Capital Controls, Corporate Debt and Real Effects

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Abstract

Non-US firms have massively borrowed dollars (foreign currency, FX), which may lead to booms and crises. We show the real effects of capital controls, including prudential benefits, through a firm-debt mechanism. Our identification exploits the introduction of a tax on FX-debt inflows in Colombia before the global financial crisis (GFC), and administrative, proprietary datasets, including loan-level credit register data and firm-level information on FX-debt inflows and imports/exports. Our results show that capital controls substantially reduce FX-debt inflows, particularly for firms with larger ex-ante FX-debt exposure. Moreover, firms with weaker local banking relationships cannot substitute FX-debt with domestic-debt and experience a reduction in total debt and imports upon implementation of the policy. However, our results suggest that, by preemptively reducing pre-crisis firm-level debt, capital controls boost exports during the subsequent GFC, especially among financially-constrained firms.

JEL Classification: F3; F38; F4; F6; G01; G15; G21; G28.

Keywords: capital controls; corporate FX-debt; real effects; macroprudential; capital inflows.

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1. Introduction

Firms outside the U.S. have massively borrowed in dollars, especially in Emerging Markets (EM). Dollar credit to the non-bank sector outside the US amounted to 14% of global GDP in 2018, and EM debt accounts for roughly one third of the total value, with non-financial firms playing an important role in major EM (Aldasoro and Ehlers, 2018). Global banks –and local banks borrowing in dollars – have been key intermediaries for this increase in firms' foreign dollar funding (Bräuning and Ivashina, 2019, and forthcoming; IMF, 2019). Cross-border loans, however, are especially fragile during financial downturns (De Haas and Van Horen, 2013; Giannetti and Laeven, 2012). Similarly, large capital inflows tend to precede credit booms, often followed by financial crises (Mendoza and Terrones, 2008; Reinhart and Reinhart, 2008; Jordà, Schularick, and Taylor, 2011; Gourinchas and Obstfeld, 2012). More generally, high corporate-leverage - especially if FX-financed - is a first-order risk for EM (Acharya et al., 2015; IMF, 2015; Alfaro et al., 2019; Bruno and Shin, 2019).

Capital controls after the last global financial crisis (GFC) have become increasingly popular among both policy-makers and academics, despite the well-known costs associated to them (Johnson and Mitton, 2003; Rajan and Zingales, 2003), and the positive effects linked to financial liberalization (Henry, 2000a, 2000b). Even institutions such as the IMF have endorsed capital controls, though as a last-resort, temporary tool for managing credit booms led by large capital inflows, i.e. with a macroprudential type of role (IMF, 2012, 2018; Blanchard, 2013).[1] In the same spirit, a class of international finance-macro models rationalize capital controls as a Pigouvian tax to cut the negative externalities due to excessive foreign debt by firms (Bianchi, 2011; Brunnermeier and Sannikov, 2015; Jeanne and Korinek, 2010; Korinek, 2011).

We analyze the impact of capital controls on corporate debt and their real effects. For empirical identification: (i) we focus on the introduction (during a strong credit boom before the GFC) of a 40% *unremunerated* (at a time of very high local interest rates) reserve requirement (URR) on foreign currency (FX) debt inflows in Colombia (capital controls (CC), Magud, Reinhart and Rogoff, 2011; Ostry et al., 2010); and (ii) we exploit matched administrative, proprietary datasets, including the supervisory credit registry and firm-level FX debt inflows and imports/exports (at quarterly frequency). The matched data allows us to study local and FX credit in conjunction, and also the associated real effects (on firms' imports and exports) during the exogenous GFC, characterized by a world-level Great Trade Collapse (Bems, Johnson and Yi, 2013).

[1] Policy-makers from EM have also supported capital controls, see e.g. Palma (2018) on Financial Times.

Briefly summarized, we find that capital controls reduce FX-debt inflows by 30% - as compared to the ex-ante average values - with a further 10% cut for firms with one standard deviation higher ex-ante FX debt. Moreover, firms with ex-ante weaker relationships with local banks cannot substitute FX-debt with local debt (i.e. receive lower loan volume at higher loan rates, even controlling for firm fixed effects and other unobservables), thereby reducing firm-level total liabilities – and imports – immediately after the implementation of the policy. However, our results suggest that capital controls improve exports during the GFC (by 7.2% for an interquartile increase in exposure) by preemptively reducing firm-level total debt before the crisis, with stronger benefits for more ex-ante financially constrained firms (those with ex-ante tighter lending rates, maturity and collateral requirements). Importantly, our analysis suggests that benefits fully stem from reduction in corporate debt due to capital controls, not from endogenous changes in debt unrelated (orthogonal) to the policy. Results on both debt and trade are identical without controls or controlling for observables and a very large set of unobservables, thereby suggesting that selection is not driving the results (Oster, 2017).

Our main contribution to the literature is to show how capital controls *benefit* the real economy via firms' capital structure – an *FX and local corporate debt channel mechanism* –; moreover, we exploit policy changes with administrative (local and FX) loan- and firm-level data for identification. Despite the increasing academic and policy attention on (prudential-type) capital controls and the large FX financing by firms, empirical evidence remains scarce, relying mostly on cross-country macro data (see, among others, Edwards, 2007; Forbes, Fratzscher and Straub, 2015; Zeev, 2017). Additionally, existing empirical literature on capital controls based on micro-data has focused on the *negative* effects, with either firm-level data (Johnson and Mitton, 2003; Desai, Foley and Hines, 2006; Forbes, 2007a, 2007b; Alfaro, Chari and Kanczuk, 2017) or loan-level data (Keller, 2019).[2] Interestingly, our results are different from the latter paper (using Peruvian policy and data), as Peru under capital controls allowed local banks to pass FX risk to firms, while Colombia did not. These different institutional details (and hence results) also show the limits of cross-country studies: specific regulations on controls are different, explaining why cross-country evidence is largely inconclusive (Magud, Reinhart and Rogoff, 2011). Moreover, by showing complementarities between FX debt and local (peso) credit supply, depending on the strength of local banking relationships, we also contribute to the large literature on lending relationships (Rajan, 1992; Petersen and Rajan, 1994; Bharath et al., 2007; Bebchuk and Goldstein, 2011; Bolton et al., 2016; Beck et al., 2018).

[2] Many papers highlight the positive effects of financial liberalization (see e.g. Henry 2000a, 2000b, and, from a long-run perspective, King and Levine, 2000, and Rajan and Zingales, 2003).

Detailed preview of the paper. We investigate two main research questions. First, we ask whether, during the boom, the introduction of capital controls affect firms' FX and total debt and its potential consequences for the real economy. In detail, we analyze whether capital controls are effective in cutting FX-debt inflows, and also whether they are arbitraged away via domestic bank debt (and if so, the mechanism). Second, we analyze the potential positive real effects during the subsequent global financial crisis after the failure of Lehman Brothers in mid-September 2008 via a reduction of debt in the boom. That is, we analyze the effects of the capital controls from a prudential perspective during a boom and bust and investigate the debt channel as a potential mechanism.

Our work is primarily based on two administrative, confidential datasets. First, we have access to the National Credit Registry (CR), provided by the Colombian Financial Supervisory Authority, which collects detailed quarterly information at the loan-level for corporate loans, with information on loan volume, rates, collateralization, maturity, and currency. Differently from most credit registers around the world, we have loan rates which are important for isolating credit supply changes. Second, we exploit the Balance of Payments records on firm-level quarterly borrowing from foreign banks and in the form of trade credit and bond issuances, as well as firm-level quarterly imports and exports. Finally, we collect data on firms' and banks' (supervisory) balance sheet, with annual and quarterly frequency, respectively. All datasets are matched through firms' unique tax identifiers or through banking groups denomination codes.

For capital controls, we exploit the introduction of a 40% unremunerated URR on FX debt inflows by the Central Bank of Colombia in May of 2007 during a strong credit boom. At the time, local interest rates – as reflected by the overnight interbank rate – were as high as 8.40%. Hence, the new regulation resulted in high taxation of FX debt inflows as a large part of the inflows were in the central bank as unremunerated reserves. CC, which were borne by the ultimate borrower, were deposited for 6 months at the central bank without any remuneration; the deposit could be eventually withdrawn before this deadline, but against a heavy penalty fee. Importantly, FX-loans by local banks to firms (not only by foreign banks) were also taxed by the CC. The capital controls were lifted in early October 2008, amid signs of economic slowdown related to the unfolding of the GFC after Lehman's collapse.

We concentrate our analysis on 2,861 firms active in FX-debt markets before the URR.[3] Given both the introduction in May 2007 of the controls and the GFC after mid-September 2008, unless otherwise stated, we conduct our analysis of FX and total debt dynamics in 5-quarter symmetric

[3] Conditional on issuing any foreign or domestic currency debt, FX-debt is on average 30% of total debt flows.

windows around the policy introduction (i.e., the sample starts in 2006:Q1 - with 2007:Q2 labelled as the first year-quarter under capital controls - and ends in 2008:Q2 before the global crisis). Next, for analyzing the firm-level real effects during the global crisis, we expand our sample so to include the GFC. Our sample period is therefore 2006-2009, at quarterly level.

As capital controls are non-random, but rather induced by the credit boom that affect corporate debt and real activity, we exploit firm heterogeneity in difference-in-difference (DID) models, controlling for common (observed or unobserved) time-varying shocks. Moreover, as ex-ante different FX-debt levels or financial intermediaries for each firm are also not random, we perform the test for selection into the treatment developed by Oster (2019) (following the literature initiated by Altonji, Elder and Taber, 2005) in all the key steps of our analysis (used e.g. by Mian and Sufi, 2014, and Smith, 2016), i.e. in regressions on FX inflows, domestic credit, and trade. In our setting, this exercise is very informative, as by saturating models with high-dimensional fixed effects (that control for time-varying unobservables) and by controlling for time-varying observables, there are very large changes in the R-squared relative to the baseline versions of our models to formally test for coefficient stability. Even under more demanding assumptions than those conventionally applied for performing the test, results suggest that self-selection is not driving the effects observed due to the capital controls.[4]

Our main findings are as follows. We first establish that capital controls are effective in reducing FX-debt inflows (for ex-ante FX-active companies). Relative to the average FX-debt pre-policy exposure, capital controls reduce inflows by 30%. Moreover, the decline is stronger for ex-ante highly exposed firms: a 1 standard deviation (s.d.) increase over the mean implies an additional 10% cut. The reduction is effective for FX-loans granted by both global and local banks.[5]

The next step is understanding whether more affected firms substitute the forgone FX-debt with domestic (peso) loans from local banks.[6] It is important to stress that capital controls would apply on

[4] At the time of the capital controls there was a change in traditional reserve requirements (based on bank deposits) on Colombian banks' funding. Given our granular data, we can isolate the effects of capital controls: (i) in loan-level regressions, where we exploit firm heterogeneity on ex-ante FX exposure, by applying bank*year-quarter fixed effects, hence fully controlling for any credit-supply variation connected to banks' idiosyncratic shocks, including the reserve policy ones; (ii) in firm-level models, by controlling for direct exposure to the reserve policy using banks' supervisory balance sheet data. Decisively, none of our results change (the estimated coefficient is identical) on the inclusion of such controls, or more generally, on other type of controls or fixed effects based on the results following Oster (2019)'s test.

[5] Results are robust (both for FX-debt flows from local and foreign banks) if we repeat the analysis over any symmetric window around the introduction of capital controls, including a 1-quarter exercise where we compare FX-debt flows in 2007:Q2 and in 2007:Q1.

[6] On the extensive margin, we find that the relative likelihood of issuing peso debt (against FX-debt) rises with capital controls and proportionally to pre-policy FX-debt exposure. Also, the share of FX-debt out of total debt issuance declines accordingly. Note that CC also tax FX lending by domestic banks.

FX-debt irrespectively of the lender's nationality. Thus, we distinguish companies depending on whether they borrowed (pre-policy) in FX from local or foreign banks. We use this grouping to compare the relative performance in the domestic peso-lending market through credit register data. We find that after the implementation of the capital controls, companies *without* FX-lending relationships with local banks face a relative credit restriction of 13% vis-à-vis companies *with* ex-ante FX-relationships with local banks. The reduction in credit volume is accompanied by a relative interest rate jump of 71bp, suggesting that the credit changes across firms are (bank) supply-driven. In addition, the described relative credit supply cutback (expansion) is stronger among companies with larger ex-ante FX exposure to foreign (local) intermediaries, which predicts the extent of FX-debt reduction. Overall, these results are consistent with a mechanism driven by the ex-ante strength of local lending relationships. By borrowing in FX (in addition to pesos) from local banks, in fact, some companies become more transparent to the local banking system – as hard information on domestic FX-loans is recorded in the credit register – and build even stronger relationships with their own FX-lender, which will for instance receive additional soft information on the operations financed through FX-loans. Further corroborating the importance of local lending relationships, indeed, we find that the relative expansion in credit supply enjoyed by these firms is mostly operated by their local FX-lender, rather than by the remaining local banks from which they borrow only in pesos.

The loan-level findings are also confirmed when we aggregate to the firm-level. That is, firms with ex-ante weaker relationships with local banks cannot fully substitute FX-debt with domestic peso borrowing, so that capital controls constrain their total debt growth. As a result of such downward adjustment in both FX-debt and domestic peso credit, we find that these firms experience a relative average reduction of approximately 4.5% in total debt liabilities during the implementation phase of capital controls. Relatedly, these more affected companies consistently reduce imports with capital controls in place. In particular, an interquartile variation in exposure to capital controls (i.e. larger ex-ante FX-debt from foreign banks, i.e. weaker local banking relationships) implies a 4.4% fall in firm-level imports.

As the capital controls on FX inflows were introduced before the GFC (lifted in October 2008), we can analyze whether the pre-crisis reduction in total firm debt caused by the capital controls is beneficial during an exogenous external negative strong financial shock, by exploiting Lehman's failure. To this end, we additionally expand our sample from Lehman's failure to the end of 2009. Colombia did not have any sign of economic slowdown before the GFC at the end of 2008:Q3. Moreover, the GFC was characterized by a world trade collapse (exports and imports), and our matched administrative data have quarterly information for each firm on imports and exports.

Our results suggest that capital controls improve exports during the global financial crisis (and world trade collapse) through a preemptive reduction in firm-level debt before the crisis (and after the policy introduction). In particular, an inter-quartile increase in ex-ante exposure to the policy (whose related firms have a higher reduction in corporate debt pre-crisis) implies during the crisis higher exports growth by 7.2%.[7] The estimated coefficient remains the same without any control as compared to the case with all the controls despite the R-squared jumps by 84 p.p. Moreover, further robustness checks suggest the results are fully stemming from reduction in firm debt due to the capital controls; differently, endogenous changes in corporate debt (between the CC policy introduction and the start of the GFC) unrelated (orthogonal) to capital controls do not affect trade during the crisis.

Estimated effects are stronger for ex-ante financially-constrained firms, in particular firms with ex-ante higher cost of loans, or with higher collateral requirements, or with greater reliance on short-term debt. Separating firms based on the median value of these proxies of financial constraints, we find that (an interquartile) more exposed firms to CC that ex-ante pledge high levels of collateral benefit with a 28% rise in exports. Similarly, for ex-ante high loan interest-rate and more short-term-debt firms, effects are stronger both statistically and economically and amount to a 10% and 13% increase, respectively, in correspondence of the interquartile jump in exposure to the policy.[8]

All in all, our results suggest that the real effects of capital controls are stronger during the crisis (benefits) than during the implementation (negative real effects), comparing the economic and statistical effects on exports and imports.[9] Note, however, that we do not perform a welfare analysis, we are just reporting benefits (and some costs) of capital controls via the corporate debt channel, hence we cannot pin down the net welfare effects of the policy.

Contribution to the literature. Our main contribution to the literature is to show that capital controls also benefit the real economy, and a mechanism is via firms' capital structure – a *FX and local corporate debt channel mechanism*. In addition to the literature on international capital flows, firm FX debt and capital controls, we also contribute to the large literature on credit in general.

[7] Exports are unaffected when the CC are enforced, i.e., before the crisis.

[8] For comparison, the fall in imports after the implementation of the policy differs only among firms with high vs. low collateral requirements. The former reacts to an interquartile variation in exposure to the policy with an 11% reduction in imports, while for firms with low collateral requirements, the effect is insignificant and the coefficient is much smaller.

[9] For robustness, we collect quarterly data on employment (that are not available at firm-level) for 27 manufacturing industries (3-digit ISIC) and collapse firm-level information at the industry*year-quarter level by taking weighted averages across the industry (there is not quarterly firm-level data on real effects except for exports and imports; and there is not investment either for firm or industry-level data at the quarter level). Repeating exercises that are identical in nature to those applied with firm data, we find that: i) binding exposure to capital controls implies a reduction of total liabilities; ii) similar to exports, our findings suggest that capital controls have no impact during the implementation phase, but importantly they are beneficial during the global crisis, with an industry-level interquartile variation in exposure to policy boosting employment by 1.9%.

Despite the increasing attention on prudential capital controls by both academia and policy, empirical evidence remains scarce, relying mostly on cross-country macro data, with the typical identification problems.[10] These studies normally try to assess the effectiveness of controls in terms of reduced inflows and domestic credit (e.g. Edwards, 2007, and Forbes, Fratzscher and Straub, 2015). Moreover, Zeev (2017) documents that Emerging Economies employing capital controls on inflows experience milder output reactions to global financial shocks. On the other hand, existing studies on capital controls based on firm-level micro-data have mostly focused on the *negative* effects, studying stock returns, investment rates and financial constraints of listed companies from Emerging Markets *during the phase of implementation* of the policy.[11] We contribute to this literature by showing the FX and domestic corporate debt channel as a mechanism associated with positive, prudential real-economy benefits of capital controls during an (exogenous) crisis, which are absent in the empirical literature,[12] as well as the analysis of capital controls on a large sample of non-listed companies (that tend to be more financially constrained).

