

Patterns and Drivers of Corporate Bonds in Latin America

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Abstract

This paper overviews patterns in bond issuance in local and external markets by firms in six large Latin American countries. Also, using an unbalanced panel of firm and market-level indicators for years 1995-2015, we control for variables representing several theories of capital structure to gauge the firm's decision on the choice of issuance jurisdiction.

Keywords: capital structure, firm-level, Latin America, LA6, corporate bond markets.

JEL classification: G100, F300.

1. MOTIVATION

Heeding lessons from crises in the 1990s, many emerging market governments have sought to create deeper and more liquid local bond markets to reduce the risk of the double mismatch of currencies and maturities, and to channel local savings into long-term domestic investment (Laeven, 2014; IMF, 2014).

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In Latin America, expanding the array of investment vehicles was seen necessary to expand the investor base domestically and abroad, to improve lending terms for corporate and sovereign borrowers, and to promote financial stability (Goldstein and Turner, 2004; Borensztein et al. 2008; and Rodrigues-Bastos et al., 2015). Policymakers have also eyed the accumulation of domestic savings to fund the region's large infrastructure investments needed to raise potential growth (Cerra et al., 2017). Long-term ambitions envisioned easier access to capital through the development of regional financial centers featuring best practices in financial infrastructure, and in regulatory and tax regimes. Increasing the absorptive capacity of local markets could also improve domestic monetary policy transmission.¹

Efforts to attract investment, coupled with the Latin America's rapid economic growth in the past decades, have brought a fresh wave of companies and investors into capital markets (Rodrigues, 2014). Against this backdrop, this paper provides a granular look at the trends in corporate bond financing over the past two decades, especially after the global financial crisis (GFC), in six of the most financially integrated economies in Latin America: Argentina, Brazil, Chile, Colombia, Mexico, and Peru (LA6, hereafter). In the context of the increased access to both local and external markets, and to contribute

¹ IMF (2004) states that money and bond markets provide instruments needed for the implementation of monetary policy and improve the transmission mechanism of the monetary policy. More than a decade later, this has become challenging, as Obstfeld (2015) puts it, "financial globalization has worsened the trade-offs monetary policy faces in navigating between multiple domestic objectives." Within the placed limitations, greater issuance in local markets (in local currency) could still help reduce the pressure to maintain stable exchange rates and give more prominence to the domestic interest rate policy. Liquid long-term local bond markets provide valuable information for the conduct of the monetary policy, including expectations and reactions to monetary policy changes (Laeven, 2014).

and expand on relevant research, this paper also examines the firm and market level factors influencing the choice of jurisdiction for bond placements. Guided by the outcomes, we offer some policy considerations on further development of local bond markets.

The rest of this paper is structured as follows. Section 2 overviews recent reforms, patterns in bond issuance and market structure in the LA6. Section 3 presents a literature review, description of the selected empirical methodology, data and results. Section 4 concludes with some policy considerations.

2. RECENT REFORMS AND THE STATE OF LATIN AMERICAN BOND MARKETS

2.1 Reform Overview

Borensztein et al. (2008) document that, in the early 1990s, Latin America had essentially no corporate bond markets (apart from Chile). The economic reforms of the 1990s, including privatizations and the introduction of private pension systems accelerated the demand for long-term debt instruments and deepening of the local markets (Jeanneau and Tovar, 2006; de la Torre et al., 2012; Tendulkar, 2015).² Adoption of international best practices, like International Financial Reporting Standards and Basel bank supervisory regimes, signaled a strengthening of corporate governance and regulatory capacity, which, in turn, generated externalities such as more favorable credit risk assessments.

Governments also spurred the evolution of debt markets by easing restrictions on foreign investment, simplifying investment regulations, allowing pension funds to invest in a wider array of assets, and developing derivatives and repurchase markets. Concurrently, modern asset management strategies

² For an account of reforms and regulatory developments in several countries prior to 2008, see Borensztein et al. (2008).

utilized by fund managers have increased demand for a more diverse universe of financial vehicles.

Governments also worked to make government debt instruments more attractive through greater financing of fiscal deficits on local markets, increased transparency with respect to the size, timing, and participation in issuances, including by setting up the market makers groups, and the establishment of liquid local benchmarks.

2.2 Stylized Facts

These efforts supported the growth and development of local bond markets, though the prominence of sovereign paper may have been an unexpected outcome. Government bonds constitute almost 60% of total stock, compared to 40% in Asia. Conversely, the role of corporate bonds is much smaller in Latin America. As a share of GDP, corporate bonds outstanding are about half the size of bonds in other emerging regions and advanced economies, and the flow of new issuances significantly lags other emerging regions (Figures 1 and 2).³ Among the LA6 countries, Brazilian firms have the most debt outstanding, with their liabilities accounting for nearly 60% of the regional corporate bond stock. Until 2016, quasi-sovereign firms (largely Brazilian and Mexican) represented about a third of corporate funds raised, with most of it occurring externally (Figures 2 and 3).⁴

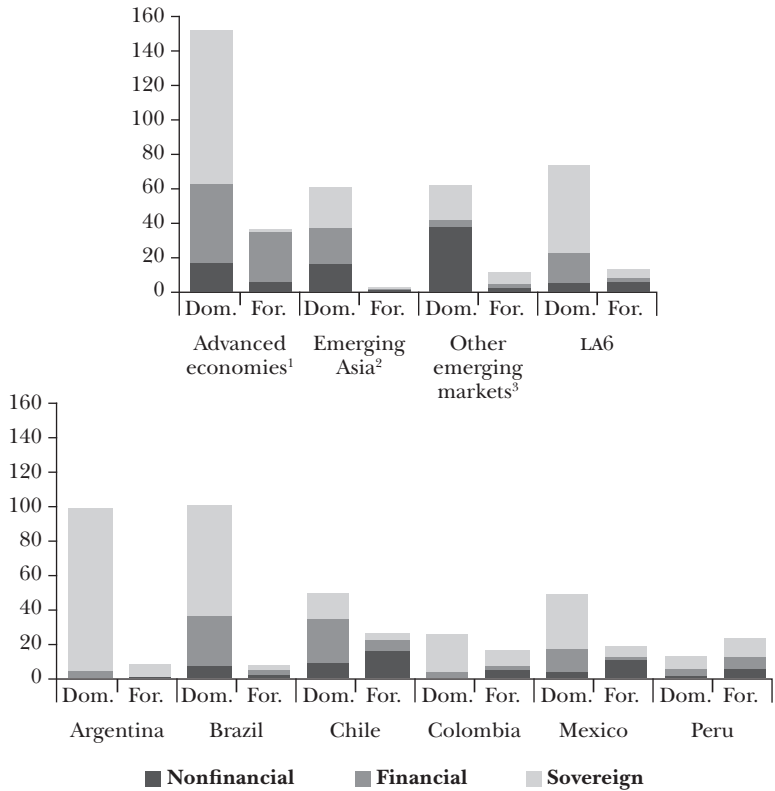
³ It is important to highlight that emerging Asia does not include Hong Kong SAR, Singapore, and Korea as we use the IMF's World Economic Outlook definition, which considers the three as advanced economies.

⁴ Since 2009, quasi-sovereigns have played an important role in foreign bond issuance, and most foreign issuance associated with Brazilian firms has taken place through subsidiaries located outside the country. So, calculating total issuance based on a residency criterion misses a significant amount of bond issuance that can be linked back to Brazil on a nationality basis

Figure 1

VALUE OF BONDS OUTSTANDING IN LOCAL AND EXTERNAL MARKETS, 2015

As percent of GDP



Notes: Dom. stands for *domestic*, and For. for *foreign*. ¹Includes: Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Ireland, Italy, Japan, Korea, Netherlands, Norway, Portugal, Spain, Sweden, United Kingdom, and United States. ²Includes China, India, Indonesia, Malaysia, Philippines, and Thailand. ³Includes Croatia, Czech Republic, Hungary, Lebanon, Pakistan, Poland, Russia, Saudi Arabia, South Africa, and Turkey.

Sources: Bank for International Settlements, Securities Statistics; Dealogic; Ibero-American Federation of Exchanges; and IMF staff calculations.

Efforts to develop local markets, coupled with macroeconomic stability, spurred domestic issuance (Table 1). However, more dramatic was the speed and degree to which corporate debt finance has moved offshore. In the early 2000s, close to 60% of corporate bonds were issued locally, but by 2013-2015, the share had fallen to below 40%. Total issuance more than doubled in both value and number of issuances as external issuance exploded from USD 38 billion to over USD 200 billion.⁵ In addition to larger issuance amounts, Latin American firms were also attracted by longer maturities and lower interest rates in advanced economy markets where post-GFC quantitative easing programs exacerbated favorable financing terms. The trade-off has been a substantial increase in foreign currency liabilities, in contrast to the objective of reducing currency mismatches.⁶ Through much of the boom in foreign issuance (2009-2013), the currency risks appeared to be contained by financial and natural hedges as well as by domestic currencies that began appreciating soon after the crisis ended. Just before the GFC, there was a spike in demand for local currency denominated debt issued abroad, however, the demand has since returned to precrisis levels (Figure 2).

Within local markets, the major change has been the curtailed access for noninvestment grade firms, while their external issuance doubled (Table 1). However, the result is highly influenced by Brazil, where a contraction took place in both local and external issuances for noninvestment grade firms

(Rodrigues-Bastos et al., 2015). Easier access of quasi-sovereign to external markets may be underpinned by the explicit or implicit government guaranties.

⁵ External issuance is defined as bonds placed in a jurisdiction other than the country of residence; whereas local is defined as issuance in the country of residence.

⁶ Using firm-level data for five large Latin American economies, Rodrigues-Bastos et al. (2015) provide evidence of a significant change in companies' external funding strategies and liability structures since 2010, as well as in the balance sheet risks that firms face.

