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Do Firms Accumulate Cash to Engage in Carry Trade? Evidence for LATAM

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SANTIAGO DE CHILE – OTOÑO 2016

Abstract

Recent evidence has pointed out the existence of an after crisis global liquidity in which bond issuances of non-financial corporations has kept growing. This evidence also suggests that firms take advantage of cheaper external debt conditions and increase their cash or liquid assets when the conditions for pursuing carry trade activities are more attractive. However, we propose that the carry trade story is too narrow and hypothesize that increment in cash holdings may stem from firm's investing strategies. Namely, firms raise cheaper debt to take advantage of favorable external conditions in order to realize investment in later periods. Using firm-level information for six Latin American countries, we find evidence that suggest that firms use hard currency issuances in order to finance future investment. This result is robust and heterogeneous. We include other country-specific variables, as the presence of capital controls, and check the robustness of our findings; the main results hold.

CONTENTS

I. INTRODUCTION

What is called the "Second Phase of Global Liquidity" has led to a large increase in bond issuances. The latter has generated some concern since, rather of finance real investment, part of the proceeds could have been used to accumulate cash or other liquid assets.

Figure 1 panel (a) shows how since 2005 there has been a huge bond issuance increase, especially in hard currency, for LATAM countries. Particularly Figure 1 shows bond issuance of non-financial firms for Argentina, Brazil, Chile, Colombia, Mexico and Peru. At the same time, Figure 1 panel (b) shows how, further than the amount, the issuances have also increased both the average maturity as the number per year.

Figure 1: Hard currency & Local currency issuance per year for Latin American non-financial firms

Source: Data obtained from Thomson Reuters Eikon.
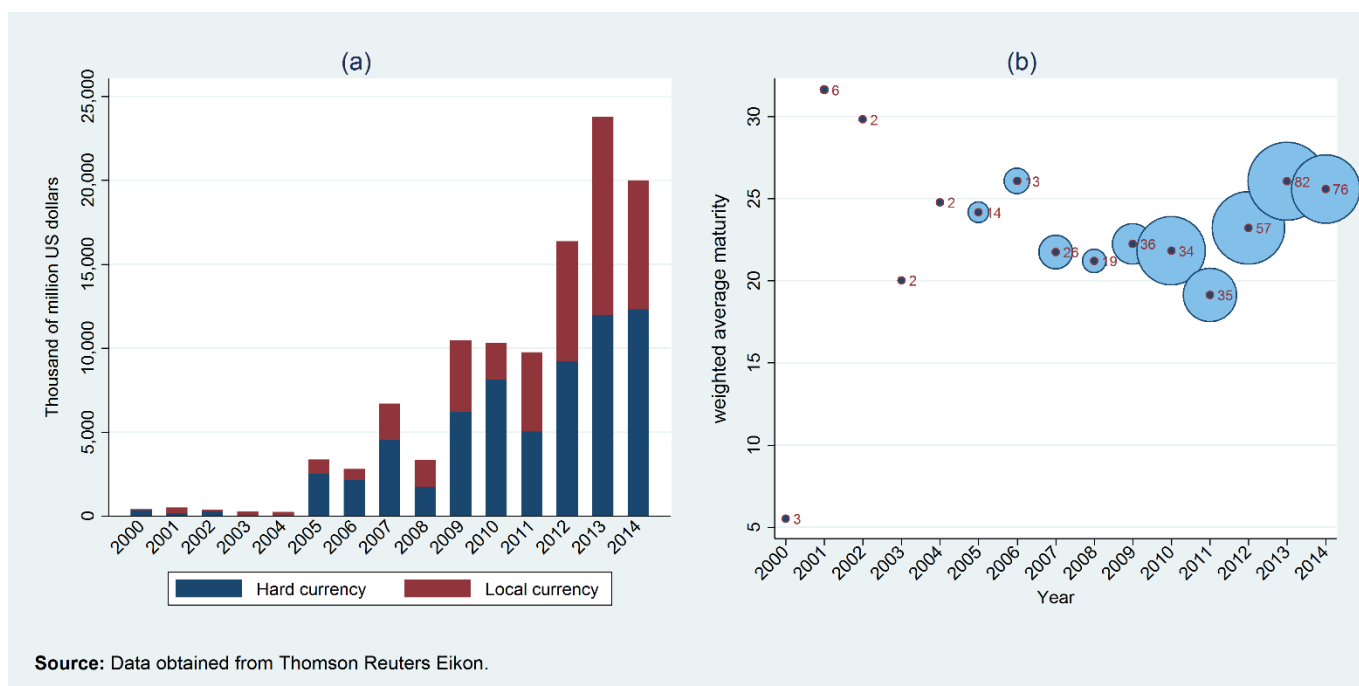
Panel (a) plots the total US bond issuance amount per year decomposed by hard and local currency. Panel (b) plots the total US bond issuance per year. The size of the circle represents the size of the issue, the height represents the average maturity (weighted by the amount of the issue) and the center value represents the issuance number. Both panels use data of the final sample used in the analysis.

Figure 2: Cash holdings and investment over the 2000-2014 period.

Source: Data obtained from Thomson Reuters Eikon.
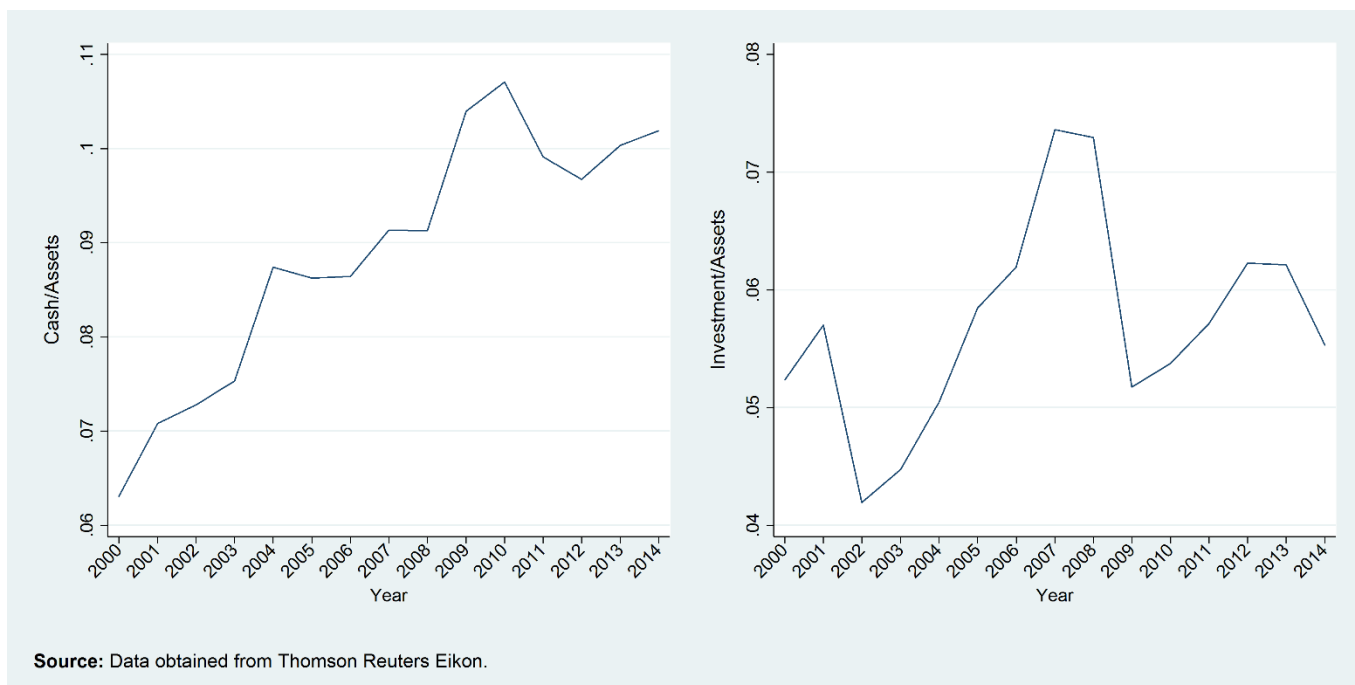
Panel (a) plots the ratio of the average level of cash over total assets for the 2000-2014 period. Panel (b) plots the ratio of the average level of capital expenditures over total assets for the 2000-2014 period. Both panels use data of the final sample used in the analysis.

The latter facts raise the question of why firms are issuing such a large volume of bonds and what are they doing with the proceeds of these issuances. Duca, Nicoletti, and Martinez (2016) argue that even though under normal conditions firms' investment opportunities should be the most important driver of borrowing decisions, there exist QE related factors that could be playing a role. First, loose financial conditions, stemming from QE policies, could have affected the timing decision of firms that try to secure funding in periods when financial conditions are favorable. This relates to the "market timing" hypothesis, proposed by Baker and Wurgler (2002). In the same line, the work of Bruno and Shin (2015) suggests as an alternative hypothesis that firms could be raising funds for precautionary motives while funding conditions are good: "they are borrowing for a rainy day, even when the sun shines today". Second, and in a less benign view, non-financial firms might have decided to engage in carry trade activities, thus issuing corporate bonds to arbitrate interest rate differentials and

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increase cash holdings rather than finance investment. The latter is in line with the hypothesis proposed by Caballero, Panizza, and Powell (2015),Bruno and Shin (2015), Caballero, Panizza, and Powell (2014), Chung, Lee, Loukoianova, Park, and Shin (2015) and Acharya et al. (2015)

So, if firms are issuing and accumulating cash a first look at the data should support this hypothesis and show an increase pattern on the level of cash holdings. Indeed, figure 2 panel (a) shows a cash accumulation pattern that has been taking place since 2000. It can be seen that it is disrupted just at the begin of the subprime crisis and again between 2010 and 2012. This pattern closely follows what was pictured in figure 1 (the only difference is what occurs between 2011 and 2012 with an increase in the level of issuance but a decrease of the level of cash accumulation). So, it seems like, for some reason, firms would accumulate an abnormal level of cash and this accumulation could be related to bond issuances.

However, panel (b) shows a slightly different picture for investment. It shows that investment falls marginally between 2007 and 2008 but decreases dramatically between 2008 and 2009, for then slowly increase from this year onwards. It can be seen that, for instance, the 2009-2010 capital expenditures increase could be related to the prior 2008-2009 huge increase in the level of cash holdings, and the same is true for the 2010-2011 increase, which could be related to a cash increase for the 2009-2010 period. (however, the above is not true for the period 2011-2012).

So, a somewhat narrow conclusion could argue that, indeed, non-financial companies are issuing bonds and keeping the proceeds as cash to engage in carry. However, a slightly more general look could note that, actually, non-financial companies are issuing bonds, keeping the proceeds as cash but are also increasing the capital expenditures in later periods. Therefore, we suggest that the carry trade story is too narrow and hypothesize that the cash accumulation may stem from firm's investing strategies, i.e., firms raise cheaper debt to take advantage of favorable external conditions in order to realize investment in later periods.

II.   RELATED LITERATURE

There exist recent research that focus on the "Second Phase of Global Liquidity" and the consequences of the subsequent corporate bond issuance increase that has been seen in the last years. Duca et al. (2016) found that the Quantitative Easing policy, led by the FED to handle the financial crisis, had a strong impact on the increase of corporate bond issuances across advanced and emerging economies. Feyen, Ghosh, Kibuuka, and Farazi (2015) note that the post-crisis bond surge are mostly driven by push factors (rather than pull factors) and do not systematically discriminate between emerging and developing economies. Shin (2014) shows that since 2010, there has been a shift from banks to the bond market in emerging economies as the main source of funding. Shin (2014) also notes that a great part of the increase is related to an "offshore" issuance[1], and this leads to a currency mismatch that could increase the vulnerability of emerging economies to a reversal of financial conditions. Avdjiev, Chui, and Shin (2014) argue that the offshore issuance of debt securities could give rise to financial stability concerns to the extent that these flows are driven by financial operations rather than real activities.

In addition, some research focus on what the firms do with the proceeds of bond issuances, stressing that much of the proceeds are kept as cash rather than finance investment, which could be *prima facie* evidence for carry trade activities. Bruno and Shin (2015) conducted a firm-level analysis for the period 2002-2014, and found that issuances of US dollar-denominated bonds are more likely to occur when there exist favorable carry trade conditions[2], and that the proceeds of these issuances are mostly kept in the form of cash. They also found that this result holds only for emerging market firms and occurs mainly in the after crisis period. Chung et al. (2015) points to the offshore US dollar-denominated issuance through a subsidiary and the subsequent increase in cash holdings as a signal of carry trade. They argue that this could be

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[1] An emerging market firm issues through a subsidiary in country B but has residence and consolidates its balance sheet in country A

[2] They use both the spread between the domestic money market rate and the US money market rate and the "Bloomberg carry return index" as proxies for carry trade.

motivated to hedge export receivables or by the prospect of a financial gain (if the domestic currency is expected to strengthen against the dollar), but it would be difficult to draw a distinction on both motivations. Caballero et al. (2015) found that, using the spread between the local currency deposit rate and borrowing costs in the US for BAA rated corporations, there exist a positive correlation between hard currency bond issuances[3] and the spread over cash holdings. At the same time, they found that these results hold and are amplified by the presence of capital controls, i.e., the effect is greater in countries with a high degree of capital controls. Acharya et al. (2015) also found a similar result with a subsample of latinamerican countries. The latter is consistent with the hypothesis of Shin and Zhao (2013) and Chung et al. (2015) that firms use within company loans to elude capital controls and thus exploit arbitrage opportunities otherwise exploited by the banking sector.

However, some research also raises the hypothesis that, although at first glance it seems like firms engaged in carry trade by the prospect of a financial gain, it could be that they first raise cheaper debt to engage in carry trade in order to invest in later periods. This relates to the "market timing" hypothesis, proposed by Baker and Wurgler (2002) and is also mentioned by Bruno and Shin (2015). Therefore, under this hypothesis the data could show an abnormal cash accumulation in one period but with a capital expenditure increase in a subsequent one. In line with this, Simutin (2010) using a sample of US corporations in the 1960-2006 period found that firms with unusually high levels of cash tend to invest more in the future than do firms with lower excess cash. He divided the sample in quintiles (according to levels of cash) and found that the difference in the investment-to-assets ratios of the top and bottom excess cash groups reaches nearly 5%. Finally, Duchin, Ozbas, and Sensoy (2010) conduct a firm-level analysis for the immediate after period of the financial crisis (2007-2008), and found that the crisis had a negative impact on investment. Nevertheless, they also show that a large level of "excess" cash in prior periods allow firms to fund investment during the crisis, and thus "soften" the negative impact of it.

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[3] Hard currencies are: US Dollar; Euro; British Pound Sterling; Japanese Yen and Swiss Franc.