Interestingly, our results are likewise very different from a recent paper on capital controls using credit register data.[13] Keller (2019) documents an unintended consequence of Peruvian controls in 2011, namely an increase in domestic firms' debt dollarization and associated fragility during a subsequent sudden stop. Such negative effects are explained by the fact that capital controls inhibited Peruvian banks from investing local dollar deposits in global forward markets, so that they were consequently redirected towards non-exporting firms. Her results and ours are not directly comparable, because of the different institutional frameworks of the Colombian and Peruvian capital controls and other institutional settings. Colombian banks were at the time of CC (and still are) inhibited from raising dollar deposits from Colombian households and firms. Crucially, the Colombian controls applied to FX-debt granted by *both local and foreign* financial intermediaries.

[10] For a detailed account of recent theoretical and empirical findings in the literature on capital controls, see Erten, Korinek and Ocampo (2019) and Rebucci and Ma (2019).

[11] See e.g. Johnson and Mitton (2003), Harrison, Love and McMillan (2004), Desai, Foley and Hines (2006), Forbes (2007a; 2007b) and Alfaro, Chari and Kanczuk (2017).

[12] Related to our findings, Tong and Wei (2010) report evidence of smaller stock price falls during the GFC for companies in less financially opened Emerging Economies, including Colombia.

[13] Two related papers (Dias et al., 2021; Fabiani et al., 2021) use the same Colombian credit registry data and the same policy shocks to evaluate the implications of capital controls for the transmission of monetary policy rates, exploiting banks' exposure to the policy (through FX-debt aimed at financing peso loans), rather than non-financial firms' exposure, as in this paper. Importantly, the two papers on monetary policy focus on the dynamics of the overall credit market for Colombia (more than 100,000 firms), whereas our study analyzes the implications of capital controls for a small subset of (less than 3,000) non-financial companies, directly exposed to capital controls through FX-inflows. Moreover, throughout all regressions, we always directly control for banks' exposure to capital controls – either through firm-level weighted averages of their lenders' FX-indebtedness or saturating loan-level models with bank*time fixed effects – but this has no tangible impact our estimates, clearly indicating that the corporate debt channel described in this paper is orthogonal to the bank-lending channel of monetary policy analyzed in these two other papers.

Importantly, the joint reading of the two papers raises a warning against reliance on cross-country studies on capital controls and helps explaining why the related empirical evidence is largely inconclusive (Magud, Reinhart and Rogoff, 2011).[14] Such studies generally label policies with different legal and institutional arrangements as capital controls. However, the two credit papers (ours and Keller, 2019), each one with very different results, show that institutional details are of first-order importance for understanding how capital controls transmit to banks and non-financial borrowers.

We further contribute to (and build a bridge between) the literatures on capital inflows and bank credit by showing complementarities between FX debt and local banks' credit supply, depending on the strength of local banking relationships. First, we show the mechanism of the corporate debt channel for our results on capital controls, where both FX debt inflows to firms and local credit supply to firms matter. Second, we are not aware of other studies identifying a credit channel behind the transmission of capital controls to the real economy that levers firms' heterogeneity in terms of the strength of local lending relationships (Sharpe, 1990; Rajan, 1992; Hoshi, Kashyap and Scharfstein, 1991; Petersen and Rajan, 1994; Berger and Udell, 1995). In this respect, our study adds to the evidence on how relationship lending shields corporate credit during financial downturns (Bolton et al., 2016; Beck et al., 2018) and at the same time allows banks to more easily pick up the slack left over by other retrenching lenders (Bharath et al., 2007). Third, the previous result in conjunction with the finding that local credit supply depends on foreign FX-debt reduction (affected by CC) suggest strategic complementarities between cross-border and local lending (Bebchuk and Goldstein, 2011; and Vives, 2014). Both channels are absent in Keller (2019), who also uses credit register data.

We finally highlight two additional contributions stemming from our findings on real effects. First, our paper relates to a novel empirical literature that tries to quantify the real effects of macroprudential measures with micro-level data (e.g. Igan and Kang, 2011, and Jiménez et al., 2017). In the context of EM, as far as we are aware, the only study that looks directly at firms' activity in relation to macroprudential policy is Ayyagari, Beck and Martinez Peria (2018), who find in a cross-country setting that companies operating in countries with tighter macroprudential stance invest less on average. Relative to them, we focus on a specific policy – (macroprudential) capital controls – and analyze its effects during a boom and a bust. Second, by showing ramifications of capital controls on firm-level trade, our study adds to a relatively large body of papers on the impact of financial shocks on trade (e.g. Amiti and Wenstein, 2011; Chor and Manova, 2011). In this respect, the negative impact of capital controls on imports mirrors Alfaro and Hammel (2007)'s findings that financial

[14] Ahnert et al. (2018) show that, after general FX macroprudential policies, banks on average pass FX-risk to firms.

liberalization spurs imports. Differently, our documented macroprudential benefits in terms of higher exports suggest that capital controls could have mitigated the Great Trade Collapse in EM.

The rest of the paper is organized as follows. Section 2 describes the policy and datasets. Section 3 presents the results of capital controls on FX debt inflows. Section 4 adds local bank credit supply. Section 5 presents the real effects during the boom and the bust. Section 6 concludes.

2. Institutional Settings and Data

2.1 Capital Controls on Capital Inflows in Colombia

The Colombian economy experienced a rapid expansion in the mid-2000s, with annual GDP growth above 4% in both 2004 and 2005. At least from early 2006, inflationary pressures further intensified due to a pronounced surge in domestic credit. The annual growth rate of commercial credit more than doubled throughout 2006, reaching a value of 22% at the end of the year from an initial point of less than 10% (Figure 1, Panel A). The Central Bank reacted by steadily increasing the interest rate, which jumped from 6% at the end of 2005 to 8% by early 2007, and further up to 10% in mid-2008. The tightening of monetary policy was accompanied by a reversal in the dynamics of net international portfolio flows, moving to strong capital inflows already by the third quarter of 2006 (Figure 1, Panel B).

To deal with the acceleration of domestic and foreign credit booms, the Central Bank resorted to capital controls on foreign inflows on May 7th, 2007, under the form of an Unremunerated Reserve Requirement (URR) on all new FX bank-loans granted to Colombian individuals and companies.[15] In practice, the URR works as follows: upon disbursement of the FX-credit to a Colombian firm, 40% of the nominal loan amount is deposited in an account at the Central Bank, without receiving any remuneration back. The deposit is always borne by the ultimate borrower of the debt (i.e. firms in our analysis) and can be withdrawn for free only after 6 months. At the time, local interest rates – as reflected by the overnight interbank rate – were as high as 8.40%. Hence, the new regulation resulted in high taxation of FX debt inflows.[16]

Importantly, firms would always pay the URR on FX-loans, independently of them being granted from local or foreign banks. Moreover, when local banks lend in FX, they finance such operations

[15] By May 23rd, the measure was extended to portfolio investments.
[16] Earlier withdrawals were allowed but against the payment of a heavy penalty fee, decreasing in time and ranging from 9.4% of the deposit itself during the first month to 1.6% during the sixth and last month.

through FX-funding from abroad.[17] To avoid double taxation, local banks' FX-financing was thus exempted.[18] Capital controls were enforced immediately upon announcement and eliminated by the 9th of October 2008, amid signs of economic slowdown related to the global unfolding of the financial crisis after Lehman Brothers' collapse.

Contemporaneously to the introduction of CC, the Central Bank also changed the regulation on traditional banks' reserve requirements, applying generally higher requirements on saving and checking deposits. Given our granular data, we can isolate the effects of capital controls from those of traditional banks' reserve requirements: (i) in loan-level regressions, where we exploit firm heterogeneity on ex-ante FX exposure, by applying bank*year-quarter fixed effects, hence fully controlling for any credit-supply variation connected to banks' idiosyncratic shocks, including the reserve policy ones; (ii) in firm-level models, by controlling for direct exposure to the reserve policy using banks' supervisory balance sheet data. Decisively, none of our results change based on the inclusion of such controls (or more generally due to other controls).

2.2 Data and Summary Statistics

Our work is primarily based on two administrative and confidential datasets observed during the period of interest 2006-2009. First, we have access to the National Credit Registry (CR) - provided by the Colombian Financial Supervisory Authority (*Superintendencia Financiera de Colombia*) – which collects detailed quarterly information at the loan-level on commercial debt outstanding. We aggregate information on size of the loan, collateralization and maturity at the firm-bank-currency level. The distinction across currencies is not available for loan interest rates, that are consequently available at the firm-bank level. Second, we observe Balance of Payments records on firm-level quarterly borrowing from foreign banks and in the form of trade credit (from foreign firms) and bond issuances. One key difference between these two datasets is that while CR-data refer to the firm-bank-currency *stock* of debt, we observe firm-level debt *flows* from abroad. We also obtain information on firm-level quarterly imports and exports.[19] Finally, we collect publicly available data

[17] Colombian banks, as banks from other countries which follow the Basel capital rules, basically fully hedge their FX-exposure. In fact, already before CC, banks could not have negative in-balance-sheet FX position, whereas the global net FX-position (comprehending off-balance-sheet assets and liabilities in FC) could not go below -5% of regulatory capital.

[18] Banks' FX-financing would be taxed through CC if this financing would be used for peso-denominated investment. Also, joint with CC, the Central Bank introduced an upper bound on the gross FX-position (i.e. the sum of in- and off-balance-sheet FX assets) equal to 500% of banks regulatory capital.

[19] Data on firms' employment are not accessible, hence we rely on figures for manufacturing industries that are released each trimester from the Colombian National Administrative Department of Statistics (DANE).

on firms' and banks' balance sheet, at annual and quarterly frequency, respectively. All datasets are matched through firms' unique tax identifiers or through banking groups denomination codes.

Our sample comprehends 2,861 firms active in FX-debt markets before the CC, excluding financial companies (ISIC codes 65 to 67) and utilities (ISIC codes 40 and 41). Unless otherwise stated, we conduct our analysis in 5-quarter symmetric windows around the policy introduction. That is, the sample starts in 2006:Q1 (with 2007:Q2 labelled as the first year-quarter under capital controls) and ends in 2008:Q2 before the crisis. We compute summary statistics over the pre-policy period 2006:Q1-2007:Q1 and report them in Table 1.

Panel A contains firm-level summary statistics. Regarding foreign inflows, the aggregate variable across local- and foreign-driven inflows, FX $\text{Inflows}_{f,yq}$, is given by the quarterly flow amount rescaled by total assets. This variable can take either positive or nil values, depending on whether FX-debt is issued or not, respectively. The presence of zeros and the rescaling by total assets produces small numbers in absolute value. This should not lead to underestimate the importance of FX-debt issuance for our companies, though. The variable $\text{Share-FX}_{f,yq}$ describes the fraction accounted for by FX debt flows out of total debt issuance. Conditional on issuing any foreign or domestic currency debt,[20] FX-debt represents on average around 30% of total debt flows. There are differences in the distribution of FX-debt inflows lent by local and foreign banks, FX-Local $\text{Inflows}_{f,yq}$ and FX-Foreign $\text{Inflows}_{f,yq}$. For both variables, we compute summary statistics over companies that have at least a positive entry during the pre-policy period. First, FX-lending relationships with local banks are more common (note the larger number of observations). In fact, 1,684 companies have FX-ties to local banks, whereas 402 companies borrow in FX from foreign banks and 775 firms enjoy FX-lending relationships with both local and global lenders. Second, foreign FX-debt flows are significantly larger. This reflects heterogeneity across firms borrowing in FX. Table 2 indeed indicates differences across companies in the two segments of the FX-debt market. Firms borrowing in FX from both local and foreign intermediaries are larger, with balance sheets around 1.5 and 0.8 times bigger than those of companies borrowing exclusively from local or foreign banks, respectively. The same ranking is also preserved along both imports and exports. One important remark is that all bank balance sheet characteristics are nearly identically distributed across the different groups of companies. This is a first reassurance that banks idiosyncratic characteristics do not interfere with the identification of the effects of capital controls based on the comparison between companies borrowing in FX.

[20] Note that this variable can be computed only for companies that issue at least one between peso and FX debt. For this reason, the number of observations for computation of statistics on $\text{Share-FX}_{f,yq}$ is lower.

A crucial variable in our analysis is the ex-ante exposure to FX-debt. Specifically, we aim to gauge a measure of pre-policy involvement in foreign currency borrowing. Since we do not have at our disposal the stock of foreign currency borrowing from abroad – in which case one might look at debt outstanding just at the onset of the policy, say in 2007:Q1 – we rely on a proxy given by the average issuance (rescaled by total assets) during the period from 2005:Q1 to 2007:Q1, the longest pre-policy period of observations for FX-inflows available to us. The related summary statistics for overall FX-debt exposure are those referring, in Table 1 and 2, to the variable $\text{Exposure}_{f,pre}$. Similar definitions apply to the exposures to FX-debt granted by local and foreign banks, respectively denoted by $\text{Exposure-Local}_{f,pre}$ and $\text{Exposure-Foreign}_{f,pre}$. Within subgroups of active companies, exposures contain heterogeneity. Across subgroups, firms with local FX-ties only are less reliant on FX-debt than the others, on average. Throughout the paper, we assess the robustness of our results to employing alternative measures of ex-ante exposure to FX-debt, which rescale inflows over total liabilities, or simply by taking logs, or consider their realization in 2007:Q1, or, finally, compute the average inflow over the period 2005:Q1-2005:Q4. We report their summary statistics in Table A1 of the Internet Appendix and they depict a substantially unmuted picture.

Firms total indebtedness is measured by its total liabilities, expressed in logs (of millions of Colombian pesos as of 2006:Q1, like other variables which are not rescaled by total assets) and denoted by the variable $\text{Liabilities}_{f,y}$, observed with annual frequency. Comparing the mean for total firm assets ($\text{Size}_{f,y-1}$) and liabilities, the latter account on average for 60% of a firm balance sheet.

The real effects of capital controls are analyzed over the period 2006-2009, so to study prudential benefits during the great financial crisis, exploiting quarterly data on imports and exports, expressed as well in logs and indicated by the variables $\text{Imports}_{f,yq}$ and $\text{Exports}_{f,yq}$, respectively. In exports (imports) regressions, we restrict our attention to those companies that during the period 2006-2009 export (import) in at least one year-quarter. For this reason, the number of observations drops, as not all companies in our sample engage in trade. Firms import more often than they export, which is reflected in fewer zeros. This also produces higher moments for imports than for exports.

Our analysis of the substitution of FX with local currency lending takes advantage of the credit registry, i.e. loan-level data. Panel B of Table 1 contains related summary statistics. The variable $\text{PesoLoan}_{f,b,yq}$ defines the log of the end-of-quarter firm-bank outstanding peso-denominated debt. The average peso-loan, expressed in end-of-2019 US dollars, is valued about $60,000.[21] The variable

[21] This figure is computed using the FRED CPI index for All Urban Consumers (https://fred.stlouisfed.org/series/CPIAUCSL) and the Peso-US$ exchange rate as of March 2006.

$InterestRate_{f,b,yq}$ represents the average interest rate applied over a company's debt balance with a given bank and is expressed in percentage points. The mean rate is 13.5%, reflecting the tight monetary policy stance of the Central Bank of Colombia over the period. Roughly 42% of the loans are collateralized and the average loan maturity is close to 4 years. Moreover, in 37% of the cases, a same bank grants not only peso credit, but also FX lending (as signaled by the variable $FX\text{-}Lender_{f,b,pre}$, a dummy with value 1 if a bank provides FX debt to a given firm before capital controls and 0 otherwise). Finally, note that firm-level variables are distributed differently in this sample for loan-level regressions. This reflects the fact that the number of firm-bank relationships is heterogeneously distributed across companies.

We report remaining summary statistics for macroeconomic controls and industry-level variables in Table A1 of the Internet Appendix.

3. Impact of Capital Controls on FX-Debt Inflows

We start our empirical analysis by looking at the influence of CC on FX-debt inflows. We study the behavior of the 2,861 ex-ante active companies in FX-debt markets during the period from 2006:Q1 to 2008:Q2. We intentionally exclude the third quarter of 2008 despite controls were effectively removed by early October of the same year. This is to separate the effects of capital controls from those of the GFC following the collapse of Lehman Brothers in mid-September of 2008, associated to high volatility of capital flows and to their retrenchment from EM towards Advanced Economies (Forbes and Warnock, 2012). All presented results nonetheless hold if we include 2008:Q3 in the regression sample (tables are available upon request).

First, we look at the unconditional impact of capital controls, by exploiting the following model:

$$\text{FX Inflows}_{f,yq} = \beta_1 Post_{yq} + \beta_2 Macro_{yq-1} + \beta_3 Firm_{f,yq-1} + \delta_q + \delta_f + \varepsilon_{f,yq}$$

The dependent variable aggregates local-driven and foreign-driven FX-debt inflows;[22] later, we will consider both markets separately. The key parameter of interest is β_1, loading $Post_{yq}$, a dummy with value 1 starting from 2007:Q2, the quarter of introduction of the CC, and 0 before. Therefore, we analyze CC over 5-quarter windows before and after their introduction. We augment the model with quarter fixed effects (i.e., seasonal effects) and firm fixed effects, δ_q and δ_f, controlling for quarter-specific shocks to FX-debt issuance and for time-invariant firm heterogeneity, respectively.

[22] That is, the sum of FX bank loans, provided by local and foreign banks, bond issuance in FX and trade credit from foreign firms. Note that FX-bonds issuance and trade credit are tiny relatively to bank loans in our sample. For this reason, we normally refer to FX-bank loans and FX-inflows interchangeably.

In addition, we include a vector of time-varying macroeconomic controls, $Macro_{yq-1}$, comprehending: the lagged yearly variation of GDP and CPI index (i.e. yearly inflation); lagged values of the VIX and of the exchange rate, both expressed in logs, and of the monetary policy rate. We also augment the model with a battery of firm controls, including lagged values of firm size, ROA, imports, exports and firm-level weighted averages (across loans shares) of multiple bank balance sheet items – most notably, the share of assets accounted for by saving and checking deposits, that were differently affected from 2007:Q2 onwards. Standard errors are double-clustered at the firm and industry*year-quarter level.