Table 1

	LA6: SUMMARY OF CORPORATE BOND ISSUANCE			
	2003-2005		2013-2015	
	Local	External	Local	External
<i>Investment: Grade</i>				
Number of issuances	418	60	1,171	266
Total amount issued (USD millions)	34,648	20,624	121,996	163,831
Average amount issued (USD millions)	82.9	343.7	104.2	615.9
Average term ¹ (months)	106.0	127.5	92.8	158.8
Average yield to maturity at issuance ¹ (%)	6.1	6.5	6.3	4.8
<i>Investment: Other</i>				
Number of issuances	153	107	12	99
Total amount issued (USD millions)	19,638	18,004	882	37,257
Average amount issued (USD millions)	128.3	168.3	73.5	376.3
Average term ¹ (months)	114.1	96.3	88.6	93.8
Average yield to maturity at issuance ¹ (%)	7.6	8.4	10.2	7.4
<i>Investment: Total</i>				
Number of issuances	571	167	1,183	365
Total amount issued (USD millions)	54,285	38,628	122,878	201,087
Average amount issued (USD millions)	95.1	231.3	103.9	550.9
Average term ¹ (months)	108.9	113.8	92.8	146.7
Average yield to maturity at issuance ¹ (%)	6.2	7.4	6.4	5.3

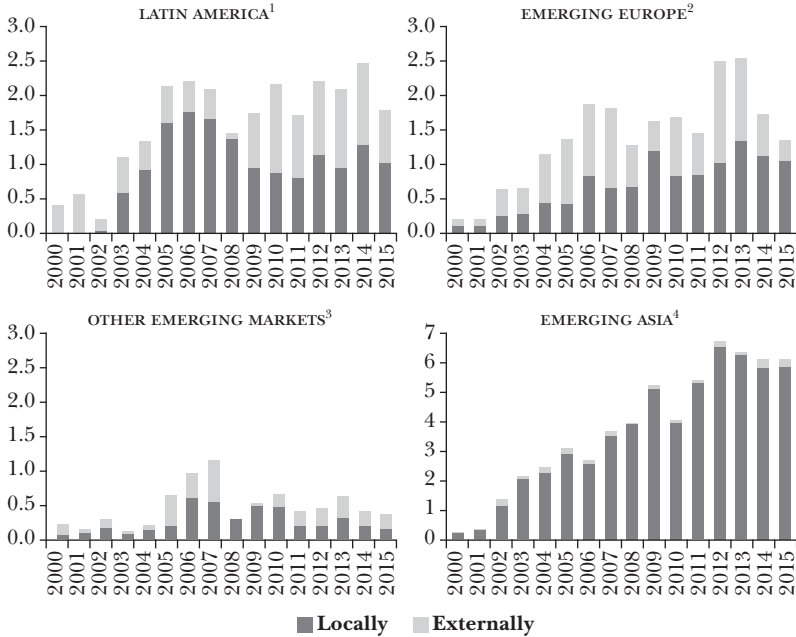
¹Average weighted by amount issued.

Sources: Dealogic; and IMF staff calculations.

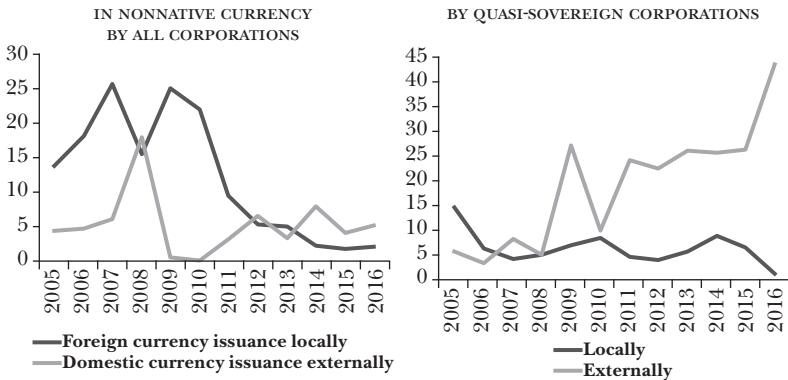
Figure 2

LA6: CORPORATE BOND ISSUANCE

As percentage of GDP



Notes: ¹ Includes: Argentina, Brazil, Chile, Colombia, Mexico, and Peru. ² Includes Hungary, Poland, Romania, Russia, and Turkey. ³ Includes China, India, Indonesia, Malaysia, Philippines, Sri Lanka, Thailand, and Vietnam. ⁴ Includes Algeria, Bahrain, Jordan, Lebanon, Nigeria, Pakistan, Saudi Arabia, and South Africa.
Sources: Dealogic and IMF staff calculations.



Source: Dealogic.

as economic conditions deteriorated (Table A.1). Investment grade firms fared better despite the sovereign's downgrade.⁷ However, in most countries, except Argentina, overall issuance declined after the 2013 Taper Tantrum episode, with non-financial companies suffering more than financials (Figure 3).

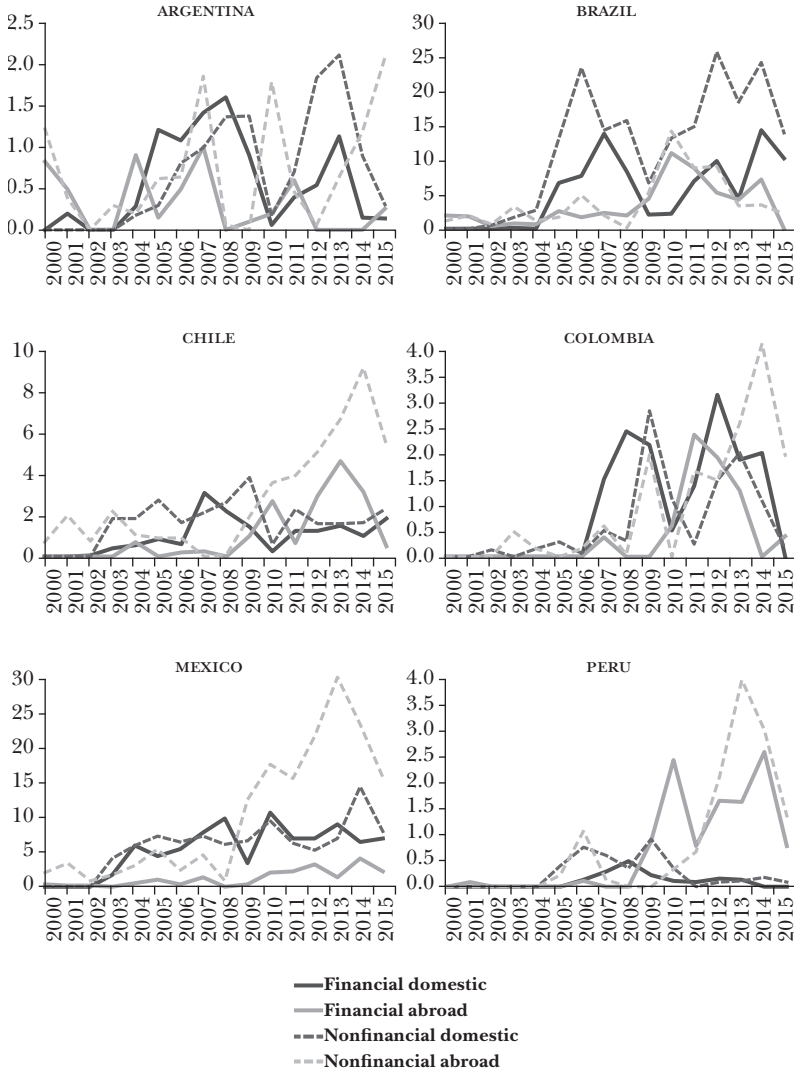
Relative liquidity conditions between local and external markets are also important indicators of market development. The level of market liquidity has many dimensions and cannot be captured by any single measure (IMF, 2015). Figures 4-6 provide some insights into general liquidity conditions in the LA6 economies. Aside from in Chile (data for Mexico is not available), markets are characterized by low trading volumes. While data limitations hinder a more in-depth analysis of corporate versus sovereign trading conditions, the World Federation of Exchanges data on the value of bonds traded on exchanges point to stronger investor interest in sovereign paper than corporate, except in Brazil and Peru.⁸ Low trading volumes most likely encourage firms to cultivate demand from long-term institutional buyers and/or offer higher interest rates to compensate buyers for holding less liquid assets. These rigidities could push corporates to issue abroad where markets are more liquid.

⁷ The Brazilian Development Bank (BNDES) provided substantial funding to Brazilian companies through loans and equity injections after the global crisis. This is likely to have contributed to lower bond issuance amongst Brazilians firms than it would otherwise have been the case (Rodrigues-Bastos et al., 2015).

⁸ The value of bonds traded may be affected by different lot sizes or face values of different instruments. The volume (or number) of trades is also helpful in assessing market liquidity for different instruments, however, such data to measure corporate and sovereign trading was not available.

