currency of issuance (USD vs LC) and issuer industry (tradeable vs non-tradeable). The content and color of each cell are coded as follows: "+" = positive impact, "x" = no impact, "-" = mildly negative impact, "--" = strongly negative impact, "---" = very strongly negative impact, "?" = uncertain overall impact.

Table 3. Total Debt Growth by Currency

	Firms with USD debt			No FX Debt
	All cur	USD	LC	LC
ΔBDI_t	-0.093	-0.168***	0.097*	0.052
	(0.059)	(0.038)	(0.056)	(0.068)
$\Delta Revenues_{it}$	0.065***	0.022***	0.051***	0.030***
	(0.007)	(0.004)	(0.006)	(0.004)
Log $Assets_{it-1}$	-0.163***	-0.048***	-0.127***	-0.173***
	(0.008)	(0.005)	(0.008)	(0.007)
$Leverage_{it-1}$	-0.868***	-0.219***	-0.670***	-0.823***
	(0.023)	(0.012)	(0.021)	(0.021)
ΔBilat XR, $orthog_{ct}$	0.198***	-0.009	0.236***	0.284***
	(0.028)	(0.019)	(0.027)	(0.034)
Real GDP $Growth_{ct}$	0.478***	0.033	0.455***	0.869***
	(0.120)	(0.073)	(0.116)	(0.148)
Stock $Return_{ct}$	-0.086***	-0.041***	-0.037***	-0.111***
	(0.015)	(0.011)	(0.014)	(0.020)
Policy $Rate_{ct}$	-0.006***	-0.002**	-0.004***	-0.003
	(0.001)	(0.001)	(0.001)	(0.002)
$Inflation_{ct}$	0.007***	0.002**	0.005***	0.006***
	(0.001)	(0.001)	(0.001)	(0.002)
2019=1	0.044***	-0.016***	0.064***	0.032***
	(0.008)	(0.004)	(0.008)	(0.010)
Constant	1.285***	0.370***	0.992***	0.907***
	(0.047)	(0.029)	(0.045)	(0.031)
R^2	0.26	0.16	0.22	0.26
N	32,810	32,810	32,810	37,525
# firms	4,842	4,842	4,842	6,309

*Notes: Dependent variable is annual growth rate in total debt. Left panel is restricted to sample of firms that have USD-denominated debt on their balance sheet at some point during the 2010-2019 sample period. Right panel is restricted to sample of firms that had no foreign currency debt on their balance sheet. Firm-level fixed effects are included in all specifications. Robust standard errors in parentheses. ***, **, * indicate statistical significance at the 1%, 5%, and 10% levels respectively.*

Table 4. Export Intensity

Total debt growth 2010-2019

	Non-exporters			< 50% exports			> 50% exports		
	All	USD	LC	All	USD	LC	All	USD	LC
ΔBDI_t	-0.061	-0.237***	0.157	-0.057	-0.172***	0.164**	-0.123	-0.047	-0.055
	(0.121)	(0.076)	(0.117)	(0.079)	(0.047)	(0.075)	(0.140)	(0.111)	(0.126)
$\Delta Revenues_{it}$	0.048***	0.014**	0.033***	0.085***	0.026***	0.074***	0.051***	0.031***	0.028**
	(0.012)	(0.007)	(0.011)	(0.010)	(0.006)	(0.009)	(0.018)	(0.011)	(0.014)
Log $Assets_{it-1}$	-0.142***	-0.051***	-0.102***	-0.177***	-0.041***	-0.152***	-0.155***	-0.061***	-0.100***
	(0.014)	(0.009)	(0.013)	(0.010)	(0.006)	(0.010)	(0.021)	(0.013)	(0.019)
$Leverage_{it-1}$	-0.732***	-0.214***	-0.546***	-0.900***	-0.188***	-0.737***	-1.077***	-0.367***	-0.698***
	(0.040)	(0.023)	(0.036)	(0.032)	(0.015)	(0.029)	(0.061)	(0.038)	(0.052)
ΔBilat XR, $orthog_{ct}$	0.167***	-0.035	0.202***	0.257***	0.004	0.292***	0.021	-0.008	0.090
	(0.048)	(0.034)	(0.049)	(0.039)	(0.024)	(0.037)	(0.070)	(0.058)	(0.063)
Real GDP $Growth_{ct}$	0.600***	-0.062	0.636***	0.342**	0.067	0.263	0.608**	0.046	0.731**
	(0.216)	(0.134)	(0.212)	(0.168)	(0.098)	(0.164)	(0.303)	(0.210)	(0.284)
Stock $Return_{ct}$	-0.057**	-0.023	-0.036	-0.084***	-0.050***	-0.021	-0.140***	-0.040	-0.095***
	(0.028)	(0.020)	(0.027)	(0.020)	(0.014)	(0.019)	(0.041)	(0.034)	(0.035)
Policy $Rate_{ct}$	-0.004**	-0.002	-0.002	-0.007***	-0.001	-0.005***	-0.009**	-0.008**	-0.001
	(0.002)	(0.002)	(0.002)	(0.002)	(0.001)	(0.002)	(0.004)	(0.003)	(0.003)
$Inflation_{ct}$	0.002	0.002	0.001	0.008***	0.001	0.007***	0.015***	0.009***	0.006**
	(0.002)	(0.002)	(0.002)	(0.002)	(0.001)	(0.002)	(0.004)	(0.003)	(0.003)
2019=1	0.029*	-0.041***	0.070***	0.046***	-0.009*	0.061***	0.064***	-0.002	0.073***
	(0.016)	(0.009)	(0.015)	(0.010)	(0.005)	(0.010)	(0.020)	(0.013)	(0.018)
Constant	1.184***	0.407***	0.855***	1.366***	0.310***	1.149***	1.257***	0.493***	0.776***
	(0.084)	(0.056)	(0.080)	(0.062)	(0.037)	(0.059)	(0.129)	(0.080)	(0.114)
R^2	0.29	0.19	0.24	0.26	0.14	0.23	0.26	0.17	0.20
N	8,135	8,135	8,135	18,946	18,946	18,946	5,729	5,729	5,729
# firms	1,299	1,299	1,299	2,695	2,695	2,695	848	848	848

