Beyond Carry-Trading: New Insights into the Uses of Foreign-Denominated Bond Issuances by Latin American Firms

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Corporate bond issuances originating from developing and emerging market economies have emerged as the primary catalyst for the expansion of global debt following the Global Financial Crisis. Although Asia has dominated this trend, Latin American firms have significantly contributed, emerging as the second-largest issuers of corporate debt. Against this background, this article delves into the underlying motivations driving firms' engagement in such borrowing activities. Traditionally, the prevailing narrative has underscored carry-trading as the predominant purpose for utilizing proceeds from foreign-denominated bonds. However, we challenge this hypothesis by adopting an innovative methodological approach. Rather than relying on ex-ante incentives based on global interest rate differentials, as commonly employed in the literature, we utilize firm-level data on the ex-post interest income earned by firms. Through this alternative methodology, we do not find evidence supporting the presence of carry-trading practices. Furthermore, our analysis reveals a stronger correlation between bond issuances and capital expenditures, thereby casting doubt on the notion of speculative motives driving bond issuance. Additionally, this article introduces an analytical innovation by examining an alternative use of funds: liability management. Our findings suggest that Latin American firms have taken advantage of the loose monetary policies at the international level to strategically reduce short-term debt and prolong debt maturities.

1. Introduction

After the 2008 Global Financial Crisis (GFC), corporate debt in emerging countries verified a substantial growth, becoming a key aspect of the global financial scene. Indeed, among developing and emerging market economies (EMEs), non-financial corporate (NFC) sector debt nearly doubled as a percentage of GDP between 2008 and the end of 2019, reaching 96% (Abraham et al., 2021). This trend was further amplified by the effects of the COVID-19 pandemic, which increased this ratio by an additional 11 percentage points by the end of 2020 (Barajas et al., 2021). Only during the post-pandemic, NFC debt nominally decreased, although marginally.

This growth in corporate debt modified the international financial integration of EMEs. Corporate issuances in foreign currency soared and became a major channel for the transmission of global liquidity, taking the place of international bank loans (Avdjiev et al., 2014; Caballero et al., 2016). Consequently, studies describe this trend as a defining characteristic of the global financial market since 2008, calling it the "*second phase of global liquidity*" (Aldasoro & Ehlers, 2018; Shin, 2014).

Latin America played a prominent role in this landscape. The Economic Commission for Latin America and the Caribbean (2019, p. 123) argues that Latin America is the region with the largest ratio of corporate bonds over total bonds in international markets. Although the continent is not the main issuer among EMEs, it was the most dynamic. The Bank of International Settlements (BIS) International Debt Statistics show that, while corporate debt outstanding denominated in foreign currency grew 190% in EMEs between 2007 and 2014, in

Latin America the rise represented 276%. This is especially true for firms from Brazil, Chile, and Mexico, particularly due to the issuance of dollar-denominated securities (Abraham et al., 2021). The first two countries experienced the third and fourth largest increases in foreign currency debt between 2007 and 2014, a period that verified the largest growth in EME corporate debt, only surpassed by China and Türkiye (IMF, 2015).

When delving into the factors underlying the rise in NFC debt among EMEs, predominant research has underscored the prevalence of carry trade activities among EMEs firms. This entails EMEs firms borrowing cheaply from global financial markets, facilitated by quantitative easing policies (Shin, 2014), and subsequently directing these funds into domestic financial markets to exploit profitable investment opportunities. Such investments typically manifest as liquid financial assets (Bruno & Shin, 2017; Caballero et al., 2016) or as trade credit extended to local firms, effectively assuming the intermediary role (Hardy & Saffie, 2019; Shin & Zhao, 2013). However, a series of studies have cast doubt on this generalized speculative motive across EMEs countries emphasizing, on the contrary, precautionary motives (De Gregorio & Jara, 2024; Kaltenbrunner et al., 2024; Rabinovich & Pérez Artica, 2022).

Our article adds to this recent, more skeptical literature of carry-trading as the main motive for EMEs firms issuing bonds in foreign currency, focusing on the case of Latin American firms. We do so by introducing two innovations: one *methodological* in order to capture carry-trading, and other *analytical* regarding alternative uses for bond proceeds in foreign currency. In terms of the former, previous literature has measured the *ex-ante* incentives to engage in carry-trading using national and international-level data on interest rates differentials (Bruno & Shin, 2017; Calomiris et al., 2022; De Gregorio & Jara, 2024). In this paper, however, we use the *ex-post* gross interest income reported by firms. Carry-trades are ultimately an interest arbitrage and, if they exist, they should be reflected in the interest earned by the firm. In terms of the second contribution of the paper, we complement the analysis of asset side of the balance sheet (what has been typically studied in the literature) with the liability side. Hence, we analyze whether new debt issuances are associated with improvements in debt maturity, more specifically with the burden of short-term liabilities.

This paper confirms some previous findings, challenges others, and provides a complementary narrative for bond issuances by Latin American firms between 2000 and 2022. As it has been shown elsewhere (Bruno & Shin, 2017; Calomiris et al., 2022), we find that foreign currency bond proceeds are more strongly used to accumulate cash holdings when compared to local currency bond proceeds, particularly for firms with large or "index eligible" issuances, and during the immediate post-GFC period. However, we do not find consistent evidence of carry-trading in any of the periods we consider, neither for firms carrying-out large issuances. If any, firms earn positive interest income from domestic rather than foreign issuances. Finally, this article provides evidence for an alternative use of proceeds derived from issuance in foreign currency: liability management. In the second wave of global liquidity starting after the GFC firms have used part of the foreign proceeds to reduce short-term debt, therefore improving their financial position.

The rest of the paper is organized as follows. In Section 2 we provide an overview of the literature on the motives behind corporate bond issuance in the aftermath of the GFC. We organize the contributions according to whether they stress the demand, or instead, the supply side of corporate bonds markets. Then, we identify two gaps in the literature that inspire our main contributions. Section 3 discusses the regional and sectoral patterns of international debt and brings to light the relevance of Latin American firms in the global debt landscape. Section 4 presents our dataset for Latin American firms' debt issuances and shows the main stylized facts regarding the nationality of issuers, currency of issuance, coupons, and maturities. In section 5 we

introduce the econometric approach followed to gauge the uses of bond proceeds by issuing firms. Sections 6 and 7 show the main econometric results and a robustness analysis, respectively. Finaly, Section 8 concludes.

2. Motives for corporate bond issuance

When looking at the causes of bond issuances, the literature has broadly focused either on the drivers for an increased *demand* for corporate bonds and/or the motivations firms have in order to *supply* those securities. In terms of the former, the main buyers of corporate debt have been institutional investors. This followed the monetary expansion implemented by developed countries after the GFC in 2008, which led to a fall in the yields of safe assets (Di Maggio & Kacperczyk, 2017). Alter and Elekdag (2020) find that a loosening of monetary policy of 1 percentage point leads to an increase in leverage ratio of up to 0.1 percentage point per year in emerging market firms. Also, Lo Duca et al. (2016) argue that US quantitative easing compounded the expansionary effect on global corporate bond issuance, with corporate bonds replacing the assets removed from the market by US Fed purchases. In this context, large institutional investors increasingly acquired riskier assets issued by firms and states in EMEs (McCauley et al., 2015). More precisely, mutual funds increased more than ten times their holdings of emerging market corporate debt (Calomiris et al., 2022).

Abraham et al (2021) find evidence that is consistent with demand being the main reason for the rise in corporate issuance in East Asia as they observe a decline in bond issuance yields, higher leverage growth for new issuers, and a buildup of cash holdings derived from issuance proceeds as firms raised more debt than the amount they needed to finance existing operations. While both EMEs sovereigns and firms benefitted from investor's interest, most lending was directed towards the latter, especially those issuances beyond US$500 million which represented 62% of the total value of bonds issued after 2008. The reason why US$500 million became a threshold is that this is the criterion to be included in J.P. Morgan CEMBI, a de-facto index followed by large institutional investors (Calomiris et al., 2022).

As regards the supply of those bonds, EMEs firms increasingly tapped market-based finance as a result of the regulations in the banking sector after the GFC that raised spreads, made credit more expensive, and reduced bank loans from large global banks (Adrian et al., 2017; Noss & Toffano, 2016; Roulet, 2018; Slovik & Cournède, 2011). Bank lending was further affected by the euro debt crisis and its detrimental effect on European banks' lending in US dollars (McCauley et al., 2019).

When looking at the allocation of bond proceeds, the main focus of our paper, the literature is divided between two main perspectives. The first one emphasizes speculative activity through carry-trading as a key driver behind firm debt issuance. EMEs firms are thought to borrow on international financial markets at lower interest rates and maintain the liquidity obtained in liquid domestic assets with higher yields (Bruno & Shin, 2017; Caballero, Panizza & Powell, 2016) or granting domestic commercial credit (Hardy & Saffie, 2019). This type of practice was further expanded by the incentives to implement issuances of large volumes, which exceeded the operational financing needs (Calomiris et al., 2022). A close correlation was observed between international corporate debt issuances in EMEs and domestic bank credit, indicating that indebted firms deposited the funds obtained in domestic banking systems, in turn financing the granting of bank credit (Avdjiev et al., 2014; Caballero et al., 2016).

Perhaps the most influential study on this type of use of bond proceeds is Bruno & Shin (2017), who analyze bond issuance activities of a global sample of firms until 2013. This paper shows that firms are more likely to issue bonds when they have higher amounts of cash in their balance sheet, a relation that is strengthened when the authors consider USD denominated bonds issued by firms from EMEs. The authors also find that *ex-ante* carry-trade opportunities are a significant determinant of USD-denominated bonds issuances in EMEs. Finally, they use a Kim & Weisbach (2008) approach to analyze the uses of bond proceeds and show that firms from EMEs tend to use USD bond proceeds for cash savings in a greater proportion than firms in advanced economies. All in all, their evidence points to the pursue of short-term financial gains and carry-trade opportunities as a key driver behind USD bond issuance by EMEs corporates.

A different perspective on the uses of bond proceeds is explored by De Gregorio & Jara (2024). Although these authors confirm that cash savings increase after firms issue USD-denominated bonds, they also show that the precautionary motive is a relevant catalyst behind corporate USD bond issuance in EMEs. Indeed, bond issuances lead to higher corporate investment in the near future, and this relationship is stronger when the spread between local and international interest rates increases. Interestingly, De Gregorio & Jara find that larger firms, with higher credit ratings and lower financial constraints are more inclined to issuing debt abroad when global liquidity expands, and global interest rates are lower. This is contradictory with the traditional view of financial constraints as a key driver of cash demand by financially constrained firms (namely, smaller and lower rating firms, see Bates et al., 2009). By contrast, regression results turn insignificant when the authors restrict their sample to smaller firms. This result is consistent with Calomiris et al (2023) finding that large-denomination bond issuance (equal to or above USD 500 millions) accounts for most of the debt issued after 2008. According to them, larger firms face a trade-off when deciding to issue debt securities. If the face value of the issuance is higher than USD 500 million, their cost of financing is reduced, but this comes at the expense of hoarding a higher share as idle cash. Thus, Calomiris et al provide a possible explanation to the phenomenon observed by other studies.

Abraham, Cortina & Schmuckler (2021) focus on issuances made by Asian firms during 2008-2016 and use a different perspective to analyze the uses of funds. They split the sample between *new* and *recurrent* issuers. New issuers are firms issuing bonds after 2008 that hadn't made any issues between 2000 and 2007. Recurrent issuers, by contrast, are firms that issued both before and after 2008. They also evaluate the uses of bonds proceeds implementing Kim & Weisbach (2008) methodology and find that cash is the most important use of proceeds during the year of issuance both for new and recurrent issuers. However, new issuers maintain their cash holdings two and three years after bond issues, while recurrent issuers re-direct cash to other uses after the year of issuance. Capital expenditures, acquisitions and Research & Development are also important alternative uses of bonds proceeds, although not as important as cash savings.