Figure 3

LA6: CORPORATE ISSUANCE BY COUNTRY¹
Billions of USD

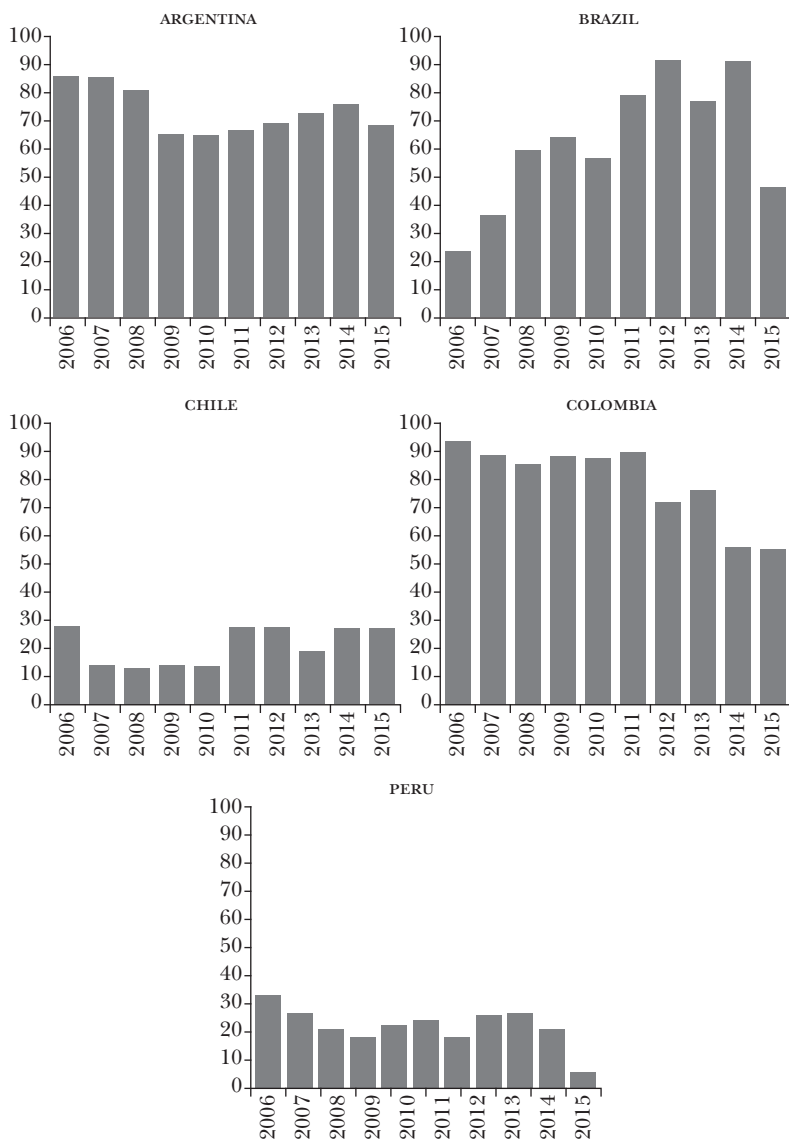


¹ Currencies converted to USD at prevailing exchange rate on the day issuance.
Sources: Dealogic and IMF staff calculations.

Figure 4

SHARE OF TRADING OF THE 10 LARGEST FIXED INCOME INSTRUMENTS, 2006-2015¹

Percentages

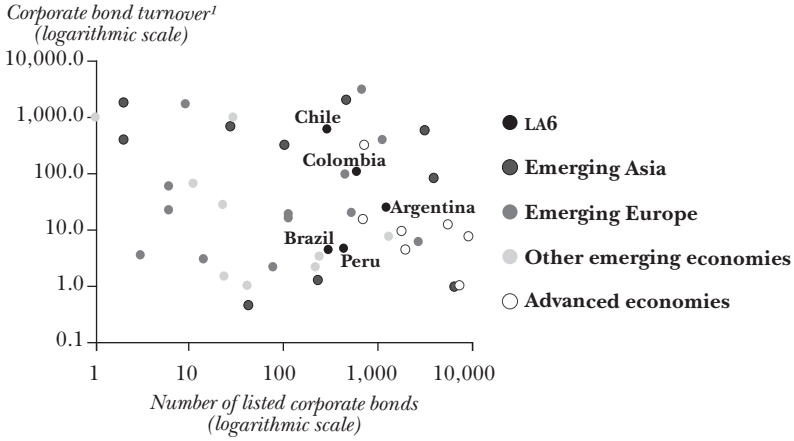


¹ Includes both sovereign and private instruments.

Source: Ibero-American Federation of Exchanges.

Figure 5

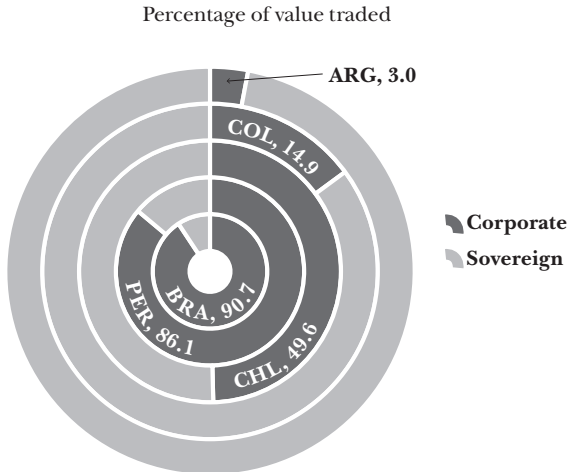
CORPORATE BOND MARKET TURNOVER, 2016



¹ Ratio of the number of transactions to the number of bonds listed.
Sources: World Federation of Exchanges; Bolsa de Santiago; and IMF staff calculations.

Figure 6

CORPORATE SHARE OF LOCAL BOND TRADING, 2016



Source: World Federation of Exchanges.

2.3 Characteristics of Local Bond Markets

The largest markets are Chile, Brazil, and Mexico. Chile has a well-developed local market that generally meets the needs of local firms as it provides size, tenor (average at 13 years), and the funding tailored to the local needs.⁹ The market's buy-side, however, is dominated by large pension funds, which only hold top-rated paper, subjecting the lower-rated firms to fund through banks. Brazil's market is the largest (in nominal terms and by the number of issuances), and absorbs most local needs.¹⁰ However, it struggles to support long-term instruments as few tenors exceed five years, and, like Chile, its slate of corporate issuers is heavily dominated by investment-grade companies. Mexico boasts many issuers, but the buy-side is concentrated. Pension funds and the insurance sector buy the longer dated corporate paper (7 to 10 years), while mutual funds tend to buy the shorter floating rate notes with tenors of between three and

⁹ The local regulator has encouraged the entrance of international investors to the local corporate market by removing the withholding tax for corporate bonds bought by international investors if they access the Chilean markets via what are known as *Huaso* bonds but to date there have been limited transactions.

¹⁰ In 2009, the Brazilian Securities Commission launched regulation 476 which was designed to speed up debt issuance in the local markets. Deals are to be marketed to a select number of investors and sold to a subset of them. Also, as opposed to the formal offering regulation (400), there is no need for prior notification or a deal prospectus given to the Stock Market Supervisor, although 400 deals can be marketed and sold to an unlimited number of qualified investors (those with more than BRL1 million in liquid assets). Also, with 476 deals, the bank can distribute to an unlimited number of investors through secondary distribution after 90 days. Most bonds remain similar to loan arrangements where banks fully underwrite the deals and therefore should take risk on their books if there is a lack of appetite from investors (*Euromoney*, 2015).

five years.¹¹ When buying local paper, pension funds are also limited to issuers rated AA- and above to guard against a forced sell-off if the debtor falls below investment grade.

Colombia's local debt market is also dominated by high-grade issuers, which reflects conservative risk management among institutional investors that largely buy and hold. Tenors go up to 20 years, although the average is about 10 years. Peru's local market is small, with most issuance dominated by financial institutions and a few large energy companies. As in other countries, the main players are very large pension funds, which are limited by prudential limits on lower rated firms. However, the largest obstacle preventing market growth is the limited number of corporate issuers and the small issuance amounts. Argentina's market tends to feature shorter term issuances with tenors averaging 15-25 months given the country's persistently high inflation, although volumes are large.¹² Secondary trading is light, not least because investors tend to hold to maturity given short tenors.

In summary, patterns of issuance in local bond markets are not homogeneous in Latin America (Table A.1), but there are common features including the outsized role of pension funds and a strong preference for investment grade issuers.

¹¹ Several large Mexican firms have considered issuing a series of transactions rather than just single placement to increase liquidity in peso securities. Also, *grossing-up* the Mexican withholding tax to compensate for the tax that international investors pay when they buy local debt (about 4.9%) is seen to improve foreign interest (*Euromoney*, 2015).

¹² Fernández et al. (2007) found that the small size of firms in Argentina could help explain why the bond market was a lot less developed, given the minimum size required for bond issues to be an attractive source of financing. The fact that many corporations in Argentina were reluctant to go public, and remain as closely held family businesses, might help explain this pattern of size distributions, as well as other features of capital markets.

3. DATA, METHODOLOGY, AND RESULTS

3.1 Literature Review

While the determinants of local market development are not explored in this article, the topic underlies many of our priors and results. Studies by Burger and Warnock (2004), Eichengreen and Luengnaruemitchai (2004), Braun and Briones (2006), and Bae (2012), among others, examine the role of scale, institutional development, and macroeconomic policy in spurring growth of local bond markets across the globe. Chinn and Ito (2006) identify capital market openness, legal, institutional, and accounting improvements when explaining the level of financial development.

We focus on the firm's capital structure and motivation theories that could explain the firm's decision regarding the jurisdiction of issuance. A comprehensive overview of those is found in Black and Munro (2010) and Mizen et al. (2012). Studies by Rajan and Zingales (1995), Booth et al. (2001), and Gozzi et al. (2012) find the size and strength of the firm's balance sheet being the determining factors in financing choice decisions (local or external), across both developed and developing countries. Whereas, Myers and Majluf (1984) concluded that before issuing abroad the largest and strongest firms might first tap local savings akin to the pecking order theory.¹³ Lower-rated/smaller firms may attempt to go abroad where risk taking is more prevalent and the pool of investors is more diverse (Black and Munro, 2010).¹⁴

¹³ In corporate finance, pecking order theory postulates that the cost of financing increases with asymmetric information. Companies prioritize their sources of financing, first preferring internal financing, and then debt, lastly raising equity as a *last resort*.

¹⁴ The cost of issuance has been perceived as one of the impediments for smaller firms to enter the market (Gozzi et al., 2012). The cost includes but is not limited to disclosure costs and accounting changes (when becoming a first-time issuer) and

Some firms might also seek external markets for its completeness/depth, which relates to the capacity to absorb larger issuances and innovatively structured or tailored products available in a larger and more diversified investor pool. Firms may also try to maintain market presence to ensure market continued access (Faulkender, 2005; Siegfried et al., 2007). Based on a sample of Asian economies, Mizen et al. (2012) reaffirm that the depth of the markets, their size and liquidity, can affect corporate financing decisions, and highlight the importance of a large nonresident investment base and the exemption from withholding taxes.

Issuance decisions can also be driven by risk management considerations where firms look for natural hedges, in which the exposure to a foreign currency debt service risk is offset by foreign currency revenues. Issuers in less developed markets may tap external markets to realize lower costs and other considerations, such as lengthening the tenor or locking in a rate (timing the market for yield). In more sophisticated and active markets, price arbitrage/static trade off considerations may drive decisions where deviations in cost incentives are actively arbitrated through variations in interest rates in different currencies and proceeds are frequently swapped back into local currency (Black and Munro, 2010).