III. METHODOLOGY

III.1. *Basic Model*

To test our hypothesis we follow the prior studies of Caballero et al. (2015) and Bruno and Shin (2015) and first estimate the following equation:

$$\frac{Cash_{i,c,t}}{Assets_{i,c,t}} = FXB_{i,c,t}\left(\beta + \delta SP_{c,t}\right) + X_{i,c,t}\gamma + \alpha_i + \theta_{c,t} + \xi_{i,c,t} \quad (1)$$

Where the dependent variable is cash and short-term investment scaled by total assets of firm i, in country c, in year t. On the right side, $FXB_{i,c,t}$ is the bond issuance, $SP_{c,t}$ is the demeaned spread between the local currency deposit rate and borrowing costs in the US for BAA rated corporations[4], $X_{i,c,t}$ is a matrix that includes the following controls: the income based cash flow over total assets; the log of total assets; the Tobin's Q (the firms' market cap plus total debt over total assets); the lagged value of cash over total assets, debt over total assets and long-term debt over total debt. α_i and $\theta_{c,t}$ are firm-level and country-year fixed effects, respectively. Finally, $\xi_{i,c,t}$ is the error term that is assumed well behaved.

The parameters of interest are β and δ. A positive sign of β means that, non-financial corporations keep a fraction of foreign currency bond proceeds as cash. At the same time, a positive sign of δ may means that the latter is intensified when there exist positive interest rate differential, which is *prima facie* evidence for carry trade activities.

So far the analysis encompasses just the period when the issuance occurs, thus we only can see if the bond issuance of a firm is related to an increase on cash holdings in this period, which would be consistent with the carry trade hypothesis, but doing this we omit what happens the next periods. It could be that firms just try to secure funding

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[4] We also use a second measure of the spread: the demeaned spread between the local currency borrowing rate and borrowing costs in the US for BAA rated corporations

when financial conditions are favorable, so they could be "borrowing for a rainy day, even when the sun shines today" and carry out the investment in later periods.

To test this hypothesis we extend equation (1) and estimate the following equation:

$$Investment_t = \kappa Investment_{t-1} + \tau FXB_{i,c,t}$$

$$+ FXB_{i,c,t-1}(\eta + \phi SP_{c,t-1}) + X_{i,c,t}\gamma + \alpha_i + \theta_{c,t} + \xi_{i,c,t} \quad (2)$$

When we use the lagged values of bond issuance and the spread, and also add a lagged value of investment and a current value of the bond issuance. Here, investment is the capital expenditures of firm i, of country c, on period t, scaled by total assets, and the controls incorporated in $X_{i,c,t}$ are the same used in equation (1).

The parameters of interest are η and ϕ. A positive sign of η means that the proceeds of a bond issuance of period t-1 are used to finance investment in period t. At the same time, a positive sign of ϕ means that a favorable (positive) spread in the last period positively influence investment in the current period as a mediating factor on bond issuance.

Therefore, we hypothesize that η and ϕ have a positive value, so, even if the bond proceeds are kept as cash for a time (and β and δ have a positive value too), the "favorable conditions" for bond issuance holds and investment take place in later periods.

III.2. *Endogeneity and Sample selection*

It is worth noting that the estimation of equation (1) and (2) have an endogeneity problem. The control variables included in $X_{i,c,t}$ are solved together with the dependent variable, leading to the estimation of biased parameters if both equations are estimated through Ordinary Least Squares. Also, the inclusion of the lagged dependent variable and fixed effect introduces endogeneity. To handle this problem we estimate equations (1) and (2) using the Blundell and Bond (1998) system GMM estimator. Recently, Flannery and Hankins (2013) report that system GMM estimators has good properties

when compared with a set of alternative dynamic panel models commonly used in corporate finance research.

As is well-known, the consistency of the estimates depends critically on the absence of second-order serial autocorrelation in the residuals and on the validity of the internal instruments Arellano and Bond (1991). Accordingly, we report the *p*-value of autocorrelation test of second order (*p*-value Auto (2)) and the Hansen test of over-identifying constraints.

At the same time, it is worth noting that the estimation is carried out with a sample of firms that have at least one bond issuance on the period considered, leading to a sample selection problem: if there is a systematic shared characteristic by firms that decided to issue, then the parameters estimated could be biased. Thus, any conclusion derived from the analysis will be valid only to these kind of firms.

IV. DATA AND STATISTICS

Our study rests on a comprehensive database that combines bond issuance information, firm-level financial information and country-level macroeconomic information. The final sample use 188 non-financial firms of Argentina, Brazil, Chile, Colombia, Mexico and Peru for the 2000-2014 period. To be in our sample we use firms that at least have one issuance on the period considered. Our data on bond issuance and financial information come from Thomson Reuters Eikon database, which was merged manually using the ticker identifier that is present in both databases, making sure that for each listed firm in our sample we were able to either find a match in the issuance data or we could confidently assign zero issuance.

Based on the balance sheet information we computed ratios of cash holdings to assets and capital expenditures to assets, which are used as the relevant dependent variables in the regressions, and we also add the ratio of cash flow to assets, total debt to assets, the log of total assets, the long term debt and tobin's Q as control variables. Table 1, rows 1 to 7, lists the average values of these variables for each country used in the sample.

We complemented the firm-level data with country-level data on deposit and borrowing interest rates, sourced from the World Bank's WDI database, and data on yields of BAA rated bonds in the USA, sourced from Moody's database. Based on the last three measures we computed both, the spread between the local currency deposit rate and borrowing costs in the US for BAA rated corporations, and also the spread between the latter and the local currency borrowing rate. Table 1, rows 8 and 9, report the average value of both spread measures for each country.

We constructed measures of bond issuance based on the currency denomination of the bond, which was decomposed between hard currency and local currency, with the hard currency category being the sum of issuance in US Dollar; Euro; British Pound Sterling; Japanese Yen and Swiss Franc. At the same time, we aggregate the total issuances in a year-level unit, i.e., we sum the total year issuances of a firm to consolidate it in just one observation per year. Doing this it could be that a firm issues two bond in the same year with a different currency denomination but this is not the case with our sample. Table 1, rows 10 and 11, present the total number of hard currency and local currency issuances for each country.

Table 1: Summary statistics for the 2000-2014 period

Row	Variable	Argentina	Brazil	Chile	Colombia	Mexico	Peru
(1)	Cash2a	8,50%	12,30%	7,20%	6,60%	9,10%	6,00%
(2)	Capex2a	5,10%	6,40%	5,30%	6,50%	5,10%	7,60%
(3)	CFO/Assets	10,50%	10,90%	8,40%	7,30%	10,20%	11,00%
(4)	Ln(Assets)	20,481	21,570	21,210	21,745	21,662	20,528
(5)	Tobin's Q	94,10%	124,70%	109,20%	103,00%	112,00%	110,70%
(6)	Debt/Assets	36,50%	32,00%	30,20%	22,90%	28,40%	31,40%
(7)	Lt Debt	66,50%	70,70%	77,90%	75,50%	76,50%	66,30%
(8)	Spread1	6,00%	5,12%	1,78%	0,28%	-3,63%	3,13%
(9)	Spread2	10,77%	36,83%	2,36%	6,73%	1,17%	15,05%
(10)	FXBH (n°)	32	26	34	12	146	38
(11)	FXBL (n°)	5	173	163	23	70	49
(12)	k	0,66	0,52	0,32	0,63	0,55	0,01
(13)	ki	0,57	0,46	0,22	0,72	0,54	0,01
(14)	ko	0,75	0,58	0,42	0,53	0,55	0,02
(15)	Hedge	4,50%	20,00%	22,20%	10,00%	36,20%	2,30%
(16)	Firms (n°)	12	69	42	7	42	16

Cash2a is the ratio between cash over total assets. Capex2a is the ratio between capital expenditures over total assets. CFO/Assets is the income based cash flow over total assets. Ln(Assets) is the log of total assets. Q Tobin is the market cap plus total debt over total assets. Debt/Assets is debt over total assets and LT Debt is long-term debt over total debt. Spread1 is deposit interest rate minus US corporate bond yield BAA. Spread2 is borrowing interest rate minus US corporate bond yield BAA. FXBH is hard currency issuance and FXBL is local currency issuance.

At the same time, we obtained data on capital controls from Fernández, Klein, Rebucci, Schindler, and Uribe (2015). The index is a discrete measure of restrictions to capital flows, with separate measures for each category of inflows and outflows. The overall measure of capital account restrictions is the simple average of the binary codings for all possible controls/restrictions in ten asset categories. The index range between 0 and 1 and are decreasing in the level of capital account openness. Table 1, rows 12 to 14, reports the average value of the three measures of capital controls. Appendix B presents detailed summary statistics for the capital control measures.

Finally, row 15 shows the percentage of firms that use derivatives on years that they decide to issue and row 16 report the total number of firms by country used in the final sample.

V.   RESULTS

V.1 *Basic results*

V.1.a. Bond issuance, Cash holdings & Investment

We begin with the estimation of equation (1) in the simplest form through OLS, i.e., without any control other than the bond issuance and the demeaned spread, to minimize endogeneity problems and to check if the results hold in the purest form of the model.

Table 2 shows the results of the baseline regression using the ratio of hard currency issuances to total assets as the bond issuance measure. The first column shows that there is a positive statistically significant correlation between hard currency bond issuances and cash holdings (β). At the same time, when we allow for the interaction term between bond issuances and cash holdings to vary with the spread the latter results hold and the interaction term is statistically significant (δ). Additionally, when we add the control variables in column 3 it can be seen that the parameters of interest are statistically significant and with the expected sign.

Columns 4 to 6 report the results of equation (2). The first column shows that there is not a statistically significant correlation between the lagged hard currency bond issuances and current investment (η) . However, when we include the lagged interaction term it can be seen that both (η) and (ϕ) are positive and statistically significant, which is consistent with our hypothesis that firms take advantage of favorable debt issuance conditions in one period, and finance investment in later periods. Finally, when we add the control variables in column 6 the later results hold, both in magnitude and statistical significance.

Table 2: Cash holdings & Investment, baseline regression LSO

Dependent Variable:	Cash & Short Term Investment				Investment	
	(1)	(2)	(3)	(4)	(5)	(6)
FXBH$_t$ (β)	0.017*	0.027**	0.037***			-0.003
	(0.010)	(0.012)	(0.012)			(0.003)
FXBH $*$ SP$_t$ (δ)		0.430**	0.556**			
		(0.208)	(0.224)			
FXBH$_{t-1}$ (η)				0.008	0.022**	0.023**
				(0.005)	(0.009)	(0.009)
FXBH $*$ SP$_{t-1}$ (ϕ)					0.513**	0.544***
					(0.200)	(0.201)
Cash$_{t-1}$			0.383***			
			(0.028)			
Inv$_{t-1}$						0.342***
						(0.043)
CFO/Assets$_t$			0.258***			0.024
			(0.036)			(0.018)
Ln(Assets)$_t$			-0.005			-0.005*
			(0.006)			(0.003)
Q tobin$_t$			0.003			0.012***
			(0.003)			(0.003)
Debt/Assets$_t$			0.037*			-0.009
			(0.020)			(0.012)
LT debt$_t$			0.007			0.006
			(0.009)			(0.004)
The spread is	Deposit interest rate - US corporate bond yield BAA					
Observations	1,868	1,868	1,584	1,584	1,584	1,584
R-squared	0.073	0.075	0.286	0.156	0.162	0.301
Number of id	188	188	184	184	184	184
Country-Year FE	YES	YES	YES	YES	YES	YES

FXBH is the hard currency issuance. FXBH*SP is an interaction term between the hard currency issuance and the demeaned spread (deposit interest rate over BAA US corporate bond yield). CFO/Assets is the income based cash flow over lagged total assets. Ln(Assets) is the log of total assets. Q Tobin is the market cap plus total debt over total assets. Debt/Assets is debt over total assets and LT Debt is long-term debt over total debt. *T-statistics* from Robust Standard Errors are in parentheses. ***, **, and * represents a level of significance lower than 1%, 5%, and 10%, respectively.

Table 3: Cash holdings & Investment, baseline regression GMM

Dependent Variable (y):	Cash	Investment	Cash	Investment
	(1)	(2)	(3)	(4)
$FXBH_t$ (β)	0.046***	-0.006*	0.065***	-0.006*
	(0.016)	(0.003)	(0.019)	(0.003)
$FXBH * SP_t$ (δ)	0.930***		0.940***	
	(0.330)		(0.297)	
$FXBH_{t-1}$ (η)		0.023*		0.031**
		(0.013)		(0.014)
$FXBH * SP_{t-1}$ (ϕ)		0.644**		0.557**
		(0.301)		(0.231)
$Cash_{t-1}$	0.612***		0.612***	
	(0.041)		(0.042)	
Inv_{t-1}		0.491***		0.487***
		(0.044)		(0.046)
$CFO/Assets_t$	0.209***	0.024	0.208***	0.024
	(0.038)	(0.021)	(0.037)	(0.020)
$Ln(Assets)_t$	-0.002	0.001	-0.002	0.001
	(0.004)	(0.002)	(0.003)	(0.002)
$Q\ tobin_t$	0.004	0.007***	0.005	0.007***
	(0.005)	(0.002)	(0.004)	(0.002)
$Debt/Assets_t$	0.049**	-0.013	0.048**	-0.011
	(0.022)	(0.016)	(0.022)	(0.016)
$LT\ debt_t$	-0.030*	0.005	-0.030*	0.006
	(0.017)	(0.010)	(0.017)	(0.010)
The spread is	Deposit interest rate - US corporate bond yield BAA		Borrowing interest rate - US corporate bond yield BAA	
Observations	1,584	1,584	1,584	1,584
Number of id	184	184	184	184
Country-Year FE	YES	YES	YES	YES
F-Test	151.8	16.75	30.50	160.6
Auto(2)	0.212	0.495	0.192	0.507
Hansen p-value	0.972	0.991	0.981	0.993
Marginal Effect				
$\partial y / \partial FXBH$	0.0382***	0.0192*	0.0568***	0.0324**
	(0.0135)	(0.0111)	(0.0173)	(0.0148)

FXBH is the hard currency issuance. FXBH*SP is an interaction term between the hard currency issuance and the demeaned spread (deposit interest rate over BAA US corporate bond yield). CFO/Assets is the income based cash flow over lagged total assets. Ln(Assets) is the log of total assets. Q Tobin is the market cap plus total debt over total assets. Debt/Assets is debt over total assets and LT Debt is long-term debt over total debt. Auto(2) is a test of second order serial autocorrelation of the residuals under the null hypothesis of no serial correlation. The Hansen test is a test of over identifying restrictions, asymptotically distributed as χ^2 under the null hypothesis of no correlation between the instruments and the error term. *T-statistics* from Robust Standard Errors are in parentheses. ***, **, and * represents a level of significance lower than 1%, 5%, and 10%, respectively.

[Table A1](#)of appendix reports the results using the borrowing interest rate rather than deposit interest rate on the spread. It can be seen that the results are very close to those of table 2.