*Notes: Dependent variable is annual growth rate in total debt. Left panel includes firms with zero exports, middle panel includes firms with export to sales ratio greater than zero but less than 50%, and right panel includes firms with exports greater than 50% of sales. Sample is restricted to firms that had USD-denominated debt on their balance sheet at some point during the 2010-2019 sample period. Firm-level fixed effects are included in all specifications. Robust standard errors in parentheses. ***, **, * indicate statistical significance at the 1%, 5%, and 10% levels respectively.*

Table 5. Firm Size

Total debt growth 2010-2019

	Small Firms			Medium Firms			Large Firms		
	All debt	USD debt	LC debt	All debt	USD debt	LC debt	All debt	USD debt	LC debt
ΔBDI_t	-0.291*	-0.249***	-0.059	-0.101	-0.235***	0.144*	0.086	-0.009	0.161*
	(0.149)	(0.081)	(0.143)	(0.084)	(0.056)	(0.080)	(0.101)	(0.070)	(0.093)
$\Delta Revenues_{it}$	0.076***	0.030***	0.054***	0.046***	0.013**	0.038***	0.089***	0.032***	0.070***
	(0.013)	(0.007)	(0.012)	(0.009)	(0.006)	(0.009)	(0.018)	(0.012)	(0.014)
Log $Assets_{it-1}$	-0.148***	-0.051***	-0.109***	-0.169***	-0.048***	-0.129***	-0.165***	-0.033***	-0.155***
	(0.014)	(0.008)	(0.014)	(0.011)	(0.007)	(0.011)	(0.016)	(0.010)	(0.014)
$Leverage_{it-1}$	-0.732***	-0.148***	-0.605***	-0.938***	-0.239***	-0.713***	-0.965***	-0.331***	-0.673***
	(0.039)	(0.019)	(0.037)	(0.034)	(0.019)	(0.030)	(0.058)	(0.033)	(0.049)
ΔBilat XR, $orthog_{ct}$	0.110	-0.054	0.162**	0.225***	-0.031	0.285***	0.186***	0.024	0.207***
	(0.085)	(0.049)	(0.081)	(0.043)	(0.030)	(0.041)	(0.040)	(0.029)	(0.037)
Real GDP $Growth_{ct}$	0.229	0.032	0.313	0.552***	0.096	0.428***	0.342*	-0.131	0.454**
	(0.299)	(0.162)	(0.294)	(0.166)	(0.105)	(0.160)	(0.202)	(0.136)	(0.194)
Stock $Return_{ct}$	-0.107***	-0.020	-0.085**	-0.088***	-0.072***	-0.007	-0.071***	-0.006	-0.057**
	(0.037)	(0.022)	(0.036)	(0.021)	(0.016)	(0.020)	(0.025)	(0.019)	(0.023)
Policy $Rate_{ct}$	-0.009***	-0.000	-0.007***	-0.007***	-0.003**	-0.004***	-0.001	-0.002	0.002
	(0.003)	(0.002)	(0.002)	(0.002)	(0.001)	(0.002)	(0.002)	(0.002)	(0.002)
$Inflation_{ct}$	0.009***	0.001	0.007***	0.009***	0.003*	0.006***	0.003	0.001	0.001
	(0.003)	(0.002)	(0.003)	(0.002)	(0.001)	(0.002)	(0.002)	(0.002)	(0.002)
2019=1	-0.025	-0.022**	0.002	0.056***	-0.016**	0.077***	0.080***	-0.011	0.092***
	(0.019)	(0.010)	(0.019)	(0.011)	(0.006)	(0.011)	(0.014)	(0.008)	(0.013)
Constant	0.833***	0.233***	0.640***	1.324***	0.373***	0.999***	1.745***	0.416***	1.524***
	(0.058)	(0.032)	(0.056)	(0.066)	(0.044)	(0.063)	(0.128)	(0.088)	(0.113)
R^2	0.24	0.14	0.20	0.27	0.17	0.23	0.29	0.17	0.25
N	8,208	8,208	8,208	16,375	16,375	16,375	8,227	8,227	8,227
# firms	1,199	1,199	1,199	2,430	2,430	2,430	1,213	1,213	1,213

*Notes: Dependent variable is annual growth rate in total debt. Left panel includes smallest quartile of firms (by assets), middle panel includes the 25th-75th percentile of size distribution, and right panel includes the top quartile of size distribution. Sample is restricted to firms that had USD-denominated debt on their balance sheet at some point during the 2010-2019 sample period. Firm-level fixed effects are included in all specifications. Robust standard errors in parentheses. ***, **, * indicate statistical significance at the 1%, 5%, and 10% levels respectively.*