The agency theory stipulates that while costs of disclosure and issuance fees rise when issuing abroad, this could be mitigated through collateral and the positive effects from greater transparency. Weak local indicators (namely, adverse macroeconomic conditions, inadequacy of local savings, tax regimes, underdeveloped local market infrastructure, information asymmetries, and barriers to nonresident investment) may also encourage firms in less developed local markets to issue externally (Burger and Warnock, 2006; Chan et al., 2012).

underwriting fees (related to each specific issuance). However, for firms in Brazil, Chile, and Mexico, based on survey results, Zervos (2004) concludes that cost is not a factor behind a choice to issue externally.

Though these topics have been well covered in the literature, the strand of research looking together at the firm and market level factors influencing a choice of jurisdiction is not particularly large, with just a few studies examining the larger and more mature Asian markets. We contribute to the studies by examining these factors in the case of the LA6 firms.

3.2 Data

We compile a dataset on issuances in local and global markets by LA6 firms between 1995 and 2015, collecting both financial statements and issuance characteristics. The choice of variables for this analysis is guided by the findings in the previous literature but largely follows the approach of Mizen et al. (2012), and adapted for data availability in our countries of interest. The data were sourced from Bloomberg for 2,985 companies and includes a total of 9,060 separate issuances (Table A.2, panels A and B).¹⁵ Compared to the analyses of Asian markets, which include advanced economies, the sample size is relatively small (Black and Mizen used between 35,000-45,000 observations). The pool of companies in the dataset is further restricted by the availability of financial statement information for each of the firm level explanatory variables for at least three years (Table 2). We then segment firms into financial versus nonfinancial and seasoned versus nonseasoned issuers to look for patterns in the structure and placement.¹⁶

¹⁵ As in other studies, we do not consider the breakdown between parent and daughter companies or affiliates/subsidiaries, with the presumption that every entity borrows independently (even if not for its own purpose).

¹⁶ Nonseasoned firms are defined as entering the market for the first time.

3.3 Empirical Methodology

We use a discrete choice (probit model), which is a natural empirical method to evaluate the probability of a firm to issue abroad, once a decision to seek financing has been made.

$$Pr\left(EXTB_{ijt}=1\right)=\Phi\left(\alpha_i+X_{ijt}\beta_i+Z_{jt}\gamma+\epsilon_{ijt}\right).$$

The variable $EXTB_{ijt}$ takes the value one if the bond is issued externally, and zero if issued locally. We also include firm-specific regressors, X_{ijt} for firm size, years present on stock market, liquid assets, term of the bond, and collateral.¹⁷ These variables have been evaluated with and without a lag to check for robustness and to mitigate potential endogeneity concerns. Finally, the model includes a global financial crisis dummy, a rating agency dummy, and a time trend to account for debt markets becoming increasingly international over time. In Table 2, we present the regressors and the expected signs of the estimated coefficients.

3.4 Data Overview

In this section, we discuss summary statistics, including means and standard deviations for the individual factors in the choice of financing with respect to the jurisdiction. These are reported for all sample firms, then broken down into financial and nonfinancial, those that issue locally or externally, and for each country. Table A.3 shows that issuers in local markets are smaller and have lower capital expenditure needs, which suggests that their financing needs could be met in local markets. The results are similar to Mizen et al. (2012) findings for the Asian economies.

¹⁷ ijt and jt indicate firm and market level indicators, respectively. α_i represents the constant, X_{ijt} represents firm level coefficients, and Z_{jt} represents the coefficients for market level indicators.

Table 2

VARIABLES AND EXPECTED OUTCOMES		
<i>Variable</i>	<i>Definition</i>	<i>Expected Outcome/Expected Sign (for increasing the probability of external issuance)</i>
<i>Firm Level Indicators</i>		
SIZE	Logarithm of the firm's total assets	Larger firms (+)
AGE	Years listed on the stock exchange	Older firms (+)
LIQ	Current assets over total liabilities	Highly liquid firms (+)
COL	Tangible assets over total assets	Highly collateralized firms (+)
Rating	Dummy	Rated firms (+)
TERM	Term of the bond	Foreign markets at longer terms (+)
<i>Market Level Indicators</i>		
TDSEC	Total bonds to GDP	Small total market (-)
ONSRT	Local issuance over total issuance	Small local market (-)
INTD	Difference between short-term local and external rates (3-12-month maturity, in percentage points)	Higher local rates (-)
EXGD	External government debt over GDP	Lower public external presence (+)
FDI	Foreign direct investment over GDP	Lower FDI (-)
FC	Global financial crisis dummy (2008-2009)	High liquidity abroad (-)

At the same time, local firms are less leveraged (which could be interpreted as a sign of vulnerability), more liquid (which could mean that they need less funding), and possess less collateral (which could deter borrowing terms). The fact that larger firms issue in external markets could be an indication of the lack of local market's depth. Financial firms are smaller in size, which is also in line with findings by Mizen et al. (2012). Also, their assets are more liquid, which could be associated with the region's substantial dependency on deposit funding or in the case of Peru, high levels of dollarization. Financial firms also maintain larger collateral. Seasoned firms are less leveraged than the nonseasoned ones, but nonseasoned entities are slightly larger in size.¹⁸ The rating dummy indicates that a large share of our estimation sample is composed of entities that have received a rating by at least one main rating agency.¹⁹

Table A.4 shows differences by country at the firm level. Issuance in local and external markets depict quite sizable variations by country. Unsurprisingly, Brazil has an outsized impact on the aggregate averages for most indicators. Brazil's weight in the estimation sample increases after applying the selection criteria. Companies in Brazil, Colombia, and Mexico are most indebted, but are also among the most profitable. Aside from Argentine and Peruvian firms, the sizes of total assets are comparable, with Brazil having the bigger companies on average. The ratio of rating is similar among countries apart from Chile, perhaps highlighting the depth of the local market.

Table A.5 shows the market level indicators. The averages display significant variation between each of the LA6, with Brazil's, Chile's, and Mexico's markets having the biggest impact on regional averages. These have the deepest markets (TDSEC), while Peru's and Argentina's markets are small. Mexican and Brazilian firms dominate large issuances abroad (FCY) and

¹⁸ The difference in the firms' characteristics by issuance type (local or external) is small but statistically significant.

¹⁹ Rating agencies include Standard & Poor's, Fitch, or Moody's.

in local markets (LCY) where the sizes of issuances are larger than their external placements, also indicated by size of the local market (ONSRT). Foreign direct investment (FDI) is similar across countries, with Chile having a higher level than average, indicating favorable domestic conditions for foreign investment.

3.5 Empirical Results

As discussed, we aim to identify the factors behind the decision to issue in foreign jurisdictions. The decision is partly determined by firm characteristics (size and years on the market, among others) and partly dependent on the level of development of the market (depth and liquidity, among others). Our dependent variable is *EXTB*, which takes a value of one if the bond is issued externally.

3.5.1 Firm Level Indicators

At the firm level, the results show that the balance sheet of a firm (*SIZE*) is statistically significant in all specifications (Table 3). This likely reflects that smaller firms are more inclined to issue in domestic markets where the investor base is more familiar with the issuer. Furthermore, international underwriters may be empowered to exercise a strong preference for large recognizable names and thus deprioritize issuance by smaller firms. Transaction costs of issuing externally could be higher and larger firms might have more capacity to absorb these costs. It is also possible that the funding needs of larger firms could stress liquidity conditions in local markets leading to higher borrowing costs. While highly liquid (*LIQ*) firms may need less borrowing and tend to issue externally, this factor may not have a sizeable impact on the issuance decision (positive sign with 10% statistical significance on a couple specifications), perhaps owing to a need to maintain access to more liquid markets. At the same time, and in line with expectations, firms with higher collateral (*COL*) seem to issue less

in local markets, as they most likely get better terms abroad as foreign lenders may require greater pledges of tangible assets to assuage concerns of agency risk and the potential for high costs of recovery (statistical significance in all three specifications). The impact by the terms of the bond (TERM) is also in line with expectations; companies generally seek foreign markets to borrow at longer terms (positive and statistically significant in all specifications). Finally, the years of presence in the market (AGE) seem to have an impact in the decision of issuance as established companies might benefit from industry and international presence. Also, there are benefits of validation associated with having been rated by a major agency, as this variable (RATING) shows high statistical significance in all specifications. This suggests that bond markets take a favorable view of even *young* and *small* firms if they are rated.

3.5.2 Market Level Indicators

With respect to market characteristics, the relative size of a local market (ONSRT) seems to have an impact on issuance (highly statistically significant), factors such as competition and low/high domestic liquidity could be driving forces in altering the lure of local issuance. The overall size of the market (TD-SEC) influences (negative coefficient) the jurisdiction choice, indicating support for the pecking order theory as firms will access a market if there is sufficient scale and depth. The incentive to issue abroad spurred by the interest rate differential (INTD), did not prove statistically significant, it plays some role in the decision on issuing externally in both specifications (lower local rates reduce the probability of going abroad). Unlike our expectations, a larger presence of sovereign external debt (EXGD) increases the probability of financing externally. Also, higher net FDI inflows may be associated with supportive foreign conditions reducing the need of borrowing locally. In sum, the results of the market indicators are consistent with the market depth theory.