We show results in columns (1) to (3) of Table 3. Column (3) displays the coefficients for the most robust version of the model which we just described. With capital controls in place, total FX-debt inflows are on average smaller by 0.004 (significant at 1% level). This coefficient is small in absolute terms, due to data on inflows being rescaled by total assets but still reflects a large effect of CC. In fact, comparing this number with firm-level summary statistics in Table 1, it equals 30% of the ex-ante mean FX-debt inflow (which, in turn, accounts on average for roughly 30% of total debt issuance). The effect is similar in columns (1) and (2), i.e. in less saturated versions of the model. In Panel A of Table A2 of the Internet Appendix, we repeat the same analysis for different groups of companies, sorted according to whether they ex-ante borrowed in FX from: local banks (column 1); both local and foreign banks (column 2), or foreign banks only (column 3). The estimates for β_1 suggests that the unconditional reduction of debt inflows is similar across the groups of firms.

To check whether CC impact differently firms ex-ante more reliant on FX-debt, we next run the following regression:

$$\text{FX Inflows}_{f,yq}=\beta_1 \text{Post}_t*\text{Exposure}_{f,pre}+(\beta_2+\beta_3*\text{Post}_t)\text{Firm}_{f,yq-1}+\delta_{i,yq}+\delta_f+\varepsilon_{f,yq}$$

That is, we condition the effect of capital controls on the ex-ante FX-debt exposure, $\text{Exposure}_{f,pre}$. For easing comparison of the coefficients in columns 3 and 4, we de-mean such exposure variable. We now further include interacted industry and year-quarter fixed-effects, $\delta_{i,yq}$, controlling for time-varying industry-wide (ISIC 4-digit level) shocks. Firm controls are finally interacted with the Post_{yq} dummy, potentially allowing for different relations among firm characteristics and FX-debt intakes before and after the CC. Table 3, columns (4) to (10), shows the estimated coefficients, revealing that more exposed companies are more affected by the CC, as β_1 is negative and statistically significant.

About the economic significance of our estimates, considering the pooled estimates in column 7, for firms with FX-exposure 1 s.d. above the mean, there is an additional 0.0106 reduction in FX-debt inflows. Overall, adding up this additional effect to the average reduction in FX-debt estimated in

column 4 gives a total reduction close to 40% of their mean ex-ante FX-exposure, hence an additional 10% reduction relative to the average firm (for which FX-debt inflows contract by 30% as compared to the pre-policy average). In columns (8)-(10) of Table 3, we run separate regressions for different groups of companies, sorted depending on whether they ex-ante borrow in FX from local and/or foreign banks, and confirm results from pooled regressions.

We conclude this section with a list of robustness checks. First, differently FX-exposed companies may vary along dimensions that we do not control for through our set of controls and fixed effects. Among observable characteristics, for instance, FX-exposure positively correlates with firm size, which, in turn, may endogenously correlate with TFP growth. If this was a threat to our identification assumption – namely, the interaction between the $Post_{yq}$ dummy and ex-ante FX-debt exposure being orthogonal to firm-specific unobserved time-varying shocks – we would observe instability of the coefficients of interest when adding controls and fixed effects. In this sense, we formally check the extent of self-selection along unobservables through the Oster (2019)'s test. Building on seminal work from Altonji, Elder and Taber (2005), she derives the proportional degree of selection into the treatment (relative to that inferred from the data) needed to nullify the estimated treatment effect, assuming a value $\tilde{R}^2$ for the hypothetical share of variance one would explain, were all the relevant residual heterogeneity controlled for. A "coefficient of proportionality" $\tilde{\delta} > 1$ is interpreted as reassuring evidence, implying that further unobservable characteristics should correlate with treatment in a stronger manner than observables and unobservables captured by fixed effects. In Table A3 of the Internet Appendix we provide the results of the test, both under the standard assumption that $\tilde{R}^2 = \min\left\{1.3\hat{R}^2; 1\right\} = 1.3\hat{R}^2$, where $\hat{R}^2 = 0.4615$ is the explained variability of column (7) of Table 3, and under the very restrictive assumption that $\tilde{R}^2 = 1$. In both cases, the resulting degree of proportionality is strictly greater than 1.

Second, we analyze a relatively long 5-quarter window around the policy, so that results in Table 3 could in principle be driven by other events taking place either in 2006 or in late 2007 and/or early 2008. For this reason, we also consider all the shorter windows around the policy announcement. Estimates in Panel B of Table A2 display a persistently negative and statistically significant coefficient throughout all the different specifications.

Third, we allow for different definitions of the exposure variables, including: values as of 2007:Q1; non-linear transformation of our averaged measure through log exposures; rescaling by total liabilities rather than by total assets; computation of average exposure over the period 2005Q1:2005Q4. All results go through (see Panel C of Table A2 in the Internet Appendix). All the

discussed robustness exercises perform similarly when considering separate regressions for the different groups of companies. The related tables, not reported for brevity, are available on request.

Finally, as our analysis corresponds to a diff-in-diff exercise, we check whether the parallel trends assumption holds. In practice, we estimate a version of the model in which the ex-ante FX-debt exposure (and all the other control variables) are allowed to exert a time-varying effect on FX-debt intakes.[23] We impose the impact in 2007q1 – the last year-quarter before the introduction of capital controls – as the baseline (unestimated) value, so that a validation of the parallel trends assumption requires that coefficients are about zero before it, and negative thereafter. In fact, the coefficients displayed in Figure 2 suggest that before capital controls there is not a significant (increasing or decreasing) trend in FX-debt inflows associated to ex-ante FX-debt exposure.[24] Following the implementation of capital controls in 2007q2, however, the effect of higher ex-ante FX-exposure becomes markedly negative.

4. Substitution of Foreign Debt with Domestic Bank Debt

We investigate whether corporates substitute the forgone foreign currency debt with domestic peso lending. To this end, first, we study substitution along the extensive margin and next over the intensive margin.

4.1 Impact of Capital Controls on Currency Composition of Corporate Debt Issuances

FX-debt intakes become much less frequent under capital controls. On the extensive margin, this can imply that ex-ante more FX-exposed companies issue domestic currency debt more frequently. We verify this hypothesis borrowing the identification strategy from Becker and Ivashina (2014). In detail, we retain firm*year-quarter pairs where either FX or peso-debt was issued, so to control for positive credit demand, while dropping those with no debt issuance or intakes of both types of financing, as they do not bring any information about the relative ability of companies to issue debt in different currencies.[25] The equation of interest takes the form:

$$\text{DebtType}_{f,yq}=\beta_1\ \text{Post}_t*\text{Exposure}_{f,pre}+\left(\beta_3+\beta_4*\text{Post}_t\right)\text{Firm}_{f,yq-1}+\delta_{i,yq}+\delta_f+e_{f,yq}$$

[23] In practice, we estimate the following equation:

$$\text{FX-Inflows}_{f,yq}=\sum_{yq\neq 2007q1}(\beta_{yq}*\text{Exposure}_{f,pre}+\gamma_{yq}*\text{Firm}_{f,yq-1})+\delta_{i,yq}+\delta_f+e_{f,yq}$$

[24] The marginally significant coefficient in 2006q2 is not associated to a particular ex-ante time trend associated to FX-debt exposure. It most likely reflects noisy seasonal effects associated to FX-debt inflows.

[25] Including firm*year-quarter pairs where both peso and FX-debt is issued, and coding the entry as peso issuance or FX-issuance based on the largest value among the two, does not alter results.

The dependent variable, $DebtType_{f,yq}$, is a dummy variable with value 1 if only debt issuance in peso is recorded and with value 0 in the opposite case where FX-debt is issued and peso debt is not. The saturation with fixed effects and controls mirrors the model for evaluating the impact of capital controls on debt inflows. The main coefficient of interest, β_1, describes the impact of ex-ante exposure to FX-debt on the relatively likelihood of issuing peso-debt (as opposed to FX-debt) after the imposition of CC, and compared to before. In Table 4, columns (1) and (2) indicate that firms relatively more ex-ante reliant on FX-debt become relatively more likely to issue peso debt, i.e. they substitute relatively more. Based on point estimates in column (2), a 1 interquartile jump in pre-determined exposure to FX-debt boosts the likelihood of issuing peso-debt by roughly 3.7%, corresponding to a 4.7% increase relative to the pre-policy average. Columns (3)-(5) report analogous figures for regressions run over separated samples for companies with local and/or foreign FX-ties.

This result points to a CC-induced drag on companies' debt-dollarization. We formally verify this hypothesis in columns (6)-(10), where we run a model with the share of FX-debt out of total debt issuance as dependent variable. The equation is otherwise identical to those analyzed so far, as long as right-hand side variables are concerned. Results indicate a decrease in the share of FX-debt over total debt issuance for more ex-ante FX-exposed companies. Results are again consistent across the three different groups. The presented findings differentiate the Colombian capital controls from the Peruvian case studied by Keller (2019) and, generally, from those FX-policies which put caps on banks' foreign currency funding and/or other investments different from lending, which tend to increase non-financial agents' usage of FX-loans (Ahnert et al., 2018).

4.2 Substitution with Peso Debt from Local Banks

For highly ex-ante FX-exposed firms, after capital controls the issuance of peso debt becomes more frequent and represents a larger share of total debt issuance. Nonetheless, it remains to understand whether the same firms also adjust on the intensive margin. To this end, we investigate loan-level data for loans denominated in pesos from the CR.

We contrast the post-CC dynamics in the domestic peso-credit market of the different groups of companies based on whether, before the policy, they borrowed in FX from local or foreign banks, or from both. A key observation is that borrowing in FX from domestic lenders grants a closer relationship with the local credit system. Locally issued FX-loans are in fact recorded in the CR, along with their entire credit history of repayments and defaults, whereas loans issued abroad are not. Moreover, the local FX-lender will also access additional soft information which is not recorded in the CR, therefore establishing an even tighter connection.

These differences are crucial for explaining our findings, that are presented in four subsections: first, we describe the empirical strategy for detecting relative changes in the volume and in the price of credit caused by capital controls; second, we report results from our baseline model; third, we perform a list of robustness exercises; fourth, we investigate a mechanism which explains our results.

4.2.1 Substitution with Peso Debt from Local Banks – Empirical Model

The companies are grouped into three categories according to the three following mutually exclusive 0/1 dummies. First, $Local_{f,pre}$ equals 1 for firms borrowing in FX before capital controls from local banks only. Second, $Foreign_{f,pre}$ has value 1 for firms ex-ante indebted in FX exclusively with foreign banks. Third, $Both_{f,pre}$ equals 1 for firms ex-ante borrowing in FX from both local and foreign banks.

Local represents the baseline group in the following regression:

$$Y_{f,b,yq}=\left(\beta_1 Both_{f,pre}+\beta_2 Foreign_{f,pre}\right)*Post_{yq}+\theta X_{f,b,yq}+\delta_{f,b}+\delta_{i,yq}+\delta_{b,yq}+\epsilon_{f,b,yq}$$

The dependent variable, $Y_{f,b,yq}$, is either the log of peso-loan provided by bank *b* to firm *f*, or the interest rate applied over it. β_1 and β_2 are the two parameters of interest, describing the post-capital controls dynamics of Both and Foreign firms in domestic credit markets, compared to Local. $X_{f,b,yq}$ is a vector of firm and loan-level controls. Firm controls include, on top of the usual variables applied in firm-level analysis, a dummy for whether a company defaulted in any loan over the past year. Loan Controls include a 0/1 collateralization dummy and the (log)-maturity of the loans. All controls are eventually fully interacted with the $Post_{yq}$ dummy. $\delta_{f,b}$ is a full set of interacted firm and bank fixed effects, controlling for firm-bank matching, whereas $\delta_{i,yq}$ are interacted industry and year-quarter fixed effects.

Peso lending may be impacted by the contemporaneous shock to banks' reserve requirements, in addition to capital controls. In turn, this might generate a bias in our estimates if banks' sources of financing covary with companies' choice to participate in different FX-debt markets. Summary statistics in Table 2, however, tells us that this is not likely to be the case, as bank attributes are identically distributed across the different groups of companies. Still, there might be other unobserved banks' idiosyncratic shocks that differently affect the willingness of banks to extend credit to the various groups of companies before and after CC, for reasons that are unrelated to the CC themselves. Thanks to the granularity of our datasets, we directly tackle these concerns applying bank*year-quarter fixed-effects, $\delta_{b,yq}$, controlling for all time-varying (observed and unobserved) idiosyncratic bank shocks.

4.2.2 Substitution with Peso Debt from Local Banks – Baseline Results

Panel A of Table 5 contains the results from the estimation of the regression equation for loan quantity. The most robust specification is in column (5). Relative to firms borrowing ex-ante in FX exclusively from local banks, firms ex-ante indebted in FX only with foreign banks experience a credit reduction of about 13%. Moreover, companies borrowing ex-ante in FX both from local and foreign banks suffer a halfway cut of 6.9%. Importantly, and confirming the exogeneity of participation into different FX-debt markets to banks heterogeneity, the coefficients magnitudes are virtually unaffected by including bank*year-quarter fixed effects, whose addition to the model also implies a tiny change in the R-squared; in other terms, the differences between the coefficients in columns (3) and (4) are not significant and bank time-varying heterogeneity explains a very small share of the relative changes in loan volume across companies (e.g. traditional RR do not affect the estimated coefficient nor add any statistical explanation).

Since we shut down Colombian banks' idiosyncratic shocks channel, we study the simultaneous loan interest rate dynamics across groups to understand whether changes in credit are driven by supply or demand channels. Panel B of Table 5 shows results for the model with loan interest rate as dependent variable. In column (5), which displays estimates for the most robust version of the model, the price of credit increases by 79bp (30bp) for firms ex-ante indebted in FX only (also) with foreign banks, relative to firms with ex-ante FX credit relationships exclusively with local banks. The joint reading of Table 5 and 6 reveals that the relative quantity and price of credit move in opposite directions after the implementation of capital controls: the suggested credit variations across groups of companies are therefore driven by supply factors, consistent with the strength of local lending relationships.

4.2.3 Substitution with Peso Debt from Local Banks – Robustness

To start with, the consistency of our estimates depends on the validity of the parallel-trend assumption: absent capital controls, firms in different groups would have gone through parallel credit dynamics. In Figure 3, we depict the aggregate raw loan quantity across groups, normalizing it to 1 in 2007:Q1, the last quarter before the introduction of CC. Each group of companies experience positive credit growth before capital controls. After CC, however, only companies ex-ante indebted in FX exclusively with local banks remain on such increasing trend, with a decline for firms with no ex-ante FX credit from local banks and flat dynamics for companies borrowing in FX both locally and abroad. Similarly, in Figure 4, before the introduction of CC interest rate is on a rising path for all companies, with diverging dynamics following the implementation of CC (note that monetary rates were continuously increasing over 2006 to 2008, so rates go up always for all firms).

We also perform other robustness tests to ensure that CC drive results. We rely again on the Oster (2019)'s test to check whether self-selection into the treatment may potentially invalidate our findings. We run the exercise using two benchmarks for the hypothetical R-squared: first, the value associated to the inclusion of firm*year-quarter fixed effects, which would absorb all firm-specific time-varying shocks, i.e. the main candidates as potential omitted variables in our model; second, the usual upper bound at 1. The resulting proportionality coefficients are in Table A4 of the Internet Appendix and are both above 1 in quantity regressions. For price regressions, they are negative, suggesting that selection along unobservables reinforces the described patterns, if anything.[26]

On top of clustering standard errors at the firm-level in all CR regressions, as we exploit firm time-varying heterogeneity for our main coefficients of interest, we also collapse our observations in a firm-bank average pre/post dimension, following Bertrand, Duflo and Mullainathan (2004), and re-run our model. The main finding that companies which ex-ante borrow in FX only from foreign banks suffer a credit supply cut from local banks still applies (Table A5 of the Internet Appendix).

An additional sensitivity check regards the fact we observe interest rates at the firm-bank level, rather than at the firm-bank-currency level. For validating that results are driven by peso borrowing, we run the same regression on firm*bank*year-quarter triples with positive peso loans and no FX-debt. The results, available on request, confirm qualitatively and quantitatively those described for the larger sample.

4.2.4 Substitution with Peso Debt from Local Banks – Mechanism

Building on the large literature on lending relationships, we investigate a mechanism for explaining our results that describes potential complementarities between domestic and external credit. Our test involves two steps. First, local FX-lending relationships are visible in the CR, and should therefore favor firms' ability to borrow in local markets proportionately to the overall exposure to the Colombian FX-debt market, proxied through Exposure-Local$_{f,pre}$. On the other hand, additional exposure to foreign banks, i.e. higher values of Exposure-Foreign$_{f,pre}$, might predict a marginal increase in the credit supply cut, as they make firms more opaque to the local banking system, generating complementarities between cross-border and domestic lending (Bebchuck and Goldstein, 2011; Vives, 2014).

Second, granting loans gives banks soft information about borrowers (which are not recorded in the credit registry). Hence, if FX-lending relationships are key for substitution, the relative credit

[26] In other terms, in this case, the correlation among residual unobservables and the treatment should have opposite sign than the correlation between observables (and unobservables controlled for by fixed effects) and the treatment itself.

expansion in favor of (ex-ante) FX-customers of local banks has to be operated more aggressively by their Colombian FX-lenders themselves.

We verify the first conjecture in column (6) of both panels of Table 5. Indeed, higher exposure to local (foreign) banks, i.e. *weaker* (*stronger*) relationships with the local banking system, grants greater (lower) levels of credit following capital controls, at relatively lower (higher) price. Quantitatively speaking, a 1 interquartile increase in ex-ante FX-exposure to local banks is associated with a 3.67% jump in credit and an interest rate descent of roughly 30bp. Conversely, a 1 interquartile increase in ex-ante FX-exposure to foreign banks is associated with a 2.77% decline in credit and a hike in interest rate of 12bp. Note that coefficients are remarkably stable in different and less saturated versions of the model and across different definitions of the variables for FX-exposures (see Table A6 and Table A7 of the Internet Appendix, respectively).