However, as stated above the previous estimation has an endogeneity problem, because some variables are solved together with the dependent variable. To correct this, in table 3 we report GMM estimations of equation (1) and (2). In this case we report the results using both measures of the spread: the deposit interest rate minus the US corporate bond yield BAA (columns 1 and 2), and the borrowing interest rate minus the US corporate bond yield BAA (columns 3 and 4). We can see that the main results of table 1 hold: *there exist a positive and statistically significant correlation between hard currency issuances and cash holdings (β), and this relation is intensified by the presence of a favorable spread (δ). Additionally, there also exist a positive correlation between hard currency bond issuances on the last period and current investment (η), and this correlation is positively amplified by the mediating effect of the lagged spread (ϕ).* The latter is consistent with our hypothesis that firms take advantage of favorable financial conditions and carry out investment in later periods.

Furthermore, table 3 reports the marginal effect of bond issuance over cash holdings and investment. Using the results of table 3 column 1, we can see that an increase of 10 percentage points in the relation bond issuance-total assets imply an increase of 0.4 percentage points in the relation cash holdings-total assets, evaluated at the average spread. This is enhanced by the spread: an increase of 1 percentage point in the spread has an impact of almost 1 percentage point on the marginal effect of the issuance over cash holdings. The latter implies that a 1 percentage point increase in the spread leads to an increase from 0.4 to 0.5 percentage points in the marginal effect of bond issuance over cash holdings. At the same time, using the results of table 3 column 2, we can see that an increase of 10 percentage points in the relation lagged bond issuance-lagged total assets imply an increase of 0.2 percentage points in the relation of current investment-total assets, evaluated at the average lagged spread.

It is worth noting that there exist a slight difference depending on the spread measure used in the regression. In columns 3 and 4 we use the borrowing interest rate rather than the deposit interest rate as the interaction term with the hard currency bond issuance. The rationale of use this measure is that if firms issue abroad, it could be that internal conditions are not so favorable as external conditions to borrow, thus

firms could take advantage of the latter and decide to issue abroad. Therefore, the relevant rate for this comparison would be the borrowing interest rate rather than the deposit interest rate (which is the relevant rate for the carry trade hypothesis). When we use the borrowing interest rate, the marginal effect of a 10 pp increase in bond issuance over cash holdings is 0.6 pp (rather than 0.4), and the marginal effect of a 10 pp increase in bond issuance over investment is 0.32 (rather than 0.2).

Figure 3 plots the marginal effect of the hard currency issuance over cash holdings (left panel) and the lagged hard currency issuance over current investment (right panel), using the results of table 2, columns 1 and 2[5]. On the left panel, the slope is positive and statistically significant only for values near zero onwards, which means that when the spread takes a positive value (the deposit interest rate is greater than the borrowing costs in the US), then the fraction of the proceeds that are kept as cash increases with the spread. However, and as can be seen in the right panel, this is also true for the relation of the lagged bond issuance and the spread over the current investment: when the spread of period t-1 increases also does it the effect of the lagged hard currency issuances on the current investment.

Figure 3: Marginal effect of the hard currency bond issuance over Cash Holdings & Investment (with spread 1)
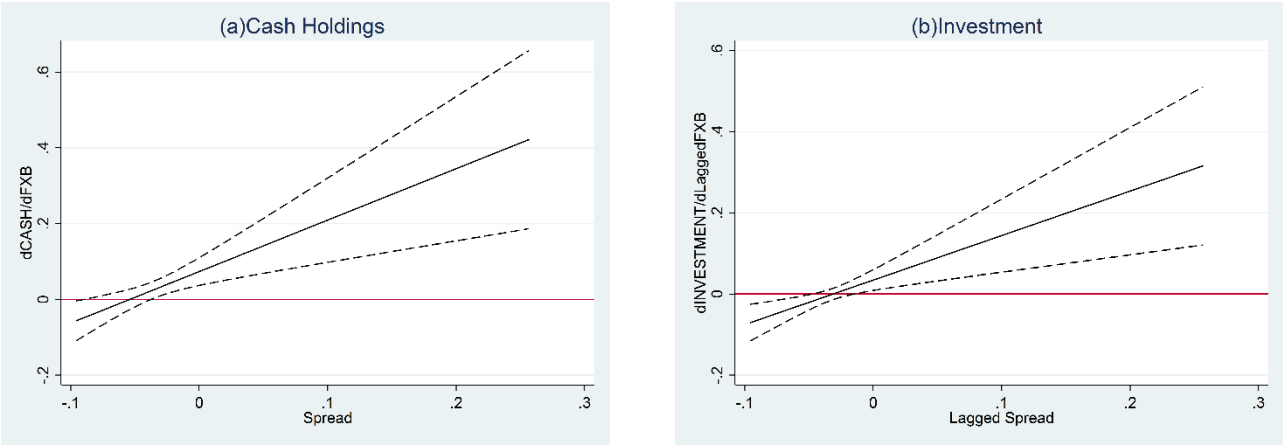
The left panel of figure 3 plots how the sensitivity of the relationship between hard currency issuances and cash holding varies with the first spread. The right panel plots the same effect of the spread over the relationship between the lagged hard currency issuance and the current investment. The solid line plots the main effect and the dashed lines are 95% confidence intervals. Panel (a) and (b) uses the model of column 1 and 2 of Table 3, respectively.

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[5] Figure A1 of appendix plots the same information using the results of columns 3 and 4.

However, it is worth noting that both estimates uses the hard currency issuance as the driver of cash accumulation, but it also could be that the same is true with local currency issuances. To verify this we run the same model but with local currency issuances as the explanatory variable, and thus check whether non-financial firms always keep a fraction of bond issuances in cash, no matter whether they are issuing in domestic or hard currency, and if past issuances in local currency also has an effect on current investment. In Table 4 we estimate the same regression as in columns 1 and 2 of table 3, but with the domestic currency issuance as the explanatory variable and as the interactive term with the spread[6]. The results show that there is no effect of domestic currency issuances on cash holdings (column 2), but there exist a negative effect of past domestic currency issuances over current investment and this effect is intensified by the spread (column 5). Moreover, in columns 3 and 6 we run a "*horserace*" regression including both, hard currency and domestic currency issuances as explanatory variables. We found that the hard currency issuance effect over cash holdings and investment are robust to the inclusion of domestic currency issuance: *the hard currency bond issuances has an impact over cash holdings and future investment, but this is not true with domestic currency issuances.* Additionally, it can be note that the negative effect of past local currency issuances on current investment found in column 5, although remains negative, is no longer statistically significant.

The rationale for this could be that, due to the favorable external financial conditions, the amount of hard currency issuances could be greater than that of local currency issuances, therefore firms could accumulate cash through this "excess proceeds" related with hard currency issuances only. Indeed, figure 1 shows that the total amount (the sum of all issuances each year) is greater for hard currency bond issuances for all years in the sample. Also, the average hard currency issuance for the whole period (2000-2014) is $601.898.137 dollars, which is far greater than the $167.067.993 dollars of local currency issuances.

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[6] In table A2 of appendix we report the same results using the borrowing interest rate rather than deposit interest rate on the spread. The results are very close to those of table 3

Table 4: HC issuances vs DC issuances, baseline regression GMM

Dependent Variable (y):	Cash			Investment		
	HC issuance	DC issuance	HC vs DC	HC issuance	DC issuance	HC vs DC
	(1)	(2)	(3)	(4)	(5)	(6)
$FXBH_t$	0.046***		0.049***	-0.006*		-0.005*
	(0.016)		(0.016)	(0.003)		(0.003)
$FXBH * SP_t$	0.930***		0.961***			
	(0.330)		(0.345)			
DCB_t		0.008	0.050		-0.003	0.041
		(0.018)	(0.061)		(0.009)	(0.034)
$DCB * SP_t$		-1.003	-1.988			
		(0.948)	(2.747)			
$FXBH_{t-1}$				0.023*		0.023*
				(0.013)		(0.013)
$FXBH * SP_{t-1}$				0.644**		0.644**
				(0.301)		(0.303)
DCB_{t-1}					-0.015*	-0.006
					(0.008)	(0.051)
$DCB * SP_{t-1}$					-0.535*	2.060
					(0.298)	(1.908)
$Cash_{t-1}$	0.612***	0.623***	0.613***			
	(0.041)	(0.041)	(0.044)			
Inv_{t-1}				0.491***	0.482***	0.488***
				(0.044)	(0.047)	(0.049)
$CFO/Assets_t$	0.209***	0.201***	0.213***	0.024	0.020	0.030
	(0.038)	(0.040)	(0.039)	(0.021)	(0.021)	(0.022)
$Ln(Assets)_t$	-0.002	-0.001	-0.000	0.001	0.001	0.001
	(0.004)	(0.004)	(0.004)	(0.002)	(0.002)	(0.002)
$Q\ tobin_t$	0.004	0.005	0.004	0.007***	0.007***	0.006**
	(0.005)	(0.005)	(0.005)	(0.002)	(0.002)	(0.003)
$Debt/Assets_t$	0.049**	0.056**	0.036	-0.013	-0.003	-0.019
	(0.022)	(0.023)	(0.025)	(0.016)	(0.016)	(0.015)
$LT\ debt_t$	-0.030*	-0.012	-0.033*	0.005	-0.004	0.008
	(0.017)	(0.017)	(0.017)	(0.010)	(0.012)	(0.011)
The spread is	Deposit interest rate - US corporate bond yield BAA					
Observations	1,584	1,584	1,584	1,584	1,584	1,584
Number of id	184	184	184	184	184	184
Country-Year FE	YES	YES	YES	YES	YES	YES
F-Test	151.8	128.3	123.9	16.75	124.6	139.5
Auto(2)	0.212	0.177	0.216	0.495	0.516	0.499
Hansen p-value	0.972	0.997	0.985	0.991	0.998	0.991

FXBH and DCB are hard currency issuance and domestic currency issuance. FXBH*SP is an interaction term between the hard currency issuance and the demeaned spread (deposit interest rate over BAA US corporate bond yield). DCB*SP is an interaction term between the domestic currency issuance and the demeaned spread. CFO/Assets is the income based cash flow over lagged total assets. Ln(Assets) is the log of total assets. Q Tobin is the market cap plus total debt over total assets. Debt/Assets is debt over total assets and LT Debt is long-term debt over total debt. Auto(2) is a test of second order serial autocorrelation of the residuals under the null hypothesis of no serial correlation. The Hansen test is a test of over identifying restrictions, asymptotically distributed as χ^2 under the null hypothesis of no correlation between the instruments and the error term. *T-statistics* from Robust Standard Errors are in parentheses. ***, **, and * represents a level of significance lower than 1%, 5%, and 10%, respectively.

V.1.b. Bond issuance & Capital controls

Here, we extend the analysis and incorporate the capital control measures developed by Fernández et al. (2015) on equations (1) and (2). The previous work of Caballero et al. (2015) using a sample of emerging countries, found that the correlation of bond issuances and cash holdings is amplified with the presence of capital controls, i.e., for some reason, in countries where exist greater capital controls there also exist a greater level of cash accumulation related to bond issuances. The cause of the latter could be related to Shin and Zhao (2013) and Chung et al. (2015) hypothesis that firms use within company loans to elude capital controls, and thus arbitrate interest rate differentials otherwise exploited by the banking sector.

To test this hypothesis we extend equation (1) and now estimate the follow equation:

$$\frac{Cash_{i,c,t}}{Assets_{i,c,t}} = FXB_{i,c,t}\big(\beta + \delta SP_{c,t} + \varrho K_{c,t} + \lambda SP_{c,t,}K_{c,t}\big) + X_{i,c,t}\gamma + \alpha_i + \theta_{c,t} + \xi_{i,c,t} \quad (3)$$

When $K_{c,t}$ is the overall measure of capital controls (to inflows and outflows) derived by Fernández et al. (2015). Here, the greater the value of $K_{c,t}$ the most closed is the capital account [7]. The parameters of interest are δ and λ, a positive and statistically significant value of δ means that the interactive term "issuance-spread" is robust to the inclusion of capital controls. Also, a positive and statistically significant value of λ would be in line with Caballero et al. (2015) hypothesis that firms use within company loans to elude capital controls, and thus the greater level of cash accumulation would be in countries where exist large capital controls. On the contrary, a negative value of λ would mean that the capital control works, and thus muffles the effect of the spread and decreases the cash accumulation.

We also extend equation (2) to the following equation:

$$Investment_t = \kappa Investment_{t-1} + \tau FXB_{i,c,t}$$
$$+ FXB_{i,c,t-1}\big(\eta + \phi SP_{c,t-1} + \vartheta K_{c,t-1} + \rho SP_{c,t-1}K_{c,t-1}\big) + X_{i,c,t}\gamma + \alpha_i$$
$$+ \theta_{c,t} + \xi_{i,c,t} \quad (4)$$

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[7] $K_{c,t}$ ranges between zero and one. 1 means closed capital account and 0 open capital account. For more details visit: (http://www.nber.org/data/international-finance/)

Here, the parameters of interest are ϕ and ρ. A positive and statistically significant value of ϕ means that the lagged value of the double interaction is robust to the inclusion of capital controls. Also, a positive and statistically significant value of ρ, the triple interaction, would mean that the presence of capital controls in previous periods favors investment in the current period. So, even though some firms can elude those controls and accumulate cash in period t through the issuance of foreign bonds, the proceeds could be used to carry out investment in t+1.

The equation (3) estimation results for the first spread measure are reported in Table 5, columns 1 to 3. In column 1 we use the overall measure of capital control and the results show that β and δ are positive and statistically significant. This means that the inclusion of the overall capital controls does not affect the previous results. On the contrary, the total marginal effect of bond issuance over cash ($\partial Cash/\partial FXBH$) is now larger, changing from 0.4 to 1 pp for a 10 pp change on the ratio issuance/assets, evaluated at mean values of the spread and the overall capital controls (0.7% and 0.45, respectively). Moreover, the results show that λ has a significant negative value. This is opposite of what was found by Caballero et al. (2015), and entails that the presence of capital controls has the partial effect of attenuate the cash accumulation. Therefore, the omission of capital controls could have derived on a downward biased effect on the estimation of the total marginal effect of bond issuances over cash holdings, which is corrected with its inclusion.

Additionally, the capital control measures developed by Fernández et al. (2015) allow to separate restrictions to inflows and outflows, thus in columns 2 and 3 we estimate equation (3) but using instead the measures of controls to inflows and outflows, respectively. The results are close to what was found using the overall measure: *the inclusion of capital controls increases the total marginal effect of the hard currency bond issuances over cash holdings, but has the partial effect of attenuate its accumulation.* The latter could stem from the large degree of correlation between both measures, table A6 of appendix shows that the correlation between KI and KO is 0.72.