Table 3

CHOICE OF MARKET: FIRM LEVEL DATA, WITH TIME TREND			
	<i>1</i>	<i>2</i>	<i>3</i>
SIZE _{ijt}	0.0683 ^c (3.26)	0.0906 ^c (4.09)	0.0943 ^c (4.23)
LEVER _{ijt}	0.264 ^a (1.80)	0.249 ^a (1.68)	0.194 (1.31)
AGE _{ijt}	0.0236 ^c (5.14)	0.0264 ^c (5.55)	0.0234 ^c (4.87)
LIQ _{ijt}	0.127 ^a (1.66)	0.154 ^b (1.99)	0.129 (1.64)
COL _{ijt}	0.474 ^c (3.23)	0.522 ^c (3.42)	0.582 ^c (3.77)
RATING _{ijt}	0.818 ^c (12.37)	0.890 ^c (12.74)	0.852 ^c (12.09)
TERM _{ijt}	0.0183 ^c (6.20)	0.0198 ^c (6.53)	0.0204 ^c (6.60)
FC_dummy	0.206 ^a (1.95)	0.252 ^b (2.38)	0.195 ^a (1.82)
EXGD _{jt}	0.00945 ^c (3.10)	0.004 (1.05)	0.0257 ^c (4.97)
TDSEC _{jt}	-1.103 ^c (-10.20)	0.031 (0.11)	-0.100 (-0.364)
ONSRT _{jt}		-1.610 ^c (-4.299)	-1.532 ^c (-4.049)
INTD _{jt}		-0.007 (-0.781)	-0.001 (-0.065)
FD _{ijt}			-0.147 ^c (-6.347)
Constant	-2.553 ^c (-8.314)	-1.776 ^c (-4.459)	-1.312 ^c (-3.191)
Pseudo R ²	0.152	0.165	0.176
BIC	3,347.695	3,133.818	3,100.485

Note: Z-statistic in parenthesis; ^a p<0.05, ^b p<0.01, ^c p<0.001.

3.5.3 Sectoral Characteristics

When controlling for firm-specific characteristics, we find that factors affecting the choice of the jurisdiction vary depending on the firms' business segment (financial or nonfinancial) and the presence on the market (seasoned or unseasoned). In Table A.6, which shows the detailed breakdown for the choice of a market, nonfinancial entities display more significant variables primarily due to the small sample size of financials. The absolute size of the market (TDSEC) has a positive influence on the jurisdiction choice suggesting that the overall market depth is more important for all nonfinancial firms, specifically for the unseasoned (statistical significance), while financial firms may be indifferent given several funding options at their disposal, including through deposits. The result for the relative size of the local market (ONSRT) for both groups of nonfinancial entities in the sample do not show statistical significance, while financial firms' result may be once again explained by specificities of their funding structures. Interest rate differential (INTD) is most significant for nonfinancial seasoned firms. Finally, nonseasoned and seasoned, nonfinancial firms may be more likely to issue locally when there are strong FDI inflows.

In Table A.7, we provide full results, including both firm and market level indicators with seasoned dummy interactions, for all observations and nonfinancial firms. The financial corporations are not represented due to observation limitations in the sample. Most of the indicators behave as expected and consistent with previously reported model specifications, but we can clearly see the difference between seasoned and nonseasoned firms in both firm and market level variables.

We provide detailed results on goodness-of-fit tests, both intercept and full model, for all the specifications used in this exercise in Table A.8. We also provide the marginal effects for our Table 3 specifications in Table A.9, which calculates the marginal effects at the means of the independent variables by using the default prediction option associated with the previous

estimation command, in this case a probit model. Before moving on to robustness checks on our models, we note that the marginal effects share consistent coefficient signs and statistical significance for our indicators in Table 3.

3.5.4 Robustness

The indicators used in our model specifications were carefully selected to reduce the number of bias and other statistical problems that might arise during our analysis. For robustness checks, we include a variety of additional indicators to our established specifications. These indicators include:

- VIX: Indicates macroenvironment (from Bloomberg);
- EMBI: Indicative of the shocks as market reprices the risk (from Bloomberg);
- Oil prices: Captures the shock caused by the change in prices (from US Energy Information Administration).

We report these new specifications in tables A.10-A.12 in the Annex. In Table A.10 we use introduce VIX to our initial specification in Table 3. The results show very little changes in the behavior of the chosen indicators. Firm-level indicators: *Size*, *Age*, *Collateral*, *Ratings*, and *Term*, behave similarly to the specification shown in Table 3. These components have the same statistical significance level and coefficient responses as in the base specification.

To further test the robustness, we introduce the EMBI index. The EMBI index is a general emerging markets sovereign debt benchmark. Similar to the introduction of VIX, we add this component to our base specification of Table 3 and see very little change in the significance and behavior of the components.

While we include various firm and market level indicators to capture the overall dynamic of local or foreign issuance, we do not include a component capturing the shocks of oil price that affects the global economy and might have greater importance in oil producing countries such as Colombia and Mexico. As part of our robustness check and to avoid any issues we might encounter with including excessively correlated variables in

the specification, we introduce market-level indicator WTI oil prices. Since we utilize standard WTI prices, this indicator does not vary across countries. The results suggest that this modification in the specification does not alter the coefficient response, and there is very little change in statistical significance with the most noticeable change being in the *Financial-crisis* dummy variable, which slightly increases significance but remains with a consistent and comparable coefficient value. Most importantly, WTI oil price seems to be significant with two of the specifications, with a very small but negative coefficient, meaning that when the price of oil increases, the probability of foreign issuance goes down. This is particularly important for oil producing countries in our sample, higher prices contribute to higher economic growth and incentivize investment in the economy through borrowing internationally.

4. CONCLUSIONS AND POLICY CONSIDERATIONS

The volume and the relative size of corporate bond issuances in both external and local markets increased significantly in the LA6 over the past two decades. This was facilitated by greater macroeconomic stability and regulatory reforms. However, local markets remain relatively small compared to peers, not very liquid and dominated by government paper.

With the greater availability of funding in both foreign and domestic markets, we searched for evidence in support of several capital structure theories by examining the firm-level and market factors influencing the firm's choice where to issue. Our results support the market completeness theory, where the choice of the jurisdiction depends on the markets' scale and depth and their ability to accommodate the borrower's needs. The size of the overall market was a statistically significant factor in selecting the jurisdiction of issuance. At the firm level: size, age, collateral, and term of the bond were indicators of higher probability of external issuance, most likely driven by large financial and liquidity needs not being accommodated

by the local market. This supports firm structure/scale and agency cost theories.

The analysis confirms that local bonds markets in several countries studied here will need to continue growing and developing to attract more issuers and provide a wider array of investment opportunities. However, this could be construed as a chicken and egg dilemma, as firms look for larger markets for funding, but markets will not become larger unless more firms enter. This is where the recommendations from other studies on the prerequisites for local market development become relevant.

Strong macroeconomic policies play an important role in spurring growth of local bond markets (Burger and Warnock, 2006). For example, in our country sample, recent macroeconomic imbalances resulting in high inflationary environments, like in Argentina, led to bond maturities of a very short nature, which are not attractive for long-term investors. Consistent with crowding out theory, a high level of government debt, as in Brazil, may have reduced the share of corporate bonds in the total stock.

Governments should continue to support local markets by establishing highly traded benchmark instruments against which private bond spreads can be valued. Domestic bond spreads provide traders and policy makers with market perceptions of credit risk, which can inform and improve the conduct of monetary policy. Also, the expansion of hedging instruments would help reduce currency risks and external funding dependence (Saxena and Villar, 2008). These are more available and diversified in the countries with larger capital markets (Mexico and Brazil) but are still scarce in countries like Peru. Ensuring continued participation of the country in emerging-market benchmarks and global portfolios is also an important factor for attracting global interest to the country.

Regulatory restrictions and reforms have also been found important in hindering or promoting local bond financing

(Borensztein et al., 2008).²⁰ For example, while Peru has achieved and maintained impressive macroeconomic stability, its local markets remain small, not least due to regulatory hurdles and institutional weaknesses. Overall, to foster greater issuer participation and investor confidence, it is necessary to further strengthen the corporate governance frameworks, streamline issuance processes and procedures, not least by reducing cumbersome registration requirements (IMF, 2005). Improving data collection and dissemination, and enhancing competitiveness of the market infrastructure (safer, more efficient payment and settlement systems) will also help achieve greater market efficiency and transparency (IOSCO, 2007).

Finally, as both firm and market size continue to be important obstacles to the development of local markets, consideration should be given to policies that widen the attractiveness of pooling vehicles that generate subsequent trades like mutual funds, money market accounts and index funds. (Borensztein et al., 2008). There is also room to consider greater cross-border integration to address the problem of small market size and liquidity, perhaps through the Latin America Integrated Market (MILA) initiative that aims to foster equity and bond market integration among Chile, Colombia, Mexico, and Peru. Expanding pension and mutual funds not only creates demand for fixed income securities but also contributes to the increase in financial innovation, improved corporate governance, and enhances competition in the bond market (Silva, 2008).²¹

²⁰ While we did not test for the effect of the withholding tax on the decision of foreigners entering the local market and providing greater funding, as all countries have this tax, albeit with various provisions, exemptions, and rate structure (The International Bureau of Fiscal Documentation's Tax Research Platform, IBFD.org), not surprisingly, this was a negative factor for the development of the local markets in the study of the Asian economies.

²¹ IMF (2017) recommends a small exemption to the limits on foreign asset holdings by pension funds, specifically that up to

Building on the latter point, further research could consider the demand side factors, like the capacity of the domestic institutional investors to absorb the additional domestic bond issuance, although, as mentioned, the issue lies in part in the regulation and limits on investments guided by firms' ratings, but also in the expansion employee participation in pension schemes. Another angle could be looking in more detail into the pecking order theory to gauge what types of firms first issue domestically or abroad (for example, better rated firms and more liquid firms). Similarly, it could be explored how reliance/availability of bank financing factors into the decision on the firms' financing choice.

5% of assets under management can be regional instruments and would not count towards statutory foreign asset limits. Regulators could agree on a bilateral or multilateral basis as to which countries would qualify for the exemption. Prudential regulations applicable to domestic assets such as credit quality criteria should also apply to regional assets held under the 5% exemption.