Table 6. Profitability

Total debt growth 2010-2019

	Low Profit			Medium Profit			High Profit		
	All	USD	LC	All	USD	LC	All	USD	LC
ΔBDI_t	-0.200*	-0.258***	0.015	0.074	-0.121**	0.242***	-0.124	-0.111	0.020
	(0.116)	(0.073)	(0.113)	(0.078)	(0.050)	(0.076)	(0.130)	(0.087)	(0.120)
$\Delta Revenues_{it}$	0.039***	0.013**	0.033***	0.103***	0.030***	0.083***	0.098***	0.046***	0.062***
	(0.009)	(0.005)	(0.008)	(0.014)	(0.008)	(0.012)	(0.021)	(0.014)	(0.020)
Log $Assets_{it-1}$	-0.152***	-0.048***	-0.117***	-0.131***	-0.027***	-0.115***	-0.149***	-0.055***	-0.110***
	(0.013)	(0.008)	(0.012)	(0.012)	(0.007)	(0.012)	(0.020)	(0.012)	(0.019)
$Leverage_{it-1}$	-0.559***	-0.143***	-0.434***	-1.259***	-0.304***	-0.963***	-1.336***	-0.392***	-1.008***
	(0.027)	(0.015)	(0.025)	(0.045)	(0.025)	(0.041)	(0.072)	(0.041)	(0.060)
ΔBilat XR, $orthog_{ct}$	0.102*	-0.032	0.138***	0.244***	-0.004	0.277***	0.241***	0.012	0.281***
	(0.053)	(0.038)	(0.053)	(0.039)	(0.025)	(0.037)	(0.058)	(0.040)	(0.055)
Real GDP $Growth_{ct}$	0.947***	0.195	0.631***	0.574***	-0.058	0.688***	0.006	0.071	-0.028
	(0.238)	(0.134)	(0.232)	(0.164)	(0.103)	(0.160)	(0.255)	(0.160)	(0.243)
Stock $Return_{ct}$	-0.130***	-0.053***	-0.090***	-0.054***	-0.023	-0.016	-0.070**	-0.053**	-0.003
	(0.029)	(0.020)	(0.028)	(0.020)	(0.015)	(0.019)	(0.033)	(0.023)	(0.030)
Policy $Rate_{ct}$	-0.004	-0.001	-0.004*	-0.009***	-0.004***	-0.004**	-0.008***	-0.002	-0.005**
	(0.002)	(0.002)	(0.002)	(0.002)	(0.001)	(0.002)	(0.002)	(0.002)	(0.002)
$Inflation_{ct}$	0.005**	-0.002	0.007***	0.011***	0.004***	0.007***	0.009***	0.003*	0.006**
	(0.002)	(0.002)	(0.002)	(0.002)	(0.001)	(0.002)	(0.003)	(0.002)	(0.002)
2019=1	0.013	-0.018**	0.028*	0.034***	-0.017***	0.057***	0.070***	-0.021**	0.097***
	(0.016)	(0.008)	(0.015)	(0.011)	(0.006)	(0.010)	(0.018)	(0.010)	(0.017)
Constant	1.057***	0.330***	0.809***	1.235***	0.279***	1.011***	1.305***	0.444***	0.971***
	(0.072)	(0.047)	(0.066)	(0.073)	(0.042)	(0.070)	(0.121)	(0.077)	(0.114)
R^2	0.28	0.19	0.23	0.29	0.16	0.25	0.24	0.15	0.21
N	8,191	8,191	8,191	16,370	16,370	16,370	8,249	8,249	8,249
# firms	1,285	1,285	1,285	2,350	2,350	2,350	1,207	1,207	1,207

*Notes: Dependent variable is annual growth rate in total debt. Left panel is restricted to lowest quartile of firm average profit rate (EBT/Total Assets), middle panel includes firms in the 25th-75th percentile of profit distribution, and right panel includes the top quartile of profit distribution. Sample is restricted to firms that had USD-denominated debt on their balance sheet at some point during the 2010-2019 sample period. Firm-level fixed effects are included in all specifications. Robust standard errors in parentheses. ***, **, * indicate statistical significance at the 1%, 5%, and 10% levels respectively.*

Table 7. Firm size variation with zero exports

Total debt growth 2010-2019

	Small non-exporters			Medium non-exporters			Large non-exporters		
	Total	USD	LC	Total	USD	LC	Total	USD	LC
ΔBDI_t	-0.691**	-0.445**	-0.389	0.142	-0.285***	0.430***	0.129	0.033	0.124
	(0.329)	(0.189)	(0.314)	(0.168)	(0.110)	(0.165)	(0.195)	(0.123)	(0.187)
$\Delta Revenues_{it}$	0.042**	0.019*	0.025	0.039**	0.012	0.021	0.070**	0.012	0.062**
	(0.020)	(0.011)	(0.019)	(0.018)	(0.010)	(0.017)	(0.031)	(0.013)	(0.025)
Log $Assets_{it-1}$	-0.106***	-0.062***	-0.048**	-0.164***	-0.060***	-0.122***	-0.158***	-0.009	-0.157***
	(0.024)	(0.015)	(0.022)	(0.019)	(0.013)	(0.018)	(0.029)	(0.020)	(0.026)
$Leverage_{it-1}$	-0.616***	-0.158***	-0.468***	-0.762***	-0.250***	-0.558***	-0.889***	-0.237***	-0.668***
	(0.064)	(0.036)	(0.059)	(0.056)	(0.035)	(0.050)	(0.119)	(0.055)	(0.112)
ΔBilat XR, $orthog_{ct}$	-0.044	-0.098	0.055	0.256***	-0.079	0.317***	0.117	0.002	0.134**
	(0.172)	(0.100)	(0.165)	(0.071)	(0.054)	(0.074)	(0.071)	(0.045)	(0.067)
Real GDP $Growth_{ct}$	0.042	-0.496	0.442	0.585**	0.066	0.498*	1.014***	0.077	0.953***
	(0.572)	(0.327)	(0.543)	(0.286)	(0.189)	(0.290)	(0.373)	(0.216)	(0.358)
Stock $Return_{ct}$	-0.086	0.018	-0.126*	-0.040	-0.073**	0.044	-0.075	0.038	-0.123***
	(0.067)	(0.040)	(0.066)	(0.037)	(0.030)	(0.036)	(0.047)	(0.032)	(0.043)
Policy $Rate_{ct}$	-0.003	0.001	-0.004	-0.007***	-0.004*	-0.002	0.003	0.001	0.001
	(0.005)	(0.003)	(0.004)	(0.003)	(0.002)	(0.003)	(0.003)	(0.002)	(0.003)
$Inflation_{ct}$	0.003	0.001	0.002	0.005	0.005*	0.001	-0.005	-0.004	-0.001
	(0.006)	(0.004)	(0.005)	(0.003)	(0.003)	(0.003)	(0.004)	(0.003)	(0.003)
2019=1	-0.066	-0.064***	-0.023	0.051**	-0.042***	0.104***	0.064**	-0.032**	0.093***
	(0.041)	(0.023)	(0.039)	(0.023)	(0.013)	(0.022)	(0.027)	(0.014)	(0.024)
Constant	0.674***	0.298***	0.421***	1.311***	0.465***	0.958***	1.638***	0.182	1.538***
	(0.094)	(0.058)	(0.086)	(0.114)	(0.081)	(0.109)	(0.241)	(0.170)	(0.208)
R^2	0.25	0.21	0.21	0.30	0.19	0.25	0.32	0.19	0.28
N	1,789	1,789	1,789	4,043	4,043	4,043	2,303	2,303	2,303
# firms	309	309	309	640	640	640	350	350	350