A common procedure followed in all these papers, besides their findings on bond proceeds, is the fact that they calculate the *ex-ante* incentives to engage in carry-trades using national-level interest data rather than the *ex-post* results of carry-trading (Bruno and Shin, 2017; De Gregorio & Jara, 2024). The problem with ex-ante interest rate differentials, as noted by De Gregorio & Jara (2024), is that they are also compatible with precautionary motives, not only carry trades. While their paper leans towards the precautionary motive, it cannot rule out engaging in carry trade activity as a motive (p.19). Furthermore, the speculative rationale has recently faced closer scrutiny. According to Rabinovich and Perez Artica (2022), who used interest income firm-level data, the latter does not emerge as a significant driver for the accumulation of cash reserves in Latin America. This paper, however, does not consider bond issuances. Kaltenbrunner et al. (2024) observed a prevalence of precautionary motives in Brazil and Türkiye. Firms appear to borrow in foreign currency during periods of

favourable international liquidity conditions while maintaining cash reserves as a safeguard against potential shifts in these conditions. Considering this recent evidence and the issues involved in using *ex-ante* incentives for carry-trading, in this paper we follow an alternative methodology that consist of *ex-post* results as explained in Section 5.

A second gap we identify in the literature is that it has concentrated on the consequences of bond issuance in the asset structure of non-financial firms, either in cash and short-term investments (Bruno & Shin, 2017; Caballero, Panizza & Powell, 2016) or lending it as commercial credit (Hardy & Saffie, 2019). One exception is the paper by Cortina et al (2018) that focuses on the liability structure using data on EMEs bond issuance and syndicated loans. However, they only analyze the use of proceeds for the latter and study the self-reported use as main source of information. As we describe in Section 4, self-reported use is problematic due to opacity.

The overall lack of empirical work in the liability structure is striking given the existing evidence that it may also be an important driver behind bond issuance. In the case of Brazil, for instance, the Central Bank (2020) highlighted that refinancing and extension of debt was the main destination of debt proceeds in 2017, 2018 and 2019: 84.3%, 83.8% and 85.6% respectively. The preliminary evidence we find in the self-reported use (Section 4) points towards similar directions. More generally, in the context of a long period of low interest rates at the international level, it was a rational option for firms to both issue long-term rather than short-term debt for financing purposes or to repay/rollover old debt. In both cases, however, the proportion of short-term debt would decrease. We therefore address this gap by estimating the effect of bond issuances on short-term debt.

3. Regional and sectoral distribution of debt expansion in the 2000s

Since the 2000s and with greater intensity after the GFC, there has been a rapid growth in NFC debt in international capital markets, notably in EMEs. Latin America has not been an exception to this more general process.[1] According to BIS statistics, as reflected in Table 1, total debt in capital markets grew from 5 trillion in 2000 to 25 trillion in 2022. When broken down by sectors and periods, it is observed that the main driver globally has been Financial Corporations (FCs), followed by NFCs. However, this dynamic has not been uniform across all years, especially for FCs. While different period segmentation continues to be a point of controversy in the literature, in this paper we focus on three main sub-periods. The first from 2000 to 2008, marked by the outbreak of the GFC, the second one goes from 2009 to 2014, characterized by the peak in debt issuances and the "FED tapering", and third one begins in 2015 and continues to the present, which includes the COVID-19 period.[2]

The most significant global change occurred in the first stage, due to the high dynamism shown by FC debt. Between 2000 and 2008, FCs from advanced economies increased their stock of debt in international markets from 2.9 trillion to 13.8 trillion, driven by increases in dollar placements outside the United States, especially by European banks (Shin, 2012). After the outbreak of the global financial crisis, FC debt lost momentum,

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[1] BIS data also includes the Caribbean but the contribution of these countries to debt growth is minor, so we term the whole region as 'Latin America' for simplicity.

[2] We include the COVID-19 pandemic in the last period for simplicity. We are aware, however, of different periodizations (see, for instance, Hardy & von Peter, 2023) so we experiment with other sub-periods in one of our robustness checks.

transitioning from a growth rate of nearly 400% in the previous stage to less than 16%, increasing by only 1.5 trillion over a decade and a half.

Following the outbreak of the GFC in 2008, a second stage begins, which extends until the year 2014. During this period, quantitative easing policies in the U.S. and other core countries led to a significant decline in the cost of international financing and an increase in global liquidity, prompting investors to take positions in assets of peripheral countries, especially in fixed income securities (Fernandez et al., 2018). The most dynamic sector in debt expansion for all countries worldwide shifted to EMEs NFCs (Abraham et al., 2020). Between 2008 and 2014, global NFC debt grew from 3.0 trillion to 5.1 trillion, recording a 70% increase, while FC debt decreased from 13.8 trillion to 13.4 trillion and government debt grew from 1.2 trillion to 1.6 trillion.

Within EMEs, Asia registered the highest proportion of NFC debt issuances. Between 2000 and 2022, out of the total 1.8 trillion increase in NFC debt, 6 out of every 10 extra dollars of issuances correspond to Asia. Moreover, the trend of debt expansion in financial markets began earlier than in other EMEs. Between 2000 and 2008, NFC debt in Asia grew from 176 billion to 441 billion, registering a 156% increase. Then, between 2008 and 2014, debt continued to increase and accelerated, reaching 1.2 trillion.

[TABLE 1]

Latin America, on the other hand, was not far behind. Although it did not capture the largest volume of issuances, it was the most dynamic region in terms of rate of growth of NFC debt, especially in the period 2008 to 2014. The stock of NFC debt in Latin America grew from 59 billion in 2000, to 96 billion in 2008, 373 billion in 2014 and 478 in 2022. The second sub-period was therefore the most dynamic, concentrating 66% of the total debt issued between the years 2000 and 2022. Moreover, a clear transition is seen in 2014 for the Latin American NFC sector, when gross NFC issues reached a peak, as we show later in Figure 1.

More broadly, while EMEs continued to lead global debt accumulation, gross debt issuance by NFCs from EMEs came to a halt in the middle of the decade. As this sector's issuance subsided, governments debt in EMEs accelerated. This latter trend was further intensified by the outbreak of COVID-19 in 2020, because of the expansion of supportive fiscal policies (IMF, 2022). For Latin America, the BIS data shows that while total international debt outstanding by NFCs from Latin America increased by 28% between 2014 and 2022, governments international debt grew by 75%.

Regarding the distribution of NFC debt, similarly the previous stage, Asia was the most dynamic and increased its prominence in the volume of placements within EMEs, increasing the stock of debt in international markets by 598 billion in 2014 to 1.18 trillion in 2022, while the stock of Latin American debt increased from 289 trillion in 2014 to 508 trillion in 2022. That is, 7 every 10 dollars of new debt corresponded exclusively to Asia.

4. Data

We combine bond issuance information from the Securities Data Company (SDC) module of Thomson Reuters Eikon with Balance Sheet Information from Thomson Reuters Eikon. We first retrieve bond issuance information from active and inactive, publicly listed firms whose ultimate parent company is incorporated in Latin America. As we focus on non-financial companies, we also exclude financial firms identified by the

primary SIC codes from 6000 to 6799 and firms without sectoral information. Due to data quality and availability, the period of analysis starts in 2000 and ends in 2022. Our database includes 6,243 data points on bond issuances, 4,365 in local currency and 1878 in foreign currency.

Eikon provides information on the currency in which bonds are issued. It is important to note that firms issue bonds with different subsidiaries and can issue bonds multiple times per year. For instance, 'Petrobras Global Finance BV' incorporated in the Netherlands is a subsidiary of the parent company, 'Petroleo Brasileiro SA', incorporated in Brazil. In these cases, we allocate the amount issued by subsidiaries to the parent company focusing on the nationality of the firm rather than its residence. This is a standard procedure followed by others (Bruno & Shin, 2017). After doing this, we calculate the total amount issued in local and foreign currency per year and firm. With this information, Table 2 summarizes the total amount and the number of issuances in local and foreign currency by firms belonging to different Latin American countries.

[TABLE 2]

Focusing first on the national composition of corporate debt, we observe that Brazil, Mexico and Chile are the countries with the highest volume of NFC debt placement throughout the entire period. These three economies accumulate 89% of total emissions for the entire period, while the remaining 11% is made up of emissions from the rest of the 12 economies in the region. Regarding this distribution, some studies claim that is possible to explain this trend by a parsimonious relationship between incoming flows due to financial debt and the contribution of this economies in the regional GDP. The only two exceptions are Chile and Argentina: the first because of its larger financial integration and high presence of domestic financial markets, and the second due to its lower financial integration and large foreign debt problem (ECLAC, 2023).

If we turn to the currency composition, foreign-denominated debt, especially dollars, turns out to be the most important and verifies the highest growth (Figure 1). Between 2000 and 2022, debt in foreign currency reached 64% of total issuances, while debt in local currency recorded for the remaining 36%. Moreover, the greatest expansion of debt flows was associated with a relative growth in the weight of issuances in foreign currency. The proportion of debt in foreign currency went form 54% between 2000 and 2008 to 66% between 2009 and 2014. Between 2015 and the present, the ratio of debt issuance in foreign currency remained above 60% for almost all years.

[FIGURE 1]

Thomson Reuters Eikon provides further information about the structure of corporate debt in relation to the coupon and maturity of issued bonds, as well as the relation between short- and long-term debt on the companies' balance sheets. Table 3 presents a summary of these results, distinguishing across sub-periods and type of currency of the issuance.

Regarding the coupon for issuances in foreign currency, a persistent reduction is observed throughout the 3 periods. The median coupon for emissions went from 7.8 points in 2000-2008, to 6.3 points in 2009-2014 and 5.8 points in 2015-2022. In total, the coupon for issues in foreign currency was reduced by 2 percentage points for the entire issue window. Regarding the coupon for issuances in domestic currency, there is an initial drop between the 2000-2008 period against 2009-2014, going from 7.9 points to 7 points, and then a growth in the period 2015-2022 reaching 8.1. This rise is related to the acceleration of global inflation and the devaluations

of regional currencies, especially in the post-pandemic. The total effect is a slight increase of 0.2 percentage points.

With respect to the average maturity of issues in foreign currency, LAC register for a prolongation of the maturity periods, although the most relevant part occurs in the period 2009-2014. The median maturity of emissions went from 7.1 years in 2000-2008, to 9.7 years in 2009-2014, and then fell back to 7.3 years in 2015-2022. Throughout the entire period the maturity for issuances in foreign currency decreased by 0.1 year throughout the period. Regarding debt in local currency, the median went from 4.8 years in 2000-2008, to 5.1 years in 2009-201, and then fell to 3.9 years in 2015-2022. Across the full period, the maturity of debt issues was reduced by 0.6 years. This shorter maturity for debt in local currency is in line with findings in the literature (Cortina et al., 2018).

Likewise, changes in the term structure of liabilities can also be observed through complementary information from the financial statements of the companies. When distinguishing by currency of issuance, it is observed that the median of the short-term to long-term debt ratio for companies that issued debt in foreign currency decreased considerably from 14% in 2000-2008, to 4.5% in 2009 -2014 and 3.6% 2015-2022. Similarly, the median short-term to long-term debt ratio for companies that issued in domestic currency decreased from 17.9% in 2000-2008, to 7.2% in 2009-2014 and to 5.4% in 2015- 2022.

[TABLE 3]

An additional element illustrates the relevance of liabilities management as a motive for bond issuances over these years. Firms issuing debt typically include the uses of those funds in the prospect. Thomson Reuters Eikon includes such information but unfortunately firms tend to be quite obscure in the self-declared use. The most frequent use of funds disclosed by firms is a miscellaneous category called "General Corporate Purpose". In 4,207 (or 67.45%) of the cases firms reported this as the only motive. In 4,965 (or 79.5% of the cases) firms declare this as at least one of the motives. Table 4 reports the self-declared uses of the 2,036 cases in which at least one motive besides "General Corporate Purpose" is reported.

Finally, following previous findings in the literature (Calomiris et al, 2023, see discussion above), we also evaluate the relevance of particularly large issuances in our sample. Figure 2 shows a histogram for debt issuances in foreign currency according to the size of issuance[3]. Between USD 1 and 499 million, there are 1313 issuances totalling 192 USD billion, corresponding to 24% of the total volume issued and grouping 70% of individual issuances in foreign currency. By contrast, issuances equal to or higher than USD 500 million, accumulating only 30% of issuances represent as much as 76% of the total proceeds. Notably, USD 500 million presents one of the largest peaks in Figure 2.