Table A.1

SUMMARY OF LA6 CORPORATE BOND ISSUANCE BY COUNTRY

		2003-2005		2013-2015	
		Local	External	Local	External
<i>Argentina</i>					
Investment	Number of issuances	71	-	161	1
Grade	Total amount issued (USD millions)	729	-	4,789	375
	Average amount issued (USD millions)	10.3	-	29.7	375.0
	Average term ¹ (months)	52.8	-	35.9	120.0
	Average yield to maturity at issuance ¹ (%)	5.7	-	10.9	6.5
<i>Other</i>					
Investment	Number of issuances	3	13	2	10
Grade	Total amount issued (USD millions)	68	1,950	21	4,208
	Average amount issued (USD millions)	22.5	150.0	10.5	420.8
	Average term ¹ (months)	27.2	105.7	13.6	100.7
	Average yield to maturity at issuance ¹ (%)	-	-	-	-
<i>Brazil</i>					
Investment	Number of issuances	12	34	586	65
Grade	Total amount issued (USD millions)	899	4,948	55,824	54,763
	Average amount issued (USD millions)	75.0	145.5	95.3	842.5
	Average term ¹ (months)	52.0	100.7	70.5	102.7
	Average yield to maturity at issuance ¹ (%)	-	7.1	19.0	5.0

Other	Number of issuances	108	85	7	21
	Total amount issued (USD millions)	17,491	14,060	708	6,456
	Average amount issued (USD millions)	162.0	165.4	101.2	307.4
	Average term ¹ (months)	117.4	91.0	73.0	92.4
	Average yield to maturity at issuance ¹ (%)	10.1	8.7	7.5	8.2
<i>Chile</i>					
Investment	Number of issuances	178	3	99	70
Grade	Total amount issued (USD millions)	7,495	950	9,799	27,289
	Average amount issued (USD millions)	42.1	316.7	99.0	389.8
	Average term ¹ (months)	200.0	120.0	178.9	139.3
	Average yield to maturity at issuance ¹ (%)	5.4	5.0	3.7	4.2
Other	Number of issuances	8	3	-	7
	Total amount issued (USD millions)	645	850	-	3,600
	Average amount issued (USD millions)	80.6	283.3	-	514.3
	Average term ¹ (months)	135.3	116.6	-	101.0
	Average yield to maturity at issuance ¹ (%)	4.8	7.6	-	7.3
<i>Colombia</i>					
Investment	Number of issuances	-	-	98	14
Grade	Total amount issued (USD millions)	-	-	7,231	10,242
	Average amount issued (USD millions)	-	-	73.8	731.5
	Average term ¹ (months)	-	-	114.2	184.3
	Average yield to maturity at issuance ¹ (%)	-	-	4.9	5.5

Table A.1 (cont.)

		2003-2005		2013-2015	
		Local	External	Local	External
Other	Number of issuances	4	-	-	8
	Total amount issued (USD millions)	450	-	-	4,700
	Average amount issued (USD millions)	112.6	-	-	587.5
	Average term ¹ (months)	104.6	-	-	91.5
	Average yield to maturity at issuance ¹ (%)	-	-	-	6.0
<i>Mexico</i>					
Investment	Number of issuances	169	21	213	93
Grade	Total amount issued (USD millions)	26,852	14,446	45,188	62,887
	Average amount issued (USD millions)	158.9	687.9	212.2	676.2
	Average term ¹ (months)	81.4	139.6	104.3	203.7
	Average yield to maturity at issuance ¹ (%)	7.2	6.3	6.3	4.8
Other	Number of issuances	21	5	1	37
	Total amount issued (USD millions)	766	920	44	14,803
	Average amount issued (USD millions)	36.5	184.0	44.1	400.1
	Average term ¹ (months)	51.2	112.3	24.0	91.7
	Average yield to maturity at issuance ¹ (%)	8.8	10.2	-	6.9

Peru

Investment Grade	Number of issuances	3	2	18	23
Total amount issued (USD millions)		150	280	416	8,275
Average amount issued (USD millions)		50.0	140.0	23.1	359.8
Average term ¹ (months)		140.0	76.6	125.9	172.1
Average yield to maturity at issuance ¹ (%)		7.2	-	6.5	5.2
Other	Number of issuances	9	1	2	16
Total amount issued (USD millions)		217	225	108	3,490
Average amount issued (USD millions)		24.1	225.0	54.0	218.1
Average term ¹ (months)		54.6	126.0	232.0	92.3
Average yield to maturity at issuance ¹ (%)		6.0	8.0	8.1	8.0

¹ Average weighted by amount issued.

Sources: Dealogic; and IMF staff calculations.

Table A.2

A. CORPORATE BOND ISSUERS IN ESTIMATION SAMPLE

	<i>Pre-estimation (1)</i>			<i>Post-estimation (2)</i>		
	<i>No. of issuers</i>	<i>No. of external</i>	<i>External as % of total</i>	<i>No. of issuers</i>	<i>No. of external</i>	<i>External as % of total</i>
<i>All</i>						
1995-2005	4,580	1,571	34.30	1,940	1,005	51.80
2006-2015	903	269	29.79	224	84	37.50
<i>Peru</i>						
1995-2005	433	98	22.63	125	63	50.40
2006-2015	174	54	31.03	38	28	73.68
<i>Mexico</i>						
1995-2005	919	499	54.30	523	352	67.30
2006-2015	137	57	41.61	35	20	57.14
<i>Chile</i>						
1995-2005	544	166	30.51	214	90	42.06
2006-2015	74	9	12.16	22	0	0.00
<i>Argentina</i>						
1995-2005	514	174	33.85	120	54	45.00
2006-2015	55	19	34.55	20	7	35.00
<i>Colombia</i>						
1995-2005	377	95	25.20	46	23	50.00
2006-2015	114	33	28.95	17	1	5.88
<i>Brazil</i>						
1995-2005	1,793	539	30.06	912	423	46.38
2006-2015	349	97	27.79	91	28	30.77

Table A.2

B. CORPORATE BOND ISSUANCES IN ESTIMATION SAMPLE			
	<i>No. of issuances</i>	<i>No. of external issuances</i>	<i>External issuances as % of total</i>
<i>All</i>			
1995-2005	2,612	975	37.33
2006-2015	6,448	1,810	28.07
<i>Peru</i>			
1995-2005	185	65	35.14
2006-2015	610	124	20.33
<i>Mexico</i>			
1995-2005	742	417	56.20
2006-2015	1,180	402	34.07
<i>Chile</i>			
1995-2005	220	87	39.55
2006-2015	832	291	34.98
<i>Argentina</i>			
1995-2005	123	65	52.85
2006-2015	848	267	31.49
<i>Colombia</i>			
1995-2005	120	9	7.50
2006-2015	498	114	22.89
<i>Brazil</i>			
1995-2005	1,222	332	27.17
2006-2015	2,480	612	24.68

Table A.3

SUMMARY STATISTICS FOR FIRM-SPECIFIC VARIABLES

	<i>All</i>	<i>Local</i>	<i>External</i>	<i>Diff.</i>	<i>Financial</i>	<i>Nonfinancial</i>	<i>Diff.</i>	<i>Seasoned</i>	<i>Nonseasoned</i>	<i>Diff.</i>
<i>SIZEijt</i>	8.581 (1.85)	7.886 (1.43)	8.559 (1.54)	0.000	8.210 (1.61)	8.586 (1.85)	0.003	8.140 (1.37)	8.811 (2.02)	0.000
<i>LEVERijt</i>	0.319 (0.17)	0.358 (0.16)	0.371 (0.21)	0.065	0.417 (0.20)	0.317 (0.17)	0.000	0.291 (0.16)	0.333 (0.18)	0.000
<i>AGEijt</i>	19.831 (5.92)	17.108 (6.02)	19.406 (5.82)	0.000	16.547 (6.07)	19.880 (5.91)	0.000	19.087 (6.20)	20.221 (5.74)	0.000
<i>LIQijt</i>	0.631 (0.51)	0.554 (0.42)	0.522 (0.30)	0.033	1.166 (1.36)	0.623 (0.48)	0.000	0.623 (0.53)	0.636 (0.50)	0.144
<i>COLijt</i>	0.878 (0.18)	0.827 (0.22)	0.872 (0.16)	0.000	0.892 (0.21)	0.877 (0.18)	0.232	0.863 (0.20)	0.885 (0.16)	0.000
<i>RATINGijt</i>	0.648 (0.48)	0.532 (0.50)	0.847 (0.36)	0.000	0.708 (0.46)	0.647 (0.48)	0.066	0.534 (0.50)	0.707 (0.46)	0.000
<i>TERMijt</i>	8.211 (7.96)	7.725 (7.72)	9.207 (8.35)	0.000	6.341 (6.11)	8.890 (8.62)	0.051	8.162 (6.50)	9.292 (9.67)	0.001

Notes: The table reports sample means with standard deviations in parenthesis. *SIZEijt*: Logarithm of total assets. *INVijt*: Investments over total assets. *AGEijt*: Numbers of years listed on the stock exchange. *LEVERijt*: Total debt to total assets. *LIQijt*: Current assets over total liabilities. *COLijt*: Tangible assets to total assets. *RATINGijt*: Rating provided by at least one rating agency. *YRS_MATijt*: Yield to maturity at issuance. Equality of mean μ -value is reported under *Diff.* with H_0 : diff = 0 and H_a : diff \neq 0.

Table A.4

SUMMARY STATISTICS FOR FIRM-SPECIFIC VARIABLES, COUNTRY LEVEL

	All	Peru	Mexico	Chile	Argentina	Colombia	Brazil
SIZE _{ijt}	8.581 (1.85)	7.503 (1.06)	8.289 (1.54)	8.031 (1.42)	7.301 (1.61)	8.552 (0.96)	9.055 (2.04)
LEVER _{ijt}	0.319 (0.17)	0.267 (0.11)	0.339 (0.19)	0.263 (0.15)	0.293 (0.11)	0.340 (0.28)	0.325 (0.17)
AGE _{ijt}	19.831 (5.92)	16.823 (5.04)	20.041 (5.40)	22.015 (6.13)	17.377 (5.63)	17.320 (4.76)	19.926 (6.08)
LIQ _{ijt}	0.631 (0.51)	0.654 (0.34)	0.635 (0.54)	0.955 (0.71)	0.551 (0.36)	0.380 (0.17)	0.584 (0.46)
COL _{ijt}	0.878 (0.18)	0.913 (0.14)	0.832 (0.21)	0.930 (0.11)	0.933 (0.14)	0.909 (0.12)	0.881 (0.17)
RATING _{ijt}	0.648 (0.48)	0.672 (0.47)	0.759 (0.43)	0.288 (0.45)	0.475 (0.50)	0.680 (0.47)	0.671 (0.47)
TERM _{ijt}	8.211 (7.96)	9.149 (6.86)	10.014 (8.56)	11.433 (10.14)	4.124 (4.22)	9.841 (5.52)	7.057 (7.71)

Notes: The table reports sample means with standard deviations in parenthesis. SIZE_{ijt}: Logarithm of total assets. INV_{ijt}: Investments over total assets. AGE_{ijt}: Numbers of years listed on the stock exchange. LEVER_{ijt}: Total debt to total assets. LIQ_{ijt}: Current assets over total liabilities. COL_{ijt}: Tangible assets to total assets. RATING_{ijt}: Rating provided by at least one rating agency. YRS_MAT_{ijt}: Yield to maturity at issuance. Equality of mean μ -value is reported under *Diff*, with H_0 : diff = 0 and H_a : diff \neq 0.