Finally, we confirm in Table 6 that the credit supply increase for companies borrowing in FX from local banks is driven by *their FX-lender(s)*. We perform the following exercise. Throughout the different regressions, we always maintain the group of companies with no ex-ante FX-debt from local banks (as a benchmark group). We compare the evolution of the price and quantity of their peso loans with those of peso loans granted to the other companies by the local FX-lender(s) (columns indexed by even number) and by the rest of the banks (columns indexed by odd numbers). Results indicate that the relative credit expansion (and contemporaneous price descent) experienced by companies borrowing in FX only from local banks is mostly driven by a change in supply of the local banks which provided FX-loans before CC.

Overall, the evidence in this subsection suggests a mechanism based on companies being penalized (favored) because of looser (stronger) relationships with the local credit system.

5. Real effects

In this section, we study whether capital controls impact the real economy through their influence on firm debt. In detail, we first check that capital controls impacted the growth of firms' total debt. Consistently with the evidence presented so far, we will confirm that this is the case for firms with weaker relationships with local banks, whose ex-ante exposure to FX-debt is ultimately constraining. Next, we exploit this heterogeneity to check real effects on trade at the firm-level.

Capital Controls were introduced in May of 2007 and removed in October of 2008. Interestingly, from our perspective, the lifting of the CC coincides with the eruption of the global financial crisis (GFC) beyond US borders due the collapse of Lehman Brothers. Note that the GFC was characterized by a world-level collapse in trade. Hence, exploiting our data on imports and exports, we can analyze

not only the impact of the capital controls upon implementation, but also their prudential benefits, potentially associated to a preventive slowdown of debt growth just before a major financial crisis (a "corporate-debt channel").

5.1 Real Effects: Capital Controls and Reduced Growth of Total Liabilities

For understanding whether the CC have ramifications for the real economy, we first check that they affect the growth of firms' total debt. Companies with weak ex-ante credit relationships with local banks may be affected, as they suffer credit cutbacks from capital controls and are additionally penalized by their Colombian (peso) lenders. Note, however, that the negative credit supply shocks might have been compensated by an increase in other forms of financing such as trade credit provided by other Colombian firms.

We verify that this (potential) substitution mechanism is not sufficient to undo the documented debt reduction by analyzing the evolution of total firms' liabilities, whose information is unfortunately available only at annual frequency. This generates ambiguity for the definition of the timing of the CC, which were adopted in 2007:Q2 (and removed in 2008:Q3). We try to overcome it by taking a dual approach. First, we consider only end-of-2006 and end-of-2007 data, which is our preferred choice. By leaving out end-of-2008, in fact, we avoid confounding shocks associated to CC with those stemming from the GFC. Next, however, we also check that results hold in a different sample where we bring in observations for end-of-2008. This strategy allows to compare ex-ante and ex-post firm liabilities, though it is subject to the critique that end-of-2008 contains shocks due to the GFC. In practice, we show that irrespectively of the terminal year we consider in our sample, more ex-ante exposed companies to CC (through weak relationships with local banks and high FX-debt) experience a reduction in total liabilities.

We present results in Table 7. Here the $Post_{yq}$ dummy takes value 0 in 2006 and value 1 in subsequent years. In columns (1)-(6), the terminal year is 2007. First, we run a relative exercise across groups, and find that CC reduce total liabilities for companies with no ex-ante FX-lending relationships with local banks by 4.7% in the most robust version of the model in column (5), where we include all usual controls interacted with the post dummy and both firm and industry*year fixed effects. The reduction holds if we fix 2008 as the terminal year of the sample (column (7)). We also verify that the reduction in total liabilities is increasing along (constraining) exposure to the policy (through ex-ante higher foreign FX-debt inflows and weak lending relationships with local banks), consistently with the evidence from previous sections. Excluding 2008 from the analysis, the coefficients in column (6) reveals that an interquartile increase in pre-policy exposure to capital

controls prompts an additional reduction in total liabilities of 1.05%. These figures nearly double in regressions where 2008 is the terminal year with CC in place.

Overall, the evidence presented in this subsection shows that capital controls ultimately cause a reduction in total debt growth for companies more ex-ante reliant of FX-debt and with weak ex-ante lending-relationships with local banks. We now verify whether such corporate-debt channel of capital controls has ramifications for the real activity.

5.2 Real effects: Capital Controls and Trade during the Boom and the Bust

Figure 4 shows that aggregate-level Colombian trade grew at fast and stable annual rates, close to 20%, from 2006 to mid-2008. Nonetheless, posterior dynamics indicates that Colombian imports and exports were affected by the Great Trade Collapse associated to the GFC of 2008-2009 (Bems, Johnson and Yi, 2013). The timing of CC (introduced in the boom and removed just before the unfolding of the GFC), the global financial and trade shock, and the availability of administrative quarterly firm-level data on imports and exports allow us to ask whether CC smooth the contraction in trade associated to the GFC by preemptively reducing corporate debt.

In this section, we answer this question, presenting findings in favor of such hypotheses. First, we describe our empirical strategy. Second, we present the baseline results. Third, we provide evidence that results are driven by a corporate-debt channel mechanism through a direct test, based on the decomposition of variation in firm total debt over 2006-2007 (hence during CC and before the crisis) into a CC-related component and a more endogenous one, orthogonal to the introduction of CC. Fourth, we perform a list of robustness checks. Finally, we further investigate firms' heterogeneity in terms of financial constraints, providing additional evidence on the corporate debt channel.

5.2.1 Capital Controls and Trade during the Boom and the Bust – Empirical model

We extend our sample to include 2009, hence observations are now collected over the period 2006:Q1-2009:Q4. We exploit the following regression model at the firm*year-quarter level:

$$Y_{f,yq}=\left(\beta_1 Post_{yq}+\beta_2 Crisis_{yq}\right)Exposure\text{-}Foreign_{f,pre}+\left(\gamma_1+\gamma_2 Post_{yq}+\gamma_3 Crisis_{yq}\right)Firm_{f,yq-1}+\delta_{i,yq}+\delta_f+\varepsilon_{f,yq}$$

The dependent variable is either imports or exports, defined in logs. Our aim is to measure how ex-ante binding exposure to the CC (through the effect of $Exposure\text{-}Foreign_{f,pre}$ on total debt) impacts firm-level trade both during the policy period (2007:Q2 to 2008:Q2) and during the crisis (2008:Q3 to 2009:Q4). To this scope, $Exposure\text{-}Foreign_{f,pre}$ is interacted with the $Post_{yq}$ and the $Crisis_{yq}$ dummies: the former has value 1 from 2007:Q2 onwards, the latter only starting from 2008:Q3.

The parameters of interest are β_1 and β_2, measuring the impact of exposure to capital controls on firm-level trade. In particular, β_1 describes the effect of capital controls during the phase of enforcement and relatively to the pre-CC period. β_2 estimates the effect of CC during the crisis, and relatively to the CC period. We include our standard set of firm controls, fully interacting them with the $Post_{yq}$ and $Crisis_{yq}$ dummies. In each regression, we will include the interacted ex-ante FX-debt exposure to local banks, not associated to reduced debt growth through capital controls and which should therefore not cause any real effect. Consistently with previous firm-level regressions, we saturate the model with firm and industry*year-quarter fixed effects, which is also the clustering-level of standard errors.

5.2.2 Capital Controls and Trade during the Boom and the Bust – Baseline Results

Panel A of Table 8 contains the baseline results on firm-level trade. We focus our discussion primarily on columns (1) and (2). Firms with higher ex-ante FX-debt and strong FX-lending relationships with local banks do not adjust neither imports nor imports, both during the implementation of the CC and during the crisis, in line with our results that they could undo the external shocks due to CC through an increase of domestic credit supply.[27]

Higher exposure to capital controls (resulting from the combination of larger ex-ante FX-debt exposure and weak relationships with local banks), interestingly, delivers imports losses on impact (introduction of the policy), with a 1.38% (inter-quartile) increase associated to a marginal 4.4% fall. Note also that imports do not revert to pre-CC levels during the crisis. In contrast, exports are not affected upon implementation of the CC.

However, during the global crisis, exposure to capital controls is beneficial, with an interquartile increase associated to a 7.2% jump in exports. In robustness checks below, we will show that both results on imports and exports are completely robust across different versions of the model, including one with no controls nor fixed effects, and, consistently with previous sections, we will verify formally this claim through the Oster (2019)'s test.

Before, however, one first interesting observation emerges from the regression for exports in column (3) where we include companies with ex-ante FX-ties both domestically and abroad: the benefits of ex-ante foreign FX-exposure during the crisis diminish. We interpret this finding as prima-

[27] Columns (1) and (2) exclude companies ex-ante borrowing in FX from both Colombian and foreign institutions as these confound the effects of our treatment variable. Such companies in fact experience a relatively milder credit cutback (see Table 5) and their total firm-level liabilities are not constrained (see Table 7). Hence, CC are not binding for debt growth and may not be associated to a corporate debt channel for the real effects of CC during the crisis.

facie evidence supporting our "debt channel" mechanism: as already mentioned, CC do not constrain the debt growth of the newly included companies, serving their "prudential" role imperfectly and bringing weaker benefits during the GFC.

Capital controls therefore come with costs and benefits. On one side, CC reduce imports; on the other side, exports are unaffected in the aftermath of the policy but grow relatively faster during the crisis. The magnitudes of the benefits during the bust outweigh those of the costs during the boom, though, as suggested by our discussion on the economic significance of the estimated coefficients. However, as we argue in the Introduction, our paper does not perform a welfare analysis: we just report benefits and (some) costs.

5.2.3 Capital Controls and Trade during the Boom and the Bust – Mechanism

We run a direct test for our mechanism, the corporate debt channel, based on the hypothesis that the pre-crisis reduction in total debt due to CC is beneficial and drives the relative increase in exports for exposed firms.

In particular, we verify that endogenous drops in total debt – i.e. cuts in total liabilities growth orthogonal to exposure to capital controls – are not associated to post-crisis differences in exports. Excluding endogenous effects of total liabilities reassures that our estimates reflect a corporate debt channel due to capital controls, rather than other spurious dynamics. The test involves two steps. First, we run a cross-sectional regression of yearly reduction in total liabilities (i.e., yearly growth rate with negative sign) as of end-of-2007 against exposure to capital controls and industry fixed effects. This model is similar, but not identical, to that we used in the estimates of Table 7 (column 6),[28] and produces comparable coefficients (with higher significance at 1% level). The predicted values from such regressions are denoted by $-\Delta_{1y}\text{Liabilities}_{f,2007}^{\text{predicted}}$: they represent the drop in total firm debt prompted by exposure to capital controls. The residuals from the same regression are indicated by $-\Delta_{1y}\text{Liabilities}_{f,2007}^{\text{residual}}$, and constitute the endogenous variation in total firm debt, orthogonal to CC by construction. In the second step, we replicate our model, though substituting exposure to CC with $-\Delta_{1y}\text{Liabilities}_{f,2007}^{\text{predicted}}$, and further including $-\Delta_{1y}\text{Liabilities}_{f,2007}^{\text{residual}}$ as an additional independent variable. Summary statistics for both variables are shown in Table A1 of the Internet Appendix.

Panel B of Table 8 shows the results. Not surprisingly, the coefficients suggest that the reduction in firm debt caused by capital controls is associated with benefits in terms of exports during the GFC.

[28] The only difference is the exclusion of firm controls, contributing marginally to the total variation in total liabilities.

Importantly, the endogenous reduction in total liabilities (orthogonal to CC) does not affect exports, providing evidence in favor of the corporate debt mechanism.

5.2.4 Capital Controls and Trade during the Boom and the Bust – Robustness Checks

We perform a list of robustness checks, reported in Table A8 of the Internet Appendix.

First, in Panel A and B we report the model for exports and imports, respectively, under different and progressively saturated specifications. The described results persist from the most basic version of the model with neither controls nor fixed effects, to the most robust one in column (4), which mirrors Table 8.

We also formally test coefficient stability through the Oster's test. In particular, for exports (imports) regressions we run the test for the coefficient loading the interaction between the $Crisis_{yq}$ ($Post_{yq}$) dummy and the constraining exposure to CC, capturing the real benefits (costs) of the CC during the crisis (implementation of the policy). In both cases, we assume $\tilde{R}^2=\min\left\{1.3\hat{R}^2;1\right\}=1$, where $\hat{R}^2$ is the R-squared from most saturated model (in column (4) of Panels A and B for exports and imports, respectively). We report the coefficients of proportionality in Panel C and they are both strictly above 1, with an especially high value of about 33 for exports regressions.

In Panel D, we check that results are robust to different definitions of the variables measuring ex-ante FX-debt exposures. Consistently with previous sections of the paper, we employ proxies which rescale inflows by total liabilities, or simply by taking logs, or consider realizations as of 2007:Q1, or, finally, compute the average inflow over the period 2005:Q1-2005:Q4. Results generally hold across alternative definitions.[29]

Additionally, we also collapse our observations as firm-level averages during the three periods of interest, following Bertrand, Duflo and Mullainathan (2004), and re-run our model. That is, for each firm, we compute the mean value of imports and exports, and of the left hand side variables as well, over the periods: 2006:Q1-2007:Q1 (pre); 2007:Q2-2008:Q2 (policy); 2008:Q3-2009:Q4 (crisis). In this framework, the dummy $Post_{yq}$ has value 0 during the pre-period and value 1 during the policy and crisis periods. Moreover, the dummy $Crisis_{yq}$ has value 1 during the crisis period and

[29] Measuring exposures through the realization of locally or foreign-driven FX-inflows (rescaled by total assets) as of 2007:Q1 generates inconsistent results (relative to the baseline findings) for imports. However, for all other measures taking averages over longer periods, baseline results hold. Note that taking a single year-quarter realization of FX-inflows may be problematic, as flow variables do not add over time. As a result, a single entry may not appropriately reflect the FX-debt exposure of a given company.

0 otherwise. We report results in Panel E and they are both qualitatively and quantitatively similar to those from baseline regressions.

In Panel F, we check the robustness of our results to different definitions of the crisis and of the policy periods. After all, the CC were lifted in early October 2008 and Lehman Brothers collapsed in mid-September of the same year. Therefore, at face value, we may label 2008:Q3 as a policy quarter (columns 1 and 2) or, alternatively, exclude it from the analysis (columns 3 and 4). In both cases, baseline findings are unaffected.

In Panel G, we exclude companies operating in sectors related to the extraction, production and processing of oil (broadly defined, these correspond to ISIC sectors 10, 11, 12, 13, 14, 23 and industries 2521, 2529 and 2924), which represents a high share of Colombian trade. One concern is that the finding are disproportionately linked to the behavior of oil-related companies, which might have experienced specific dynamics unrelated to CC while being at the same time exposed to them. Nonetheless, estimated coefficients reassure that oil companies are not driving our results.

In Panel H, we further include companies that do not borrow at all in FX, hence unaffected by the CC. Comparing their trade-performance with FX-indebted companies is therefore informative for isolating the effects of CC through the corporate debt channel. Indeed, results are both quantitatively and qualitatively unaffected, although the statistical significance of coefficients in the exports regressions goes down.

On a similar vein, in Panel I, we re-run the baseline regressions within the group of firms ex-ante indebted in FX with foreign lenders, i.e. the firms more constrained by capital controls. By doing so, we address further worries about firms' self-selection into different segments (local vs foreign) of the FX-debt markets, despite previous results on coefficients stability in Panels A, B and C suggest that self-selection does not drive results. In column 1, we report coefficients for the baseline version of the model for exports. Like in pooled regressions, exposure to controls has no impact during the phase of enforcement of CC and, at the same time, exerts benefits during the crisis. The usual interquartile increase in exposure to the policy boosts exports by 5.68% during the GFC. The coefficient is slightly smaller relative to the baseline version of the model, which is not surprising, given that the average company in the group is constrained by capital controls, so variation takes place just on an intensive margin. In column 2, we find again that benefits stem from variations in total debt caused by CC, rather than by endogenous changes in total debt orthogonal to the policy (which have zero effect). In columns 3 and 4, results for imports are comparable to those commented for pooled regressions.

Finally, in Table A9 of the Internet Appendix, we check that CC consistently impact other margins of firms' real activity. No other variables (such as investment or employment) are available

at firm-level with quarterly frequency. Hence, we exploit industrial-level data on employment for 27 manufacturing industries (unfortunately, investment is also not available at industry level). We translate the approach followed so far at the firm-level at a less granular 3-digit industrial level.[30] For exposure variables, we collapse firm-level data by taking weighted industry-averages, with weights given by the size of a company's assets over total assets in the industry (as of end of 2006). We augment the model with the same firm controls[31] applied in previous sections and industry and year-quarter fixed effects. Estimates from the most robust version of the model in column (4) suggest that higher pre-policy exposure to CC increases employment during the crisis. In details, an inter-quantile variation in industrial pre-policy exposure to CC raises employment by 1.9% during the crisis (robust to other definitions of exposure to CC, i.e. proxies which rescale debt flows by total liabilities in column 5 or by taking logs in column 6). Also, confirming again firm-level evidence, CC do not affect employment after the implementation of the policy (i.e. before the GFC).