Table 5: Cash holdings, Investment & Capital controls GMM

Dependent Variable (y):	Cash			Investment		
	(1)	(2)	(3)	(4)	(5)	(6)
$FXBH_{t-1}$				0.085***	0.075***	0.112*
				(0.027)	(0.028)	(0.059)
$FXBH_t$	0.167***	0.158***	0.148***	-0.009	-0.010	-0.001
	(0.037)	(0.033)	(0.034)	(0.008)	(0.008)	(0.011)
FXBH*SP[1]	3.911***	3.246***	3.169***	1.771*	1.438	3.751*
	(1.192)	(0.986)	(0.993)	(1.040)	(1.060)	(2.163)
FXBH*K[1]	-0.130*			-0.134**		
	(0.070)			(0.062)		
FXBH*K*SP[1]	-3.954**			-2.693		
	(1.847)			(2.783)		
FXBH*KI[1]		-0.120*			-0.119*	
		(0.069)			(0.064)	
FXBH*KI*SP[1]		-3.205*			-2.095	
		(1.835)			(3.394)	
FXBH*KO[1]			-0.124**			-0.199*
			(0.053)			(0.101)
FXBH*KO*SP[1]			-3.362**			-6.271
			(1.450)			(4.270)
$Cash_{t-1}$	0.656***	0.654***	0.698***			
	(0.051)	(0.053)	(0.042)			
Inv_{t-1}				0.599***	0.599***	0.578***
				(0.069)	(0.073)	(0.075)
$CFO/Assets_t$	0.183***	0.187***	0.209***	0.067*	0.064	0.097*
	(0.065)	(0.066)	(0.054)	(0.038)	(0.040)	(0.050)
$Ln(Assets)_t$	-0.001	-0.001	-0.002	-0.000	-0.000	0.002
	(0.004)	(0.004)	(0.003)	(0.002)	(0.003)	(0.002)
$Q\ tobin_t$	0.007	0.007	0.005	0.001	0.002	-0.004
	(0.005)	(0.005)	(0.004)	(0.003)	(0.004)	(0.005)
$Debt/Assets_t$	-0.004	-0.004	-0.004	-0.032**	-0.032**	-0.024
	(0.018)	(0.018)	(0.017)	(0.014)	(0.015)	(0.016)
$LT\ debt_t$	-0.021	-0.022	-0.019	0.012	0.012	0.019*
	(0.015)	(0.015)	(0.015)	(0.009)	(0.009)	(0.011)
The spread is	Deposit interest rate - US corporate bond yield BAA					
Observations	1,584	1,584	1,584	1,584	1,584	1,584
Number of id	184	184	184	184	184	184
Country-Year FE	YES	YES	YES	YES	YES	YES
F-Test	174.1	186.1	31.14	20.92	19.94	22.37
Auto(2)	0.500	0.513	0.491	0.996	0.842	0.594
Hansen p-value	0.971	0.957	0.960	0.613	0.570	0.632
Marginal Effect						
$\partial y/\partial FXBH$	0.0906***	0.0914***	0.0749***	0.0289	0.0315	0.0179
	(0.0183)	(0.0187)	(0.0138)	(0.0236)	(0.0308)	(0.0272)
$\partial(\partial y/\partial FXBH)/\partial SP$	1.937***	2.069***	1.584***	0.561	0.600	0.656
	(0.427)	(0.562)	(0.324)	(0.384)	(0.463)	(0.476)

FXBH is the hard currency issuance. FXBH*SP is an interaction term between the hard currency issuance and the demeaned spread (deposit interest rate over BAA US corporate bond yield). FXBH*SP *K is a triple interaction term between the hard currency issuance, the demeaned spread and a measure of capital controls. CFO/Assets is the income based cash flow over lagged total assets. Ln(Assets) is the log of total assets. Q Tobin is the market cap plus total debt over total assets. Debt/Assets is debt over total assets and LT Debt is long-term debt over total debt. Auto(2) is a test of second order serial autocorrelation of the residuals under the null hypothesis of no serial correlation. The Hansen test is a test of over identifying restrictions, asymptotically distributed as χ^2 under the null hypothesis of no correlation between the instruments and the error term. *T-statistics* from Robust Standard Errors are in parentheses. ***, **, and * represents a level of significance lower than 1%, 5%, and 10%, respectively. (1) For columns 4 to 6 these variables are in the lag form.

Table 6: Cash holdings, Investment & Capital controls GMM

Dependent Variable (y):	Cash			Investment		
	(1)	(2)	(3)	(4)	(5)	(6)
$FXBH_{t-1}$				0.115***	0.090**	0.164**
				(0.044)	(0.040)	(0.082)
$FXBH_t$	0.357***	0.327***	0.387***	-0.009	-0.009	-0.002
	(0.117)	(0.104)	(0.141)	(0.008)	(0.008)	(0.010)
FXBH*SP[1]	14.073***	11.901***	15.706***	1.610**	1.240*	2.763**
	(4.409)	(3.567)	(5.482)	(0.731)	(0.645)	(1.303)
FXBH*K[1]	-0.295**			-0.197**		
	(0.138)			(0.096)		
FXBH*K*SP[1]	-16.917***			-2.688		
	(5.483)			(1.709)		
FXBH*KI[1]		-0.245*			-0.159*	
		(0.126)			(0.091)	
FXBH*KI*SP[1]		-14.687***			-2.089	
		(4.593)			(1.670)	
FXBH*KO[1]			-0.357**			-0.294**
			(0.162)			(0.129)
FXBH*KO*SP[1]			-18.353***			-4.587**
			(6.565)			(2.128)
$Cash_{t-1}$	0.629***	0.626***	0.627***			
	(0.109)	(0.107)	(0.110)			
Inv_{t-1}				0.603***	0.608***	0.584***
				(0.071)	(0.071)	(0.077)
$CFO/Assets_t$	0.197	0.203	0.185	0.064	0.063	0.098**
	(0.164)	(0.165)	(0.166)	(0.040)	(0.041)	(0.049)
$Ln(Assets)_t$	-0.003	-0.004	-0.002	-0.000	0.000	0.002
	(0.009)	(0.009)	(0.009)	(0.002)	(0.002)	(0.003)
$Q\ tobin_t$	0.004	0.005	0.004	0.001	0.001	-0.004
	(0.008)	(0.009)	(0.008)	(0.003)	(0.003)	(0.005)
$Debt/Assets_t$	0.040	0.034	0.043	-0.030**	-0.030**	-0.022
	(0.050)	(0.049)	(0.050)	(0.014)	(0.014)	(0.017)
$LT\ debt_t$	-0.003	-0.000	-0.004	0.012	0.012	0.019*
	(0.038)	(0.038)	(0.037)	(0.010)	(0.010)	(0.011)
The spread is	Borrowing interest rate - US corporate bond yield BAA					
Observations	1,584	1,584	1,584	1,584	1,584	1,584
Number of id	184	184	184	184	184	184
Country-Year FE	YES	YES	YES	YES	YES	YES
F-Test	7.995	7.941	7.950	17.24	17.10	28.06
Auto(2)	0.326	0.345	0.304	0.479	0.539	0.385
Hansen p-value	0.432	0.479	0.322	0.523	0.476	0.583
Marginal Effect						
$\partial y/\partial FXBH$	0.189***	0.198***	0.171***	0.0264	0.0263	0.0201
	(0.0576)	(0.0580)	(0.0603)	(0.0246)	(0.0222)	(0.0303)
$\partial(\partial y/\partial FXBH)/\partial SP$	6.385***	6.012***	6.465***	0.383	0.384	0.493
	(1.941)	(1.817)	(2.197)	(0.365)	(0.260)	(0.418)

FXBH is the hard currency issuance. FXBH*SP is an interaction term between the hard currency issuance and the demeaned spread (borrowing interest rate over BAA US corporate bond yield). FXBH*SP *K is a triple interaction term between the hard currency issuance, the demeaned spread and a measure of capital controls. CFO/Assets is the income based cash flow over lagged total assets. Ln(Assets) is the log of total assets. Q Tobin is the market cap plus total debt over total assets. Debt/Assets is debt over total assets and LT Debt is long-term debt over total debt. Auto(2) is a test of second order serial autocorrelation of the residuals under the null hypothesis of no serial correlation. The Hansen test is a test of over identifying restrictions, asymptotically distributed as χ^2 under the null hypothesis of no correlation between the instruments and the error term. *T-statistics* from Robust Standard Errors are in parentheses. ***, **, and * represents a level of significance lower than 1%, 5%, and 10%, respectively. (1) For columns 4 to 6 these variables are in the lag form.

At the same time , the equation (3) estimation results for the second spread measure are reported in table 6, columns 1 to 3. Here, the results are very close in statistical significance with what was found in table 5, however, are slightly different in magnitude (as in table 4). For instance, using the results of column 1 it can be seen that the total marginal effect of bond issuance over cash ($\partial Cash/\partial FXBH$) is 1.9 pp (rather than 1 pp) for a change of 10 pp on the ratio issuance/assets (evaluated at mean values of the spread and the overall capital controls).

Additionally, columns 4 to 6 of table 5 reports the estimation results of equation (4). Here, the results show that η and ϕ are still positive and statistically significant but the triple interaction does not in any of the three specifications. In fact, the total marginal effect of hard currency bond issuances is still positive but no longer significant. This could mean that the presence of capital controls is related to a smaller level of cash accumulation but also with less investment in the next period (although never statistically significant, ρ is negative in all three specifications). Table 6, columns 4 to 6 reports the same results with the second measure of the spread. Here again the results are very similar in statistical significance and magnitude. The main difference is what happens with the lagged triple interaction with controls to outflows: it is negative and statistically significant. This means that the presence of controls to outflows in one period harms investment in next periods and therefore attenuates the positive effect of the lagged bond issuance on it. Indeed, even though the other measures of capital controls have same negative sign, this effect is only statistically significant for controls to outflows.

Figure 4 (panels (a) and (b)) plots the "damper effect" of capital controls on the marginal effect of bond issuances over cash holdings ($\partial(\partial Cash/\partial FXBH)/\partial SP$), separately taking the effect between controls to inflows and outflows. The figure shows that both slopes are negative, reflecting how greater levels of capital controls has a negative effect over the marginal effect of bond issuance over cash accumulation, and that the latter is true for both kind of controls. At the same time, in Figure 4 (panels (c) and (d)) we plot the second derivative ($\partial(\partial Investment/\partial FXBH)/\partial SP$) mediated by capital controls to inflows and outflows. We can see that although the average effect has no statistical significance,

this is true only for levels approximately greater than 4 in both kind of controls. Thus, it would seem that the effect of bond issuance over current investment (evaluated at the mean spread) is positive and significant only when there are no greater levels of capital controls, and this effect is lost for values greater than 4 (which is also the sample mean value). Figure A2 of appendix shows the same results using the second measure of the spread.

Figure 4: Marginal effect of the hard currency bond issuance over Cash Holdings & Investment with capital controls (with spread 1)
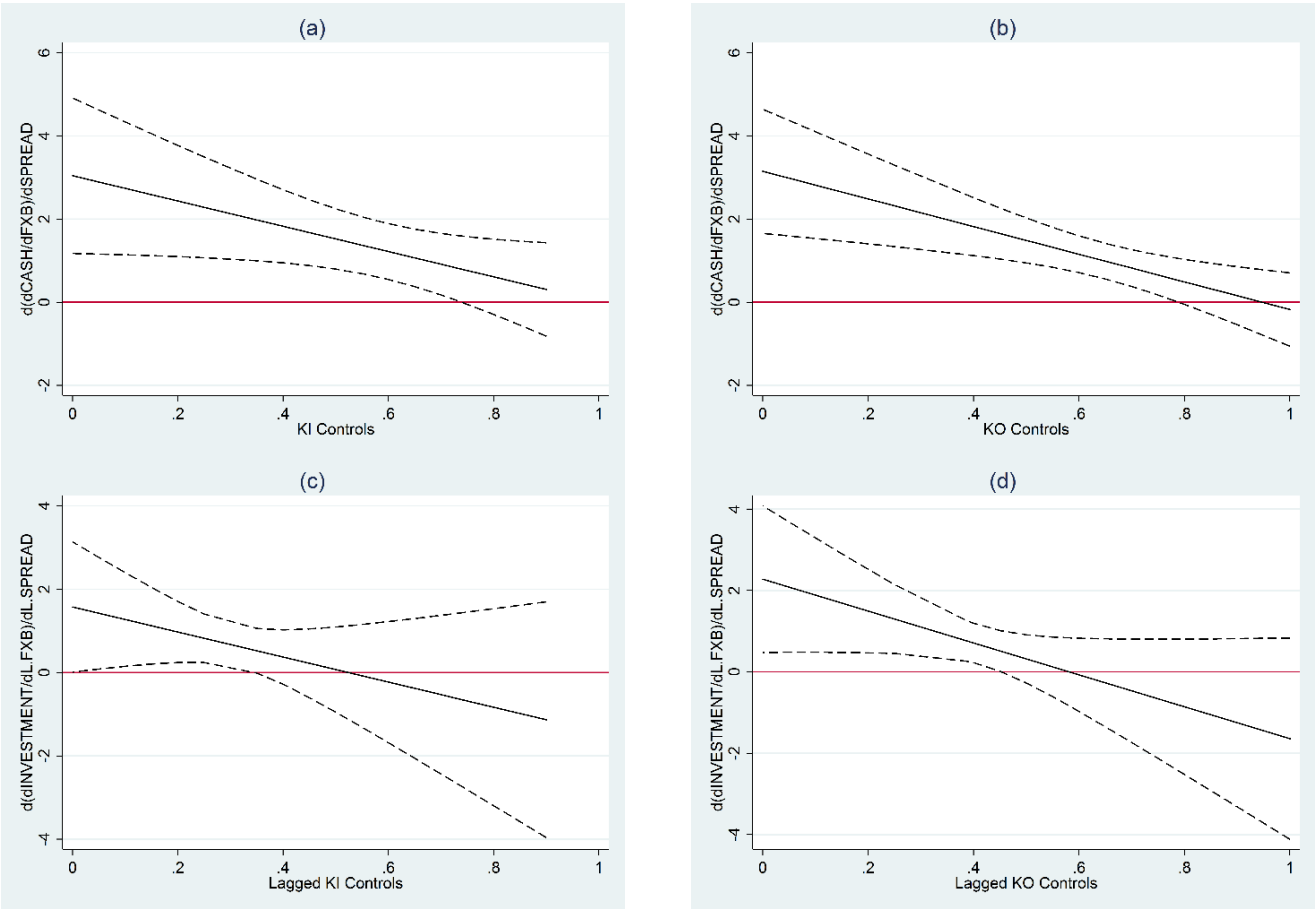
The top left and right panels of figure 4 plots how the sensitivity of the relationship between hard currency issuances and cash holding varies with controls to inflows and outflows, respectively (evaluated at mean spread value). The bottom left and right panels plots the same effect of capital controls, but over the relationship between the lagged hard currency issuance and the current investment (evaluated at mean spread value). The solid line plots the main effect and the dashed lines are 95% confidence intervals. Panels (a) and (b) uses the model of column 2 and 3 from Table 5. Panels (c) and (d) uses the model of column 5 and 6 from Table 5.