*Notes: Dependent variable is annual growth rate in total debt. Sample is restricted to firms with zero exports that had USD-denominated debt on their balance sheet at some point during the 2010-2019 sample period. Left panel is restricted to smallest quartile of firms (by assets), middle panel includes firms in the 25th-75th percentile of size distribution, and right panel includes the top quartile of size distribution. Firm-level fixed effects are included in all specifications. Robust standard errors in parentheses. ***, **, * indicate statistical significance at the 1%, 5%, and 10% levels respectively.*

Table 8. Profit variation with zero exports

Total debt growth 2010-2019

	Low Profit non-exporters			Medium Profit non-exporters			High Profit non-exporters		
	Total	USD	LC	Total	USD	LC	Total	USD	LC
ΔBDI_t	-0.430*	-0.282**	-0.210	0.237	-0.207*	0.493***	-0.083	-0.191	-0.025
	(0.231)	(0.136)	(0.225)	(0.167)	(0.107)	(0.165)	(0.259)	(0.170)	(0.249)
$\Delta Revenues_{it}$	0.030**	0.008	0.026**	0.088***	0.016	0.072***	0.077**	0.040	0.004
	(0.014)	(0.008)	(0.013)	(0.028)	(0.011)	(0.026)	(0.033)	(0.028)	(0.037)
Log $Assets_{it-1}$	-0.147***	-0.060***	-0.101***	-0.091***	-0.014	-0.090***	-0.153***	-0.081***	-0.084***
	(0.021)	(0.014)	(0.019)	(0.023)	(0.013)	(0.023)	(0.031)	(0.024)	(0.029)
$Leverage_{it-1}$	-0.495***	-0.172***	-0.356***	-1.298***	-0.350***	-0.950***	-0.972***	-0.255***	-0.772***
	(0.045)	(0.028)	(0.042)	(0.088)	(0.058)	(0.084)	(0.101)	(0.057)	(0.085)
ΔBilat XR, $orthog_{ct}$	0.050	-0.042	0.082	0.208***	-0.019	0.229***	0.193*	-0.058	0.231**
	(0.089)	(0.068)	(0.093)	(0.070)	(0.044)	(0.069)	(0.102)	(0.078)	(0.105)
Real GDP $Growth_{ct}$	0.777*	0.084	0.463	0.880***	0.043	0.972***	-0.103	-0.413	0.206
	(0.409)	(0.226)	(0.389)	(0.321)	(0.209)	(0.315)	(0.427)	(0.281)	(0.430)
Stock $Return_{ct}$	-0.185***	-0.072**	-0.137***	-0.020	0.020	-0.018	0.019	-0.039	0.039
	(0.052)	(0.035)	(0.051)	(0.039)	(0.031)	(0.038)	(0.058)	(0.037)	(0.054)
Policy $Rate_{ct}$	-0.006	-0.003	-0.005	-0.005*	-0.003	-0.000	-0.003	0.001	-0.003
	(0.004)	(0.003)	(0.003)	(0.003)	(0.002)	(0.002)	(0.004)	(0.003)	(0.004)
$Inflation_{ct}$	0.008*	0.003	0.007*	0.004	0.004	-0.000	-0.006	-0.005	-0.004
	(0.004)	(0.003)	(0.004)	(0.003)	(0.003)	(0.003)	(0.005)	(0.004)	(0.005)
2019=1	-0.030	-0.039**	0.012	0.053**	-0.040***	0.097***	0.020	-0.058***	0.071**
	(0.030)	(0.016)	(0.029)	(0.023)	(0.013)	(0.022)	(0.034)	(0.020)	(0.030)
Constant	1.058***	0.418***	0.745***	1.042***	0.217***	0.888***	1.384***	0.632***	0.858***
	(0.117)	(0.080)	(0.107)	(0.141)	(0.079)	(0.137)	(0.197)	(0.155)	(0.183)
R^2	0.31	0.25	0.25	0.30	0.17	0.26	0.29	0.18	0.25
N	2,321	2,321	2,321	3,889	3,889	3,889	1,925	1,925	1,925
# firms	398	398	398	597	597	597	304	304	304

*Notes: Dependent variable is annual growth rate in total debt. Sample is restricted to firms with zero exports that had USD-denominated debt on their balance sheet at some point during the 2010-2019 sample period. Left panel is restricted to lowest quartile of firm average profit rate (EBT/Total Assets), middle panel includes firms in the 25th-75th percentile of profit distribution, and right panel includes the top quartile of profit distribution. Firm-level fixed effects are included in all specifications. Robust standard errors in parentheses. ***, **, * indicate statistical significance at the 1%, 5%, and 10% levels respectively.*