[TABLE 4]

[FIGURE 2]

The final step is to merge firm-level issuance information with the balance sheet data of those issuing companies. We also retrieve balance sheet data on those Latin American companies that did not issue bonds in the period under analysis allowing for a comparison between those different types of firms. Our sample

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[3] We consider only foreign currency debt as they are the largest in volume and the most illustrative of the process.

comprises 736 firms from Latin America, out of which 187 issued bonds in foreign currency, 511 issued bonds in local currency and 110 issued both types.

5. Methodology

We now go on to systematically evaluate how Latin American firms used the proceeds of bonds issued both domestically and internationally. To this aim, we draw on the methodology developed by Kim & Weisbach (2008). This widely used specification, originally used to identify uses of equity issuances (W. Kim & Weisbach, 2008) and later applied to bond issuances (Abraham et al., 2021; Bruno & Shin, 2017; Calomiris et al., 2022; Erel et al., 2012), allows to identify the correlation between those sources of funds and different categories in the financial statement of the firm (stocks and flows) in multiple periods. While the results of these equations have been typically analyzed as *uses* of funds, a more literal interpretation of the coefficients is that they are ultimately correlations between the focal independent variable (funds coming from either equity or bond issuance and other sources) and financial statement data.

The distinction between uses and correlation (or impact) is key because it allows us to include interest income as one of the dependent variables. One of the innovations of this paper is therefore to address the limitations in carry-trades measurement by using the *ex-post* interest income earned by the firm. Carry-trades are ultimately an interest arbitrage so, if firms are engaging in such behavior, it should be reflected in this category. Notably, this is a gross measure, i.e. we do not compute the costs involved in engaging in such activities. The reason is that while it is straightforward to compute the income associated with holding financial assets, the costs incurred in the pursuit of such activities cannot be easily distinguished from those financial costs needed, for instance, to finance the primary or operating activities of the firm. If any, interest income overstates carry-trades but, at least, it is certain that if firms *did* engage in carry-trading activities when issuing foreign-denominated bonds, we should expect to see a positive impact on future interest income.[4]

Besides interest income, we concentrate on changes of three other main variables related to bond issuance. First, we evaluate whether firms used bond proceeds to accumulate cash reserves, particularly for dollar denominated bonds, as found by others (Abraham et al., 2021; Acharya & Vij, 2020; Bruno & Shin, 2017; Calomiris et al., 2022). Our second variable of interest is fixed capital formation, seeking to know to which extent bond proceeds contributed to finance higher fixed investment in the years following issuances. Third, connecting to the second contribution of this paper, we look at the evolution of short-term debt to answer whether bond issuances led to significant changes in the term-structure of firms' liabilities.

We aim to compare the impact of bond proceeds and other sources of funds in the four categories described above. While interest income and capital expenditures are flow variables, cash and short-term investments and short-term debt are stock variables. Following Kim & Weisbach (2008), for the latter we compute Y_{it} as follows.

Eq. 1
$$Y_{it} = ln\{[(V_{it} - V_{i0})/TA_{i0}] + 1\}$$

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[4] Another way of saying this is that a positive impact on interest income is a necessary condition for carry-trading but not sufficient.

Where V_{it} is the balance sheet variable (cash and equivalents, or short-term debt) for firm i at the fiscal year end t, V_{i0} is the same variable at the fiscal year end prior to the bond issuance, and TA_{i0} represents the total assets of firm i prior to the bond issuance.

For variables from the income statement and cash flow statements (interest income and capital expenditures), in turn, we define Y_{it} as follows:

Eq. 2
$$Y_{it} = ln\left\{\left[\left(\sum_{i=1}^{t} V_{it}\right)/TA_{i0}\right] + 1\right\}$$

Where V_{it} is the income or cash flow variable for firm i at the fiscal year end t. With this set of dependent variables, we estimate a model using the following specification:

Eq. 3
$$Y_{it} = \beta_1 ln\left[\left(\frac{Cum.Bondproceeds_{it}}{TA_{i0}}\right) + 1\right] + \beta_2 ln\left[\left(\frac{Cum.OtherSources_{it}}{TA_{i0}}\right) + 1\right] \beta_{3i} ln[TA_{i0}] + \sum_{j=1}^{T} year_j + \sum_{c=1}^{C} \alpha_c + \varepsilon_{it}$$

Where $year_j$ are fiscal year dummies, α_c are country dummies. Additionally, $Cum.Bondproceeds_{it}$ and $Cum.OtherSources_{it}$ represent the amount of bond proceeds and other sources of funds, respectively, for firm i accumulated over a time horizon t, with $t \in \{1, 2, 3, 4\}$:

Eq. 4
$$Cum.Bondproceeds_{it} = \sum_{s=1}^{t} Bond\ proceeds_{is}$$

Eq. 5
$$Cum.OtherSources_{it} = \sum_{s=1}^{t} Other\ Sources_{is}$$

We interpret the coefficient β_1 as measuring the effect of bond proceeds raised per issuance on the dependent variables for each year of the time horizon. β_2, in turn, measures the effect of other sources of funds on each variable Y. The effects measured by β_1 and β_2 are interpreted as use of funds in the case of cash and short-term investment, capital expenditure and short-term debt and as correlation in the case of interest income. If coefficients β_1 and β_2 are statistically different (using a Wald test of parameters), then different sources of funding will impact the dependent variables differently.

Finally, while our whole period under analysis is 2000-2022, and considering the main stylized facts presented in section 3 and 4, we divide it into sub-samples. As discussed above, these decades contain phases with markedly different characteristics, leading us to distinguish three sub-periods. As is clear from the literature, in the aftermath of the Global Financial Crisis a distinct phase in the global financial system was originated known as the "*second phase of global liquidity*". We thus define the pre-crisis period for the years 2000-2008. This is conventional in the literature. Our second cut is defined in 2014. As shown in Figure 2 above, bond issuance activity by Latin American NFCs reached a maximum that year and was followed by a period of lower issuance. Additionally, the post-crisis period ending in 2014 becomes interesting as this is the main object of concern by relevant studies in the global corporate debt literature. Consequently, we define 2008-2014 and 2015-2022 as

our second and third sub-periods of interest. In one of our robustness checks we nevertheless study sub-periods 2 and 3 together without the COVID-19 pandemic.

6. Econometric results

a. Bond proceeds vs. other sources

When we compare the coefficients in Table 5, we find that firms in Latin America tend to use funds from bonds proceeds for cash savings in a greater proportion than other sources of funds. We observe this in the three sub-periods. Results are statistically different from 0 in all 4 years after bonds were issued in all sub-periods except for the 2nd year in the 2009-2014 period. This result is in line with evidence reported in the literature (Bruno & Shin, 2017, Calomiris et al, 2023).

In terms of capital expenditures, the contribution of bond proceeds to financing fixed investments is also higher than that of other sources, particularly during the first and the third sub-periods. Notably, the 2000-2008 period is the one with fastest economic growth in our sample. However, during the subperiod immediately following the GFC, this difference disappears, which echoes some findings in the literature for that period highlighting the use of bond proceeds to finance carry-trades.

In terms of our two remaining variables, we do observe that interest income increases significantly more as a response to bonds proceeds when compared to other sources of funds, which might reveal that firms accumulate liquid assets yielding a financial return. This is particularly noteworthy after the Global Financial Crisis, mostly in the 2015-2022 period with the largest effects of bond proceeds in future interest income and most significant differences from the effects of other sources. Finally, at this level, we do not find any inclination of firms to use bond proceeds for reducing short-term debt.

[TABLE 5]

b. Local vs. foreign-denominated bond issuances

A second analytical step consists of evaluating whether the currency of bond issuance affects the propensity to use bond proceeds for alternative uses. Therefore, we estimate a modified version of Equation 3, where we split bond proceeds between local and foreign currency-denominated issues. We use the following specification:

Eq.6
$$Y_{it} = \beta_1 ln\left[\left(\frac{Cum.Bond\ proceeds^{LC}_{it}}{TA_{i0}}\right) + 1\right] + \beta_2 ln\left[\left(\frac{Cum.Bond\ proceeds^{FC}_{it}}{TA}\right) + 1\right] +$$
$$\beta_3 ln\left[\left(\frac{Cum.OtherSources_{it}}{TA_{i0}}\right) + 1\right] \beta_4 ln[TA_{i0}] + \sum_{j=1}^{T} year_j + \sum_{c=1}^{C} \alpha_c + \varepsilon_{it}$$

In this new specification, β_1 and β_2 measure the effect of local and foreign currency bond proceeds respectively on dependent variables. Now, if coefficients β_1 and β_2 are statistically different, then the currency of denomination of bond issuances affects the inclination of firms to use proceeds in alternative uses.

Results shown in Table 5 above point to a distinct inclination of firms to use bond proceeds to accumulate cash and equivalent assets. When we explore whether the currency of denomination impacts on this use of proceeds, in Table 6 below, we find no differences between bond issues in local and foreign currencies. The coefficients for local and foreign currency-denominated issuances are not statistically different during the first two sub-periods. However, since 2015 we find that the contribution of bonds issued in local currency to the accumulation of cash is higher than for bonds denominated in foreign currency. Regarding capital expenditures, the contribution of bond issuances in local and foreign currency is statistically significant and seems to be approximately the same. In no period do we find statistically significant differences.

The similarity in capital expenditures contrasts with interest income that seems to respond more markedly to issuances in local currency than those in foreign currency. This is a major departure from what has been previously found in the literature (Bruno & Shin, 2017; Caballero et al., 2016). First, issuances in local currency are associated with higher interest income in all three sub-periods. Second, issuances in foreign currency have no positive effect on interest income. Taken together, these findings go against other evidence showing a greater tendency to use bond proceeds in foreign currency for carry trading. One possible interpretation of these results, on the other hand, is that firms keep proceeds from foreign-denominated bonds in foreign currency, hence reporting lower interest rate.

Finally, while bond issuances in local currency were used in a higher proportion to reduce short-term debt during the pre-GFC period, foreign currency bonds played this role in the subperiod immediately following the GFC. In the 2009-2014 period, proceeds from bonds in foreign currency always have a negative sign and in year 2 and 3 after the issuance, the effect is statistically different from 0. This finding provides an alternative narrative to carry-trading. In the period that verifies the largest increase in foreign-denominated bonds, firms in Latin America took advantage of that liquidity and used the proceeds in foreign currency to improve their financial position and reduce short-term debt.

[TABLE 6]

c. Local vs. foreign-denominated bond in large bond issuances

Next, we follow Calomiris et al (2023) and evaluate whether firms issuing large "*index eligible*" bonds use their proceeds in any distinct way. According to their findings, we should find that firms with large issues are more likely to increase their cash holdings. This is because firms with large issues benefit from the "*size yield discount*" and thus enjoy a lower coupon, but in return face the risk of holding excess idle cash in their balances as a result of receiving proceeds in excess of their immediate financial needs.

As discussed above, we find that large issuances that lend themselves to the "*index eligible*" pattern are only found among the foreign currency denominated issues. Consequently, we identify firms with foreign currency issues equal or higher than U$ 500 million and evaluate the extent to which their use of bonds proceeds differs from the rest of the sample.

Above we show that bond issuances tend to correlate differently with alternative variables. We now seek to distinguish whether the currency has different effects particularly for firms with larger bond issuances meeting the "index eligible" pattern. The estimated model is:

$$Y_{it} = \beta_1 ln\left[\left(\frac{Cum.Bond\ proceeds^{LC}_{it}}{TA_{i0}}\right) + 1\right] + \beta_2 large * ln\left[\left(\frac{Cum.Bond\ proceeds^{LC}_{it}}{TA_{i0}}\right) + 1\right] +$$

Eq. 7
$$\beta_3 ln\left[\left(\frac{Cum.Bond\ proceeds^{FC}_{it}}{TA_{i0}}\right) + 1\right] + \beta_4\ large * ln\left[\left(\frac{Cum.Bond\ proceeds^{FC}_{it}}{TA_{i0}}\right) + 1\right] +$$

$$\beta_5 ln\left[\left(\frac{Cum.OtherSources_{it}}{TA_{i0}}\right) + 1\right] + \beta_6\ large * ln\left[\left(\frac{Cum.OtherSources_{it}}{TA_{i0}}\right) + 1\right] + \beta_7 ln[TA_{i0}] +$$

$$\sum_{j=1}^{T} year_j + \sum_{c=1}^{C} \alpha_c + \varepsilon_{it}$$

Here, to capture the difference between the proclivity to use local and foreign currency bond proceeds for alternative uses, we test if coefficients $\beta_1 + \beta_2$ (that is, the proportion of local currency bond proceeds used for each alternative use among firms with larger issues) are significantly different from $\beta_3 + \beta_4$ (the proportion of foreign currency proceeds for the same subset of firms).