V.2 Heterogeneity analysis

In this section, we will test the heterogeneity of the results. For this, we first test if the baseline results change after the subprime crisis and thus are affected in a stronger way by the Quantitative Easing polices. Then, we test if there are any difference in firms that faces financial restrictions with those that does not. Finally, we take a closer look on the use of capital control measures and try to shed some light on the channel through which the results are lead.

V.2.a. 2009(2010)-2014: "The Quantitative Easing period"

As can be seen in figure 5, the US bond yield Baa reach a peak in 2008 (it was increasing since 2005) and then, since 2009, it begins to decline. At the same time, Figure 1 shows that since 2009 the hard currency issuances increases in both number and amount. Therefore, it could be that since 2009 onwards the results are stronger. Consequently, we restrict the sample to the after crisis period (2009-2014), and estimate equations (3) and (4) just for that period.

Figure 5: US corporate Bond Yield Baa for the period 2000-2014

Table 7: Cash holdings & Investment, 2009(2010)-2014 the "QE" period GMM

Dependent Variable (y):	Cash			Investment		
	(1)	(2)	(3)	(4)	(5)	(6)
$FXBH_{t-1}$				0.067***	0.062***	0.071***
				(0.023)	(0.021)	(0.026)
$FXBH_t$	0.171***	0.158***	0.179***	-0.004	-0.003	-0.001
	(0.036)	(0.027)	(0.048)	(0.008)	(0.008)	(0.009)
FXBH*SP[1]	7.463***	5.947**	9.995**	3.061**	2.678**	3.305
	(2.791)	(2.581)	(3.974)	(1.466)	(1.172)	(2.143)
FXBH*K[1]	-0.149*			-0.078**		
	(0.084)			(0.035)		
FXBH*K*SP[1]	-7.547**			-2.820		
	(3.329)			(1.932)		
FXBH*KI[1]		-0.139*			-0.066**	
		(0.077)			(0.029)	
FXBH*KI*SP[1]		-5.905*			-2.144	
		(3.019)			(1.642)	
FXBH*KO[1]			-0.148			-0.082**
			(0.091)			(0.036)
FXBH*KO*SP[1]			-10.343**			-2.899
			(4.748)			(2.575)
$Cash_{t-1}$	0.560***	0.562***	0.557***			
	(0.074)	(0.073)	(0.075)			
Inv_{t-1}				0.690***	0.681***	0.666***
				(0.062)	(0.060)	(0.070)
$CFO/Assets_t$	0.222**	0.215**	0.229**	0.053*	0.064*	0.061*
	(0.090)	(0.090)	(0.090)	(0.031)	(0.033)	(0.034)
$Ln(Assets)_t$	-0.004	-0.004	-0.004	0.001	0.001	0.001
	(0.005)	(0.005)	(0.005)	(0.001)	(0.001)	(0.001)
$Q\ tobin_t$	0.008	0.008	0.007	-0.000	0.000	0.001
	(0.007)	(0.007)	(0.006)	(0.002)	(0.002)	(0.002)
$Debt/Assets_t$	0.003	0.003	0.003	-0.016	-0.013	-0.017
	(0.029)	(0.029)	(0.029)	(0.012)	(0.011)	(0.013)
$LT\ debt_t$	-0.004	-0.003	-0.005	0.016	0.018*	0.019**
	(0.024)	(0.025)	(0.023)	(0.010)	(0.010)	(0.008)
The spread is	Deposit interest rate - US corporate bond yield BAA					
Observations	884	884	884	758	758	758
Number of id	180	180	180	180	180	180
Country-Year FE	YES	YES	YES	YES	YES	YES
F-Test	82.61	13.05	11.83	184.5	159.3	13.71
Auto(2)	0.615	0.482	0.517	0.969	0.895	0.863
Hansen p-value	0.146	0.117	0.182	0.969	0.982	0.891
Marginal Effect						
$\partial y/\partial FXBH$	0.137***	0.134***	0.146***	0.0514***	0.0574***	0.0501***
	(0.0299)	(0.0296)	(0.0332)	(0.0154)	(0.0170)	(0.0189)
$\partial(\partial y/\partial FXBH)/\partial SP$	3.440***	3.129**	3.960***	1.564***	1.651***	1.632**
	(1.191)	(1.286)	(1.363)	(0.553)	(0.521)	(0.755)

FXBH is the hard currency issuance. FXBH*SP is an interaction term between the hard currency issuance and the demeaned spread (deposit interest rate over BAA US corporate bond yield).). FXBH*SP *K is a triple interaction term between the hard currency issuance, the demeaned spread and a measure of capital controls. CFO/Assets is the income based cash flow over lagged total assets. Ln(Assets) is the log of total assets. Q Tobin is the market cap plus total debt over total assets. Debt/Assets is debt over total assets and LT Debt is long-term debt over total debt. Auto(2) is a test of second order serial autocorrelation of the residuals under the null hypothesis of no serial correlation. The Hansen test is a test of over identifying restrictions, asymptotically distributed as χ^2 under the null hypothesis of no correlation between the instruments and the error term. *T-statistics* from Robust Standard Errors are in parentheses. ***, **, and * represents a level of significance lower than 1%, 5%, and 10%, respectively. (1) For columns 4 to 6 these variables are in the lag form.

Table 7 reports the complete estimation results[8] and Table 8 tabulates the marginal effects for both the restricted and unrestricted sample (evaluated at mean values)[9].

It can be seen that the estimation results for equation (3) are quite similar to those observed in table 5, but in this case the marginal effect is slightly higher, particularly in the model that includes controls to outflows (column 3). On the contrary, estimation of equation (4) shows that the marginal effect over investment increases considerably and now, for the restricted sample, it is statistically significant.

This result means that the total effect of the lagged bond issuance over current investment is larger in the 2010-2014 period. The latter supports our hypothesis that the large bond issuances that has taken place the last years have been realized to secure funding and, even though some firms can accumulate cash for a time, the proceeds are finally used to carry out investment in later periods.

Table 8: Marginal effect comparison between the period 2000-2014 and 2009(2010)-2014

Dependent Variable (y):	Cash holdings			Investment		
Sample period:	**2000-2014**			**2001-2014**		
$\partial y/\partial FXBH$	0.0906***	0.0914***	0.0749***	0.0289	0.0315	0.0179
	(0.0183)	(0.0187)	(0.0138)	(0.0236)	(0.0308)	(0.0272)
$\partial(\partial y/\partial FXBH)/\partial SP$	1.937***	2.069***	1.584***	0.561	0.600	0.656
	(0.427)	(0.562)	(0.324)	(0.384)	(0.463)	(0.476)
Sample period:	**2009-2014**			**2010-2014**		
$\partial y/\partial FXBH$	0.137***	0.134***	0.146***	0.0514***	0.0574***	0.0501***
	(0.0299)	(0.0296)	(0.0332)	(0.0154)	(0.0170)	(0.0189)
$\partial(\partial y/\partial FXBH)/\partial SP$	3.440***	3.129**	3.960***	1.564***	1.651***	1.632**
	(1.191)	(1.286)	(1.363)	(0.553)	(0.521)	(0.755)

Table 7 tabulates the marginal effect of hard currency issuance over cash holdings and investment. $\partial y/\partial FXBH$ is evaluated at mean values of the spread and capital controls. $\partial(\partial y/\partial FXBH)/\partial SP$ is evaluated at mean values of the spread. The results are from the unrestricted model of table 5 and the restricted model of table 7, both with the first measure of the spread (the "conservative" results).

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[8] Table A3 of the appendix report the results using the second measure of the spread, the results are very closed to those with the first measure.

[9] Given that equation (4) use the lagged values of the relevant variables and that the focus is on the effect of cash accumulation in period t over investment in period t+1, the sample restriction for equation (4) is for the period 2010-2014 for the restricted sample and 2001-2014 for the unrestricted.

V.2.b. Bond issuances & Financial restrictions

Here, we test if there exist any difference in the results when we split the sample between firms above and below the median size (in terms of total assets). To split the sample we first compute the median total assets for each country, then we assign each firm with average total assets greater than the median to the size unrestricted firms group, and those with average total assets lesser than or equal to the median to the size restricted firms group. Doing this, we obtain 101 firms in the size restricted group and 83 firms in the size unrestricted group. The work of Hadlock and Pierce (2010) shows that "firms' size" is a good predictor of the financial constraint level that firms face, therefore the following analysis can be understood as one that focus on how the baseline results, presented in section V.1, change when we differentiate by the financial constraint level of non-financial firms.

For space reasons table 9 report the main results using just the overall measure of capital controls, however the use of controls to inflows or outflows rather than the overall measure does not change the results. When we compare columns 1 and 3 we can see that the relation "bond issuance-spread" is positive and statistically significant for both groups, which means that a favorable spread is related with positive cash accumulation independently the financial constraint degree that each kind of firm may face. However, the triple interaction term is only statistically significant for the size unrestricted group and, although also negative, for the size restricted group it is not. Nevertheless, it can be seen that the marginal effect of bond issuance over cash holdings ($\partial Cash/\partial FXBH$) is very similar, both in magnitude and statistical significance, for the size unrestricted and restricted groups: *there exist a positive and statistically significant correlation between the hard currency issuance and cash holdings, this relation is intensified by the presence of a favorable spread and can be seen in firms that face and does not face financial constraints.*

For the contrary, when we look at the effect over investment we can see a slightly different picture: columns 2 and 4 show that the interaction term "bond issuance-spread" is only significant for the size restricted group. Indeed, the marginal effect of past hard currency bond issuances over current investment ($\partial Investment_t / \partial FXBH_{t-1}$) is only positive and statistically significant for the size restricted group, and it is not for the unrestricted group of firms. This means that the cash accumulation in one period, related to hard currency issuances and a positive spread, does not leads to more investment in the next period for size unrestricted firms and it occurs just for the size restricted group of firms. The rationale of this could be related to the results found by Denis and Sibilkov (2010), who shows that cash holdings are more valuable for financially constrained firms than for unconstrained firms. Particulary, they show that the marginal value of investment is greater for constrained firms, thus higher cash holdings allow constrained firms to undertake value increasing projects that might otherwise be bypassed. At the same time, the previous work of Opler, Pinkowitz, Stulz, and Williamson (1999) finds that firms with poor access to external capital but with better investment opportunities hold more cash because adverse shocks and financial distress are more costly for them.

Therefore, our results shows that the presence of a positive spread, and the "favorable conditions" for bond issuance that it leads to, helps financially constrained firms and allows them to undertake projects that might otherwise be bypassed, but this is no true for financially unconstrained firms, thereby limiting the scope of our baseline results: *there exist a positive correlation between the hard currency bond issuance on the last period and current investment, this correlation is positively amplified by the mediating effect of the lagged spread but only exist for financially restricted firms.*

Table 9: Cash holdings, Investment & Size restrictions GMM

Sample constraint:	Small firms		Large firms	
Dependent Variable:	Cash	Investment	Cash	Investment
	(1)	(2)	(3)	(4)
$FXBH_{t-1}$		0.128***		0.084*
		(0.043)		(0.046)
$FXBH_t$	0.220***	-0.006	0.167***	-0.006
	(0.053)	(0.009)	(0.036)	(0.009)
FXBH*SP[1]	2.876**	1.387*	4.410**	2.158
	(1.312)	(0.801)	(1.688)	(2.327)
FXBH*K[1]	-0.241***	-0.137*	-0.173***	-0.118
	(0.062)	(0.081)	(0.062)	(0.084)
FXBH*K*SP[1]	-2.837	-1.192	-5.496**	-3.206
	(1.887)	(1.618)	(2.640)	(3.375)
$Cash_{t-1}$	0.714***		0.785***	
	(0.058)		(0.071)	
Inv_{t-1}		0.672***		0.615***
		(0.083)		(0.088)
$CFO/Assets_t$	0.211***	0.073	0.164*	0.096*
	(0.061)	(0.056)	(0.083)	(0.051)
$Ln(Assets)_t$	-0.004	-0.003	-0.004	0.002
	(0.005)	(0.004)	(0.006)	(0.003)
$Q\ tobin_t$	0.003	0.001	0.001	0.000
	(0.005)	(0.003)	(0.006)	(0.005)
$Debt/Assets_t$	0.029	-0.025	-0.004	-0.021
	(0.031)	(0.021)	(0.039)	(0.029)
$LT\ debt_t$	-0.020	-0.001	-0.015	0.005
	(0.014)	(0.013)	(0.027)	(0.013)
The spread is	Deposit interest rate - US corporate bond yield BAA			
Observations	778	778	806	806
Number of id	101	101	83	83
Country-Year FE	YES	YES	YES	YES
F-Test	25.03	21.92	18.40	28.16
Auto(2)	0.436	0.520	0.715	0.104
Hansen p-value	0.192	0.468	0.835	0.411
Marginal Effect				
$\partial y/\partial FXBH$	0.0899***	0.0624***	0.0928***	0.0402
	(0.0270)	(0.0178)	(0.0268)	(0.0314)
$\partial(\partial y/\partial FXBH)/\partial SP$	1.558***	0.843***	1.997***	0.759
	(0.491)	(0.279)	(0.734)	(0.960)

FXBH is the hard currency issuance. FXBH*SP is an interaction term between the hard currency issuance and the demeaned spread (deposit interest rate over BAA US corporate bond yield).). FXBH*SP *K is a triple interaction term between the hard currency issuance, the demeaned spread and a measure of capital controls. CFO/Assets is the income based cash flow over lagged total assets. Ln(Assets) is the log of total assets. Q Tobin is the market cap plus total debt over total assets. Debt/Assets is debt over total assets and LT Debt is long-term debt over total debt. Auto(2) is a test of second order serial autocorrelation of the residuals under the null hypothesis of no serial correlation. The Hansen test is a test of over identifying restrictions, asymptotically distributed as χ^2 under the null hypothesis of no correlation between the instruments and the error term. *T-statistics* from Robust Standard Errors are in parentheses. ***, **, and * represents a level of significance lower than 1%, 5%, and 10%, respectively. (1) For columns 2 and 4 these variables are in the lag form.

V.2.c. Capital controls in depth

In this subsection we analyse in a deeper way how the baseline results change with the presence of capital controls. Our previous results show that the presence of capital controls attenuates the cash accumulation of bond issuances when there exist a positive spread, and this is true for the three measures of controls: the overall measure (k); the inflow controls (ki) and the outflow controls (ko). However, the relevant measure we should look at is the "restriction level of bond sales or issue abroad by a national firm", and we would expect that the previous results are mainly explained by this measure. Indeed, the Fernandez' database allows to decompose each capital control measure with relation to the specific asset that is the object of restriction. Hence, the following analysis uses just the specific "bond sales restriction" (henceforth BSR) and compares this result with the overall measure without this specific component (henceforth AM). At the same time, since both measures are correlated (the correlation is 0.52), we run a regression of BSR over KI and use the residuals (henceforth RS) as a third measure of capital control, since that measure is orthogonal with BSR.