Table 9. Interaction of BDI with USDshare

Total debt growth 2010-2019

	Non-exporters			< 50% exports			> 50% exports		
	All	USD	LC	All	USD	LC	All	USD	LC
ΔBDI_t*$USDshare_i$	-0.601*	-1.066***	0.420*	-0.165	-0.809***	0.684***	0.139	-0.480	0.407
	(0.316)	(0.279)	(0.245)	(0.273)	(0.233)	(0.210)	(0.387)	(0.330)	(0.295)
ΔBDI_t	0.077	0.007	0.061	-0.028	-0.026	0.040	-0.166	0.101	-0.180
	(0.147)	(0.075)	(0.144)	(0.093)	(0.049)	(0.089)	(0.189)	(0.124)	(0.180)
$\Delta Revenues_{it}$	0.048***	0.014**	0.033***	0.085***	0.026***	0.074***	0.051***	0.031***	0.028**
	(0.012)	(0.007)	(0.011)	(0.010)	(0.006)	(0.009)	(0.018)	(0.011)	(0.014)
Log $Assets_{it-1}$	-0.142***	-0.050***	-0.103***	-0.177***	-0.041***	-0.152***	-0.156***	-0.061***	-0.100***
	(0.014)	(0.009)	(0.013)	(0.010)	(0.006)	(0.010)	(0.021)	(0.013)	(0.019)
$Leverage_{it-1}$	-0.731***	-0.214***	-0.547***	-0.900***	-0.189***	-0.736***	-1.077***	-0.368***	-0.697***
	(0.040)	(0.023)	(0.036)	(0.032)	(0.015)	(0.029)	(0.061)	(0.038)	(0.052)
ΔBilat XR, $orthog_{ct}$	0.167***	-0.034	0.202***	0.257***	0.002	0.294***	0.020	-0.004	0.087
	(0.048)	(0.033)	(0.049)	(0.039)	(0.024)	(0.037)	(0.070)	(0.058)	(0.064)
Real GDP $Growth_{ct}$	0.620***	-0.027	0.623***	0.337**	0.042	0.284*	0.616**	0.021	0.752***
	(0.217)	(0.134)	(0.213)	(0.168)	(0.098)	(0.164)	(0.303)	(0.212)	(0.284)
Stock $Return_{ct}$	-0.059**	-0.026	-0.034	-0.085***	-0.051***	-0.020	-0.140***	-0.038	-0.096***
	(0.028)	(0.020)	(0.027)	(0.020)	(0.014)	(0.019)	(0.041)	(0.034)	(0.036)
Policy $Rate_{ct}$	-0.004**	-0.002	-0.002	-0.007***	-0.001	-0.005***	-0.009**	-0.008**	-0.000
	(0.002)	(0.002)	(0.002)	(0.002)	(0.001)	(0.002)	(0.004)	(0.003)	(0.003)
$Inflation_{ct}$	0.002	0.002	0.001	0.008***	0.001	0.007***	0.015***	0.009***	0.006*
	(0.002)	(0.002)	(0.002)	(0.002)	(0.001)	(0.002)	(0.004)	(0.003)	(0.003)
2019=1	0.029*	-0.041***	0.070***	0.046***	-0.010*	0.061***	0.064***	-0.003	0.074***
	(0.016)	(0.009)	(0.015)	(0.010)	(0.005)	(0.010)	(0.020)	(0.013)	(0.018)
Constant	1.181***	0.402***	0.858***	1.365***	0.309***	1.150***	1.258***	0.490***	0.779***
	(0.084)	(0.055)	(0.080)	(0.062)	(0.037)	(0.059)	(0.129)	(0.080)	(0.114)
R^2	0.29	0.19	0.24	0.26	0.14	0.23	0.26	0.17	0.20
N	8,135	8,135	8,135	18,946	18,946	18,946	5,729	5,729	5,729
# firms	1,299	1,299	1,299	2,695	2,695	2,695	848	848	848

*Notes: Dependent variable is annual growth rate in total debt. $USDshare_i$ is firm-level average share of total debt denominated in USD. Left panel includes firms with zero exports, middle panel includes firms with export to sales ratio greater than zero but less than 50%, and right panel includes firms with exports greater than 50% of sales. Sample is restricted to firms that had USD-denominated debt on their balance sheet at some point during the 2010-2019 sample period. Firm-level fixed effects are included in all specifications. Robust standard errors in parentheses. ***, **, * indicate statistical significance at the 1%, 5%, and 10% levels respectively.*

Table 10. Degree of country-level dollar reliance

Total debt growth 2010-2019

	Highly Dollar Reliant (AR, CL, PE, ID, MX)			Less Dollar Reliant		
	All cur	USD	LC	All cur	USD	LC
ΔBDI_t	-0.353***	-0.341***	-0.002	-0.024	-0.157***	0.165**
	(0.131)	(0.105)	(0.114)	(0.067)	(0.039)	(0.065)
$\Delta Revenues_{it}$	0.053***	0.035***	0.025*	0.066***	0.020***	0.055***
	(0.016)	(0.013)	(0.013)	(0.008)	(0.004)	(0.007)
Log $Assets_{it-1}$	-0.142***	-0.082***	-0.070***	-0.163***	-0.037***	-0.139***
	(0.018)	(0.013)	(0.016)	(0.009)	(0.005)	(0.008)
$Leverage_{it-1}$	-0.856***	-0.483***	-0.410***	-0.870***	-0.156***	-0.732***
	(0.055)	(0.041)	(0.042)	(0.026)	(0.012)	(0.024)
ΔBilat XR, $orthog_{ct}$	0.017	-0.061	0.079	0.197***	-0.028	0.261***
	(0.066)	(0.054)	(0.058)	(0.031)	(0.019)	(0.031)
Real GDP $Growth_{ct}$	-0.280	0.013	-0.326	0.601***	-0.122	0.765***
	(0.289)	(0.231)	(0.264)	(0.142)	(0.077)	(0.141)
Stock $Return_{ct}$	-0.042	-0.008	-0.029	-0.105***	-0.071***	-0.023
	(0.027)	(0.022)	(0.025)	(0.018)	(0.011)	(0.018)
$PolicyRate_{ct}$	0.001	0.002	0.001	-0.008***	-0.006***	-0.001
	(0.002)	(0.002)	(0.002)	(0.002)	(0.001)	(0.002)
$Inflation_{ct}$	-0.004*	-0.001	-0.004**	0.014***	0.005***	0.010***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.001)	(0.002)
2019=1	-0.004	-0.044***	0.041**	0.061***	-0.012***	0.079***
	(0.019)	(0.015)	(0.016)	(0.009)	(0.005)	(0.009)
Constant	1.235***	0.668***	0.641***	1.254***	0.295***	1.026***
	(0.105)	(0.081)	(0.095)	(0.054)	(0.030)	(0.051)
R^2	0.29	0.21	0.24	0.26	0.14	0.23
N	6,222	6,222	6,222	26,588	26,588	26,588
# firms	993	993	993	3,849	3,849	3,849