Table A.5

MARKET SUMMARY STATISTICS

	<i>All</i>	<i>Peru</i>	<i>Mexico</i>	<i>Chile</i>	<i>Argentina</i>	<i>Colombia</i>	<i>Brazil</i>
<i>FCYjt</i>	107.339 (53.74)	27.872 (13.03)	137.864 (57.06)	36.139 (18.53)	51.323 (1.56)	34.150 (8.43)	123.182 (29.48)
<i>LCYjt</i> ¹	1,018.927 (782.74)	23.465 (6.14)	472.146 (125.34)	119.960 (16.66)	20.865 (5.29)	81.568 (13.34)	1,689.536 (445.79)
<i>TDSECjt</i>	0.695 (0.25)	0.300 (0.04)	0.530 (0.12)	0.655 (0.08)	0.127 (0.02)	0.346 (0.02)	0.892 (0.08)
<i>ONSRTjt</i>	0.818 (0.16)	0.491 (0.12)	0.778 (0.04)	0.749 (0.07)	0.286 (0.06)	0.707 (0.05)	0.930 (0.02)
<i>INTDjt</i>	6.846 (4.11)	3.490 (1.84)	3.635 (1.18)	1.238 (1.44)	12.275 (0.53)	4.133 (0.67)	10.158 (2.44)
<i>EXGDjt</i>	28.70 (10.18)	31.08 (7.73)	27.70 (6.54)	49.33 (10.55)	27.55 (3.65)	26.97 (6.18)	24.92 (6.79)
<i>FDIjt</i>	3.65 (1.81)	4.68 (1.01)	2.57 (0.59)	8.01 (1.46)	1.79 (0.60)	3.97 (0.71)	3.32 (0.79)

Notes: The table reports sample means with standard deviations in parenthesis. *FCYjt*: Firm's external liabilities in millions of USD. *LCYjt*: Firm's local liabilities in millions of USD. *TDSECjt*: Total bonds to GDP. *ONSRTjt*: Local bonds to total bonds. *INTDjt*: Short-interest differential between local and US nominal rates. *EXGDjt*: External government debt. *FDIjt*: Foreign direct investment as percentage of GDP. ¹Local firm's liabilities are calculated using only nonfinancial firm data for Colombia and calculated using only financial firm data for Argentina.

Table A.6

	4	5	6	7
	<i>Financial</i>	<i>Financial</i>	<i>Nonfinancial</i>	<i>Nonfinancial</i>
EXGD jt^* SEAS	0.000 (.)	0.000 (.)	0.010 ^a (2.28)	0.032 ^c (4.95)
EXGD $jt^*(1-SEAS)$	3.632 (0.03)	-0.283 (-0.00)	0.017 ^c (4.64)	0.047 ^c (8.27)
TDSEC jt^* SEAS	0.000 (.)	0.000 (.)	-0.291 (-0.83)	-0.349 (-0.96)
TDSEC $jt^*(1-SEAS)$	107.510 (0.04)	-178.469 (-0.02)	-1.017 ^b (-3.10)	-1.020 ^b (-3.08)
ONSRT jt^* SEAS	0.000 (.)	0.000 (.)	-0.467 (-1.16)	-0.380 (-0.92)
ONSRT $jt^*(1-SEAS)$	662.744 (0.06)	432.29 (.)	-0.151 (-0.38)	-0.384 (-0.95)
INTD jt^* SEAS	0.000 (.)	0.00 (.)	-0.059 ^c (-3.89)	-0.062 ^c (-4.05)
INTD $jt^*(1-SEAS)$	-26.712 (-0.12)	-6.392 (-0.02)	0.011 (0.93)	0.027 ^a (2.14)
FC_dummy	0.000 (.)	0.000 (.)	0.262 ^b (2.58)	0.196 (1.92)
FDI jt^* SEAS		0.000 (.)		-0.140 ^c (-3.82)
FDI $jt^*(1-SEAS)$		5.13 (0.02)		-0.202 ^c (-7.27)
Constant	-518.694 (-0.05)	-470.467 (-0.08)	-0.131 (-0.39)	0.567 (1.59)
Pseudo R ²		0.060	0.079	
BIC	33.1	36.5	3,467.6	3,414.9

Note: Zstatistic in parenthesis. ^ap < 0.05, ^bp < 0.01, ^cp < 0.001.

Table A.7

CHOICE OF MARKET: FULL RESULTS, WITH SEASONED COMPONENT

	8	9	10	11
	<i>All</i>	<i>All</i>	<i>Nonfinancial</i>	<i>Nonfinancial</i>
SIZE _{ijt} *SEAS	0.045 (1.03)	0.069 (1.58)	0.042 (0.97)	0.068 (1.55)
SIZE _{ijt} *(1-SEAS)	0.109 ^c (4.28)	0.107 ^c (4.14)	0.114 ^c (4.42)	0.113 ^c (4.33)
LEVER _{ijt} *SEAS	-1.044 ^b (-2.60)	-0.885 ^a (-2.20)	-1.020 ^a (-2.55)	-0.856 ^a (-2.13)
LEVER _{ijt} *(1-SEAS)	0.164 (0.96)	0.119 (0.70)	0.229 (1.32)	0.191 (1.10)
AGE _{ijt} *SEAS	0.011 (1.22)	0.012 (1.32)	0.009 (0.99)	0.010 (1.11)
AGE _{ijt} *(1-SEAS)	0.021 ^c (3.41)	0.018 ^b (2.94)	0.020 ^c (3.35)	0.018 ^b (2.88)
LIQ _{ijt} *SEAS	0.542 ^a (2.32)	0.548 ^a (2.34)	0.541 ^a (2.32)	0.549 ^a (2.34)
LIQ _{ijt} *(1-SEAS)	-0.118 (-1.10)	-0.116 (-1.09)	-0.050 (-0.49)	-0.043 (-0.42)
COL _{ijt} *SEAS	-0.126 (-0.56)	-0.104 (-0.46)	-0.088 (-0.39)	-0.065 (-0.28)
COL _{ijt} *(1-SEAS)	0.819 ^c (3.67)	0.864 ^c (3.85)	0.770 ^c (3.37)	0.836 ^c (3.64)
RATING _{ijt} *SEAS	1.380 ^c (10.48)	1.345 ^c (10.20)	1.372 ^c (10.44)	1.336 ^c (10.15)
RATING _{ijt} *(1-SEAS)	0.682 ^c (7.55)	0.666 ^c (7.28)	0.703 ^c (7.75)	0.685 ^c (7.47)
TERM _{ijt} *SEAS	0.020 ^b (2.63)	0.020 ^b (2.61)	0.021 ^b (2.65)	0.021 ^b (2.64)
TERM _{ijt} *(1-SEAS)	0.019 ^c (5.65)	0.020 ^c (5.75)	0.019 ^c (5.51)	0.019 ^c (5.61)

	<u>8</u>	<u>9</u>	<u>10</u>	<u>11</u>
	<u>All</u>	<u>All</u>	<u>Nonfinancial</u>	<u>Nonfinancial</u>
EXGD jt *SEAS	0.011 (1.94)	0.030 ^c (3.85)	0.012 ^a (2.01)	0.030 ^c (3.87)
EXGD jt *(1-SEAS)	-0.002 (-0.38)	0.021 ^b (3.16)	-0.002 (-0.56)	0.020 ^b (3.06)
TDSEC jt *SEAS	0.159 (0.37)	0.113 (0.25)	0.168 (0.39)	0.121 (0.27)
TDSEC jt *(1-SEAS)	-0.281 (-0.78)	-0.347 (-0.96)	-0.306 (-0.84)	-0.367 (-1.01)
ONSRT jt *SEAS	-1.720 ^b (-3.13)	-1.745 ^b (-3.12)	-1.669 ^b (-3.04)	-1.692 ^b (-3.03)
ONSRT jt *(1-SEAS)	-2.445 ^c (-4.75)	-2.382 ^c (-4.57)	-2.415 ^c (-4.67)	-2.368 ^c (-4.52)
INTD jt *SEAS	-0.063 ^c (-3.74)	-0.067 ^c (-3.84)	-0.063 ^c (-3.75)	-0.066 ^c (-3.84)
INTD jt *(1-SEAS)	0.029 ^a (2.31)	0.040 ^b (3.02)	0.029 ^a (2.25)	0.039 ^b (2.94)
FC_Dummy	0.315 ^b (2.91)	0.254 ^a (2.33)	0.322 ^b (2.97)	0.263 ^a (2.40)
FDI jt *SEAS		-0.133 ^c (-3.31)		-0.131 ^b (-3.26)
FDI jt *(1-SEAS)		-0.138 ^c (-4.59)		-0.140 ^c (-4.64)
Constant	-0.916 ^a (-2.04)	-0.512 (-1.10)	-0.991 ^a (-2.19)	-0.611 (-1.30)
Pseudo R ²	0.1947	0.2034	0.1965	0.2053
BIC	3,113.0	3,097.5	3,069.5	3,053.8

Note: Zstatistic in parenthesis. ^ap < 0.05, ^bp < 0.01, ^cp < 0.001.