Table 10 reports the main results. In column 1 we use the BSR measure and find that the baseline results hold: *there exist a positive and statistically significant correlation between the hard currency issuance and cash holdings, this relation is intensified by the presence of a favorable spread but is attenuated by the presence of bond sales restriction.* However, in column 3 we use the AM measure and find that, although the double interaction term remains positive and statistically significant, the triple interaction term does not, which could mean that, consistent with what would be expected, the damper effect of capital controls found previously is mainly due to the specific component of sales restriction. The same is true in column 5: when we use RS as the capital control, we can see that the results are very close to those of column 3 with the AM measure.

Table 10: Cash holdings, Investment & Capital controls, GMM

Dependent Variable:	Cash (1)	Investment (2)	Cash (3)	Investment (4)	Cash (5)	Investment (6)
$FXBH_{t-1}$		0.049***		0.054***		0.044***
		(0.012)		(0.018)		(0.014)
$FXBH_t$	0.117***	-0.012*	0.132***	-0.010*	0.133**	-0.011
	(0.034)	(0.007)	(0.041)	(0.006)	(0.056)	(0.007)
FXBH*SP[1]	5.546*	2.305**	2.899**	1.049*	3.942*	1.593***
	(2.851)	(0.945)	(1.297)	(0.556)	(2.221)	(0.504)
FXBH*K[1]	-0.093**	-0.049***	-0.111	-0.062**	-0.540*	-0.177*
	(0.042)	(0.015)	(0.091)	(0.025)	(0.321)	(0.103)
FXBH*K*SP[1]	-4.896*	-2.152**	-2.769	-0.736	-11.414	-0.049
	(2.860)	(0.995)	(2.358)	(1.072)	(9.188)	(2.185)
$Cash_{t-1}$	0.617***		0.614***		0.712***	
	(0.056)		(0.061)		(0.071)	
Inv_{t-1}		0.723***		0.679***		0.730***
		(0.050)		(0.050)		(0.052)
$CFO/Assets_t$	0.197**	0.049*	0.203***	0.078***	0.125**	0.056**
	(0.076)	(0.027)	(0.075)	(0.030)	(0.063)	(0.026)
$Ln(Assets)_t$	0.002	0.000	0.001	-0.000	-0.004	0.000
	(0.005)	(0.001)	(0.006)	(0.001)	(0.004)	(0.001)
$Q\ tobin_t$	0.003	-0.001	0.003	-0.001	0.007	-0.001
	(0.008)	(0.002)	(0.007)	(0.002)	(0.007)	(0.003)
$Debt/Assets_t$	0.011	-0.016	0.014	-0.016	-0.012	-0.015
	(0.025)	(0.013)	(0.024)	(0.010)	(0.031)	(0.015)
$LT\ debt_t$	-0.036*	0.017**	-0.038*	0.018**	0.009	0.015*
	(0.020)	(0.008)	(0.020)	(0.008)	(0.020)	(0.008)
The spread is	Deposit interest rate - US corporate bond yield BAA					

The control measure is	Restriction to bond's sale or issue abroad by residents (BRS)		Overall "ki" restriction without the bond's sale or issue restriction (AM)		Orthogonal component between AM and BSR (RS)	
Observations	1,584	1,584	1,584	1,584	1,584	1,584
Number of id	184	184	184	184	184	184
Country-Year FE	YES	YES	YES	YES	YES	YES
F-Test	158.9	24.52	20.36	34.03	11.84	25.54
Auto(2)	0.342	0.418	0.334	0.837	0.210	0.514
Hansen p-value	0.337	0.990	0.280	0.998	0.583	0.990

FXBH is the hard currency issuance. FXBH*SP is an interaction term between the hard currency issuance and the demeaned spread (deposit interest rate over BAA US corporate bond yield). FXBH*SP *K is a triple interaction term between the hard currency issuance, the demeaned spread and a measure of capital controls. CFO/Assets is the income based cash flow over lagged total assets. Ln(Assets) is the log of total assets. Q Tobin is the market cap plus total debt over total assets. Debt/Assets is debt over total assets and LT Debt is long-term debt over total debt. Auto(2) is a test of second order serial autocorrelation of the residuals under the null hypothesis of no serial correlation. The Hansen test is a test of over identifying restrictions, asymptotically distributed as χ^2 under the null hypothesis of no correlation between the instruments and the error term. *T-statistics* from Robust Standard Errors are in parentheses. ***, **, and * represents a level of significance lower than 1%, 5%, and 10%, respectively. (1) For columns 2 and 4 these variables are in the lag form.

At the same time, the baseline results show that the presence of capital controls is related to a smaller level of cash accumulation but also, although almost never statiscally significant[10], with less investment in the next period. Column 2 shows that the previous results hold and now, unlike the previous result, the triple interaction term is statistically significant: *there exist a positive correlation between the hard currency bond issuance on the last period and the current investment, this correlation is positively amplified by the mediating effect of the lagged spread but is attenuated by the presence of bond sales restriction on the last period.* However, columns 4 and 6 shows that this is not true for the triple interaction term with the AM and RS measures: it remains negative but is not statistically significant[11]. Therefore, it seems like the use of a more precise measure helps to better understand the channel through which the results are originated.

V.3 Robustness

V.3.a. Removing countries

In this subsection we test if the results change when we subtract the major bond issuers. Table 1, row 10, shows that the three major bond issuers are Chile, Mexico and Peru, together they issue the 76% of hard currency issuances on the sample. The results are shown in table A5 of the appendix. It can be seen that the main results hold, both for equations (3) and (4).

V.3.b. Restricting the sample for hard currency issuance years only

Here, we limit the sample just to the firm-year observations with a hard currency bond issuance, thus we can see if the baseline results hold when we use a stricter criterion to run the regressions or if they could be led by firm-year observations with no issuances.

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[10] It is statistically significant just for the outflows capital control with the second spread measure, but here we just focus on the first measure.

[11] Table A4 of appendix shows that results does not change with the second measure of the spread

Table 11: Robustness analysis, restricting the sample for hard currency issuance years only

Dependent Variable (y):	Cash			Investment		
	(1)	(2)	(3)	(4)	(5)	(6)
$FXBH_{t-1}$				0.108***	0.095**	0.115***
				(0.035)	(0.039)	(0.036)
$FXBH_t$	0.173**	0.156**	0.178***	-0.027*	-0.025	-0.030*
	(0.067)	(0.068)	(0.064)	(0.015)	(0.066)	(0.016)
FXBH*SP[1]	2.502**	2.711**	2.570*	1.499*	3.633*	1.964**
	(1.252)	(1.300)	(1.294)	(0.775)	(2.004)	(0.821)
FXBH*K[1]	-0.214**			-0.172*		
	(0.096)			(0.100)		
FXBH*K*SP[1]	-2.805			-1.711		
	(1.713)			(2.727)		
FXBH*KI[1]		-0.152*			-0.047	
		(0.087)			(0.066)	
FXBH*KI*SP[1]		-2.930*			-4.869	
		(1.647)			(3.434)	
FXBH*KO[1]			-0.191			-0.187**
			(0.115)			(0.089)
FXBH*KO*SP[1]			-2.610			-2.713
			(2.268)			(2.448)
$Cash_{t-1}$	0.585***	0.537***	0.719***			
	(0.214)	(0.170)	(0.193)			
Inv_{t-1}				0.795**	0.755***	0.786**
				(0.318)	(0.182)	(0.321)
$CFO/Assets_t$	0.155	0.184*	0.289	-0.064	-0.095	-0.070
	(0.168)	(0.101)	(0.186)	(0.146)	(0.215)	(0.161)
$Ln(Assets)_t$	-0.016	-0.010	-0.009	0.001	-0.000	0.001
	(0.011)	(0.011)	(0.013)	(0.006)	(0.010)	(0.006)
$Q\ tobin_t$	0.025**	0.023***	0.000	-0.003	0.013	-0.002
	(0.010)	(0.008)	(0.025)	(0.032)	(0.020)	(0.031)
$Debt/Assets_t$	-0.012	-0.072	-0.072	0.103	0.002	0.103
	(0.100)	(0.073)	(0.091)	(0.169)	(0.083)	(0.169)
$LT\ debt_t$	0.016	0.026	-0.046	0.068	0.065	0.080
	(0.080)	(0.059)	(0.079)	(0.091)	(0.058)	(0.093)
The spread is	Deposit interest rate - US corporate bond yield BAA					
Observations	114	114	114	103	103	103
Number of id	68	68	68	62	62	62
Country-Year FE	YES	YES	YES	YES	YES	YES
F-Test	104.6	31.84	567.5	17.05	14.79	14.14
Auto(2)	0.803	0.959	0.390	0.196	0.896	0.162
Hansen p-value	0.294	0.397	0.128	0.705	0.742	0.427

FXBH is the hard currency issuance. FXBH*SP is an interaction term between the hard currency issuance and the demeaned spread (borrowing interest rate over BAA US corporate bond yield).). FXBH*SP *K is a triple interaction term between the hard currency issuance, the demeaned spread and a measure of capital controls. CFO/Assets is the income based cash flow over lagged total assets. Ln(Assets) is the log of total assets. Q Tobin is the market cap plus total debt over total assets. Debt/Assets is debt over total assets and LT Debt is long-term debt over total debt. Auto(2) is a test of second order serial autocorrelation of the residuals under the null hypothesis of no serial correlation. The Hansen test is a test of over identifying restrictions, asymptotically distributed as χ^2 under the null hypothesis of no correlation between the instruments and the error term. *T-statistics* from Robust Standard Errors are in parentheses. ***, **, and * represents a level of significance lower than 1%, 5%, and 10%, respectively. (1) For columns 4 to 6 these variables are in the lag form.

Table 11 report the results of equation (3) and (4). Columns 1 to 3 shows that the baseline results, i.e., the direct effect of hard currency issuance over cash holdings and the indirect effect mediated by the spread, remains positive and statistically significant for the three specifications used. However, the triple interaction term remains negative and statistically significant only when we use the capital control to inflows. So, it seems like when we restrict the sample just for hard currency issuance years, unlike the baseline results, the only relevant capital control measure that truly have a damper effect over cash holdings is the restricton to inflows.

At the same time, columns 4 to 6 reports the results of equation (4). It can be seen that the baseline results holds but also the triple interaction term remains negative and statistically no significant for the three specifications used.

VI.   CONCLUDING REMARKS

What is called the "Second Phase of Global Liquidity" has led to a large increase in bond issuances, and this has generated some concern since part of the proceeds could have been used to engage in carry trades activities, thus issuing corporate bonds to arbitrate interest rate differentials and increase cash holdings rather than finance investment. However, we propose that the carry trade story is too narrow and hypothesize that the cash accumulation may stem from firm's investing strategies, i.e., firms raise cheaper debt to take advantage of favorable external conditions in order to realize investment in later periods. Our results show that there exist a positive and statistically significant correlation between hard currency issuances and cash holdings, this relation is intensified by the presence of a favorable spread but is attenuated by the presence of capital controls, especially by bond sales restrictions. Particularly, an increase of 10 percentage points in hard currency issuances (in proportion to total assets) has an impact that ranges between 1 and 1.9 percentage points over cash holdings (in relation to total assets). At the same time, our results also show that there exist a positive correlation between the hard currency bond issuance on the last period and the current investment, this correlation is positively amplified by the mediating effect of the lagged spread but is attenuated by the presence of capital controls, principally by bond sales restrictions. We also found that this effect is stronger in the QE period: for the whole period the marginal effect of past hard currency issuances over current investment ranges between 0.2 and 0.3 percentage points, but it is not statistically significant. However, for the QE period, it ranges between 0.2 and 0.5 percentage points and it is statistically significant. Nevertheless, we also found that the latter results are mainly lead by firms that faces financial restrictions. We found that both, financial restricted and unrestricted firms, increase cash holdings when external financial conditions are more attractive, but this cash accumulation does not leads to more investment in the next period for financially unrestricted firms, and it occurs just

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for the financially restricted group of firms. We also run different robustness tests, and the main results hold.

Therefore, the results found are consistent with our hypothesis that firms take advantage of favorable debt issuance conditions in one period and finance investment in later periods, however, and as was noted, this occurs mainly in firms that have financial constraints. This keeps open the question of what are financially unconstrained firms doing with the proceeds of these issuances, and could be the subject of future research

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VIII. APPENDIX

A. Tables and figures

Table A1: Cash holdings & Investment, baseline regression LSO

Dependent Variable:	Cash & Short Term Investment				Investment	
	(1)	(2)	(3)	(4)	(5)	(6)
FXBH$_t$ (β)	0.017*	0.037**	0.045***			-0.004
	(0.010)	(0.014)	(0.014)			(0.003)
FXBH $*$ SP$_t$ (δ)		0.488***	0.518***			
		(0.185)	(0.188)			
FXBH$_{t-1}$ (η)				0.008	0.025***	0.026***
				(0.005)	(0.010)	(0.009)
FXBH $*$ SP$_{t-1}$ (ϕ)					0.395***	0.409***
					(0.143)	(0.137)
Cash$_{t-1}$			0.381***			
			(0.028)			
Inv$_{t-1}$						0.341***
						(0.043)
CFO/Assets$_t$			0.257***			0.025
			(0.036)			(0.018)
Ln(Assets)$_t$			-0.005			-0.005*
			(0.006)			(0.003)
Q tobin$_t$			0.003			0.012***
			(0.003)			(0.003)
Debt/Assets$_t$			0.036*			-0.009
			(0.020)			(0.012)
LT debt$_t$			0.007			0.006
			(0.009)			(0.004)
The spread is	Borrowing interest rate - US corporate bond yield BAA					
Observations	1,868	1,868	1,584	1,584	1,584	1,584
R-squared	0.073	0.077	0.286	0.156	0.161	0.300
Number of id	188	188	184	184	184	184
Country-Year FE	YES	YES	YES	YES	YES	YES

FXBH is the hard currency issuance. FXBH*SP is an interaction term between the hard currency issuance and the demeaned spread (borrowing interest rate over BAA US corporate bond yield). CFO/Assets is the income based cash flow over lagged total assets. Ln(Assets) is the log of total assets. Q Tobin is the market cap plus total debt over total assets. Debt/Assets is debt over total assets and LT Debt is long-term debt over total debt. *T-statistics* from Robust Standard Errors are in parentheses. ***, **, and * represents a level of significance lower than 1%, 5%, and 10%, respectively.