*Notes: Dependent variable is annual growth rate in total debt. Left panel is restricted to firms in the five most dollar reliant economies based on average firm-level share of USD debt (Argentina, Chile, Peru, Indonesia, and Mexico). Right panel includes firms from less dollar reliant economies. Sample is restricted to firms that had USD-denominated debt on their balance sheet at some point during the 2010-2019 sample period. Firm-level fixed effects are included in all specifications. Robust standard errors in parentheses. ***, **, * indicate statistical significance at the 1%, 5%, and 10% levels respectively.*

Table 11. Bank v. Bond Debt Growth

	All	USD	LC	All	USD	LC	All	USD	LC
	Non-exporters			< 50% exports			> 50% exports		
ΔBDI_t	0.120	-0.164**	0.251**	-0.184**	-0.147***	-0.008	-0.125	-0.054	-0.055
Bank Loans	(0.117)	(0.069)	(0.108)	(0.075)	(0.044)	(0.070)	(0.139)	(0.105)	(0.118)
ΔBDI_t	-0.235***	-0.086*	-0.149**	0.098*	-0.015	0.135***	0.041	-0.058	0.056
Bonds	(0.085)	(0.046)	(0.075)	(0.053)	(0.027)	(0.048)	(0.093)	(0.065)	(0.061)
	Small Firms			Medium Firms			Large Firms		
ΔBDI_t	-0.355**	-0.276***	-0.106	-0.132	-0.181***	0.042	0.093	0.038	0.102
Bank Loans	(0.138)	(0.077)	(0.131)	(0.084)	(0.054)	(0.078)	(0.092)	(0.062)	(0.081)
ΔBDI_t	-0.074	0.030	-0.106	-0.044	-0.082***	0.044	0.051	-0.013	0.075
Bonds	(0.146)	(0.053)	(0.138)	(0.053)	(0.027)	(0.047)	(0.070)	(0.043)	(0.057)
	Low Profit			Medium Profit			High Profit		
ΔBDI_t	-0.146	-0.210***	0.012	0.031	-0.083*	0.152**	-0.218*	-0.096	-0.124
Bank Loans	(0.111)	(0.066)	(0.102)	(0.077)	(0.048)	(0.072)	(0.124)	(0.082)	(0.113)
ΔBDI_t	-0.180**	-0.103**	-0.076	0.032	-0.036	0.070	0.127	0.012	0.152*
Bonds	(0.079)	(0.044)	(0.069)	(0.055)	(0.029)	(0.048)	(0.089)	(0.050)	(0.079)
	Highly Dollar Reliant Countries						Less Dollar Reliant Countries		
ΔBDI_t	-0.333**	-0.325***	-0.002				-0.028	-0.160***	0.164**
Bank Loans	(0.130)	(0.105)	(0.113)				(0.067)	(0.039)	(0.065)
ΔBDI_t	-0.216	-0.241**	0.068				0.015	-0.100**	0.139*
Bonds	(0.139)	(0.116)	(0.119)				(0.079)	(0.045)	(0.076)

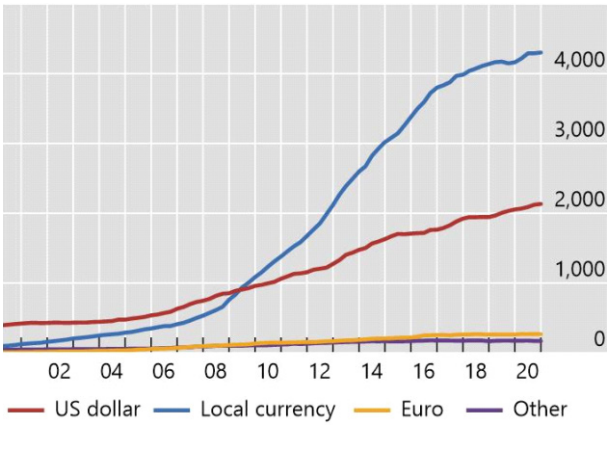
*Notes: In each panel the top row reports results for annual growth rate in bank loans as the dependent variable and the second row reports results for growth in bonds. Left to right variation in samples is based on export intensity, size, profit, and dollar reliance as analyzed in preceding tables. Sample is restricted to firms that had USD-denominated debt on their balance sheet at some point during the 2010-2019 sample period. To conserve space only the coefficient on broad dollar appreciation is reported. Firm and country-level controls as well as firm-level fixed effects are included in all specifications. Robust standard errors in parentheses. ***, **, * indicate statistical significance at the 1%, 5%, and 10% levels respectively.*

Appendix

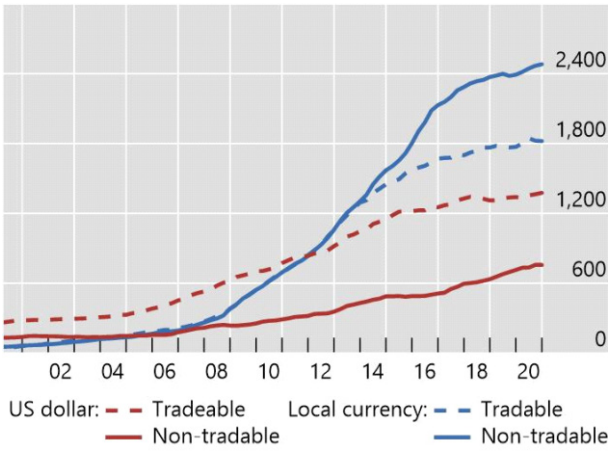
Aggregate EME corporate debt, including China[1]