5.2.5 Capital Controls and Trade during the Boom and the Bust – Heterogeneity

We test for further heterogenous effects of capital controls across companies. The economics of prudential capital controls suggest financially constrained companies benefit more from a preemptive reduction in debt growth, as they would otherwise find more difficult to refinance themselves during a negative financial shock, the downside being that upon implementation they might be affected in a stronger manner (see e.g. Korinek, 2011). Hence, we separate companies according to three proxies of ex-ante financial constraints derived from credit registry data: the interest rate paid on loans, the share of collateralized bank credit and the share of bank credit with short maturity (i.e., below or equal to 1 year). Note that companies with high interest rate are on average riskier. Similarly, high collateral requirements are normally applied to opaque and/or riskier companies, whereas companies relying extensively on short-term debt are more vulnerable to unexpected negative liquidity shocks. During an unexpected crisis, all these firms are likely to experience worse outcomes if their debt

[30] The hypothesis that we test is whether capital controls, by reducing total debt growth, made companies more resilient to the crisis, with consequential effects at the industrial level. A key step, therefore, is to show that looser FX-ties to local banks constraint debt growth also at the industrial level. In the Internet Appendix, Figure A1, Panel A, suggests indeed that for the 27 industries that we match with firm-level data, the relation between exposure to capital controls and subsequent *reduction* in total liabilities between 2006 and 2007 is markedly positive. Note that such relation controls for industry and year fixed effects and is significant at the 1% level and is robust to the inclusion of firm controls. It implies a 5.8% reduction in total liabilities for a 1 interquartile increase in exposure to capital controls at industrial level. Furthermore, also at the industry level, like in firm-level analysis, ex-ante FX-exposure to local banks does *not* constrain total debt growth (Figure A1, Panel B).

[31] For time-varying firm controls, we take a similar approach and build time-varying weighted averages. All firm controls are interacted with the $Post_{yq}$ and $Crisis_{yq}$ dummies.

balance is relatively large. Hence, they are also supposed to benefit more from pre-crisis reduction in total indebtedness.

Before moving to the discussion of results, we describe how we build proxies of financing constraints. First, we run loan-level regressions of interest rate, collateralized-loan dummy and short-term-loan dummy against bank*industry*year-quarter fixed effects, over the period 2005:Q1-2007:Q1. The residuals reflect financial constraints which are due to firm-specific factors and "cleaned" from industry, lender-specific or common time-varying factors (and from all potential interactions among them). Then, in each year-quarter, we build a weighted firm-level average, with weights given by the loan share over total firm's banks credit. Finally, we compute the firm-level mean over the entire period.[32] We display results in Table 8, Panel C (Panel D) for exports (imports). Firms are split into highly- and lowly-constrained along the three margins taking the median value in the regression sample as a benchmark.[33] Since we lose few observations over the process, we make sure that baseline results for both exports and imports hold in the smaller samples we look at (see columns 1, 4 and 7 of Panels C and D of Table 8).

Regressions on exports suggest that the benefits of capital controls are concentrated among ex-ante more financially constrained companies. In detail, firms pledging ex-ante high levels of collateral benefit from an interquartile increase in exposure to capital controls with a 28% rise in exports (relative to a 7.2% average increase). Also, while benefits are not statistically significant among low interest-rate and low short-term-debt companies, they are both statistically and economically significant for constrained companies along both margins – and amount to 10% and 13%, respectively, in correspondence of an interquartile jump in exposure to the policy. Differently, the fall in imports during the implementation of the policy differs only among companies with high and low collateral requirements. In particular, the former react to an interquartile variation in exposure to CC with an 11% reduction in imports. For companies with low collateral requirements, the effect is not statistically significant and the coefficient is also much smaller. Overall, the evidence presented in this subsection suggests that the benefits of capital controls are larger among ex-ante more

[32] Importantly, results presented below go through both if we build our measures based on the original loan rates, collateralization or short-term debt shares or on residuals derived from more saturated models (including for instance other loan characteristics). We also make sure that each of these methodologies work if we were to repeat them over the longer pre-crisis period 2005:Q1-2008:Q2. Related tables are available upon request.

[33] The residuals we use to build our measures of constraints represent the firms' specific differences relatively to the average values applied over loans granted in a given sector by a same bank in a specific year-quarter. Hence, an alternative reasonable choice is splitting companies based on whether their proxy is above or below zero. Firms with positive values are in fact more constrained than the average industry peer applying for a loan to a given bank over the pre-CC period. Indeed, results are robust to such specification and the tables are available upon request.

financially constrained companies, in line with the corporate debt channel documented in previous subsections.

6. Conclusions

In this paper we have provided a comprehensive empirical analysis of macroprudential capital controls. For empirical identification: (i) we focus on the introduction (during a strong credit boom and high interest rates) of a 40% *unremunerated* reserve requirement (URR) on foreign currency (FX) debt inflows in Colombia before the GFC, i.e. capital controls (CC); and (ii) we exploit matched administrative datasets, most importantly the credit registry and firm-level data on FX debt inflows and trade flows, all at quarterly frequency. Through these data, we study the dynamics of capital inflows and of the local credit cycle altogether and uncover a corporate debt channel through which capital controls impact the real economy.

Our robust results show that capital controls reduce FX-debt inflows (by 30%) and that the reduction is relatively stronger for firms with larger ex-ante FX borrowing (by further 10%). Crucially, not all the affected companies can substitute this credit cutback with lending in peso from domestic banks. In particular, firms with ex-ante relatively weaker relationships with Colombian banks suffer an additional restriction in credit supply and hence experience a slowdown in credit growth and total corporate debt. This corporate debt channel has real ramifications both during the phase of implementation of capital controls (the boom) and during the subsequent Great Financial Crisis (the bust). During the boom, firms more constrained by capital controls reduce imports. However, reduced debt growth in the boom grants a better performance during the bust, in the form of larger exports (by 7.2%), especially for financially constrained firms (between 28% and 10%). Effects during the crisis are fully stemming from a reduction in corporate debt associated to capital controls and not from endogenous debt change orthogonal to the policy (where the corporate debt changes are between the introduction of CC and the start of the GFC). Results on both debt and trade are identical without controls or controlling for observables and a very large set of unobservables, thereby suggesting that selection is irrelevant for the results (following e.g. Oster, 2017). For example, in the case of exports during the crisis, the estimated coefficient remains the same without any control as compared to the case with all the controls, despite that the R-squared jumps by 84 percentage points.

Our key contribution to the literature is to show benefits of capital controls for the real economy, starting from micro-level data (loan, firm and bank) and based on a corporate debt channel mechanism. This exploits the relative strength of firms' relationships with the local banking system

as a channel for partly arbitraging the debt reduction from abroad due to the capital controls. Our results fill the gap between the increasing faith that both policy-makers and academics are arguing towards macroprudential capital controls and the inconclusive and problematic evidence based on time series and cross-country studies. Moreover, as we highlight twice in the Introduction, institutional details are crucial to understand the effects of capital controls (e.g. Keller (2019)'s results versus our results).

Finally, the literature has highlighted other channels through which capital controls may affect the real economy, including the strengthening of domestic monetary policy (Rey, 2015) and potential relations of complementarity/substitutability with other macroprudential measures (Korinek and Sandri, 2016). We leave these questions for future research.

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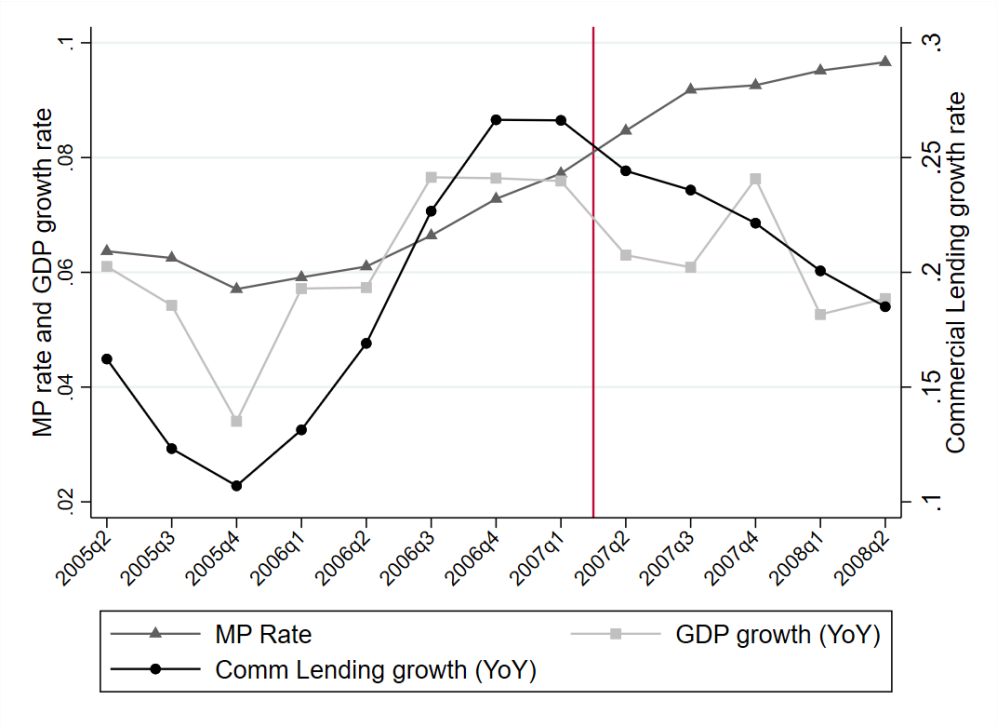
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Figures

Figure 1: Macroeconomic Environment

Panel A: Credit Growth, Monetary Policy and Economic Growth



Panel B: Exchange Rate and Financial Flows

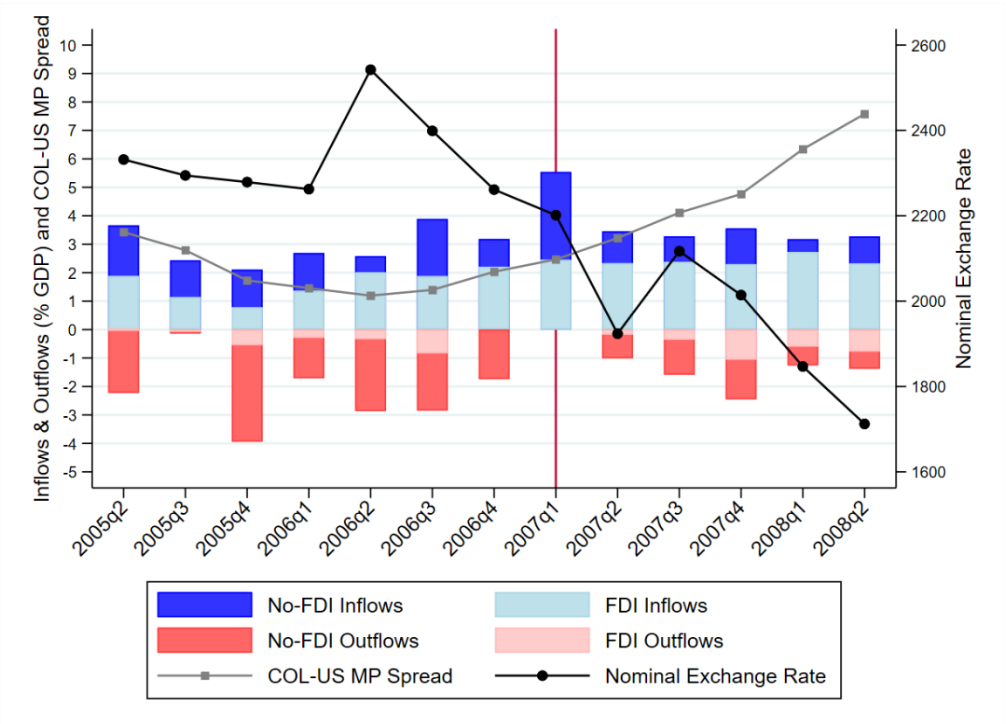
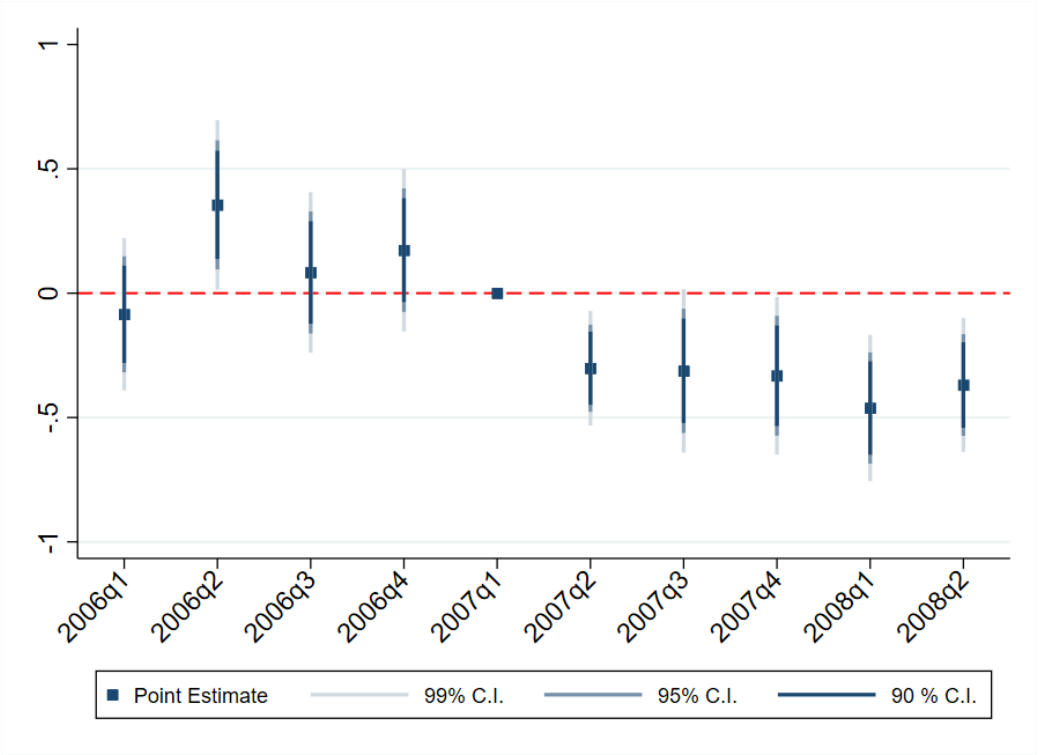


Figure 2: Time-Varying Effect of Ex-ante Exposure on FX-Debt Inflows



This figure shows the coefficients β_{yq} resulting from the estimation of the following regression:

$$FX\text{-}Inflows_{f,yq} = \sum_{yq \neq 2007q1} (\beta_{yq} * Exposure_{f,pre} + \gamma_{yq} * Firm_{f,yq-1}) + \delta_{i,yq} + \delta_f + e_{f,yq}$$

The dependent variable is given by FX debt inflows (rescaled by total assets). $Exposure_{f,pre}$ is the average FX debt inflow (rescaled by total assets) over the period from 2005:Q1 to 2007:Q1. $Firm_{f,yq-1}$ include: firm-level controls, i.e. $ROA_{f,y-1}$, $Size_{f,y-1}$, $Imports_{f,yq-1}$, $Exports_{f,yq-1;}$ bank controls, obtained as the firm-level weighted average of different lenders characteristics, including $BankCET1_{f,yq-1}$; $BankROA_{f,yq-1}$; $BankSIZE_{f,yq-1}$; $BankNPL_{f,yq-1}$; $BankSaving_{f,yq-1}$; $BankChecking_{f,yq-1}$ and $BankFX\text{-}Funds_{b,yq-1}$. $\delta_{i,yq}$ denotes interacted industry and year-quarter fixed effects. δ_f is a vector of firm fixed effects. $e_{f,yq}$ is an error term, double-clustered at the firm and industry*year-quarter level.