Table A2: HC issuances vs DC issuances, baseline regression GMM

Dependent Variable (y):	Cash			Investment		
	HC issuance (1)	DC issuance (2)	HC vs DC (3)	HC issuance (4)	DC issuance (5)	HC vs DC (6)
$FXBH_t$	0.065***		0.068***	-0.006*		-0.005*
	(0.019)		(0.020)	(0.003)		(0.003)
$FXBH * SP_t$	0.940***		0.965***			
	(0.297)		(0.326)			
DCB_t		0.010	0.041		-0.002	0.034
		(0.020)	(0.045)		(0.009)	(0.032)
$DCB * SP_t$		-0.397	-0.537			
		(0.533)	(1.133)			
$FXBH_{t-1}$				0.031**		0.029**
				(0.014)		(0.014)
$FXBH * SP_{t-1}$				0.557**		0.531**
				(0.231)		(0.228)
DCB_{t-1}					-0.014	-0.027
					(0.012)	(0.034)
$DCB * SP_{t-1}$					-0.136	0.427
					(0.112)	(0.575)
$Cash_{t-1}$	0.612***	0.621***	0.612***			
	(0.042)	(0.041)	(0.045)			
Inv_{t-1}				0.487***	0.483***	0.486***
				(0.046)	(0.047)	(0.047)
$CFO/Assets_t$	0.208***	0.200***	0.221***	0.024	0.027	0.022
	(0.037)	(0.042)	(0.039)	(0.020)	(0.021)	(0.020)
$Ln(Assets)_t$	-0.002	-0.001	-0.000	0.001	0.001	0.001
	(0.003)	(0.003)	(0.004)	(0.002)	(0.002)	(0.002)
$Q\ tobin_t$	0.005	0.005	0.004	0.007***	0.007***	0.006**
	(0.004)	(0.005)	(0.005)	(0.002)	(0.002)	(0.003)
$Debt/Assets_t$	0.048**	0.058**	0.040*	-0.011	-0.002	-0.018
	(0.022)	(0.025)	(0.023)	(0.016)	(0.015)	(0.017)
$LT\ debt_t$	-0.030*	-0.016	-0.031*	0.006	-0.004	0.003
	(0.017)	(0.017)	(0.018)	(0.010)	(0.012)	(0.011)
The spread is	Borrowing interest rate - US corporate bond yield BAA					
Observations	1,584	1,584	1,584	1,584	1,584	1,584
Number of id	184	184	184	184	184	184
Country-Year FE	YES	YES	YES	YES	YES	YES
F-Test	30.50	121.7	26	160.6	13.98	15.80
Auto(2)	0.192	0.160	0.178	0.507	0.528	0.546
Hansen p-value	0.981	0.992	0.995	0.993	0.998	0.993

FXBH and DCB are hard currency issuance and domestic currency issuance. FXBH*SP is an interaction term between the hard currency issuance and the demeaned spread (Borrowing interest rate over BAA US corporate bond yield). DCB*SP is an interaction term between the domestic currency issuance and the demeaned spread. CFO/Assets is the income based cash flow over lagged total assets. Ln(Assets) is the log of total assets. Q Tobin is the market cap plus total debt over total assets. Debt/Assets is debt over total assets and LT Debt is long-term debt over total debt. Auto(2) is a test of second order serial autocorrelation of the residuals under the null hypothesis of no serial correlation. The Hansen test is a test of over identifying restrictions, asymptotically distributed as χ^2 under the null hypothesis of no correlation between the instruments and the error term. *T-statistics* from Robust Standard Errors are in parentheses. ***, **, and * represents a level of significance lower than 1%, 5%, and 10%, respectively.

Table A3: Cash holdings & Investment, 2009(2010)-2014 the "QE" period GMM

Dependent Variable (y):	Cash			Investment		
	(1)	(2)	(3)	(4)	(5)	(6)
$FXBH_{t-1}$				0.115***	0.090***	0.141***
				(0.039)	(0.033)	(0.048)
$FXBH_t$	0.224***	0.200***	0.241***	-0.009	-0.009	-0.009
	(0.055)	(0.042)	(0.064)	(0.010)	(0.009)	(0.009)
FXBH*SP[1]	5.210**	4.475***	5.695**	3.418**	2.643**	4.244**
	(2.071)	(1.594)	(2.500)	(1.491)	(1.206)	(1.843)
FXBH*K[1]	-0.244***			-0.140**		
	(0.068)			(0.054)		
FXBH*K*SP[1]	-6.286***			-3.986**		
	(2.256)			(1.961)		
FXBH*KI[1]		-0.217***			-0.107**	
		(0.050)			(0.046)	
FXBH*KI*SP[1]		-5.515***			-3.144*	
		(1.750)			(1.695)	
FXBH*KO[1]			-0.262***			-0.172**
			(0.081)			(0.067)
FXBH*KO*SP[1]			-6.722**			-4.800**
			(2.697)			(2.284)
$Cash_{t-1}$	0.703***	0.699***	0.698***			
	(0.058)	(0.057)	(0.062)			
Inv_{t-1}				0.738***	0.739***	0.739***
				(0.062)	(0.063)	(0.061)
$CFO/Assets_t$	0.186***	0.188***	0.187***	0.018	0.016	0.018
	(0.059)	(0.063)	(0.057)	(0.034)	(0.035)	(0.032)
$Ln(Assets)_t$	-0.002	-0.002	-0.002	0.001	0.001	0.001
	(0.002)	(0.003)	(0.002)	(0.001)	(0.001)	(0.001)
$Q\ tobin_t$	0.006	0.006	0.006	0.001	0.001	0.000
	(0.005)	(0.005)	(0.005)	(0.002)	(0.002)	(0.002)
$Debt/Assets_t$	-0.017	-0.017	-0.017	-0.011	-0.010	-0.011
	(0.026)	(0.028)	(0.029)	(0.011)	(0.012)	(0.010)
$LT\ debt_t$	-0.011	-0.009	-0.012	0.021**	0.022***	0.019**
	(0.020)	(0.020)	(0.019)	(0.009)	(0.008)	(0.009)
The spread is	Borrowing interest rate - US corporate bond yield BAA					
Observations	884	884	884	758	758	758
Number of id	180	180	180	180	180	180
Country-Year FE	YES	YES	YES	YES	YES	YES
F-Test	24.24	21.17	25.84	189.2	15.39	186.6
Auto(2)	0.626	0.627	0.662	0.917	0.846	0.949
Hansen p-value	0.476	0.440	0.491	0.718	0.737	0.799
Marginal Effect						
$\partial y/\partial FXBH$	0.0411	0.0451***	0.0380***	0.0140**	0.0158**	0.0128*
	(0.0254)	(0.0146)	(0.0135)	(0.00632)	(0.00679)	(0.00670)
$\partial(\partial y/\partial FXBH)/\partial SP$	2.183**	2.060***	2.003**	1.322***	1.153***	1.259**
	(0.995)	(0.711)	(0.857)	(0.489)	(0.447)	(0.548)

FXBH is the hard currency issuance. FXBH*SP is an interaction term between the hard currency issuance and the demeaned spread (borrowing interest rate over BAA US corporate bond yield).). FXBH*SP *K is a triple interaction term between the hard currency issuance, the demeaned spread and a measure of capital controls. CFO/Assets is the income based cash flow over lagged total assets. Ln(Assets) is the log of total assets. Q Tobin is the market cap plus total debt over total assets. Debt/Assets is debt over total assets and LT Debt is long-term debt over total debt. Auto(2) is a test of second order serial autocorrelation of the residuals under the null hypothesis of no serial correlation. The Hansen test is a test of over identifying restrictions, asymptotically distributed as χ^2 under the null hypothesis of no correlation between the instruments and the error term. *T-statistics* from Robust Standard Errors are in parentheses. ***, **, and * represents a level of significance lower than 1%, 5%, and 10%, respectively. (1) For columns 4 to 6 these variables are in the lag form.

Table A4: Cash holdings, Investment & Capital controls, GMM

Dependent Variable:	Cash (1)	Investment (2)	Cash (3)	Investment (4)	Cash (5)	Investment (6)
$FXBH_{t-1}$		0.085**		0.097*		0.050***
		(0.036)		(0.055)		(0.016)
$FXBH_t$	0.108**	-0.003	0.187*	-0.004	0.145**	-0.010
	(0.043)	(0.009)	(0.099)	(0.010)	(0.070)	(0.007)
FXBH*SP[1]	3.288**	3.352**	4.624*	1.699*	2.809*	0.990***
	(1.393)	(1.397)	(2.550)	(0.947)	(1.680)	(0.317)
FXBH*K[1]	-0.104*	-0.080**	-0.253*	-0.207*	-0.617	-0.176*
	(0.054)	(0.039)	(0.148)	(0.119)	(0.396)	(0.098)
FXBH*K*SP[1]	-3.327**	-2.986*	-8.055	-3.176	-8.949	-0.798
	(1.550)	(1.535)	(5.456)	(2.302)	(7.294)	(1.459)
$Cash_{t-1}$	0.760***		0.783***		0.709***	
	(0.077)		(0.076)		(0.074)	
Inv_{t-1}		0.779***		0.590***		0.732***
		(0.111)		(0.079)		(0.051)
$CFO/Assets_t$	0.225***	0.060	0.237***	0.088*	0.103	0.061*
	(0.055)	(0.056)	(0.069)	(0.049)	(0.068)	(0.033)
$Ln(Assets)_t$	-0.005	0.001	-0.004	0.002	-0.004	-0.000
	(0.004)	(0.003)	(0.004)	(0.003)	(0.004)	(0.001)
$Q\ tobin_t$	0.010	-0.006	0.011	-0.004	0.008	-0.002
	(0.007)	(0.006)	(0.007)	(0.005)	(0.008)	(0.003)
$Debt/Assets_t$	0.028	-0.005	0.042	-0.019	-0.029	-0.019
	(0.038)	(0.019)	(0.039)	(0.016)	(0.031)	(0.015)
$LT\ debt_t$	-0.029	0.033*	-0.036*	0.021**	0.011	0.019**
	(0.019)	(0.019)	(0.020)	(0.011)	(0.023)	(0.008)
The spread is			Borrowing interest rate - US corporate bond yield BAA			

| The control measure is	Restriction to bond's sale or issue abroad by residents (BRS)		Overall "ki" restriction without the bond's sale or issue restriction (AM)		Orthogonal component between AM and BSR (RS)	
Observations	1,584	1,584	1,584	1,584	1,584	1,584
Number of id	184	184	184	184	184	184
Country-Year FE	YES	YES	YES	YES	YES	YES
F-Test	11.58	12.17	12.35	19.25	12.08	28.42
Auto(2)	0.844	0.942	0.582	0.534	0.233	0.398
Hansen p-value	0.696	0.584	0.395	0.543	0.400	0.900

FXBH is the hard currency issuance. FXBH*SP is an interaction term between the hard currency issuance and the demeaned spread (Borrowing interest rate over BAA US corporate bond yield). FXBH*SP *K is a triple interaction term between the hard currency issuance, the demeaned spread and a measure of capital controls. CFO/Assets is the income based cash flow over lagged total assets. Ln(Assets) is the log of total assets. Q Tobin is the market cap plus total debt over total assets. Debt/Assets is debt over total assets and LT Debt is long-term debt over total debt. Auto(2) is a test of second order serial autocorrelation of the residuals under the null hypothesis of no serial correlation. The Hansen test is a test of over identifying restrictions, asymptotically distributed as χ^2 under the null hypothesis of no correlation between the instruments and the error term. *T-statistics* from Robust Standard Errors are in parentheses. ***, **, and * represents a level of significance lower than 1%, 5%, and 10%, respectively. (1) For columns 2 and 4 these variables are in the lag form.

Table A5: Robustness analysis, removing one country at a time

Country removed:	Chile		Mexico		Peru	
Dependent Variable:	Cash	Investment	Cash	Investment	Cash	Investment
	(1)	(2)	(3)	(4)	(5)	(6)
$FXBH_{t-1}$		0.063***		0.059***		0.066**
		(0.022)		(0.019)		(0.030)
$FXBH_t$	0.200***	-0.010	0.156***	-0.002	0.488**	-0.007
	(0.065)	(0.007)	(0.041)	(0.005)	(0.237)	(0.005)
FXBH*SP[1]	6.626*	1.300**	5.462**	1.011**	23.388**	0.894*
	(3.386)	(0.592)	(2.205)	(0.511)	(8.998)	(0.508)
FXBH*K[1]	-0.176*	-0.081**	-0.128**	-0.072***	-0.422	-0.069
	(0.092)	(0.032)	(0.064)	(0.027)	(0.284)	(0.042)
FXBH*K*SP[1]	-7.225*	-1.372	-6.407**	-0.803	-27.156***	-0.359
	(4.036)	(1.072)	(2.861)	(0.951)	(10.419)	(0.812)
$Cash_{t-1}$	0.644***		0.749***		0.610***	
	(0.063)		(0.062)		(0.102)	
Inv_{t-1}		0.660***		0.617***		0.647***
		(0.057)		(0.058)		(0.044)
$CFO/Assets_t$	0.137**	0.057**	0.116*	0.086**	0.205	0.098***
	(0.065)	(0.028)	(0.060)	(0.038)	(0.148)	(0.024)
$Ln(Assets)_t$	-0.000	0.000	-0.004	0.001	-0.001	-0.000
	(0.003)	(0.001)	(0.003)	(0.002)	(0.008)	(0.001)
$Q\ tobin_t$	0.005	0.001	0.004	-0.001	0.001	0.001
	(0.005)	(0.002)	(0.005)	(0.003)	(0.009)	(0.002)
$Debt/Assets_t$	0.023	-0.019	0.022	-0.009	0.056	-0.021**
	(0.031)	(0.015)	(0.028)	(0.015)	(0.051)	(0.010)
$LT\ debt_t$	-0.023	0.017*	-0.017	0.015**	-0.008	0.007
	(0.015)	(0.009)	(0.021)	(0.007)	(0.032)	(0.005)
The spread is	Deposit interest rate - US corporate bond yield BAA					
Observations	1,178	1,178	1,160	1,160	1,451	1,451
Number of id	142	142	143	143	168	168
Country-Year FE	YES	YES	YES	YES	YES	YES
F-Test	21.08	20.52	23.99	19.28	8.737	340.8
Auto(2)	0.210	0.752	0.184	0.627	0.490	0.586
Hansen p-value	0.964	0.517	0.596	0.880	0.383	0.629

FXBH is the hard currency issuance. FXBH*SP is an interaction term between the hard currency issuance and the demeaned spread (deposit interest rate over BAA US corporate bond yield).). FXBH*SP *K is a triple interaction term between the hard currency issuance, the demeaned spread and a measure of capital controls. CFO/Assets is the income based cash flow over lagged total assets. Ln(Assets) is the log of total assets. Q Tobin is the market cap plus total debt over total assets. Debt/Assets is debt over total assets and LT Debt is long-term debt over total debt. Auto(2) is a test of second order serial autocorrelation of the residuals under the null hypothesis of no serial correlation. The Hansen test is a test of over identifying restrictions, asymptotically distributed as χ^2 under the null hypothesis of no correlation between the instruments and the error term. *T-statistics* from Robust Standard Errors are in parentheses. ***, **, and * represents a level of significance lower than 1%, 5%, and 10%, respectively. (1) For columns 2, 4 and 6 these variables are in the lag form.