Outstanding amount of debt securities and loans, in billions of US dollars — Graph A1

A. By currency



B. By currency and sector



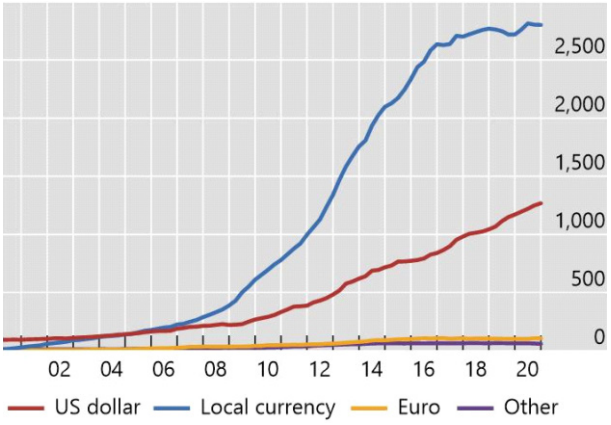
[1] Tradable: ultimate parent of the issuing firm is in a tradable sector such as manufacturing or agriculture. Non-tradable: ultimate parent of the issuing firm is in a non-tradable sector such as construction. For an unbalanced panel of firms headquartered in 23 emerging markets since Q1 2000. Includes debt securities and syndicated loans.

Sources: Dealogic; authors' calculations.

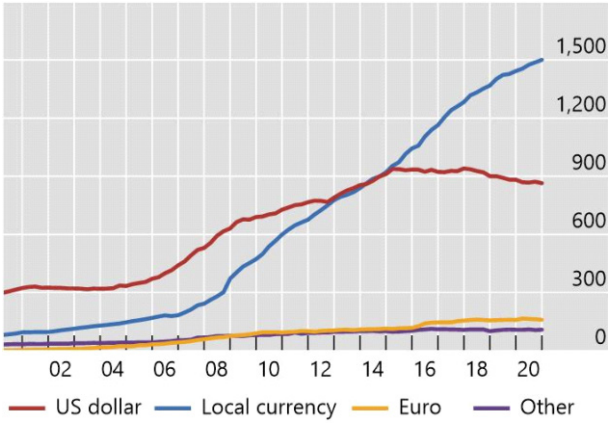
EME corporate debt by currency, including China[1]

Outstanding amounts, in billions of US dollars — Graph A2

A. Bonds



B. Syndicated loans



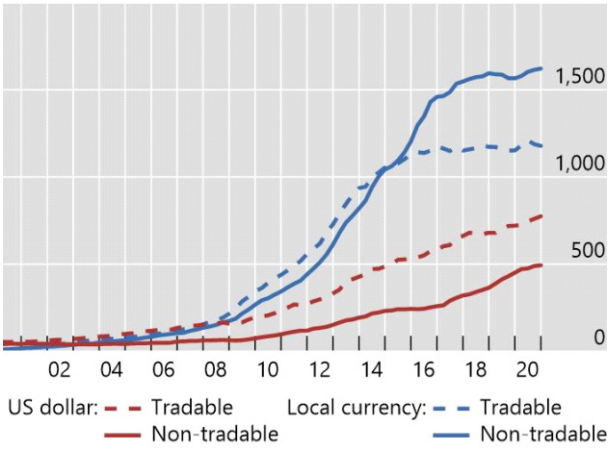
[1] For an unbalanced panel of firms headquartered in 23 emerging markets since Q1 2000. Includes debt securities and syndicated loans.

Sources: Dealogic; authors' calculations.

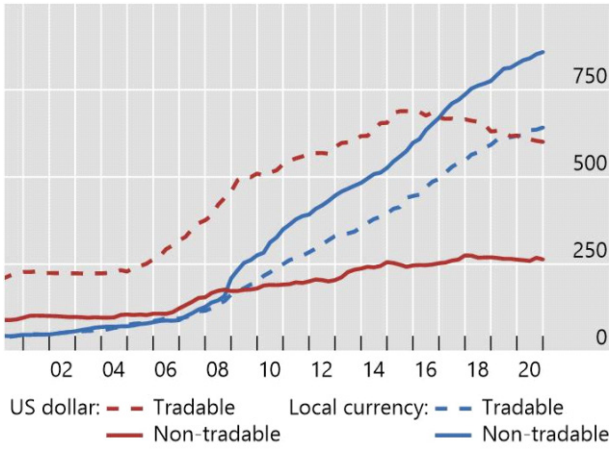
EME corporate debt by currency and sector, including China[1]

Outstanding amounts, in billions of US dollars — Graph A3

A. Bonds



B. Syndicated loans



[1] Tradable: ultimate parent of the issuing firm is in a tradable sector such as manufacturing or agriculture. Non-tradable: ultimate parent of the issuing firm is in a non-tradable sector such as construction. For an unbalanced panel of firms headquartered in 23 emerging markets since Q1 2000. Includes debt securities and syndicated loans.

Sources: Dealogic; authors' calculations.