Figure 3: Aggregate Volume of Loans across groups of Companies

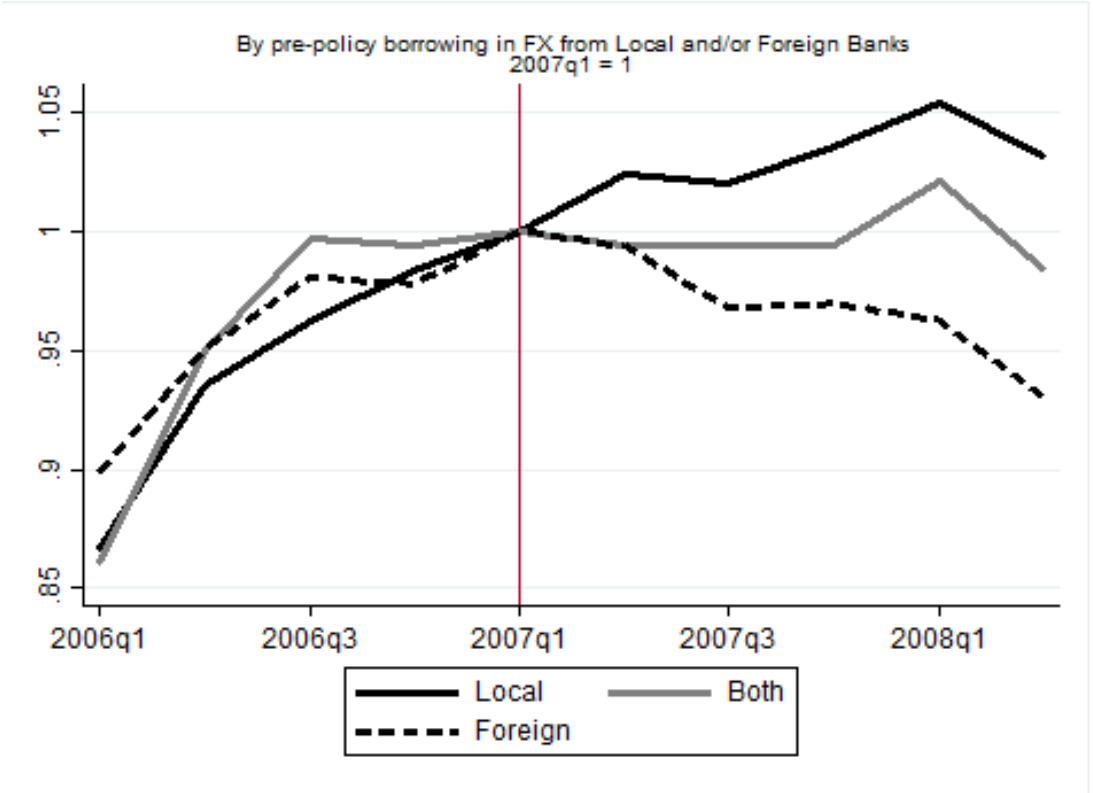


Figure 4: Average Loan Interest Rate across groups of Companies

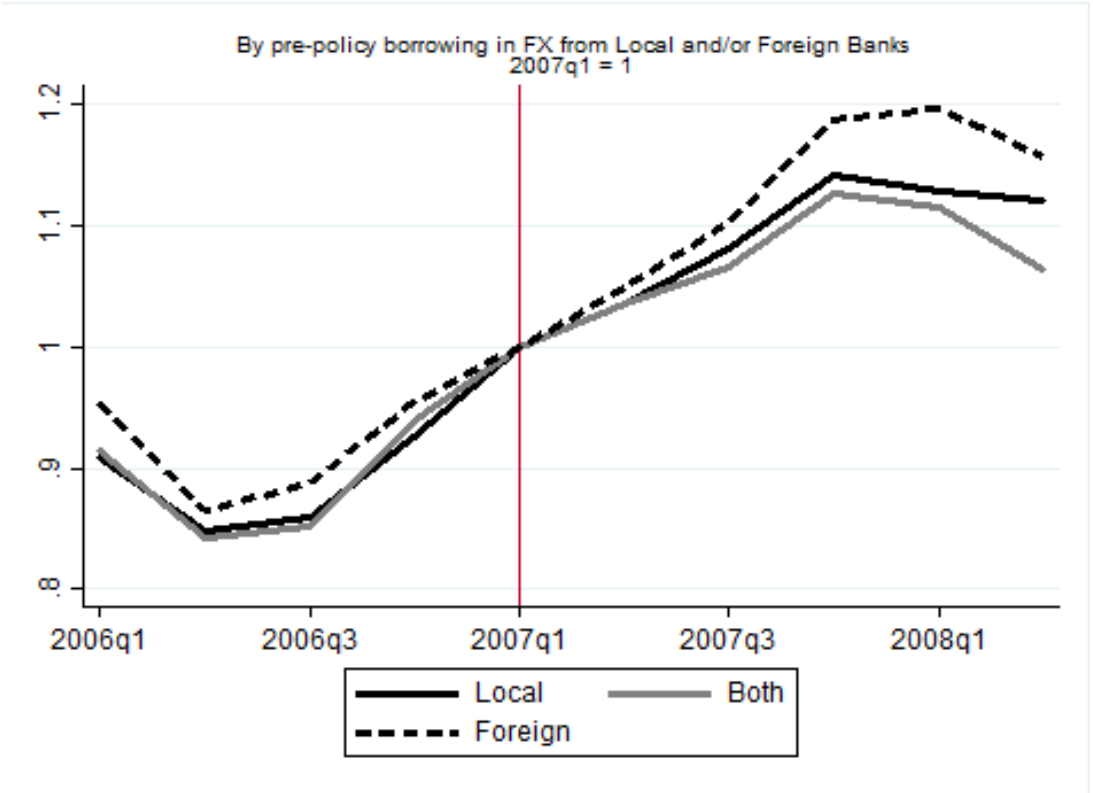
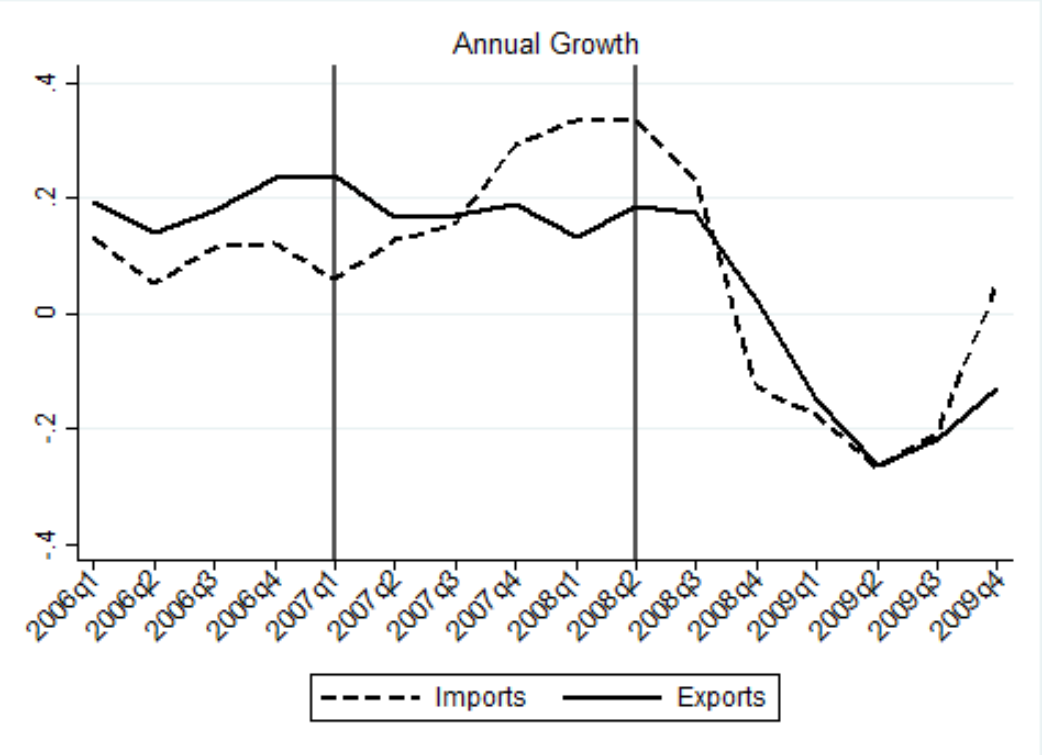


Figure 5: Country-level Imports and Exports



Tables

Table 1: Summary Statistics

PANEL A: Firm-level Analysis: 2006:Q1-2007:Q1

VARIABLES	Scale	N	Mean	P25	P50	P75	SD
FX Inflows$_{f,yq}$	Flow over Total Assets	14,125	0.0133	0	0	0.00660	0.0370
FX-Foreign Inflows$_{f,yq}$	Flow over Total Assets	5,751	0.0132	0	0	0.00351	0.0421
FX-Local Inflows$_{f,yq}$	Flow over Total Assets	12,176	0.00915	0	0	0.00216	0.0258
Share-FX$_{f,yq}$	$\in [0,1]$	11,769	0.291	0	0.00371	0.631	0.397
DebtType$_{f,yq}$	0/1 Dummy	6,647	0.798	1	1	1	0.401
Exposure$_{f,pre}$	Flow over Total Assets	14,125	0.0132	0.000245	0.00374	0.0160	0.0231
Exposure-Local$_{f,pre}$	Flow over Total Assets	12,176	0.00853	0.000121	0.00152	0.00979	0.0151
Exposure-Foreign$_{f,pre}$	Flow over Total Assets	5,751	0.0143	0.00129	0.00506	0.0151	0.0257
Liabilities$_{f,y}$	Logs	14,125	8.374	7.198	8.318	9.512	1.673
ROA$_{f,y-1}$	Flow over Total Assets	14,125	0.0366	0.00931	0.0296	0.0627	0.0703
Size$_{f,y-1}$	Logs	14,125	8.848	7.678	8.802	9.952	1.621
Imports$_{f,yq}$	Logs	11,722	4.968	3.048	5.629	7.302	2.974
Exports$_{f,yq}$	Logs	7,938	4.074	0	4.512	7.021	3.362
BankCET1$_{f,yq-1}$	Stock over Total Assets	14,125	0.0397	0.0328	0.0388	0.0451	0.00865
BankROA$_{f,yq-1}$	Stock over Total Assets	14,125	0.0152	0.00960	0.0154	0.0197	0.00673
BankSize$_{f,yq-1}$	Logs	14,125	16.43	16.21	16.43	16.69	0.369
BankNPL$_{f,yq-1}$	Stock over Total Assets	14,125	0.0221	0.0197	0.0213	0.0235	0.00403
BankSaving$_{f,yq-1}$	Stock over Total Assets	14,125	0.334	0.303	0.331	0.361	0.0479
BankCheck$_{f,yq-1}$	Stock over Total Assets	14,125	0.146	0.125	0.140	0.165	0.0335
BankFX-Funds $_{f,yq-1}$	Stock /	14,125	0.0519	0.0392	0.0505	0.0638	0.0197
Default$_{f,yq}$	0/1 Dummy	14,125	0.0920	0	0	0	0.289
Relationships$_{f,yq}$	Discrete	14,125	3.816	2	4	5	1.996

PANEL B: Loan-Level Analysis (Regressions on Substitution of FX Debt with Peso Debt): 2006:Q1-2007:Q1

VARIABLES	Scale	N	Mean	P25	P50	P75	SD
Loan-level Variables							
Peso $Loan_{f,b,yq}$	Logs	50,527	5.145	3.836	5.349	6.758	2.233
Interest $Rate_{f,b,yq}$	%	50,527	13.57	9.400	13.42	18	7.142
$Maturity_{f,b,yq}$	Months	50,527	46.63	6	23.15	43.00	115.9
$Collateral_{f,b,yq}$	0/1 Dummy	50,527	0.422	0	0	1	0.494
FX-$Lender_{f,b,pre}$	0/1 Dummy	50,527	0.377	0	0	1	0.485
Firm-level Variables							
$ROA_{f,y-1}$	Flow over Total Assets	50,527	0.0337	0.00941	0.0278	0.0581	0.0636
$Size_{f,y-1}$	Logs	50,527	9.169	8.051	9.107	10.23	1.563
$Imports_{f,yq-1}$	Logs	50,527	4.381	0	5.262	7.227	3.359
$Exports_{f,yq-1}$	Logs	50,527	2.510	0	0	5.629	3.352
$Default_{f,yq}$	0/1 Dummy	50,527	0.111	0	0	0	0.314
$Relationships_{f,yq}$	Discrete	50,527	4.764	3	5	6	2.088
Exposure-$Foreign_{f,pre}$	Flow over Total Assets	50,527	0.0120	0.00124	0.00466	0.0120	0.0225
Exposure-$Local_{f,pre}$	Flow over Total Assets	50,527	0.00949	0.000156	0.00254	0.0114	0.0154

Summary statistics are computed over the period: 2006:Q1-2007:Q1. Firm-level Variables. FX $Inflows_{f,yq}$ represents total FX debt inflows, rescaled by total assets. FX-Foreign $Inflows_{f,yq}$ and FX-Local $Inflows_{f,yq}$ refer to FX-inflows intermediated by foreign and local banks, respectively, both rescaled by total assets. $Exposure_{f,pre}$ is the average of FX $Inflows_{f,yq}$ in the period from 2005:Q1 to 2007:Q1. Exposure-$Local_{f,pre}$ and Exposure-$Foreign_{f,pre}$ are the averages of FX-Local $Inflows_{f,yq}$ and FX-Foreign $Inflows_{f,yq}$ in the period from 2005:Q1 to 2007:Q1, respectively. Note: statistics on FX-debt flows intermediated by local and foreign intermediaries are computed over companies with at least one positive entry during the period 2005:Q1-2007:Q1. Share-$FX_{f,yq}$ is the share of FX-Debt flows out of total debt flows. $Liabilities_{f,yq}$ is the logarithm of firm. $ROA_{f,y-1}$ is previous year return on assets and $Size_{f,y-1}$ is the logarithm of total firm assets over the same period. $Imports_{f,yq-1}$ and $Exports_{f,yq-1}$ are the logarithm of (1 + firm imports) and (1 + firm exports), respectively. All variables with Bank prefix refer to firm-level weighted averages of local banks characteristics, where weights are loan share in total bank debt accounted for by a specific bank. $BankCET1_{f,yq-1}$ is bank common equity over total assets; $BankROA_{f,yq-1}$ is bank return on assets; $BankSize_{f,yq-1}$ is the logarithm of total bank assets; $BankNPL_{f,yq-1}$ is bank non-performing loans over total assets; $BankSaving_{f,yq-1}$ is bank saving deposits over total assets; $BankChecking_{f,yq-1}$ is bank checking deposits over total assets and BankFX-$Funds_{f,yq-1}$ is bank FX-liabilities rescaled by total assets. $Default_{f,yq}$ is a dummy with value 1 in case of firm default in at least one bank loan over previous year. $Relationships_{f,yq}$ is the number of local banks from which a company borrows. Loan-Level Variables. Peso $Loan_{f,b,yq}$ is defined as the logarithm of the loan in Pesos. Interest $Rate_{f,b,yq}$ is the interest rate paid on a given loan, defined in percentage points. $Maturity_{f,b,yq}$ is the maturity of the loan, in months. $Collateral_{f,b,yq}$ is a dummy variable with value 1 if a loan is collateralized and 0 otherwise. FX-$Lender_{f,b,pre}$ is a dummy variable with value 1 if bank b provides also FX debt (in addition to peso debt) to firm f between 2005:Q1 and 2007:Q1, and 0 otherwise.

Table 2: Summary Statistics – Firms Sorted by Pre-Policy Borrowing in FX from Local and/or Foreign banks

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	LOCAL (1684 companies)			BOTH (775 companies)			FOREIGN (402 companies)		
VARIABLES	Mean	P50	SD	mean	p50	SD	Mean	P50	SD
$FX\ Inflows_{f,yq}$	0.00826	0	0.0255	0.0229	0.00303	0.0468	0.0160	0	0.0505
$FX\text{-}Foreign\ Inflows_{f,yq}$	0	0	0	0.0118	0	0.0370	0.0160	0	0.0505
$FX\text{-}Local\ Inflows_{f,yq}$	0.00826	0	0.0255	0.0111	1.19e-06	0.0263	0	0	0
$Share\text{-}FX_{fx}$	0.235	0	0.378	0.396	0.261	0.403	0.301	0	0.422
$Exposure_{f,pre}$	0.00743	0.000736	0.0148	0.0237	0.0141	0.0291	0.0174	0.00541	0.0302
$Exposure\text{-}Local_{f,pre}$	0.00743	0.000736	0.0148	0.0109	0.00453	0.0155	0	0	0
$Exposure\text{-}Foreign_{f,pre}$	0	0	0	0.0128	0.00492	0.0228	0.0174	0.00541	0.0302
$ROA_{f,y-1}$	0.0437	0.0332	0.0714	0.0289	0.0251	0.0574	0.0211	0.0226	0.0832
$Size_{f,y-1}$	8.334	8.297	1.461	9.854	9.816	1.498	9.089	9.125	1.524
$Imports_{f,yq}$	2.850	0.774	3.136	6.028	6.745	2.773	4.716	5.485	3.136
$Exports_{f,yq}$	1.382	0	2.564	4.107	4.562	3.732	2.517	0	3.209
$BankCET1_{f,yq-1}$	0.0392	0.0381	0.00865	0.0403	0.0399	0.00799	0.0405	0.0396	0.00969
$BankROA_{f,yq-1}$	0.0154	0.0157	0.00672	0.0149	0.0148	0.00662	0.0150	0.0152	0.00693
$BankSize_{f,yq-1}$	16.46	16.46	0.363	16.40	16.39	0.336	16.36	16.40	0.436
$BankNPL_{f,yq-1}$	0.0220	0.0212	0.00402	0.0219	0.0213	0.00360	0.0227	0.0214	0.00478
$BankSaving_{f,yq-1}$	0.336	0.334	0.0484	0.329	0.326	0.0435	0.332	0.328	0.0526
$BankCheck_{f,yq-1}$	0.147	0.141	0.0337	0.144	0.139	0.0301	0.146	0.140	0.0384
$BankFX\text{-}Funds_{f,yq-1}$	0.0528	0.0510	0.0200	0.0520	0.0504	0.0180	0.0479	0.0478	0.0209
$Default_{f,yq}$	0.0774	0	0.267	0.111	0	0.314	0.117	0	0.321
$Relationships_{f,yq}$	3.631	3	1.889	4.635	4	2.127	3.012	3	1.614

LOCAL are companies that borrowed in FX only from local banks in the period from 2005:Q1 to 2007:Q1 and FOREIGN only from foreign ones. BOTH refers to the set of firms borrowing in FX from both local and foreign banks in the period from 2005:Q1 to 2007:Q1. Summary statistics are computed over the period: 2006:Q1-2007:Q1. $FX\ Inflows_{f,yq}$ represents total FX debt inflows, rescaled by total assets. $FX\text{-}Foreign\ Inflows_{f,yq}$ and $FX\text{-}Local\ Inflows_{f,yq}$ refer to FX-inflows intermediated by foreign and local banks, respectively, both rescaled by total assets. $Exposure_{f,pre}$ is the average of $FX\ Inflows_{f,yq}$ in the period from 2005:Q1 to 2007:Q1. $Exposure\text{-}Local_{f,pre}$ and $Exposure\text{-}Foreign_{f,pre}$ are the averages of $FX\text{-}Local\ Inflows_{f,yq}$ and $FX\text{-}Foreign\ Inflows_{f,yq}$ in the period from 2005:Q1 to 2007:Q1, respectively. Note: statistics on FX-debt flows intermediated by local and foreign intermediaries are computed over companies with at least one positive entry during the period 2005:Q1-2007:Q1. $Share\text{-}FX_{f,yq}$ is the share of FX-Debt flows out of total debt flows. $Liabilities_{f,yq}$ is the logarithm of firm. $ROA_{f,y-1}$ is previous year return on assets and $Size_{f,y-1}$ is the logarithm of total firm assets over the same period. $Imports_{f,yq-1}$ and $Exports_{f,yq-1}$ are the logarithm of (1 + firm imports) and (1 + firm exports), respectively. All variables with Bank prefix refer to firm-level weighted averages of local banks characteristics, where weights are loan share in total bank debt accounted for by a specific bank. $BankCET1_{f,yq-1}$ is bank common equity over total assets; $BankROA_{f,yq-1}$ is bank return on assets; $BankSize_{f,yq-1}$ is the logarithm of total bank assets; $BankNPL_{f,yq-1}$ is bank non-performing loans over total assets; $BankSaving_{f,yq-1}$ is bank saving deposits over total assets; $BankChecking_{f,yq-1}$ is bank checking deposits over total assets and $BankFX\text{-}Funds_{f,yq-1}$ is bank FX-liabilities rescaled by total assets. $Default_{f,yq}$ is a dummy with value 1 in case of firm default in at least one bank loan over previous year. $Relationships_{f,yq}$ is the number of local banks from which a company borrows.