Table A.8

POST-ESTIMATION MEASURES OF FIT

	<i>Table 7</i>	<i>Table 8</i>	<i>Table 9</i>	<i>Table 10</i>	<i>Table 11</i>						
Intercept only	1	2	3	4	5	6	7	8	9	10	11
Model:											
Log-Lik intercept only	-1,916.82	-1,809.67	-1,809.67	-15.01	-15.01	-1,798.27	-1,798.27	-1,809.67	-1,809.67	-1,786.80	-1,786.80
McFadden's R ²	0.152	0.165	0.176	0.465	0.465	0.060	0.079	0.195	0.203	0.196	0.205
Maximum likelihood R ²	0.180	0.193	0.205	0.372	0.372	0.075	0.098	0.223	0.232	0.226	0.235
McKelvey and Zavoina's R ²	0.293	0.317	0.335	1.000	0.998	0.128	0.163	0.397	0.408	0.397	0.409
Variance of y*	1.413	1.465	1.503	2,310.176	404.465	1.146	1.194	1.657	1.690	1.658	1.692
Count R ²	0.696	0.709	0.712	0.867	0.867	0.641	0.671	0.728	0.733	0.724	0.733
AIC	1.120	1.095	1.081	1.268	1.535	1.234	1.212	1.064	1.054	1.065	1.055
BIC	-20,005.86	-18,974.68	-19,008.01	-48.57	-34.97	-18,373.09	-18,409.93	-18,995.46	-19,011.01	-18,646.33	-18,662.04

	<i>Table 7</i>				<i>Table 8</i>				<i>Table 9</i>		
	1	2	3	4	5	6	7	8	9	10	11
Full model											
Model:											
Log-Lik full model	-1,625.96	-1,511.38	-1,490.75	-8.02	-8.02	-1,690.22	-1,655.96	-1,457.36	-1,441.65	-1,435.78	-1,420.01
McFadden's adj. R ²	0.145	0.157	0.168	-0.267	-0.534	0.054	0.071	0.181	0.188	0.182	0.190
Cragg & Uhler's R ²	0.247	0.265	0.281	0.589	0.589	0.103	0.135	0.307	0.319	0.310	0.322
Efron's R ²	0.180	0.193	0.207	0.423	0.423	0.073	0.099	0.224	0.234	0.227	0.237
Variance of error	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Adj count R ²	0.163	0.176	0.183	0.333	0.333	-0.004	0.080	0.229	0.243	0.227	0.251
AIC*n	3,275.92	3,050.76	3,011.49	38.05	46.05	3,402.45	3,341.92	2,964.71	2,937.30	2,921.56	2,894.01
BIC	-493.92	-493.45	-526.79	-0.37	3.03	-136.88	-189.57	-514.24	-529.79	-512.04	-527.75

Table A.9

MARGINAL EFFECTS FOR TABLE 3 SPECIFICATIONS			
	<i>1</i>	<i>2</i>	<i>3</i>
SIZE _{ijt}	0.025 ^b (- 3.25)	0.032 ^c (- 4.09)	0.034 ^c (- 4.23)
LEVER _{ijt}	0.096 (- 1.80)	0.089 (- 1.68)	0.069 (- 1.31)
AGE _{ijt}	0.009 ^c (- 5.15)	0.009 ^c (- 5.56)	0.008 ^c (- 4.88)
LIQ _{ijt}	0.046 (- 1.66)	0.055 ^a (- 1.99)	0.046 (- 1.64)
COL _{ijt}	0.172 ^b (- 3.23)	0.186 ^c (- 3.42)	0.207 ^c (- 3.78)
RATING _{ijt}	0.275 ^c (- 13.92)	0.289 ^c (- 14.71)	0.277 ^c (- 13.85)
TERM _{ijt}	0.007 ^c (- 6.20)	0.007 ^c (- 6.52)	0.007 ^c (- 6.60)
FC_dummy	0.077 (- 1.90)	0.094 ^a (- 2.30)	0.072 (- 1.77)
EXGD _{jt}	0.003 ^b (- 3.10)	0.001 (- 1.05)	0.009 ^c (- 4.96)
TDSEC _{jt}	-0.401 ^c (-10.27)	0.011 (-0.110)	-0.036 (-0.36)
ONSRT _{jt}		-0.574 ^c (-4.31)	-0.545 ^c (-4.05)
INTD _{jt}		-0.003 (-0.78)	0.000 (-0.07)
FDI _{jt}			-0.052 ^c (-6.34)

Note: Z-statistic in parenthesis. ^ap < 0.05, ^bp < 0.01, ^cp < 0.001.

Table A.10

VIX SPECIFICATION			
	<i>1</i>	<i>2</i>	<i>3</i>
SIZE _{ijt}	0.0665 ^c (0.02)	0.0897 ^c (0.02)	0.0932 ^c (0.02)
LEVER _{ijt}	0.253 ^a (0.15)	0.233 (0.15)	0.164 (0.15)
AGE _{ijt}	0.0236 ^c (0.00)	0.0264 ^c (0.00)	0.0229 ^c (0.00)
LIQ _{ijt}	0.119 (0.08)	0.142 ^a (0.08)	0.106 (0.08)
COL _{ijt}	0.514 ^c (0.15)	0.572 ^c (0.15)	0.663 ^c (0.16)
RATING _{ijt}	0.826 ^c (0.07)	0.896 ^c (0.07)	0.858 ^c (0.07)
TERM _{ijt}	0.0183 ^c (0.00)	0.0197 ^c (0.00)	0.0203 ^c (0.00)
FC_dummy	-0.101 -0.168	-0.090 -0.170	-0.342 ^a -0.177
VIX _{jt}	0.0226 ^b -0.010	0.0251 ^b -0.010	0.0385 ^c -0.010
EXGD _{jt}	0.00976 ^c (0.00)	0.004 (0.00)	0.0286 ^c (0.01)
TDSEC _{jt}	-1.120 ^c (0.11)	0.018 (0.27)	-0.119 (0.28)
ONSRT _{jt}		-1.553 ^c (0.38)	-1.460 ^c (0.38)
INTD _{jt}		-0.010 (0.01)	-0.004 (0.01)
FDI _{jt}			-0.164 ^c (0.02)
Constant	-3.098 ^c (0.39)	-2.420 ^c (0.47)	-2.200 ^c (0.48)
Pseudo R ²	0.153	0.167	0.180
BIC	3,350.137	3,135.226	3,093.944

Note: Zstatistic in parenthesis. ^ap < 0.05, ^bp < 0.01, ^cp < 0.001.

Table A.11

EMBI SPECIFICATION			
	<i>1</i>	<i>2</i>	<i>3</i>
SIZE _{ijt}	0.0713 ^c	0.0857 ^c	0.0905 ^c
	(0.02)	(0.02)	(0.02)
LEVER _{ijt}	0.270 ^a	0.202	0.188
	(0.15)	(0.15)	(0.15)
AGE _{ijt}	0.0246 ^c	0.0249 ^c	0.0236 ^c
	(0.00)	(0.00)	(0.00)
LIQ _{ijt}	0.138 ^a	0.140 ^a	0.130 ^a
	(0.08)	(0.08)	(0.08)
COL _{ijt}	0.461 ^c	0.551 ^c	0.578 ^c
	(0.15)	(0.15)	(0.16)
RATING _{ijt}	0.835 ^c	0.856 ^c	0.847 ^c
	(0.07)	(0.07)	(0.07)
TERM _{ijt}	0.0199 ^c	0.0199 ^c	0.0202 ^c
	(0.00)	(0.00)	(0.00)
FC_dummy	0.148	-0.144	0.003
	-0.107	-0.128	-0.136
EMBI _{jt}	0.000725 ^c	0.00443 ^c	0.00238 ^b
	0.000	-0.001	-0.001
EXGD _{jt}	0.0104 ^c	-0.0107 ^b	0.010
	(0.00)	(0.00)	(0.01)
TDSEC _{jt}	-1.014 ^c	0.211	0.049
	(0.11)	(0.28)	(0.28)
ONSRT _{jt}		-0.652	-1.047 ^b
		(0.42)	(0.44)
INTD _{jt}		-0.109 ^c	-0.0580 ^b
		(0.02)	(0.03)
FDI _{jt}			-0.0949 ^c
			(0.03)
Constant	-2.702 ^c	-2.658 ^c	-1.954 ^c
	(0.31)	(0.43)	(0.49)
Pseudo R ²	0.155	0.175	0.178
BIC	3,340.048	3,103.304	3,101.747

Note: Z-statistic in parenthesis. ^ap < 0.05, ^bp < 0.01, ^cp < 0.001.

Table A.12

	OIL PRICES SPECIFICATION		
	<i>1</i>	<i>2</i>	<i>3</i>
SIZE _{ijt}	0.0541 ^b (0.02)	0.0794 ^c (0.02)	0.0888 ^c (0.02)
LEVER _{ijt}	0.204 (0.15)	0.174 (0.15)	0.170 (0.15)
AGE _{ijt}	0.0224 ^c (0.00)	0.0249 ^c (0.00)	0.0232 ^c (0.00)
LIQ _{ijt}	0.120 (0.08)	0.133 ^a (0.08)	0.124 (0.08)
COL _{ijt}	0.480 ^c (0.15)	0.555 ^c (0.15)	0.588 ^c (0.16)
RATING _{ijt}	0.822 ^c (0.07)	0.876 ^c (0.07)	0.852 ^c (0.07)
TERM _{ijt}	0.0193 ^c (0.00)	0.0200 ^c (0.00)	0.0204 ^c (0.00)
FC_dummy	0.146 -0.106	0.193 ^a -0.107	0.177 ^a -0.107
WTI _{jt}	-0.00729 ^c -0.001	-0.00716 ^c -0.002	-0.00316 ^a -0.002
EXGD _{jt}	0.004 (0.00)	-0.003 (0.00)	0.0196 ^c (0.01)
TDSEC _{jt}	-1.177 ^c (0.11)	-0.237 (0.28)	-0.199 (0.28)
ONSRT _{jt}		-1.198 ^c (0.38)	-1.358 ^c (0.39)
INTD _{jt}		-0.0159 ^a (0.01)	-0.006 (0.01)
FDI _{jt}			-0.124 ^c (0.03)
Constant	-1.414 ^c (0.38)	-0.991 ^b (0.43)	-1.039 ^b (0.44)
Pseudo R ²	0.159	0.171	0.177
BIC	3,328.256	3,120.404	3,105.23

Note: Z-statistic in parenthesis; ^a p < 0.05, ^b p < 0.01, ^c p < 0.001.

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