Table A1. FX Assets

Total debt growth 2010-2019

	Zero FX Assets			0%<FX Assets<10%			FX Assets>10%		
	All	USD	LC	All	USD	LC	All	USD	LC
ΔBDI_t	-0.138	-0.240***	0.105	-0.055	-0.090	0.077	-0.070	-0.064	0.066
	(0.087)	(0.053)	(0.084)	(0.138)	(0.083)	(0.131)	(0.129)	(0.091)	(0.121)
$\Delta Revenues_{it}$	0.057***	0.017***	0.043***	0.092***	0.029***	0.080***	0.047***	0.014	0.047***
	(0.009)	(0.005)	(0.009)	(0.018)	(0.011)	(0.016)	(0.018)	(0.012)	(0.016)
Log $Assets_{it-1}$	-0.145***	-0.051***	-0.105***	-0.132***	-0.026**	-0.117***	-0.211***	-0.052***	-0.177***
	(0.011)	(0.007)	(0.010)	(0.019)	(0.011)	(0.019)	(0.018)	(0.011)	(0.017)
$Leverage_{it-1}$	-0.810***	-0.218***	-0.621***	-0.970***	-0.194***	-0.825***	-0.873***	-0.219***	-0.663***
	(0.031)	(0.017)	(0.028)	(0.062)	(0.031)	(0.057)	(0.058)	(0.028)	(0.050)
ΔBilat XR, $orthog_{ct}$	0.171***	-0.027	0.203***	0.354***	-0.006	0.408***	0.255***	0.017	0.294***
	(0.039)	(0.026)	(0.038)	(0.071)	(0.042)	(0.068)	(0.067)	(0.047)	(0.062)
Real GDP $Growth_{ct}$	0.521***	0.123	0.380**	0.505*	-0.173	0.714**	0.462*	0.016	0.496*
	(0.170)	(0.098)	(0.166)	(0.302)	(0.178)	(0.294)	(0.278)	(0.195)	(0.273)
Stock $Return_{ct}$	-0.085***	-0.052***	-0.035*	-0.063	-0.033	-0.016	-0.106***	-0.041	-0.053*
	(0.021)	(0.015)	(0.020)	(0.038)	(0.026)	(0.038)	(0.035)	(0.027)	(0.032)
Policy $Rate_{ct}$	-0.005***	-0.001	-0.004***	-0.006	-0.002	-0.003	-0.010***	-0.007***	-0.003
	(0.002)	(0.001)	(0.001)	(0.004)	(0.002)	(0.003)	(0.003)	(0.002)	(0.003)
$Inflation_{ct}$	0.005***	0.001	0.004**	0.012***	0.004*	0.009***	0.010***	0.004*	0.006*
	(0.002)	(0.001)	(0.002)	(0.003)	(0.002)	(0.003)	(0.003)	(0.002)	(0.003)
2019=1	0.021*	-0.025***	0.046***	0.074***	-0.001	0.090***	0.065***	-0.009	0.078***
	(0.012)	(0.006)	(0.011)	(0.020)	(0.009)	(0.020)	(0.017)	(0.010)	(0.017)
Constant	1.160***	0.378***	0.857***	1.115***	0.233***	0.961***	1.660***	0.436***	1.335***
	(0.062)	(0.039)	(0.059)	(0.114)	(0.071)	(0.115)	(0.120)	(0.075)	(0.114)
R^2	0.27	0.17	0.22	0.26	0.13	0.24	0.27	0.17	0.22
N	15,593	15,593	15,593	5,751	5,751	5,751	6,066	6,066	6,066
# firms	2319	2319	2319	799	799	799	899	899	899

*Notes: Dependent variable is annual growth rate in total debt. FX assets are proxied by percentage of total assets held abroad. Left panel includes firms with zero FX assets, middle panel includes firms with FX assets greater than zero but less than 10%, and right panel includes firms with FX Assets greater than 10%. Sample is restricted to firms that had USD-denominated debt on their balance sheet at some point during the 2010-2019 sample period. Firm-level fixed effects are included in all specifications. Robust standard errors in parentheses. ***, **, * indicate statistical significance at the 1%, 5%, and 10% levels respectively.*

Table A2. Broker-Dealer Leverage

Total debt growth 2010-2019

	All	USD	LC	All	USD	LC	All	USD	LC
	Non-exporters			< 50% exports			> 50% exports		
ΔBD_Lev_t	0.061	0.134**	-0.046	0.032	0.074**	-0.057	0.207**	0.023	0.138
	(0.087)	(0.056)	(0.083)	(0.058)	(0.035)	(0.055)	(0.106)	(0.078)	(0.094)
	Small Firms			Medium Firms			Large Firms		
ΔBD_Lev_t	0.175*	0.311***	-0.094	0.074	0.054	0.017	0.043	-0.025	0.014
	(0.100)	(0.057)	(0.096)	(0.062)	(0.041)	(0.058)	(0.075)	(0.052)	(0.069)
	Low Profit			Medium Profit			High Profit		
ΔBD_Lev_t	-0.078	0.043	-0.095	-0.007	0.077**	-0.088	0.245**	0.101	0.101
	(0.083)	(0.052)	(0.079)	(0.057)	(0.037)	(0.055)	(0.100)	(0.066)	(0.092)
	Small non-exporters			Medium non-exporters			Large non-exporters		
ΔBD_Lev_t	0.420*	0.420***	0.055	-0.158	0.023	-0.161	0.146	0.104	0.062
	(0.233)	(0.140)	(0.219)	(0.120)	(0.081)	(0.114)	(0.140)	(0.084)	(0.131)
	Low Profit non-exporters			Medium Profit non-exporters			High Profit non-exporters		
ΔBD_Lev_t	0.036	0.060	0.019	-0.055	0.147*	-0.186	0.166	0.158	0.058
	(0.163)	(0.104)	(0.154)	(0.119)	(0.078)	(0.116)	(0.195)	(0.126)	(0.178)

*Notes: Dependent variable is annual growth rate in total debt. As a robustness check, changes in the broad dollar index are replaced by the log difference in broker-dealer leverage (Federal Reserve Board Financial Stability Report (November 2024)). To conserve space only the coefficient of interest is reported. Left to right variation in samples is based on export intensity, size, and profit as analyzed in preceding tables. Sample is restricted to firms that had USD-denominated debt on their balance sheet at some point during the 2010-2019 sample period. Firm and country-level controls as well as firm-level fixed effects are included in all specifications. Robust standard errors in parentheses. ***, **, * indicate statistical significance at the 1%, 5%, and 10% levels respectively.*