Figure A1: Marginal effect of the hard currency bond issuance over Cash Holdings & Investment (with spread 2)
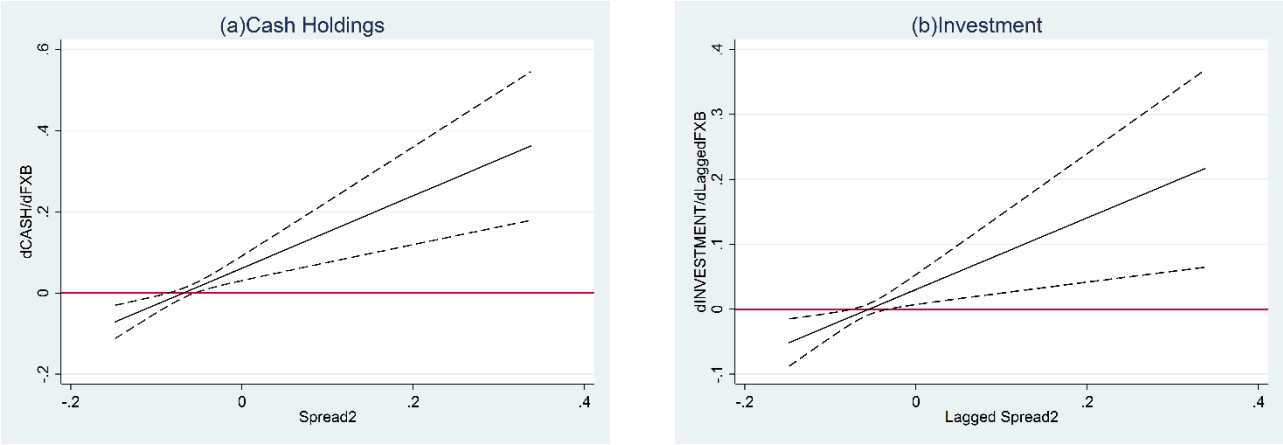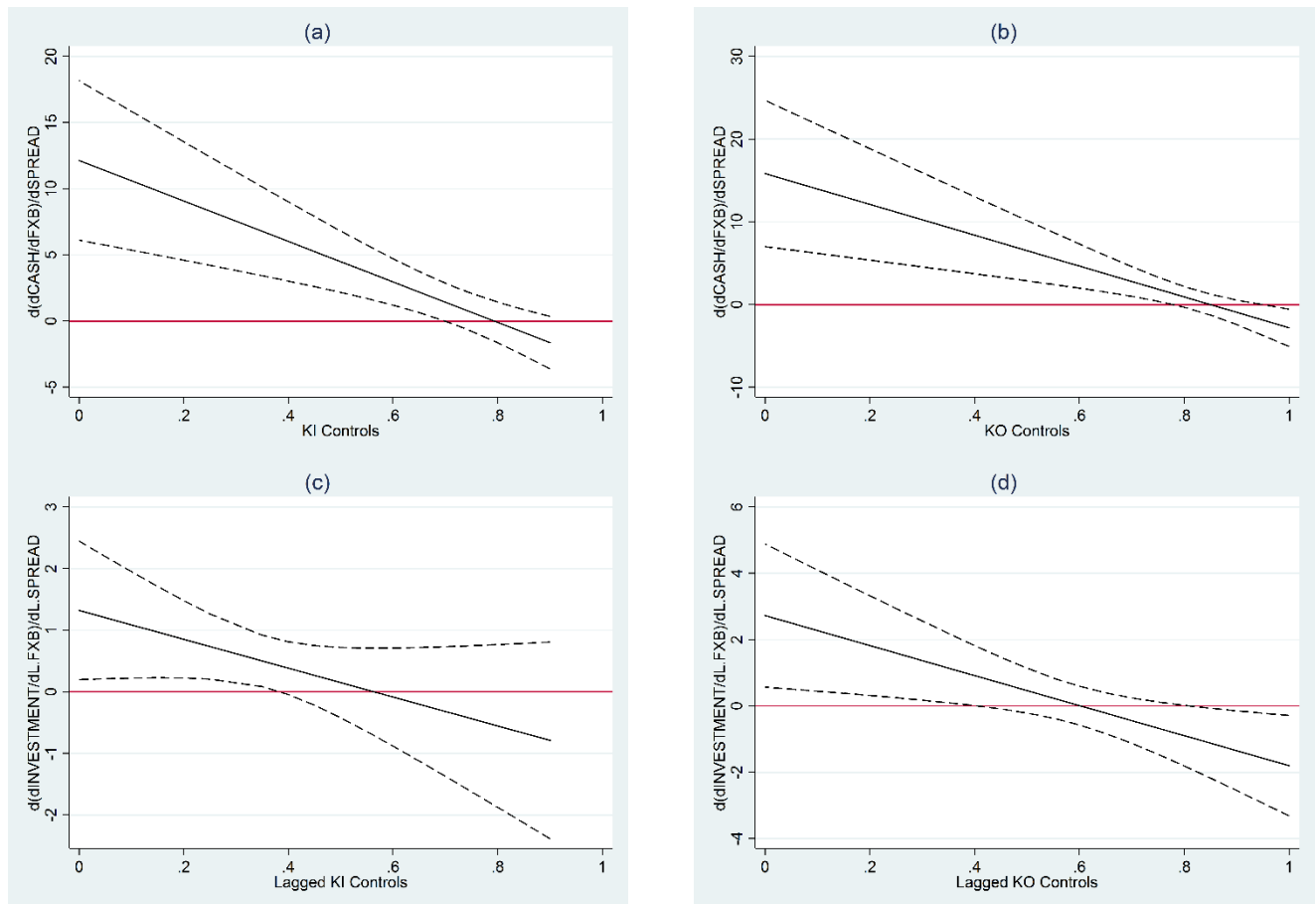

(a)Cash Holdings

(b)Investment

The left panel of figure 3 plots how the sensitivity of the relationship between hard currency issuances and cash holding varies with the second spread. The right panel plots the same effect of the spread over the relationship between the lagged hard currency issuance and the current investment. The solid line plots the main effect and the dashed lines are 95% confidence intervals. Panel (a) and (b) uses the model of column 3 and 4 of Table 3, respectively.

Table A6: Correlation between the three measures of capital controls

	k	ki	ko
k	1		
ki	0,9389	1	
ko	0,9146	0,7198	1

Figure A2: Marginal effect of the hard currency bond issuance over Cash Holdings & Investment with capital controls (with spread 2)

The top left and right panels of figure 4 plots how the sensitivity of the relationship between hard currency issuances and cash holding varies with controls to inflows and outflows, respectively (evaluated at mean spread value). The bottom left and right panels plots the same effect of capital controls, but over the relationship between the lagged hard currency issuance and the current investment (evaluated at mean spread value). The solid line plots the main effect and the dashed lines are 95% confidence intervals. Panels (a) and (b) uses the model of column 2 and 3 from Table 6. Panels (c) and (d) uses the model of column 5 and 6 from Table 6.

B. *Capital control measures*

The capital control measures constructed by Fernández et al. (2015) includes an overall measure of capital account restrictions and a separate measure for inflows and outflows. The overall measure of capital account restrictions is the simple average of the binary codings for all possible controls/restrictions for the following ten asset categories:

1. Equity: shares or other securities of a participating nature, excluding those investments for the purpose of acquiring a lasting economic interest which are addressed as foreign direct investment
2. Bonds: with an original maturity of more than one year
3. Money market: which includes securities with an original maturity of one year or less, in addition to short-term instruments like certificates of deposit and bills of exchange, among others.
4. Collective investment: such as mutual funds and investment trusts.
5. Financial credit and credits other than commercial credits granted by all residents, including banks, to nonresidents, or vice versa.
6. Foreign direct investment: direct investment accounts for transactions made for the purpose of establishing lasting economic relations both abroad by residents and domestically by nonresidents.
7. Derivatives: which includes operations in rights, warrants, financial options and futures, secondary market operations in other financial claims, swaps of bonds and other debt securities, and foreign exchange without any other underlying transaction.
8. Commercial credit for operations directly linked with international trade transactions or with the rendering of international services.
9. Financial guarantees: Guarantees, Sureties and Financial Back-Up Facilities provided by residents to nonresidents, and vice versa, which includes securities pledged for payment or performance of a contract and financial

backup facilities that are credit facilities used as a guarantee for independent financial operations.

10. Real estate: real estate transactions representing the acquisition of real estate not associated with direct investment, including, for example, investments of a purely financial nature in real estate or the acquisition of real estate for personal use.

For Bonds and Derivatives (along with other 3 kind of assets), there are four categories of transactions controls: two categories of controls on inflows, including *Purchase Locally by Non-Residents* (bo_plbn) and *Sale or Issue Abroad by Residents* (bo_siar); and two categories of controls on outflows, which are *Purchase Abroad by Residents* (bo_pabr) and *Sale or Issue Locally by Non-Residents* (bo_siln).

Table B1 report the average measure of the overall controls (k, ki and ko), controls to bond issuance (bo, boi and boo), and the 4 categories of transactions controls for each country considered in the simple. Figure B1 plots the evolution of controls to inflows and controls to outflows for the whole sample period for each of the six countries.

Table B1: Capital control measures, average values for the 2000-2014 period

Row	Variable	Argentina	Brazil	Chile	Colombia	Mexico	Peru
(1)	k	0,66	0,52	0,32	0,63	0,55	0,01
(2)	ki	0,57	0,46	0,22	0,72	0,54	0,01
(3)	ko	0,75	0,58	0,42	0,53	0,55	0,02
(4)	bo	0,80	0,55	0,35	0,87	0,43	0,00
(5)	boi	0,70	0,30	0,07	1,00	0,00	0,00
(6)	boo	0,90	0,80	0,63	0,69	0,87	0,00
(7)	bo_plbn	0,60	0,40	0,07	1,00	0,00	0,00
(8)	bo_siln	0,93	0,80	0,73	1,00	1,00	0,00
(9)	bo_pabr	0,87	0,80	0,53	0,39	0,73	0,00
(10)	bo_siar	0,80	0,20	0,07	1,00	0,00	0,00

K is the overall restrictions index, ki is the overall inflow restrictions index, ko is the overall outflow restrictions index, bo is the average bond restrictions, boi is the bond inflow restrictions, boo is the bond outflow restrictions, bo_plbn is the bonds purchase locally by nonresidents, bo_siln is the bonds sale or issue locally by nonresidents, bo_psbr is the bonds purchase abroad by residents and bo_siar is the bonds sale or issue abroad by residents.

Figure B1: Bond restrictions and the overall restriction index for inflows and outflows.
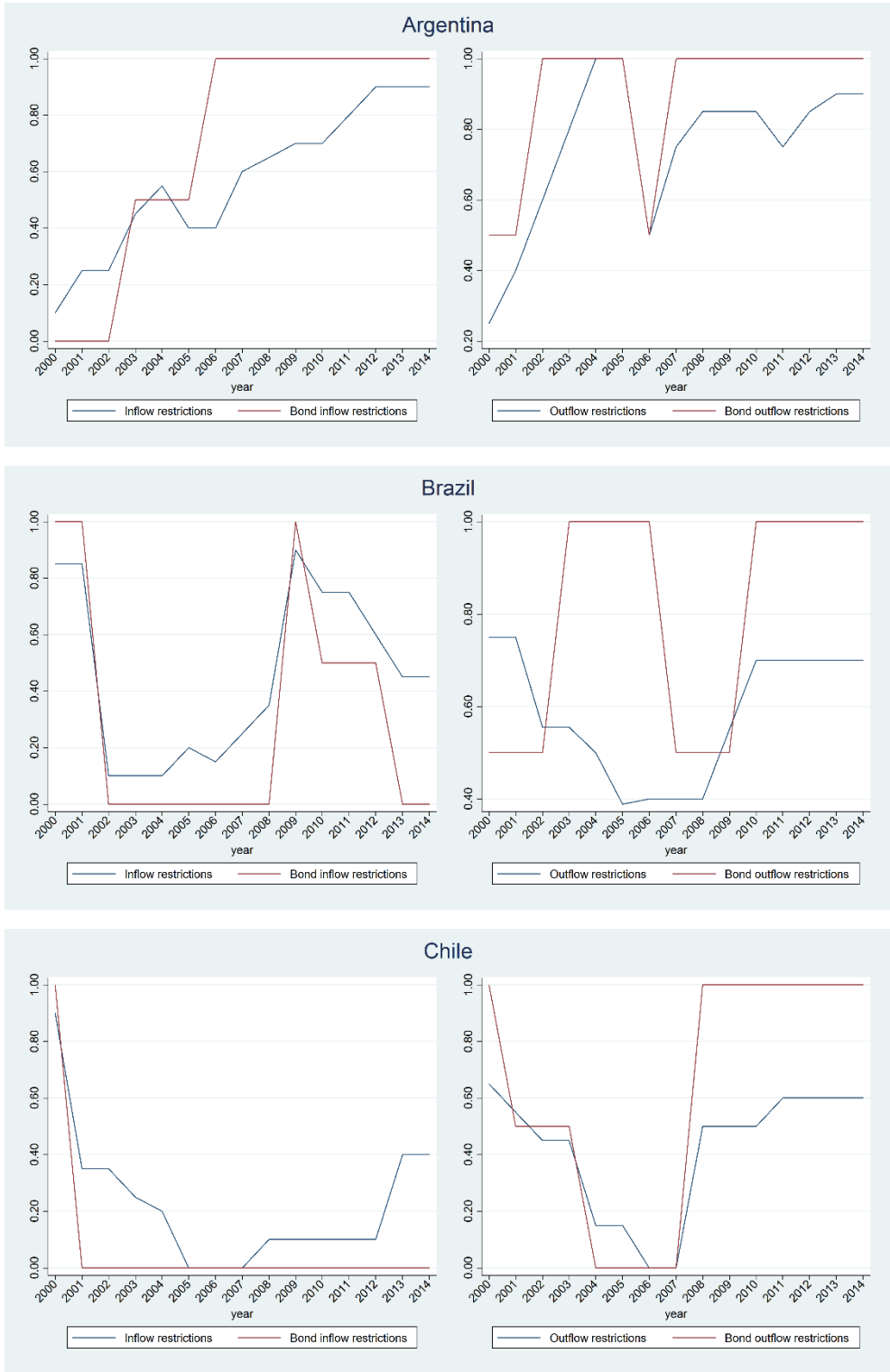
Figure B1 plots bond restrictions and the overall restriction index for inflows and outflows, for each country considered in the sample and for the whole period. The capital control measures are developed by Fernández et al. (2015). For Colombia there are not information of bond outflow restrictions for years 2000 and 2001.