We find that companies with larger issuances use foreign currency proceeds to increase their cash and equivalents balances more pronouncedly than local currency bond proceeds, but this takes place only during our second sub-period, the immediate post-GFC years. This is in line with findings by relevant studies in the literature. For instance, Bruno & Shin (2017) document a similar trend toward accumulating cash balances out of foreign currency bond proceeds among firms from EMEs, pointing to carry trades as the main driver. Consistent with our findings, they find that this result is stronger during the years corresponding to our second sub-period. Even closer to our results, Calomiris et al (2023) show that firms with larger issues are more inclined toward cash hoarding in the year immediately following debt issuance particularly for the period 2009-2016. In terms of capital expenditures, we do not find any noticeable preference between local and foreign currency proceeds as sources of investment financing in any of the three sub-periods.

Distinguishing among large issuances provides additional information regarding our remaining variables of interest. In terms of interest income, Table 7 shows that the difference between issuances in local and foreign currency is driven by large issuers in local currency in the 2000-2008 and 2015-2022 periods. Still, we find that it is local currency -rather than foreign currency- bond proceeds that led to higher interest income. Moreover, this is consistently observed throughout the three sub-periods, including the second sub-period for which we find a higher inclination to use foreign currency proceeds to accumulate cash.

Finally, the second sub-period is also distinct in that during those years, foreign currency proceeds lead to a reduction in short-term debt, a sign of bond issuance being used as an instrument of liabilities management by larger firms. This situation is partially reverted, however in the 2015-2022 period in which large issuances in foreign currency are associated with more short-term debt.[5]

[TABLE 7]

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[5] Based on the results we report in Table 8, the positive correlation we observe in the third period between short-term debt and large issuances in foreign currency may be driven by the COVID-19 pandemic.

7. Robustness analysis

We perform two robustness checks for our main results reported in section 6. Despite our rationale for dividing the whole period into 3 sub-periods (see section 3), the literature typically emphasizes that the second sub-period ends during the COVID-19 pandemic (Hardy & von Peter, 2023). Our first robustness check therefore considers whether using a different periodization affects the results (Table 8). We stretch the extent of our second sub-period, to encompass the years following the GFC and preceding the COVID-19 pandemic, namely, 2009-2019. We re-run the Kim & Weisbach (2008) regression using data for that sub-period and find that, all in all, results mix some elements of our original second and third sub-period.

Bond proceeds continue to outpace other sources of funding for cash accumulation and are still the source of funding most intensely correlated with interest income (Panel A). Moreover, they still contribute more pronouncedly to finance capital expenditures, particularly three and four years after issuance as we found in our third period. When we split the contributions of local and foreign currency proceeds throughout this period (Panel B), we find that local currency proceeds are more markedly related to cash accumulation as we originally found for the 2015-2022 period. However, differently from our original findings, foreign-denominated bond issuances are negatively related to short-term debt for the whole period between the GFC and the COVID-19 pandemic. The fact that foreign-denominated bonds are not related to carry-trading is a result that is robust to the new periodization and consistent with our original findings. The same results in terms of cash, interest income and short-term debt (more markedly for the latter) are obtained when we focus on larger issuances (Panel C).

[TABLE 8]

In a second robustness check we evaluate whether results hold when we consider firms from the energy and materials sectors separately. These sectors show up as highly engaged in the international bond markets (Bruno & Shin, 2017, pp. 721–723) and might be driving our main results. Consequently, we re-run Kim & Weisbach regressions identifying firms in those two industries. We create an indicator variable equal to one for firms in the Energy and Materials sectors, and we include interaction terms with the main sources of funding, as in Equation 7. This strategy allows us to capture the results shown below in Tables 9 and 10.

Separating these two sectors from the rest of the sample does not seem to preclude the main results discussed above. For example, when we analyze the results for the general sample (without energy and materials apart) bond proceeds continue to be the source most strongly associated with cash accumulation, interest income and capital expenditures (Table 9). Moreover, no clear signs of short-term debt reduction arise, similar to findings previously discussed. As regards energy and material firms, we also find that bond proceeds are more strongly related to cash accumulation, although not to interest income and fixed investment.

When comparing the use of proceeds in different currencies (Table 10), the sample excluding energy and materials firms also continues to show results consistent with those presented for the whole sample. We do not find large differences in the proportion of proceeds in local and foreign currency that are accumulated as cash or used to finance capital expenditures, and local currency proceeds are again more strongly correlated with interest income after the GFC. We barely see minimum differences in the use of local and foreign proceeds to reduce short-term debt.

For firms in the energy and materials industries, on the other hand, we observe mild divergence from this general pattern of uses of funds. Cash accumulation and interest income are both similarly associated to local and foreign currency proceeds. Additionally, although we do observe mild differences in the way firms from these two sectors combine bond proceeds in different currencies for capital expenditures and short-term debt reductions, these do not define clear-cut patterns.

[TABLE 9]

[TABLE 10]

8. Discussion and conclusion

In this article we have analyzed the bond issuances of Latin American firms during the 2000-2022 period. While Asian firms have been responsible for the largest proportion of NFC debt growth, Latin American firms have been the second most active in bond issuances, especially those in foreign currency. Considering that corporate debt from EMEs has been the main driver of debt expansion after the GFC, its relevance for local and global financial markets' stability, and therefore Central Bank practice, is evident. We contribute to the analysis of this phenomenon by focusing specifically on the way firms allocate funds obtained through such behaviour.

The prevailing explanation for bond issuance in foreign currency has been centred around speculation through carry-trading. According to this narrative, firms issue foreign-denominated bonds in low-interest rate countries with the intention of investing the proceeds in high-interest rate financial instruments or lending it locally. Moreover, these studies have been focused on EMEs in general without any of them concentrating on Latin America in particular. Our paper challenges the carry-trading hypothesis both by innovating *methodologically* to measure such activity and *analytically* by considering an alternative use for bonds proceeds.

In terms of our findings, in this article we show that bond proceeds are more strongly associated with cash accumulation when compared to other sources of finance, as found by relevant studies in the literature (Abraham et al., 2021; Bruno & Shin, 2017; Calomiris et al., 2022). However, they are also more strongly associated with capital expenditures, weakening the case for "speculative motives" driving bond issuance activity.

More specifically, we do not find consistent evidence of carry-trading being the main use of proceeds from foreign currency debt issuance. First, we do not find a systematically stronger association of foreign currency bond proceeds with cash accumulation, when compared to local currency bond proceeds. This higher association of foreign currency proceeds to cash accumulation is only found for firms with larger issuances (equal to or above USD 500 million), during the 2009-2014 period of intense bond activity by firms from the region. Second, and more importantly, we find that local currency bond proceeds are the ones more strongly associated with financial income. Issuances in foreign currency, on the other hand, have no positive effect on interest income. Therefore, we do not find any evidence of a use of foreign-denominated bonds to engage in carry-trading. If anything, firms' engagement in financial speculative activities seems to be centrally financed through local currency-denominated bonds.

The evidence from the descriptive statistics suggests that, during the corporate bond bonanza experienced after the GFC, new issuances in foreign currency came with reduced coupons and extended maturities. Our econometric results validate this idea. We find that during the period 2009-2014 (and 2009-2019 as well), foreign currency proceeds were associated with short-term debt reduction. Overall, our results tend to go more in line with firms using the beneficial international context after as a precautionary measure, saving for future uncertainties, and improving their liability structure.

Our results have policy implications for Central Banks in Latin America. First, in relation to foreign-denominated debt. This type of debt is associated to multiple types of risk such as operational performance (IMF, 2022; Kalemli-Özcan et al., 2022), insolvency (Asis et al., 2021; Chui et al., 2018), rollover (Çelik et al., 2019) and currency (Alfaro et al., 2019). While all of them merit attention, currency risk is particularly relevant for Central Banks. Even though our results go against a purely speculative use of foreign proceeds for carry-trading and point towards an improvement of the financial position of nonfinancial firms, this does not mean that corporate bond issuances may be neglected from a regulatory perspective. Quite on the contrary, the accelerated growth in foreign denominated debt can introduce a systemic risk if firms' ability to repay their debt is impaired amid foreign exchange depreciation. Moreover, these larger external liabilities may put pressure on Central Bank reserves in a moment of distress. An example of this is Argentina during the COVID-19 pandemic, where the corporate sector sought to cancel its external debt, thereby adding considerable pressure on a strained foreign exchange market. This situation compelled the government to mandate a renegotiation of corporate foreign debt.

Second, in terms of our specific findings, while we have shown that some of the foreign-denominated borrowing has been utilized to enhance the financial standing of the firm by substituting short-term borrowing with long-term debt, there exists a potential downside. This concern may arise particularly in cases where firms opt to replace short-term debt denominated in local currency, with foreign-denominated long-term debt. Regrettably, our dataset does not enable us to discern this distinction. Still, more research should be done in this direction because what is a logical decision from the point of view of the firm may have negative macroeconomic consequences.

Third, we have also demonstrated that debt denominated in foreign currency is more attractive than local-currency alternatives regarding coupon rates and maturity. This illuminates an area of potential policy intervention aimed at increasing the proportion of local currency denominated debt, further supporting the de-dollarization of credit observed in several countries from the region. Improving the conditions of local currency instruments might be targeted by authorities as a mean for diminishing the overall risks associated with corporate debt.

Fourth, in this article we have adopted a nationality-based perspective, rather than a resident-based one for the capital flows under consideration as many issuances occur through foreign subsidiaries of Latin American firms. Traditional capital control measures focus on portfolio flows, but intercompany loans, categorized as foreign direct investment, often bypass regulatory controls (de Camino et al., 2023). Thus, from a macroprudential perspective, the emergence of corporations as global financial intermediaries during the recent expansionary phase of the global financial cycle, raises questions about the necessity of implementing specific capital flow management measures directed at this sector. In particular, by creating buffers at the level of large borrowers to prevent excessive vulnerabilities in the financial systems at large (Arakelyan et al., 2023).

Fifth and finally, just as the accumulation of corporate debt drew significant attention from scholars and officials, its decline now demands equally rigorous scrutiny. Focusing on developed economies, Ottonello & Winberry (2020) and Cloyne et al. (2023) identify the financial conditions of firms—such as leverage and liquidity demand—as critical determinants of the impacts of monetary tightening. The IMF (2022) emphasizes the need to consider how these financial variables are distributed among firms. Our paper aligns with this perspective, offering granular insights that help assess the potential spillover risks of this contraction to peripheral economies.

References

Abraham, F., Cortina, J. J., & Schmukler, S. L. (2021). The rise of domestic capital markets for corporate financing: Lessons from East Asia. *Journal of Banking & Finance*, *122*, 105987. https://doi.org/10.1016/j.jbankfin.2020.105987

Abraham, F., Cortina Lorente, J. J., & Schmukler, S. L. (2020). Growth of global corporate debt: Main facts and policy challenges. *World Bank Policy Research Working Paper*, *9394*. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3690997

Acharya, V. V., & Vij, S. (2020). *Foreign currency borrowing of corporations as carry trades: Evidence from india*. National Bureau of Economic Research.