Table 3: Impact of Capital Controls on FX-Debt Inflows

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	FX Inflows$_{f,yq}$									
$Post_{yq}$	-0.003***	-0.003***	-0.004***	-0.005***	-	-	-	-	-	-
	(0.001)	(0.000)	(0.001)	(0.001)						
$Post_{yq}$ *$Exposure_{f,pre}$				-0.429***	-0.429***	-0.459***	-0.461***	-0.401***	-0.377***	-0.533***
				(0.050)	(0.050)	(0.052)	(0.051)	(0.047)	(0.082)	(0.121)
N	28288	28288	28288	28288	28288	28288	28288	16394	7192	3317
R^2	0.0016	0.3903	0.3938	0.4149	0.4149	0.4167	0.4615	0.4748	0.5105	0.4954
Companies	All	All	All	All	All	All	All	Local	Both	Foreign
Firm FE	NO	YES	YES	YES	YES	YES	YES	YES	YES	YES
Quarter FE	NO	NO	YES	YES	-	-	-	-	-	-
Macro Controls	NO	NO	YES	YES	-	-	-	-	-	-
Firm Controls	NO	NO	YES	YES	YES	-	-	-	-	-
Bank Controls	NO	NO	YES	YES	YES	-	-	-	-	-
Year-quarter FE	NO	NO	NO	NO	YES	YES	-	-	-	-
Firm Controls*Post	NO	NO	NO	NO	NO	YES	YES	YES	YES	YES
Bank Controls*Post	NO	NO	NO	NO	NO	YES	YES	YES	YES	YES
Industry*Year-quarter FE	NO	NO	NO	NO	NO	NO	YES	YES	YES	YES

This table shows the effect of the introduction of capital controls on total FX debt inflows (rescaled by total assets), depending on pre-policy exposure to FX debt inflows. $Post_{yq}$ is a dummy with value 1 from 2007:Q2 to 2008:Q2 and 0 from 2006:Q1 to 2007:Q1. $Exposure_{f,pre}$ is the average FX debt inflow (rescaled by total assets) over the period from 2005:Q1 to 2007:Q1. For easing comparisons between results in columns 4 and 5, we demean this variable. Macro Controls include lagged values of: GDP yearly growth rate; yearly inflation rate; log of VIX and of exchange rate and the lagged monetary policy rate. Firm Controls include $ROA_{f,y-1}$, $Size_{f,y-1}$, $Imports_{f,yq-1}$, $Exports_{f,yq-1}$. Bank Controls include: $BankCET1_{f,yq-1}$; $BankROA_{f,yq-1}$; $BankSIZE_{f,yq-1}$; $BankNPL_{f,yq-1}$; $BankSaving_{f,yq-1}$; $BankChecking_{f,yq-1}$ and $BankFX\text{-}Funds_{b,yq-1}$. The sign "-" denotes cases where a variable (or a group of variables or of fixed effects) is spanned out by other controls and/or fixed effects. Standard errors in parentheses are double-clustered at the firm and industry*year-quarter level. *** p<0.01, ** p<0.05, *p<0.1.

Table 4: Impact of Capital Controls on Currency Composition of Corporate Debt Issuances

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	$DebtType_{f,yq}$ (1=Peso; 0=FX)					$ShareFX_{f,yq}$				
$Post_{yq}$	0.019	-	-	-	-	-0.016	-	-	-	-
	(0.020)					(0.014)				
$Post_{yq}$*$Exposure_{f,pre}$	2.111***	2.376***	1.770**	3.122***	1.637**	-1.691***	-1.980***	-2.134***	-1.875***	-1.627***
	(0.346)	(0.385)	(0.850)	(0761)	(0.634)	(0.217)	(0.247)	(0.456)	(0.363)	(0.464)
N	13485	13485	8317	2384	1527	23278	23278	13181	6546	2237
R^2	0.3871	0.4846	0.4639	0.6022	0.6723	0.3594	0.4248	0.4187	0.4545	0.5970
Companies	All	All	Local	Both	Foreign	All	All	Local	Both	Foreign
Firm FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Quarter FE	YES	-	-	-	-	YES	-	-	-	-
Macro Controls	YES	-	-	-	-	YES	-	-	-	-
Firm Controls	YES	-	-	-	-	YES	-	-	-	-
Bank Controls	YES	-	-	-	-	YES	-	-	-	-
Year-quarter FE	NO	-	-	-	-	NO	-	-	-	-
Firm Controls*Post	NO	YES	YES	YES	YES	NO	YES	YES	YES	YES
Bank Controls*Post	NO	YES	YES	YES	YES	NO	YES	YES	YES	YES
Industry*Year-quarter FE	NO	YES	YES	YES	YES	NO	YES	YES	YES	YES

This table shows the effect of the introduction of capital controls on the relative frequency of peso vs FX debt issuance (columns 1 to 5) and on the share of FX debt out of total debt issuance (Columns 6 to 10), depending on pre-policy exposure to FX-debt market. $Debt\ Type_{f,yq}$ is a dummy with value 1 if a company issues peso-debt and value 0 if it issues: any FX-debt (columns 1, 2 and 4), local FX-debt (column 3) or foreign FX-debt (column 5). $Post_{yq}$ is a dummy with value 1 from 2007:Q2 to 2008:Q2 and 0 from 2006:Q1 to 2007:Q1. $Exposure_{f,pre}$ is the average FX-inflow (rescaled by total assets) over the period from 2005:Q1 to 2007:Q1. For easing comparisons between results in columns 1 and 2 and 6 and 7, we de-mean such variable. Macro Controls include lagged values of: GDP yearly growth rate; yearly inflation rate; log of VIX and of exchange rate and the lagged monetary policy rate. Firm Controls include $ROA_{f,y-1}$, $Size_{f,y-1}$, $Imports_{f,yq-1}$, $Exports_{f,yq-1}$. Bank Controls include: $BankCET1_{f,yq-1}$; $BankROA_{f,yq-1}$; $BankSIZE_{f,yq-1}$; $BankNPL_{f,yq-1}$; $BankSaving_{f,yq-1}$; $BankChecking_{f,yq-1}$ and $BankFX\text{-}Funds_{b,yq-1}$. Both Bank and Firm controls are fully interacted with the $Post_{yq}$ dummy. The sign "-" denotes cases where a variable (or a group of variables or of fixed effects) is spanned out by other controls and/or fixed effects. Standard errors in parentheses are double-clustered at the firm and industry*year-quarter level. *** p<0.01, ** p<0.05, *p<0.1.

Table 5: Substitution with Peso Debt from Local Banks

Panel A: Loan Volume

	(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*
				$PesoLoan_{f,b,yq}$		
$Post_{yq}$	0.259***	-0.087	-0.104	-	-	-
	(0.019)	(0.095)	(0.083)			
$Post_{yq}$* $Both_{f,pre}$	-0.093***	-0.077**	-0.062*	-0.064*	-0.069**	
	(0.035)	(0.038)	(0.035)	(0.035)	(0.035)	
$Post_{yq}$* $Foreign_{f,pre}$	-0.178***	-0.114**	-0.140***	-0.118***	-0.133***	
	(0.048)	(0.045)	(0.040)	(0.040)	(0.041)	
$Post_{yq}$*Exposure-$Foreign_{f,pre}$						-2.007*
						(1.134)
$Post_{yq}$*Exposure-$Local_{f,pre}$						3.793***
						(1.199)
N	102035	102035	102035	102035	102035	102035
R^2	0.044	0.258	0.789	0.791	0.802	0.802
Companies	All	All	All	All	All	All
Firm Controls*Post	NO	YES	YES	YES	YES	YES
Firm*Bank FE	NO	NO	YES	YES	YES	YES
Bank*Year-quarter FE	NO	NO	NO	YES	YES	YES
Industry*Year-quarter FE	NO	NO	NO	NO	YES	YES
Loan Controls*Post	NO	NO	NO	NO	YES	YES

Panel B: Loan Price

	(1)	(2)	(3)	(4)	(5)	(6)
			InterestRate$_{f,b,yq}$			
Post$_{yq}$	2.943***	6.683***	6.564***	-	-	-
	(0.073)	(0.373)	(0.373)			
Post$_{yq}$**Both*$_{f,pre}$	-0.559***	0.365***	0.377***	0.327***	0.305**	
	(0.121)	(0.133)	(0.134)	(0.124)	(0.128)	
Post$_{yq}$**Foreign*$_{f,pre}$	0.272	0.429**	0.358*	0.707***	0.786***	
	(0.190)	(0.192)	(0.186)	(0.170)	(0.170)	
Post$_{yq}$**Exposure-Foreign*$_{f,pre}$						9.103**
						(3.552)
Post$_{yq}$**Exposure-Local*$_{f,pre}$						-30.710***
						(4.135)
N	102035	102035	102035	102035	102035	102035
R^2	0.052	0.094	0.536	0.609	0.624	0.625
Companies	All	All	All	All	All	All
Firm Controls*Post	NO	YES	YES	YES	YES	YES
Firm*Bank FE	NO	NO	YES	YES	YES	YES
Bank*Year-quarter FE	NO	NO	NO	YES	YES	YES
Industry*Year-quarter FE	NO	NO	NO	NO	YES	YES
Loan Controls*Post	NO	NO	NO	NO	YES	YES

This table shows the effect of capital controls on the quantity and price of commercial (peso) credit granted from Colombian banks. In Panel A, the dependent variable is defined as the logarithm of the loan in pesos granted from bank b to firm f in year-quarter yq. In panel B, the dependent variable is the interest rate (in %) applied over the same loans. In columns (1) to (5), the baseline category is given by companies borrowing in FX before 2007:Q2 from local banks only. Foreign$_{f,pre}$ is a dummy with value 1 if a company borrowed in FX only from foreign intermediaries before 2007:Q2 and 0 otherwise. Both$_{f,pre}$ refers to companies resorting to both local and foreign intermediaries for peso credit before 2007:Q2. Post$_{yq}$ is a dummy with value 1 from 2007:Q2 to 2008:Q2 and 0 from 2006:Q1 to 2007:Q1. In column (6), Exposure-Foreign$_{f,pre}$ and Exposure-Local$_{f,pre}$ are the average of FX-Foreign Inflows $_{f,yq}$ and of FX-Local Inflows $_{f,yq}$ in the period from 2005:Q1 to 2007:Q1, respectively. Firm Controls include ROA$_{f,y-1}$, Size$_{f,y-1}$, Imports$_{f,yq-1}$, Exports$_{f,yq-1,}$ Default$_{f,yq}$ and Relationships$_{f,yq.}$ Loan Controls include: Maturity$_{f,b,yq}$ and Collateral$_{f,b,yq}$. Both Firm and Loan controls are fully interacted with the Post$_{yq}$ dummy. The sign "-" denotes cases where a variable (or a group of variables or of fixed effects) is spanned out by other controls and/or fixed effects. Standard errors in parentheses are clustered at the firm level. *** p<0.01, ** p<0.05, *p<0.1.

Table 6: Substitution with Peso Debt from Local Banks: Role of Ex-Ante FX Lending Relationships

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	$PesoLoan_{f,b,yq}$				$InterestRate_{f,b,yq}$			
	FX-Lender		FX-Lender		FX-Lender		FX-Lender	
	No	Yes	No	Yes	No	Yes	No	Yes
$Post_{yq}$*$Both_{f,pre}$	-0.041	-0.101*			0.206	0.362*		
	(0.039)	(0.055)			(0.150)	(0.216)		
$Post_{yq}$*$Foreign_{f,pre}$	-0.066	-0.238***			0.360**	0.851***		
	(0.043)	(0.051)			(0.181)	(0.221)		
$Post_{yq}$*Exposure-$Foreign_{f,pre}$			-2.802**	-0.110			11.316***	9.586**
			(1.348)	(1.133)			(4.247)	(4.415)
$Post_{yq}$*Exposure-$Local_{f,pre}$			-0.697	4.432***			-22.554***	-39.828***
			(1.794)	(1.482)			(5.367)	(5.558)
N	64443	48895	64443	48895	64443	48895	64443	48895
R^2	0.841	0.779	0.841	0.779	0.667	0.614	0.668	0.615
Firm Controls*Post	YES	YES	YES	YES	YES	YES	YES	YES
Firm*Bank FE	YES	YES	YES	YES	YES	YES	YES	YES
Bank* Year-Quarter FE	YES	YES	YES	YES	YES	YES	YES	YES
Industry*Year-Quarter FE	YES	YES	YES	YES	YES	YES	YES	YES
Loan Controls*Post	YES	YES	YES	YES	YES	YES	YES	YES

This table shows the importance of FX lending relationships with local banks for substituting FX-debt with peso-debt during capital controls. The samples vary across columns. We always keep all companies borrowing in FX exclusively from foreign banks. For the other companies: in even columns (FX-Lender: "Yes") we retain peso-credit relationships with Colombian banks that do provide FX-debt between 2005:Q1-2007:Q1; in odd columns (FX-Lender: "No"), with Colombian banks that do not provide FX-debt between 2005:Q1-2007:Q1. In columns (1) to (4), the dependent variable is defined as the logarithm of the loan in pesos granted from bank b to firm f in year-quarter yq. In columns (5) to (8), the dependent variable is the interest rate (in pp) applied over the same loans. In columns (1)-(2) and (5)-(6), the baseline category is companies borrowing in FX before 2007:Q2 from local banks only. $Foreign_{f,pre}$ is a dummy with value 1 if a company borrowed in FX only from foreign intermediaries before 2007:Q2 and 0 otherwise. $Both_{f,pre}$ refers to companies resorting to both local and foreign intermediaries for peso credit before 2007:Q2. $Post_{yq}$ is a dummy with value 1 from 2007:Q2 to 2008:Q2 and 0 from 2006:Q1 to 2007:Q1. In columns (3)-(4) and (7)-(8), Exposure-$Foreign_{f,pre}$ and Exposure-$Local_{f,pre}$ are the average of FX-Foreign Inflows $_{f,yq}$ and of FX-Local Inflows $_{f,yq}$ in the period from 2005:Q1 to 2007:Q1, respectively. Firm Controls include $ROA_{f,y-1}$, $Size_{f,y-1}$, $Imports_{f,yq-1}$, $Exports_{f,yq-1,}$ $Default_{f,yq}$ and $Relationships_{f,yq.}$ Loan Controls include: $Maturity_{f,b,yq}$ and $Collateral_{f,b,yq}$. Both Firm and Loan controls are fully interacted with the $Post_{yq}$ dummy. The sign "-" denotes cases where a variable (or a group of variables or of fixed effects) is spanned out by other controls and/or fixed effects. Standard errors in parentheses are clustered at the firm level. *** p<0.01, ** p<0.05, *p<0.1.

Table 7: The Impact of Capital Controls on Total Liabilities

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Ln(Total Liabilities)$_{f,y}$							
$Post_{yq}$	0.148	0.148***	-0.283	-	-	-	-	-
	(0.150)	(0.013)	(0.656)					
$Post_{yq}$*$Both_{f,pre}$	-0.031	-0.031*	0.003	0.003	0.005		-0.001	
	(0.227)	(0.016)	(0.017)	(0.017)	(0.016)		(0.020)	
$Post_{yq}$*$Foreign_{f,pre}$	-0.073	-0.073***	-0.052**	-0.052**	-0.047**		-0.043*	
	(0.152)	(0.021)	(0.020)	(0.020)	(0.018)		(0.023)	
$Post_{yq}$*Exposure-$Local_{f,pre}$						0.692		0.254
						(0.496)		(0.660)
$Post_{yq}$*Exposure-$Foreign_{f,pre}$						-0.768*		-1.418*
						(0.428)		(0.851)
N	5632	5632	5632	5632	5632	5632	5616	5616
R^2	0.1705	0.9873	0.9878	0.9878	0.9881	0.9881	0.9767	0.9767
Firm FE	NO	YES	YES	YES	YES	YES	YES	YES
Firm Controls*Post	NO	NO	YES	YES	YES	YES	YES	YES
Bank Controls*Post	NO	NO	YES	YES	YES	YES	YES	YES
Year FE	NO	NO	NO	YES	-	-	-	-
Industry*Year FE	NO	NO	NO	NO	YES	YES	YES	YES
Terminal year	2007	2007	2007	2007	2007	2007	2008	2008

This table shows the effect of capital controls on total liabilities, depending on pre-policy firms activity in local/foreign FX-debt markets and on exposure to FX-debt markets. The dependent variable is defined as the logarithm of total liabilities of firm f in year y. In columns (1)-(6), observations are from 2006 and 2007. In columns (7)-(8), the sample includes observations for 2006 and 2008. In columns (1)-(5) and (7), the baseline category is companies borrowing in FX before 2007:Q2 from local banks only. $Foreign_{f,pre}$ is a dummy with value 1 if a company borrowed in FX only from foreign banks before 2007:Q2 and 0 otherwise. $Both_{f,pre}$ refers to companies resorting to both local and foreign banks for FX-credit before 2007:Q2. In columns (6) and (8), Exposure-$Foreign_{f,pre}$ and Exposure-$Local_{f,pre}$ are the average of FX-Foreign Inflows $_{f,yq}$ and of FX-Local Inflows $_{f,yq}$ in the period from 2005:Q1 to 2007:Q1, respectively. $Post_{yq}$ is a dummy with value 1 from 2007:Q2 to 2008:Q2 and 0 from 2006:Q1 to 2007:Q1. Firm Controls include $ROA_{f,y-1}$, $Size_{f,y-1}$, $Imports_{f,yq-1}$, $Exports_{f,yq-1}$. $Default_{f,yq}$ and $Relationships_{f,yq}$.. Bank Controls include: $BankCET1_{f,yq-1}$; $BankROA_{f,yq-1}$; $BankSIZE_{f,yq-1}$; $BankNPL_{f,yq-1}$; $BankSaving_{f,yq-1}$; $BankChecking_{f,yq-1}$; $BankFX\text{-}Funds_{f,yq-1}$. Both Bank and Firm controls are fully interacted with the $Post_{yq}$ dummy. The sign "-" denotes cases where a variable (or a group of variables or fixed effects) is spanned out by other controls/fixed effects. Standard errors in parentheses are clustered at the firm level. *** p<0.01, ** p<0.05, *p<0.1.