Adrian, T., Fleming, M., Shachar, O., & Vogt, E. (2017). Market Liquidity After the Financial Crisis. *Annual Review of Financial Economics*, *9*(1), 43–83. https://doi.org/10.1146/annurev-financial-110716-032325

Aldasoro, I., & Ehlers, T. (2018). Global liquidity: Changing instrument and currency patterns. *BIS Quarterly Review September*. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3288084

Alfaro, L., Asis, G., Chari, A., & Panizza, U. (2019). Corporate debt, firm size and financial fragility in emerging markets. *Journal of International Economics*, *118*, 1–19. https://doi.org/10.1016/j.jinteco.2019.01.002

Alter, A., & Elekdag, S. (2020). Emerging market corporate leverage and global financial conditions. *Journal of Corporate Finance*, *62*, 101590. https://doi.org/10.1016/j.jcorpfin.2020.101590

Asis, G., Chari, A., & Haas, A. (2021). In search of distress risk in emerging markets. *Journal of International Economics*, *131*, 103463. https://doi.org/10.1016/j.jinteco.2021.103463

Avdjiev, S., Chui, M. K., & Shin, H. S. (2014). Non-financial corporations from emerging market economies and capital flows. *BIS Quarterly Review*, 67–77.

Banco Central do Brasil. (2020). *Relatório de Economia Bancária*.

Barajas, M. A., Choi, W. G., Gan, K. Z., Guérin, P., Mann, S., Wang, M., & Xu, Y. (2021). Loose financial conditions, rising leverage, and risks to macro-financial stability. In *Global Financial Stabillity Report* (pp. 35–50). International Monetary Fund.

Bates, T. W., Kahle, K. M., & Stulz, R. M. (2009). Why do US firms hold so much more cash than they used to? *The Journal of Finance*, *64*(5), 1985–2021. https://doi.org/10.1111/j.1540-6261.2009.01492.x

Bruno, V., & Shin, H. S. (2017). Global dollar credit and carry trades: A firm-level analysis. *The Review of Financial Studies*, *30*(3), 703–749. https://doi.org/10.1093/rfs/hhw099

Caballero, J., Panizza, U., & Powell, A. (2016). The second wave of global liquidity: Why are firms acting like financial intermediaries? *IDB Working Paper*, *641*.

Calomiris, C. W., Larrain, M., Schmukler, S. L., & Williams, T. (2022). Large international corporate bonds: Investor behavior and firm responses. *Journal of International Economics*, *137*, 103624. https://doi.org/10.1016/j.jinteco.2022.103624

Çelik, S., Demirtaş, G., & Isaksson, M. (2019). *Corporate Bond Markets in a Time of Unconventional Monetary Policy* (OECD Capital Market Series). OECD. https://www.oecd-ilibrary.org/governance/corporate-bonds-bondholders-and-corporate-governance_5js69lj4hvnw-en

Chui, M., Kuruc, E., & Turner, P. (2018). Leverage and currency mismatches: Non-financial companies in the emerging markets. *The World Economy*, *41*(12), 3269–3287. https://doi.org/10.1111/twec.12627

Cortina, J. J., Didier, T., & Schmukler, S. L. (2018). Corporate debt maturity in developing countries: Sources of long and short-termism. *The World Economy*, *41*(12), 3288–3316. https://doi.org/10.1111/twec.12632

De Gregorio, J., & Jara, M. (2024). The boom of corporate debt in emerging markets: Carry trade or save to invest? *Journal of International Economics*, *148*, 103844. https://doi.org/10.1016/j.jinteco.2023.103844

Di Maggio, M., & Kacperczyk, M. (2017). The unintended consequences of the zero lower bound policy. *Journal of Financial Economics*, *123*(1), 59–80.

ECLAC. (2019). *Estudio Económico de América Latina y el Caribe 2019*.

ECLAC. (2023). *Capital flows to Latin America and the Caribbean 2023 year-in-review and early 2024 developments*.

Erel, I., Julio, B., Kim, W., & Weisbach, M. S. (2012). Macroeconomic Conditions and Capital Raising. *The Review of Financial Studies*, *25*(2), 341–376. https://doi.org/10.1093/rfs/hhr085

Fernandez, R., Bortz, P., & Zeolla, N. (2018). The politics of quantitative easing. *SOMO Amsterdam*. https://www.academia.edu/download/57257789/Report-Quantitive-Easing-_final.pdf

Hardy, B., & Saffie, F. (2019). From carry trades to trade credit: Financial intermediation by non-financial corporations. *BIS Working Papers*, *773*. https://www.bis.org/publ/work773.htm

Hardy, B., & von Peter, G. (2023). Global liquidity: A new phase? *BIS Quarterly Review*.

IMF. (2015). Corporate Leverage in Emerging Markets. A Concern? In *Global Financial Stability Report* (pp. 83–114). International Monetary Fund.

IMF. (2022). Private Sector Debt and The Global Recovery. In *World Economic Outlook*.

Kalemli-Özcan, Ş., Laeven, L., & Moreno, D. (2022). Debt Overhang, Rollover Risk, and Corporate Investment: Evidence from the European Crisis. *Journal of the European Economic Association*, *20*(6), 2353–2395. https://doi.org/10.1093/jeea/jvac018

Kaltenbrunner, A., Karacimen, E., & Rabinovich, J. (2024). The changing financial practises of Brazilian and Turkish firms under financial subordination, a mixed-methods analysis. *Socio-Economic Review, Forthcoming*.

Kim, W., & Weisbach, M. S. (2008). Motivations for public equity offers: An international perspective. *Journal of Financial Economics*, *87*(2), 281–307.

Lo Duca, M., Nicoletti, G., & Martinez, A. V. (2016). Global corporate bond issuance: What role for US quantitative easing? *Journal of International Money and Finance*, *60*, 114–150.

McCauley, R. N., Bénétrix, A. S., McGuire, P. M., & von Peter, G. (2019). Financial deglobalisation in banking? *Journal of International Money and Finance*, *94*, 116–131.

McCauley, R. N., McGuire, P., & Sushko, V. (2015). Dollar credit to emerging market economies. *BIS Quarterly Review December*.

Noss, J., & Toffano, P. (2016). Estimating the impact of changes in aggregate bank capital requirements on lending and growth during an upswing. *Journal of Banking & Finance*, *62*, 15–27.

Rabinovich, J., & Pérez Artica, R. (2022). Cash holdings and corporate financialization: Evidence from listed Latin American firms. *Competition & Change*, 10245294221117275. https://doi.org/10.1177/10245294221117275

Roulet, C. (2018). Basel III: Effects of capital and liquidity regulations on European bank lending. *Journal of Economics and Business*, *95*, 26–46.

Shin, H. S. (2012). Global banking glut and loan risk premium. *IMF Economic Review*, *60*(2), 155–192.

Shin, H. S. (2014). The second phase of global liquidity and its impact on emerging economies. In K. Chung, S. Kim, H. Park, C. Choi, & H. S. Shin (Eds.), *Volatile Capital Flows in Korea* (pp. 247–257). Springer.

Shin, H. S., & Zhao, L. (2013). *Firms as surrogate intermediaries: Evidence from emerging economies* [Manuscript]. Princeton University.

Slovik, P., & Cournède, B. (2011). *Macroeconomic impact of Basel III.* https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2650033

Figures

Figure 1. Gross debt issuances by Latin American firms, 2000-2022
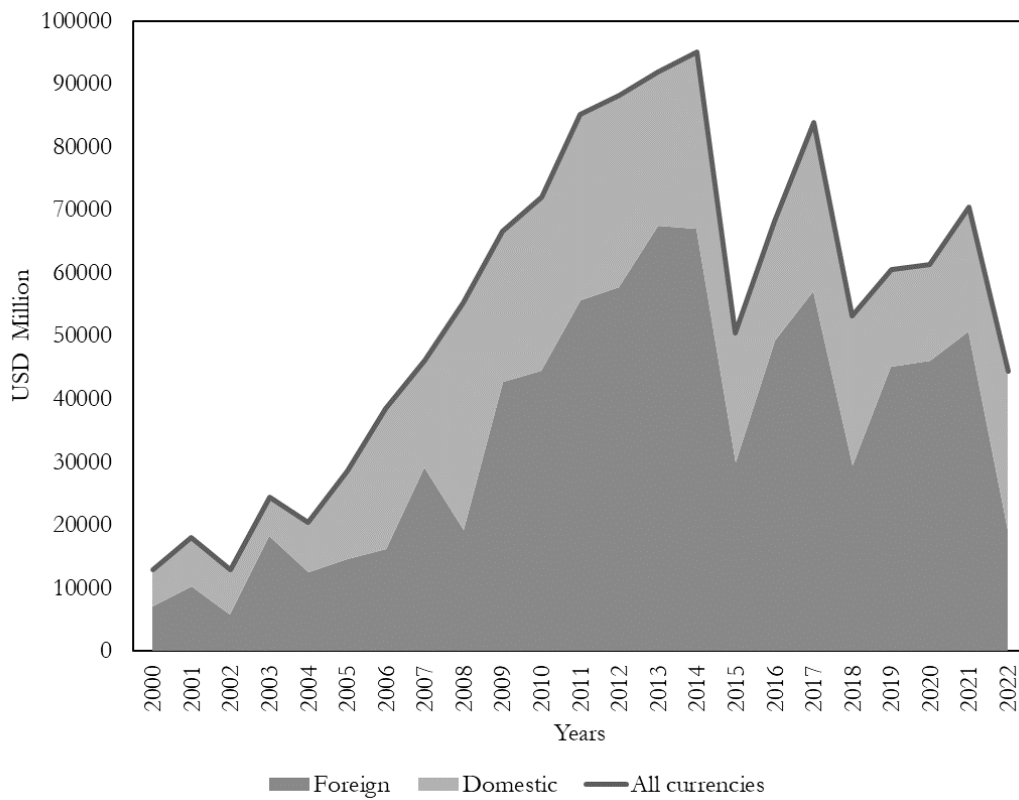
Figure 1 shows the trajectories of Total Gross Debt Issuances made by Latin American firms, as well as Gross Debt Issuances denominated in Local and Foreign currencies over the 2000-2022 period. Source: Authors' own elaboration based on Workspace-Refinitiv.

Figure 2. Histogram for LAC NFC debt issuances in foreign currency in 2000 to 2022
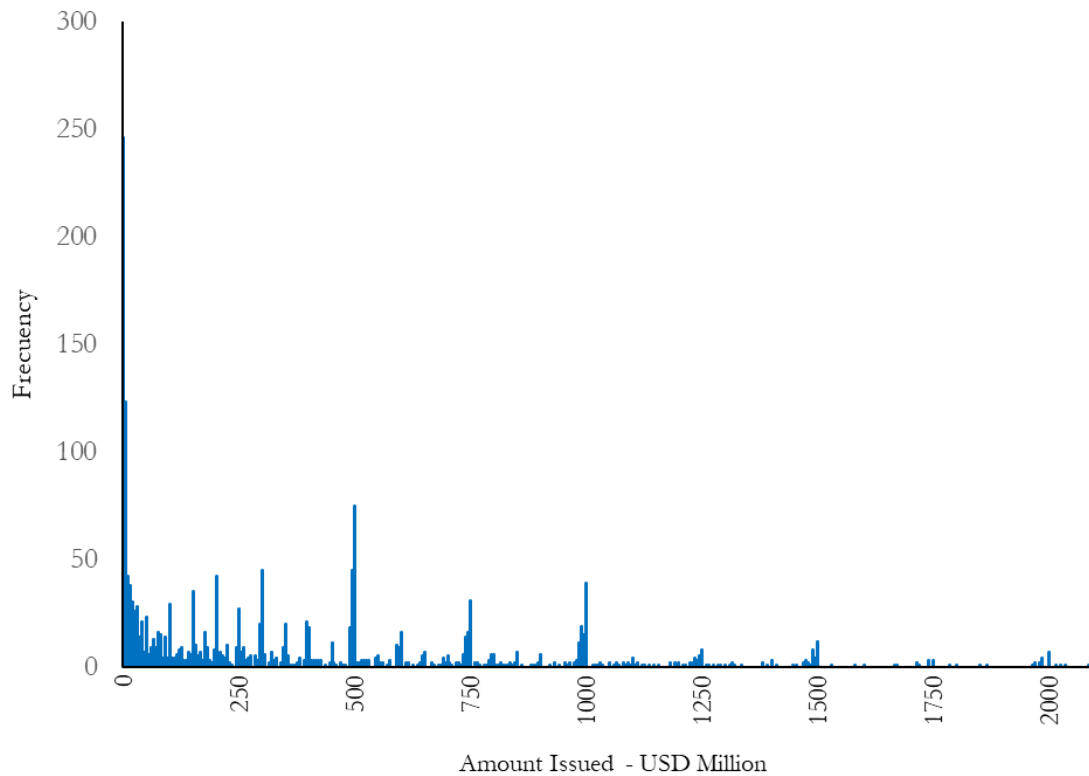
Figure 2 shows the histogram for the distribution of amount of issuance, for issuances denominated in foreign currency made by Latin American firms in 2000-2022. For illustrative purposes issuances larger than 2100 million dollars are excluded. Source: authors' own elaboration based on Workspace-Refinitiv.

Tables

Table 1. International debt securities outstanding

		2000-Q4	2008-Q4	2014-Q4	2022-Q4	2008/ 2000	2014/ 2008	2022/ 2014
		mill USD	mill USD	mill USD	mill USD	var %	var %	var %
All countries	All issuers	5,050,747	18,117,441	20,127,248	25,212,325	259%	11%	25%
	Non-financial corporations	1,422,136	3,040,431	5,162,959	7,406,194	114%	70%	43%
	General government	700,550	1,238,717	1,622,557	2,382,091	77%	31%	47%
	Financial corporations	2,928,061	13,838,293	13,341,732	15,424,040	373%	-4%	16%
Developed countries	All issuers	4,406,057	16,790,821	17,135,189	20,114,080	281%	2%	17%
	Non-financial corporations	1,249,530	2,598,630	3,947,798	5,376,827	108%	52%	36%
	General government	346,408	764,382	838,230	777,656	121%	10%	-7%
	Financial corporations	2,810,119	13,427,809	12,349,161	13,959,597	378%	-8%	13%
Emerging market and developing economies	All issuers	644,689	1,326,620	2,992,058	5,098,244	106%	126%	70%
	Non-financial corporations	172,607	441,801	1,215,161	2,029,367	156%	175%	67%
	General government	354,141	474,334	784,327	1,604,435	34%	65%	105%
	Financial corporations	117,941	410,485	992,570	1,464,442	248%	142%	48%
Developing Asia and Pacific	All issuers	191,038	468,062	1,223,091	2,408,670	145%	161%	97%
	Non-financial corporations	97,485	222,108	598,709	1,185,575	128%	170%	98%
	General government	27,651	52,258	110,214	246,640	89%	111%	124%
	Financial corporations	65,902	193,696	514,168	976,455	194%	165%	90%
Developing Latin America and Caribbean	All issuers	322,906	363,602	806,490	1,103,447	13%	122%	37%
	Non-financial corporations	59,158	96,739	373,946	478,250	64%	287%	28%
	General government	235,501	218,018	289,688	508,326	-7%	33%	75%
	Financial corporations	28,247	48,845	142,856	116,871	73%	192%	-18%

Table 1 shows the total amount of international debt outstanding by region and sector at the end of years 2000, 2008, 2014 and 2022. Data reported for each year corresponds to the fourth quarter. Note: all issuers exclude International Institutions and Central Banks. Source: Authors' own elaboration based on BIS International Securities Database.

Table 2. Descriptive statistics for LAC debt issuances 2000-2022, by nationality and currency of issuance.

	Value (mill USD)		Observations		Average per issuance (mill USD)	
	Domestic currency	Foreign currency	Domestic currency	Foreign currency	Domestic currency	Foreign currency
Argentina	4,041	24,441	231	273	17.49	89.53
Brazil	290,372	298,725	2,182	485	133.08	615.93
Chile	24,990	64,529	269	157	92.90	411.01
Colombia	9,172	33,743	115	73	79.76	462.24
Mexico	118,360	316,540	898	521	131.80	607.56
Peru	1,164	12,959	45	135	25.87	95.99
Uruguay		1,587		15		105.81
Venezuela	111	35,764	12	21	9.23	1,703.05
Others	6,000	5,978	613	198	26.64	57.45
Total LAC	**454,209**	**794,266**	**4,365**	**1,878**	**48.33**	**316.84**

Table 2 shows the total amount, total observations and average amount per issuance of debt issuances by Latin American firms, by issuer's nationality and currency of issuance. Source: authors' own elaboration based on Workspace-Refinitiv.

Table 3. Coupon and Maturity for LAC debt issuances 2000 to 2022. By currency of issuance.

		(1) 2000-2008 median	(2) 2009-2014 median	(3) 2015-2022 median	(2)-(1)/(1)*100 second vs first change pp.	(3)-(2)/(2)*100 third vs second change pp.	(3)-(1)/(1)*100 overall change pp.
Coupon	Issuer in Foreign Curre	7.84	6.27	5.81	-1.57	-0.46	-2.02
	Issuer in Local Curren	7.92	6.96	8.08	-0.97	1.12	0.16
Maturity	Issuer in Foreign Curre	7.12	9.67	7.25	2.55	-2.41	0.13
	Issuer in Local Curren	4.60	5.09	3.95	0.49	-1.14	-0.65
Short-Term Debt/Long Term Debt*100	Issuer in Foreign Curre	14.23	4.45	3.59	-9.78	-0.86	-10.64
	Issuer in Local Curren	17.97	7.12	5.04	-10.85	-2.08	-12.93

Table 3 shows the median for coupon, maturity and ratio of Short-Term Debt to Long-Term Debt across our sample of Latin American firms' bond issuances for the following three periods: 2000-2008, 2009-2014 and 2015-2022. Coupon and maturity data are provided by debt issuances reports from Eikon-Refinitiv, and Short- and Long- Term Debt data are extracted from balance sheet information.

Table 4. Self-declared uses of bond proceeds

Currency	Refinance/ Reduce debt	Capital Expenditures	Working Capital	Acquisitions	Stock Repurchase	Green Bond Purposes	Construction	Acquisition of Securities	Other
Foreign	66.60%	18.47%	4.33%	2.25%	0.96%	4.55%	0.00%	0.79%	2.05%
Local	51.35%	18.40%	13.63%	3.51%	0.00%	5.15%	1.69%	0.00%	6.26%

Table 4 reports the self-declared allocation of bond proceeds by Latin American firms issuing bonds in 2000-2022, by currency of issuance. Source: Authors' own elaboration based on Workspace-Refinitiv.

Table 5. Use of bond proceeds by sub-periods. Regression results for Equation 3

			2000-2008				2009-2014				2015-2022		
Variable	time	N	Cum. Bond proceeds	Cum. Other Sources	p-value $\beta_1 = \beta_2$	N	Cum. Bond proceeds	Cum. Other Sources	p-value $\beta_1 = \beta_2$	N	Cum. Bond proceeds	Cum. Other Sources	p-value $\beta_1 = \beta_2$
Cash & ST Inv.	1	910	.1698***	.0680***	**0.063**	1433	.1592***	.0498**	**0.094**	2789	.2606***	.0975***	**0.000**
Cash & ST Inv.	2	892	.1921***	.0731***	**0.057**	1412	.1114***	.0526***	0.111	2343	.2645***	.0740***	**0.000**
Cash & ST Inv.	3	877	.2495***	.0786***	**0.001**	1393	.1170***	.0565***	**0.044**	1871	.2988***	.0847***	**0.000**
Cash & ST Inv.	4	860	.2439***	.0895***	**0.000**	1376	.1249***	.0529***	**0.000**	1454	.2733***	.1319***	**0.001**
Cap. Expend.	1	918	.2460***	.1903***	0.169	1449	.1679***	.1713***	0.868	2963	.1685***	.1601***	0.536
Cap. Expend.	2	906	.3236***	.2103***	**0.022**	1429	.2526***	.2457***	0.851	2448	.2398***	.1930***	**0.026**
Cap. Expend.	3	890	.3788***	.2639***	**0.024**	1407	.3045***	.2796***	0.571	1973	.3068***	.2329***	**0.003**
Cap. Expend.	4	870	.3848***	.3192***	0.219	1387	.3544***	.3027***	0.233	1547	.3662***	.2606***	**0.001**
Short-Term Debt	1	471	-.111**	-.059**	0.216	359	.0907	.0500	0.582	948	.0449	.0102	0.295
Short-Term Debt	2	419	-.081	-.032	0.311	311	.0945	.0485	0.487	718	.0857*	.0351**	0.237
Short-Term Debt	3	373	-.032	-.032	0.991	283	.0624	-.034	0.204	518	.0581	-.010	0.271
Short-Term Debt	4	319	.0381	-.031	0.285	264	.0570	.0104	0.594	367	.1931*	.0333	**0.044**
Interest Inc.	1	918	.0096	.0123**	0.692	1449	.0134**	-.003	**0.008**	2963	.0210***	.0143***	**0.043**
Interest Inc.	2	906	.0231*	.0199***	0.802	1429	.0158*	-.000	**0.055**	2448	.0317***	.0231***	0.119
Interest Inc.	3	890	.0506***	.0290***	0.132	1407	.0103	.0068	0.642	1973	.0455***	.0292***	**0.033**
Interest Inc.	4	870	.0607***	.0398***	0.192	1387	.0119	.0118**	0.988	1547	.0610***	.0330***	**0.017**

Table 5 shows the results of estimating Equation 3 across the three sub-periods, for the following potential uses of funds: Cash & Short-Term Investments, Capital Expenditures, Short-Term Debt reduction, and Interest Income. We perform 4 consecutive regressions for each dependent variable, using the cumulative change (in the case of balance sheet variables) or amount (for income and cash flow statements variables), against the cumulative amount of bond proceeds and other sources of funds from 1 to 4 years after the first bond issuance. All variables are in log-transformed as explained in equations 1 to 5. * indicates significance at 10%, ** significance at 5% and *** significance at 1%.

Table 6. Use of bond proceeds by currency and sub-periods. Regression results for Equation 6

Variable	time		2000-2008					2009-2014					2015-2022			
		N	Cum. Local C. proceeds	Cum. Foreign C. proceeds	Cum. Other Sources	p-value $\beta_1 = \beta_2$	N	Cum. Local C. proceeds	Cum. Foreign C. proceeds	Cum. Other Sources	p-value $\beta_1 = \beta_2$	N	Cum. Local C. proceeds	Cum. Foreign C. proceeds	Cum. Other Sources	p-value $\beta_1 = \beta_2$
Cash & ST Inv.	1	910	.171**	.1686**	.0697***	0.980	1433	.1253*	.1155***	.0049	0.900	2788	.2933***	.1417**	.0952***	**0.024**
Cash & ST Inv.	2	892	.1447***	.2515**	.0446**	0.246	1412	.088**	.1286***	.0275***	0.524	2343	.2984***	.0865***	.0641***	**0.000**
Cash & ST Inv.	3	877	.2518***	.2135***	.0408***	0.697	1393	.0977***	.101**	.0339***	0.955	1871	.307***	.1921***	.0801***	0.118
Cash & ST Inv.	4	859	.2603***	.1662***	.0501***	0.277	1375	.1073***	.0942**	.038***	0.774	1454	.2822***	.2057***	.129***	0.341
Cap. Expend.	1	918	.2496***	.1496***	.1771***	**0.024**	1449	.0872***	.1384**	.0757***	0.377	2962	.133***	.1307***	.1295***	0.913
Cap. Expend.	2	906	.3091***	.1923***	.1346***	0.163	1429	.1761***	.2581***	.1582***	0.253	2448	.2012***	.1896***	.1677***	0.747
Cap. Expend.	3	890	.3339***	.3405***	.1746***	0.944	1407	.2392***	.2194***	.1989***	0.824	1973	.2289***	.2594***	.2036***	0.484
Cap. Expend.	4	869	.3146***	.411***	.2094***	0.300	1386	.3136***	.2211***	.2427***	0.309	1547	.2779***	.337***	.2407***	0.307
Short-Term Debt	1	471	-.1422*	-.0814**	-.059**	0.401	359	.0567	-.0636	.0367	0.507	948	.0277	.0492	.0036	0.697
Short-Term Debt	2	419	-.1552**	.0106	-.0283	**0.093**	311	.0618	-.2173*	.0173	**0.074**	718	.0712	.0607	.0318**	0.885
Short-Term Debt	3	373	-.1099	.0304	-.0342	0.255	283	.0873	-.2025**	-.012	**0.010**	518	.0246	.1012	-.0126	0.556
Short-Term Debt	4	319	-.0313	.0893*	-.0366	0.403	263	.074	-.081	.0277	0.244	367	.1283*	-.0164	.0174	0.224
Interest Inc.	1	918	.0178	.0019	.0169**	0.258	1449	.0197***	-.0021	.0000	**0.030**	2962	.0382***	.0104	.0196***	**0.001**
Interest Inc.	2	906	.0391**	.0215	.018**	0.503	1429	.022**	-.0112	.0029	**0.009**	2448	.0589***	.0116	.0295***	**0.000**
Interest Inc.	3	890	.087***	.004	.0199***	**0.017**	1407	.0163	-.0132**	.0078**	**0.013**	1973	.0747***	.0241	.0357***	**0.005**
Interest Inc.	4	869	.0979***	.0016	.0229***	**0.016**	1386	.0175*	-.0078	.0119***	**0.049**	1547	.0998***	.0235	.038***	**0.001**

Table 6 shows the results of estimating Equation 6 across the three sub-periods, for the following potential uses of funds: Cash & Short-Term Investments, Capital Expenditures, Short-Term Debt reduction, and Interest Income. We perform 4 consecutive regressions for each dependent variable, using the cumulative change (in the case of balance sheet variables) or amount (for income and cash flow statements variables), against the cumulative amount of bond proceeds and other sources of funds from 1 to 4 years after the first bond issuance. All variables are in log-transformed as explained in equations 1 to 5. For each sub-period, the last column shows the p-value of a Wald test evaluating whether Local and Foreign currency bond proceeds contribute equally to the each alternative use. * indicates significance at 10%, ** significance at 5% and *** significance at 1%.

Table 7. Use of bond proceeds by currency and sub-periods. Regression results for Equation 7

Variable	time	2000-2008							2009-2014							2015-2022						
		N	β1 Cum. Local C. proceeds	β2 Cum. Foreign C. proceeds	β3 Large*Cum. Local C. proceeds	β4 Large*Cum. Foreign C. proceeds	p-value β1 = β2	p-value β1 + β3 = β2 + β4	N	β1 Cum. Local C. proceeds	β2 Cum. Foreign C. proceeds	β3 Large*Cum. Local C. proceeds	β4 Large*Cum. Foreign C. proceeds	p-value β1 = β2	p-value β1 + β3 = β2 + β4	N	β1 Cum. Local C. proceeds	β2 Cum. Foreign C. proceeds	β3 Large*Cum. Local C. proceeds	β4 Large*Cum. Foreign C. proceeds	p-value β1 = β2	p-value β1 + β3 = β2 + β4
Cash & ST Inv.	1	910	.1599**	.1373*	.0751	.1502	0.823	0.723	1433	.1988***	.0872*	-.1757***	.1551**	0.091	**0.001**	2788	.2736***	.1153***	.4329**	.1124	0.005	**0.044**
Cash & ST Inv.	2	892	.115**	.2644**	.1834*	-.0757	0.180	0.402	1412	.1167***	.1128	-.0626	.0536	0.957	0.296	2343	.2951***	.0876*	.1062	.0117	0.000	**0.005**
Cash & ST Inv.	3	877	.2117***	.2094**	.1824	.0061	0.984	0.185	1393	.1233***	.0369	-.0837	.1983**	0.103	**0.004**	1871	.3056***	.1554**	.0147	.0968	0.078	0.638
Cash & ST Inv.	4	859	.2141***	.1571***	.1888	.0132	0.580	**0.067**	1375	.1127***	.0329	.0046	.1888***	0.110	**0.028**	1454	.2757***	.2022***	.1101	.0084	0.452	0.129
Cap. Expend	1	918	.2544***	.1603***	-.0865	-.0778	0.045	0.286	1449	.0893***	.096	.0894**	.1071	0.929	0.795	2962	.1282***	.1229***	.0716	.02	0.811	0.426
Cap. Expend	2	906	.3205***	.1936***	-.1371	-.0099	0.199	0.998	1429	.1801***	.1773**	.0356	.1126	0.976	0.498	2448	.1947***	.1888***	.0606	.0131	0.892	0.532
Cap. Expend	3	890	.3525***	.3696***	-.149	-.1411	0.887	0.761	1407	.2515***	.1333**	-.0089	.1546	0.233	0.619	1973	.2257***	.2793***	-.0043	-.0557	0.349	0.983
Cap. Expend	4	869	.317***	.4356***	-.0536	-.1444	0.333	0.774	1386	.3316***	.118**	-.0469	.208**	0.041	0.624	1547	.2756***	.3699***	.0207	-.1093	0.224	0.696
Short-Term Debt	1	471	-.1458*	-.0899**	.0268	.0454	0.460	0.355	359	-.0605	-.1057	.2542	-.0696	0.830	**0.051**	948	.0238	.0611	-.001		0.749	0.879
Short-Term Debt	2	419	-.1627**	-.0004	.0939	.1669	0.120	0.459	311	.0112	-.2061	.1229	.0858	0.279	**0.094**	718	.0736*	.0166	-.3426*	.2726**	0.247	**0.038**
Short-Term Debt	3	373	-.1282	.0188	.1925	.0769	0.258	0.925	283	.026	-.177**	.131	-.0346	0.207	**0.021**	518	.0273	-.0298	-.2733**	.437***	0.453	**0.000**
Short-Term Debt	4	319	-.065	.1069**	.351*	-.2839**	0.265	**0.035**	263	-.0506	-.0528	.2494	-.092	0.990	**0.070**	367	.1142	.0634	.1593	-.2466	0.732	**0.073**
Interest Inc.	1	918	.0071	.006	.1396**	-.0531**	0.930	**0.002**	1449	.0159	-.0037	.0231**	.0072	0.093	**0.024**	2962	.0371***	.0129	.0445**	-.0109	0.013	**0.000**
Interest Inc.	2	906	.0067	.0423	.2144***	-.1358***	0.149	**0.000**	1429	.0205	-.0216***	.0196	.0225	0.003	**0.071**	2448	.0556***	.0115	.0793**	-.0036	0.005	**0.000**
Interest Inc.	3	890	.042	.0288	.2139***	-.1222***	0.701	**0.000**	1407	.0149	-.0211***	.0222	.0141	0.013	**0.079**	1973	.0714***	.0112	.0877**	.0149	0.003	**0.000**
Interest Inc.	4	869	.0427	.0342	.2293***	-.1511***	0.823	**0.000**	1386	.0165	-.0186**	.0197	.0256	0.029	0.240	1547	.0956***	.0041	.0993**	.0234	0.000	**0.000**

Table 7 shows the results of estimating Equation 7 across the three sub-periods, for the following potential uses of funds: Cash & Short-Term Investments, Capital Expenditures, Short-Term Debt reduction, and Interest Income. We perform 4 consecutive regressions for each dependent variable, using the cumulative change (in the case of balance sheet variables) or amount (for income and cash flow statements variables), against the cumulative amount of bond proceeds denominated in local currency, bond proceeds denominated in foreign currency, and other sources of funds from 1 to 4 years after the first bond issuance. All variables are log-transformed as explained in equations 1 to 5. For each sub-period, the last two columns show the p-value of a Wald test evaluating whether bond proceeds in local currency and bond proceeds in foreign currency contribute equally to each alternative use, both for firms without large issues made during the period (β1 = β2) and with large issues made during the period (β1 + β3 = β2 + β4). * indicates significance at 10%, ** significance at 5% and *** significance at 1%.

Table 8. Robustness Exercise 1. Results for the extended post-GFC period, 2009-2019

Variable	time	N	Panel A. Bond proceeds vs O. Sources β_1 Cum. Bond proceeds	β_2 Cum. Other Sources	p-value $\beta_1 = \beta_2$	N	Panel B. Local vs Foreign Curr. Proceeds β_1 Cum. Local C. proceeds	β_2 Cum. Foreign C. proceeds	β_3 Cum. Other Sources	p-value $\beta_1 = \beta_2$	N	Panel C. Larger issuances interaction β_1 Cum. Local C. proceeds	β_2 Cum. Foreign C. proceeds	β_3 Large*Cum. Local C. proceeds	β_4 Large*Cum. Foreign C. proceeds	p-value $\beta_1 = \beta_2$	p-value $\beta_1 + \beta_3 = \beta_2 + \beta_4$
Cash & ST Inv.	1	3195	.21***	.066***	**0.000**	3195	.2146***	.0875*	.0316	**0.052**	3195	.2345***	.0659*	-.1854***	.1048	**0.001**	0.315
Cash & ST Inv.	2	3135	.2306***	.0776***	**0.000**	3135	.2411***	.0848***	.054***	**0.000**	3135	.2545***	.086**	-.15*	.0293	**0.000**	0.896
Cash & ST Inv.	3	2971	.245***	.0798***	**0.000**	2971	.2475***	.1383***	.0608***	**0.056**	2971	.258***	.1088*	-.14*	.0981	**0.023**	0.318
Cash & ST Inv.	4	2830	.2096***	.0979***	**0.000**	2829	.1941***	.1634***	.0817***	0.614	2829	.1968***	.1339***	-.0061	.0831	0.403	0.643
Cap. Expend.	1	3240	.1741***	.1718***	0.856	3240	.1219***	.1281***	.1046***	0.787	3240	.1187***	.1137***	.0351	.0862**	0.841	0.220
Cap. Expend.	2	3173	.2523***	.23***	0.232	3173	.1962***	.2078***	.1767***	0.729	3173	.193***	.1922***	.0176	.0628	0.985	0.304
Cap. Expend.	3	3074	.3107***	.2572***	**0.016**	3074	.2334***	.2551***	.207***	0.600	3074	.2336***	.2456***	-.0136	-.004	0.827	0.644
Cap. Expend.	4	2934	.3587***	.2729***	**0.001**	2933	.2865***	.3004***	.2395***	0.788	2933	.2881***	.2794***	-.0174	.0078	0.902	0.721
Short-Term Debt	1	912	.0055	-.0165	0.593	912	-.0133	-.0381	-.0225	0.655	912	-.0596	-.0594	.3235***	.0103	0.997	**0.000**
Short-Term Debt	2	820	.0831*	.0376	0.257	820	.0623	-.0248	.0231	0.137	820	.0435	-.0076	.1366*	-.3046**	0.353	**0.002**
Short-Term Debt	3	728	.0485	-.0222	0.164	728	.0396	-.1038**	-.0202	**0.024**	728	.0158	-.0739*	.1432**	-.1283	0.187	**0.000**
Short-Term Debt	4	631	.14*	.0256	**0.078**	630	.0996	-.0216	.0164	0.188	630	.0605	.0438	.2065**	-.2247**	0.888	**0.000**
Interest Inc.	1	3240	.0212***	.0117***	**0.012**	3240	.0319***	.0102	.0113***	**0.013**	3240	.0289***	.0095	.028**	.0087	**0.061**	**0.000**
Interest Inc.	2	3173	.031***	.0194***	**0.024**	3173	.0512***	.0075	.0206***	**0.000**	3173	.0486***	.0081	.0219	.0039	**0.006**	**0.002**
Interest Inc.	3	3074	.0381***	.0244***	**0.037**	3074	.0585***	.0162	.0254***	**0.011**	3074	.0566***	.0052	.0163	.03	**0.004**	**0.004**
Interest Inc.	4	2934	.0461***	.0278***	**0.044**	2933	.0722***	.0126	.0281***	**0.003**	2933	.0709***	-.005	.0101	.0468	**0.000**	**0.026**

The first panel of Table 8 shows the results of estimating Equation 3 for the period 2009-2019, for the following potential uses of funds: Cash & Short-Term Investments, Capital Expenditures, Short-Term Debt reduction, and Interest Income. The second and third panels show the results of estimating Equation 6 and 7 respectively for the same period 2009-2019. All variables are in log-transformed as explained in equations 1 to 5. * indicates significance at 10%, ** significance at 5% and *** significance at 1%.

Table 9. Robustness Exercise 2. Energy and Materials Industries. Use of bond proceeds and other sources by sub-periods.

Variable	time	N	β_1 Cum. Bond proceeds	β_2 Cum. Other Sources	β_3 En&Mat *Cum. Bond Proceeds	β_4 En&Mat *Cum. Other Sources	p-value $\beta_1 = \beta_2$	p-value $\beta_1 + \beta_3 = \beta_2 + \beta_4$	N	β_1 Cum. Bond proceeds	β_2 Cum. Other Sources	β_3 En&Mat *Cum. Bond Proceeds	β_4 En&Mat *Cum. Other Sources	p-value $\beta_1 = \beta_2$	p-value $\beta_1 + \beta_3 = \beta_2 + \beta_4$	N	β_1 Cum. Bond proceeds	β_2 Cum. Other Sources	β_3 En&Mat *Cum. Bond Proceeds	β_4 En&Mat *Cum. Other Sources	p-value $\beta_1 = \beta_2$	p-value $\beta_1 + \beta_3 = \beta_2 + \beta_4$
			2000-2008							2009-2014							2015-2022					
Cash & ST Inv.	1	910	.1692**	.062***	-.0068	.0252	**0.091**	0.240	1433	.1942***	.0143	-.1027	.0574	**0.003**	0.815	2789	.2279***	.0756***	.2219***	.1471***	**0.001**	**0.000**
Cash & ST Inv.	2	892	.1926**	.0712***	-.0173	.0047	0.106	**0.043**	1412	.1429***	.0328*	-.097	.0282	**0.001**	0.786	2343	.2453***	.0661***	.0411	.0283	**0.000**	**0.001**
Cash & ST Inv.	3	877	.2493***	.0776***	-.0152	.0003	**0.008**	**0.001**	1393	.1586***	.045***	-.1068**	.011	**0.000**	0.914	1871	.3005***	.0878***	-.0441	-.0256	**0.000**	**0.004**
Cash & ST Inv.	4	860	.2341***	.0902***	.0243	-.0065	**0.004**	**0.000**	1376	.1473***	.0452***	-.0575	.008	**0.000**	**0.070**	1454	.3004***	.1335***	-.1329*	-.0255	**0.001**	0.191
Cap. Expend.	1	918	.2326***	.1791***	-.081	.0156	0.163	0.260	1449	.1638***	.1496***	-.0367	-.0004	0.572	0.278	2963	.1286***	.1138***	.0532**	.0918***	0.344	0.103
Cap. Expend.	2	906	.3212***	.2066***	-.0885	.0005	**0.020**	0.670	1429	.2212***	.179***	.0198	.0895***	0.358	0.324	2448	.1935***	.143***	.0993***	.1544***	**0.053**	0.611
Cap. Expend.	3	890	.3947***	.2329***	-.121*	.0465	**0.004**	0.927	1407	.2783***	.1885***	.0452	.1482***	0.146	0.614	1973	.2309***	.1723***	.1382***	.1796***	**0.036**	0.199
Cap. Expend.	4	870	.3956***	.2642***	-.0716	.0823*	**0.023**	0.725	1387	.3424***	.1984***	.0597	.1995***	**0.026**	0.863	1547	.2823***	.2044***	.1722***	.1871***	**0.019**	**0.034**
Short-Term Debt	1	471	-.1358**	-.0508	.147	-.039	**0.080**	0.395	359	-.0202	.1092	.0234	-.2828**	0.245	**0.000**	948	.051	-.0035	-.0297	.0291	0.177	0.913
Short-Term Debt	2	419	-.0931	-.0137	.0796	-.082*	0.183	0.298	311	-.0387	.0592	.149	-.096	0.337	**0.000**	718	.0843	.0327***	-.0212	.0036	0.360	0.561
Short-Term Debt	3	373	-.0494	-.0201	.0856	-.0369	0.660	0.430	283	-.148	-.0462	.3041**	.0256	0.302	**0.001**	518	.0679	-.012	-.0565	.0026	0.286	0.616
Short-Term Debt	4	319	.0299	-.0455	-.0567	.0622	0.365	0.628	264	-.2442**	.0194	.404***	-.0521	**0.006**	**0.001**	367	.1244	.0171	-.086	-.0249	0.113	0.568
Interest Inc.	1	918	.0178*	.0233***	-.0309*	-.0228**	0.552	0.325	1449	.0174*	-.0079**	-.0065	.0099*	**0.010**	0.460	2963	.0404***	.0201***	-.0319***	-.0089	**0.001**	0.408
Interest Inc.	2	906	.0383*	.0379***	-.0313	-.0339**	0.984	0.879	1429	.0254*	-.0018	-.0203	.0091	**0.033**	0.863	2448	.0608***	.0329***	-.0537***-	.0212***	**0.010**	0.374
Interest Inc.	3	890	.0671***	.0491***	-.0395	-.0416***	0.383	0.400	1407	.0185	.0042	-.0144	.0142	0.184	0.210	1973	.0791***	.0391***	-.0736***-	.0268***	**0.001**	0.360
Interest Inc.	4	870	.0766***	.0597***	-.0375	-.0429***	0.487	0.381	1387	.0216*	.0091	-.016	.0147	0.235	**0.081**	1547	.0963***	.0442***	-.0927***-	.0326***	**0.001**	0.575

Table 9 shows the results of estimating Equation 7 across the three sub-periods, for the following potential uses of funds: Cash & Short-Term Investments, Capital Expenditures, Short-Term Debt reduction, and Interest Income. We perform 4 consecutive regressions for each dependent variable, using the cumulative change (in the case of balance sheet variables) or amount (for income and cash flow statements variables), against the cumulative amount of bond proceeds and other sources of funds from 1 to 4 years after the first bond issuance. All variables are log-transformed as explained in equations 1 to 5. For each sub-period, the last two columns show the p-value of a Wald test evaluating whether bond proceeds and other sources of finance contribute equally to each alternative use, both for firms outside the energy and materials sectors ($\beta_1 = \beta_2$) and inside those two sectors during the period ($\beta_1 + \beta_3 = \beta_2 + \beta_4$). * indicates significance at 10%, ** significance at 5% and *** significance at 1%.

Table 10. Robustness Exercise 3. Energy and Materials Industries. Use of bond proceeds by currency and sub-periods.

			2000-2008							2009-2014							2015-2022					
			β_1	β_2	β_3	β_4	p-value	p-value		β_1	β_2	β_3	β_4	p-value	p-value		β_1	β_2	β_3	β_4	p-value	p-value
Variable	time	N	Cum. Local C. proceeds	Cum. Foreign C. proceeds	En&Mat *Cum. Local C. proceeds	En&Mat *Cum. Foreign C. proceeds	$\beta_1 = \beta_2$	$\beta_1 + \beta_3 = \beta_2 + \beta_4$	N	Cum. Local C. proceeds	Cum. Foreign C. proceeds	En&Mat *Cum. Local C. proceeds	En&Mat *Cum. Foreign C. proceeds	$\beta_1 = \beta_2$	$\beta_1 + \beta_3 = \beta_2 + \beta_4$	N	Cum. Local C. proceeds	Cum. Foreign C. proceeds	En&Mat *Cum. Local C. proceeds	En&Mat *Cum. Foreign C. proceeds	$\beta_1 = \beta_2$	$\beta_1 + \beta_3 = \beta_2 + \beta_4$
Cash & ST Inv.	1	910	.174**	.1566*	-.0538	.0423	0.874	0.401	1433	.1557**	.0614	-.1104	.1122	0.198	**0.246**	2788	.262***	.0535	.2241***	.2255**	**0.001**	**0.061**
Cash & ST Inv.	2	892	.1429***	.28**	-.0277	-.085	0.236	0.413	1412	.1466***	.1101**	-.156**	.0612	0.533	0.113	2343	.2931***	.0722**	.0421	.0474	**0.000**	**0.024**
Cash & ST Inv.	3	877	.2543***	.2119**	-.0776	.034	0.725	0.479	1393	.1522***	.1781***	-.1581***	-.1084*	0.626	**0.284**	1871	.3114***	.2293**	-.0261	-.0882	0.396	0.295
Cash & ST Inv.	4	859	.2596***	.1424**	-.043	.1063	0.245	**0.755**	1375	.1365***	.1888***	-.0876**	-.1345**	0.269	**0.909**	1454	.3109***	.2588***	-.2623*	-.0805	0.609	0.414
Cap. Expend.	1	918	.2573***	.1568***	-.0898	-.0476	**0.039**	0.352	1449	.1355***	.1201*	-.0865*	.0994	0.834	0.028	2962	.1323***	.1099***	.0769***	.0335	0.473	**0.009**
Cap. Expend.	2	906	.3288***	.2205***	-.1779*	-.0141	0.241	0.627	1429	.2155***	.1957***	-.0964	.196*	0.831	**0.002**	2448	.2095***	.1254***	.0785**	.1331***	**0.068**	0.237
Cap. Expend.	3	890	.3512***	.386***	-.1801*	-.1067	0.757	0.306	1407	.2807***	.1864**	-.126	.0831	0.364	0.223	1973	.232***	.1919***	.1083**	.1423***	0.412	0.890
Cap. Expend.	4	869	.3291***	.4499***	-.1425	-.0711	0.317	**0.073**	1386	.3539***	.205**	-.1418*	.0788	0.134	0.312	1547	.2816***	.2478***	.0436	.1794***	0.552	0.315
Short-Term Deb	1	471	-.1716**	-.0509	.3381***	-.139	**0.085**	**0.029**	359	-.0345	-.1232	.0295	.6831***	0.626	**0.078**	948	.0652	-.0082	-.0931	.1285**	0.127	**0.062**
Short-Term Deb	2	419	-.1798**	.0307	.1793**	-.0191	**0.045**	0.954	311	-.0431	-.2368*	.151	.3397	0.375	**0.985**	718	.101	.0018	-.0558	.1279	0.175	0.467
Short-Term Deb	3	373	-.1349	.0394	.1892	.0057	0.175	0.973	283	-.1377	-.1949*	.3466**	.0392	0.741	**0.000**	518	.0741	-.2733**	-.1068	.4094***	**0.014**	0.175
Short-Term Deb	4	319	-.0526	.1105**	.0823	-.1827	0.304	0.585	263	-.2612**	-.1493	.4734***	.1023	0.463	**0.001**	367	.1258	.0486	-.0002	-.1325	0.722	0.339
Interest Inc.	1	918	.0187	.0153	-.0148	-.0454*	0.803	0.168	1449	.023**	.0008	-.0104	-.0127	**0.060**	0.165	2962	.0443***	.0203**	-.0318***	-.0159	**0.018**	0.273
Interest Inc.	2	906	.0328	.0552**	-.0339	-.1041***	0.436	**0.013**	1429	.0306***	-.0036	-.0227	-.0222	**0.033**	**0.072**	2448	.0713***	.0195**	-.0624***	-.0149	**0.001**	0.690
Interest Inc.	3	890	.0755**	.0424**	.045	-.1027***	0.380	**0.001**	1407	.0225	-.0052	-.0154	-.0105	**0.088**	0.157	1973	.0855***	.049**	-.078***	-.0461*	0.127	0.749
Interest Inc.	4	869	.0818**	.0527***	.0623	-.1233***	0.520	**0.000**	1386	.0249*	.0012	-.02	-.0095	0.144	0.449	1547	.1053***	.0561**	-.0962***	-.0567*	0.112	0.720

Table 10 shows the results of estimating Equation 7 across the three sub-periods, for the following potential uses of funds: Cash & Short-Term Investments, Capital Expenditures, Short-Term Debt reduction, and Interest Income. We perform 4 consecutive regressions for each dependent variable, using the cumulative change (in the case of balance sheet variables) or amount (for income and cash flow statements variables), against the cumulative amount of bond proceeds denominated in local currency, bond proceeds denominated in foreign currency, and other sources of funds from 1 to 4 years after the first bond issuance. All variables are log-transformed as explained in equations 1 to 5. For each sub-period, the last two columns show the p-value of a Wald test evaluating whether bond proceeds in local currency and bond proceeds in foreign currency contribute equally to each alternative use, both for firms outside the energy and materials sectors ($\beta_1 = \beta_2$) and inside those two sectors during the period ($\beta_1 + \beta_3 = \beta_2 + \beta_4$). * indicates significance at 10%, ** significance at 5% and *** significance at 1%.