Table 8: Real effects – Capital Controls and Trade during the Boom and the Bust

Panel A: Baseline results for exports and imports

	(1) $Exports_{f,yq}$	(2) $Imports_{f,yq}$	(3) $Exports_{f,yq}$	(4) $Imports_{f,yq}$
$Crisis_{yq}$*$Exposure\text{-}Foreign_{f,pre}$	5.2213***	-1.7723	2.3819*	-0.6226
	(1.814)	(1.722)	(1.231)	(1.094)
$Crisis_{yq}$*$Exposure\text{-}Local_{f,pre}$	-1.1536	2.7480	-2.1527	1.8147
	(3.439)	(2.032)	(2.397)	(1.552)
$Post_{yq}$ *$Exposure\text{-}Foreign_{f,pre}$	-1.0216	-3.1762**	1.5957	-3.1905***
	(2.254)	(1.255)	(1.508)	(0.994)
$Post_{yq}$ *$Exposure\text{-}Local_{f,pre}$	-1.4590	0.9796	-1.2024	0.5269
	(3.349)	(1.634)	(2.327)	(1.311)
N	15269	25294	25391	37484
R^2	0.8476	0.8396	0.8747	0.8534
Firm Controls*[Post ; Crisis]	YES	YES	YES	YES
Bank Controls*[Post ; Crisis]	YES	YES	YES	YES
Firm FE	YES	YES	YES	YES
Industry*Year-quarter FE	YES	YES	YES	YES
Companies Active in Both	Excluded	Excluded	Included	Included

Panel B: Mechanism – Growth of total liabilities

	(1) $Exports_{f,yq}$	(2) $Imports_{f,yq}$	(3) $Exports_{f,yq}$	(4) $Imports_{f,yq}$
$Crisis_{yq}$*(-$\Delta_{1y}Liabilities_{f,2007}^{predicted}$)	4.8597***	-1.9240	2.0079*	-0.7038
	(1.716)	(1.582)	(1.127)	(0.985)
$Crisis_{yq}$*$Exposure\text{-}Local_{f,pre}$	-1.0676	2.8161	-2.2189	1.8829
	(3.454)	(2.025)	(2.399)	(1.551)
$Crisis_{yq}$*(-$\Delta_{1y}Liabilities_{f,2007}^{residual}$)	0.1591	0.0660	0.0524	0.0748
	(0.123)	(0.094)	(0.084)	(0.075)
$Post_{yq}$*(-$\Delta_{1y}Liabilities_{f,2007}^{predicted}$)	-1.7336	-2.9384**	1.0659	-2.7399***
	(1.931)	(1.171)	(1.297)	(0.881)
$Post_{yq}$*$Exposure\text{-}Local_{f,pre}$	-1.6858	0.7582	-1.0353	0.5738
	(3.359)	(1.594)	(2.311)	(1.275)
$Post_{yq}$*(-$\Delta_{1y}Liabilities_{f,2007}^{residual}$)	-0.3648**	-0.3850***	-0.3002**	-0.4039***
	(0.153)	(0.093)	(0.127)	(0.076)
N	14998	24868	25091	37016
R^2	0.8481	0.8401	0.8751	0.8538
Firm Controls*[Post ; Crisis]	YES	YES	YES	YES
Bank Controls*[Post ; Crisis]	YES	YES	YES	YES
Firm FE	YES	YES	YES	YES
Industry*Year-Quarter FE	YES	YES	YES	YES
Companies active in Both	Excluded	Excluded	Included	Included

Panel C: Exports – Companies sorted according to proxies of financing constraints

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Exports$_{f,yq}$								
	Loan Interest Rate			% Collateralized Debt			% Short-Term Debt (≤1y)		
	All	Low	High	All	Low	High	All	Low	High
Crisis$_{yq}$*Exposure-Foreign$_{f,pre}$	5.1960***	3.2374	7.5520***	5.4803***	4.4204**	20.6088***	4.9244***	0.2981	9.5632***
	(1.882)	(2.384)	(2.495)	(1.903)	(2.127)	(7.484)	(1.852)	(3.074)	(3.457)
Crisis$_{yq}$*Exposure-Local$_{f,pre}$	-1.9590	1.1328	-6.1956	-1.3611	-3.6624	8.0004*	-1.0751	1.2764	-0.9220
	(3.659)	(4.816)	(4.691)	(3.550)	(4.843)	(4.521)	(3.551)	(6.815)	(4.150)
Post$_{yq}$ *Exposure-Foreign$_{f,pre}$	-0.8325	1.8080	-5.1024	-0.8090	-0.7187	-1.6442	-1.0068	-0.2588	0.5760
	(2.319)	(2.468)	(3.401)	(2.319)	(2.350)	(8.452)	(2.300)	(3.701)	(3.375)
Post$_{yq}$ *Exposure-Local$_{f,pre}$	0.3068	-0.5093	1.3247	-1.5242	-2.0529	-3.6530	-1.6852	1.7283	-3.9347
	(3.247)	(4.388)	(3.135)	(3.495)	(4.906)	(3.878)	(3.451)	(7.237)	(3.959)
N	14172	7103	7069	14162	7151	7011	14269	7176	7093
R^2	0.8489	0.8743	0.8386	0.8440	0.8637	0.8453	0.8477	0.8552	0.8635
Firm Controls*[Post ; Crisis]	YES	YES	YES	YES	YES	YES	YES	YES	YES
Bank Controls*[Post ; Crisis]	YES	YES	YES	YES	YES	YES	YES	YES	YES
Firm FE	YES	YES	YES	YES	YES	YES	YES	YES	YES
Industry*Time FE	YES	YES	YES	YES	YES	YES	YES	YES	YES
Companies active in Both	Excluded	Excluded	Excluded	Excluded	Excluded	Excluded	Excluded	Excluded	Excluded

Panel D: Imports – Companies sorted according to proxies of financing constraints

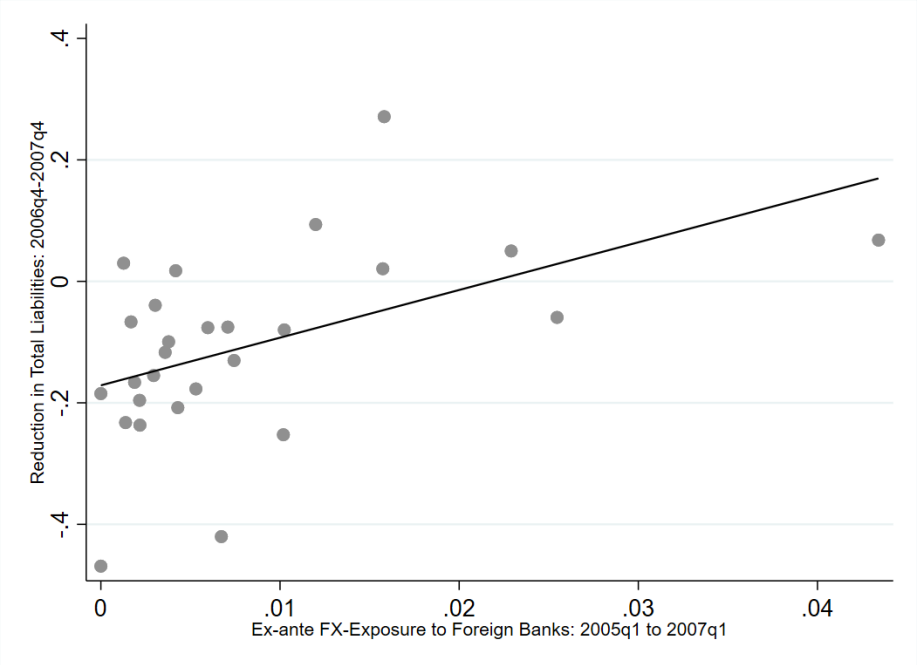
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	$Imports_{f,yq}$								
	Loan Interest Rate			% Collateralized Debt			% Short-Term Debt (≤1y)		
	All	Low	High	All	Low	High	All	Low	High
$Crisis_{yq}$*$Exposure\text{-}Foreign_{f,pre}$	-0.7940	-0.0600	-2.2971	-1.0514	0.1316	-2.1827	-1.4203	-1.5812	-0.7398
	(1.614)	(2.119)	(2.281)	(1.632)	(1.915)	(4.538)	(1.709)	(2.218)	(2.728)
$Crisis_{yq}$*$Exposure\text{-}Local_{f,pre}$	2.8681	4.0890	-0.5642	2.8238	-0.7546	11.3877**	2.9607	7.1357*	4.1200*
	(2.077)	(2.897)	(2.911)	(2.056)	(1.925)	(4.783)	(2.053)	(4.157)	(2.434)
$Post_{yq}$ *$Exposure\text{-}Foreign_{f,pre}$	-3.1068**	-3.9203*	-2.6509*	-3.5807***	-2.3797	-8.5667**	-3.3384***	-3.9725**	-3.4836**
	(1.256)	(2.170)	(1.488)	(1.250)	(1.551)	(3.841)	(1.256)	(1.985)	(1.770)
$Post_{yq}$ *$Exposure\text{-}Local_{f,pre}$	1.0180	1.3016	-1.5710	1.2012	1.7479	-1.3561	1.0019	-2.4461	2.1644
	(1.676)	(2.024)	(2.901)	(1.660)	(1.906)	(3.740)	(1.655)	(3.848)	(1.984)
N	24063	12017	12046	24171	12138	12033	24022	12119	11903
R^2	0.8389	0.8426	0.8514	0.8376	0.8620	0.8262	0.8366	0.8461	0.8425
Firm Controls*[Post ; Crisis]	YES	YES	YES	YES	YES	YES	YES	YES	YES
Bank Controls*[Post ; Crisis]	YES	YES	YES	YES	YES	YES	YES	YES	YES
Firm FE	YES	YES	YES	YES	YES	YES	YES	YES	YES
Industry*Time FE	YES	YES	YES	YES	YES	YES	YES	YES	YES
Companies active in Both	Excluded	Excluded	Excluded	Excluded	Excluded	Excluded	Excluded	Excluded	Excluded

This table shows the impact of capital controls on firm-level trade. In Panel A, we report how exposure to local and foreign banks affect exports and imports, during capital controls (boom) and during the GFC (bust). The dependent variable is either the logarithm of (1 + exports), $Exports_{f,yq}$, or of (1+imports), $Imports_{f,yq}$ of firm f in year-quarter yq. $Exposure\text{-}Foreign_{f,pre}$ and $Exposure\text{-}Local_{f,pre}$ are the average of FX-Foreign $Inflows_{f,yq}$ and of FX-Local $Inflows_{f,yq}$ in the period from 2005:Q1 to 2007:Q1, respectively. $Post_{yq}$ is a dummy with value 0 (1) from 2006:Q1 to 2007:Q1 (2007:Q2 to 2009:Q4). $Crisis_{yq}$ is a dummy with value 1 from 2008:Q3 to 2009:Q4 and 0 before. Firm Controls include $ROA_{f,y-1}$, $Size_{f,y-1}$ and $Imports_{f,yq-1}$ ($Exports_{f,yq-1}$) in regressions where exports (imports) is the dependent variable. Bank Controls include: $BankCET1_{f,yq-1}$; $BankROA_{f,yq-1}$; $BankSIZE_{f,yq-1}$; $BankNPL_{f,yq-1}$; $BankSaving_{f,yq-1}$; $BankChecking_{f,yq-1}$; $BankFX\text{-}Funds_{f,yq-1}$. Both Bank and Firm controls are fully interacted with the $Post_{yq}$ and $Crisis_{yq}$ dummies. In Panel B, we replicate panel A, replacing $Exposure\text{-}Foreign_{f,pre}$ with $-\Delta_{1y}Liabilities_{f,2007}^{predicted}$, the yearly reduction in total liabilities that it predicts in 2007 (in a cross-sectional regression with industry fixed effects – coefficient is equal to 1.1397, significance at 1% level). We also include the residual heterogeneity, denoted by $-\Delta_{1y}Liabilities_{f,2007}^{residual}$. In panels C and D, respectively, we repeat the same exercise for exports and imports, sorting companies based on proxies of financial constraints - i.e. indicators of high interest rate, collateral requirements and percentage of short-term debt (maturity smaller or equal than 1 year). These are taken as weighted average of related variables from the credit registry (after taking out bank*industry*year-quarter fixed effects) - with weights given by the loan share over total bank debt – over the period 2005:Q1-2007:Q1. A company is defined as High (Low) Interest Rate/% Collateralized Debt/% Short-Term Debt if its value is above (below) the median in the regression sample

Internet Appendix

Figure A1: Ex-ante FX-Exposures and Reduction in Total Liabilities : Industry-level

Panel A: FX-Exposure to Foreign Banks



Panel B: FX-Exposure to Local Banks

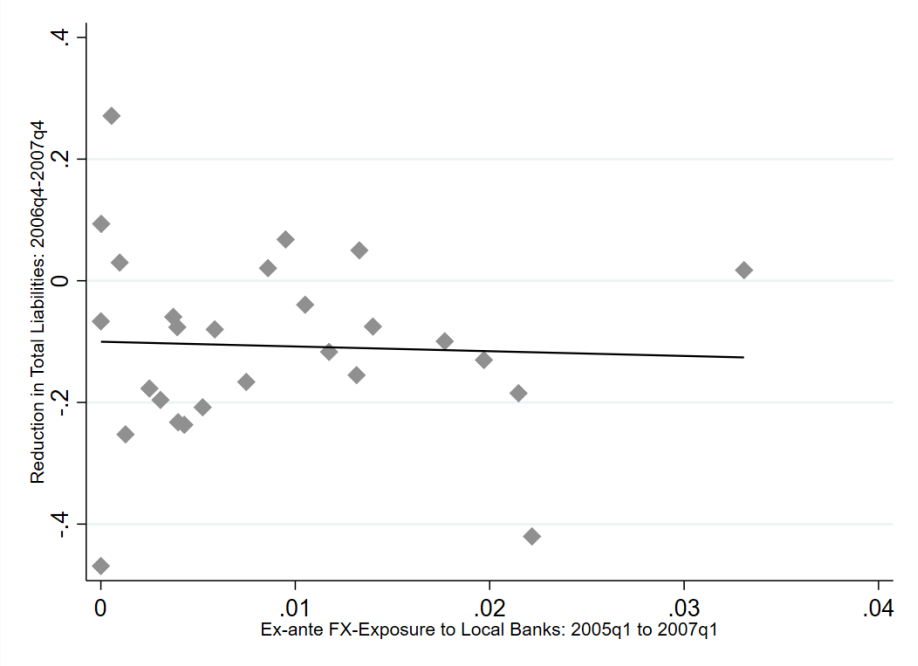


Table A1: Other Summary Statistics - Macro and Industrial Level Variables (2006:Q1-2007:Q1)

VARIABLES	N	Mean	P25	P50	P75	SD
Firm-level variables (2006:Q1-2007:Q1)						
$ExposureLiab_{f,pre}$	14,125	0.0244	0.000517	0.00702	0.0319	0.0408
$Exposure_{f,2007:Q1}$	14,125	0.0124	0	0	0.00534	0.0341
$AvgLogExposure_{f,pre}$	14,125	1.827	0.310	0.970	2.804	2.008
$Exposure_{f,2005}$	14,125	0.0127	0	0.00113	0.01419	0.0208
$Exposure\text{-}Foreign\text{-}Liab_{f,pre}$	5,751	0.0253	0.00237	0.00937	0.0302	0.0423
$Exposure\text{-}Foreign_{f,2007:Q1}$	5,751	0.0124	0	0	0.00364	0.0379
$Exposure\text{-}Foreign\text{-}Log_{f,pre}$	5,751	1.894	0.568	1.171	2.581	1.825
$Exposure\text{-}Foreign_{f,2005}$	5,751	0.0162	0	0.00402	0.0160	0.0352
$Exposure\text{-}Local\text{-}Liab_{f,pre}$	12,176	0.0164	0.000240	0.00315	0.0190	0.0288
$Exposure\text{-}Local_{f,2007:Q1}$	12,176	0.00836	0	0	0.00120	0.0234
$Exposure\text{-}Local\text{-}Log_{f,pre}$	12,176	1.428	0.204	0.675	2.145	1.655
$Exposure\text{-}Local_{f,2005}$	12,176	0.00714	0	0.00017	0.00782	0.0142
$-\Delta Liabilities_{f,2007}^{predicted}$	5,433	0.00735	0.0157	0.00554	0.01638	.02843
$-\Delta Liabilities_{f,2007}^{residual}$	11,597	0.00475	-0.1662	0.01735	0.18658	0.34617
Macroeconomic Variables (2006:Q1-2008:Q2)						
Δi_{yq-1}	10	0.0105	-0.00267	0.0168	0.0198	0.0133
$\Delta \pi_{yq-1}$	10	0.0630	0.0572	0.0619	0.0763	0.0138
ΔGDP_{yq-1}	10	0.0504	0.0448	0.0494	0.0577	0.00766
ΔVIX_{yq-1}	10	0.184	-0.0432	0.149	0.407	0.289
Δe_{yq-1}	10	-0.0624	-0.1175	-0.0469	-0.0077	0.0903

(Continued below)

Industry-Level Variables (2006:Q1-2007:Q1)						
$Employment_{i,yq}$	135	4.547	4.486	4.611	4.732	0.380
$Exposure\text{-}Foreign_{i,pre}$	135	0.00817	0.00216	0.00430	0.0102	0.00950
$Exposure\text{-}Local_{i,pre}$	135	0.00881	0.00250	0.00586	0.0133	0.00822
$Exposure\text{-}Foreign\text{-}Liab_{i,pre}$	135	0.0165	0.00339	0.00968	0.0259	0.0166
$Exposure\text{-}Local\text{-}Liab_{i,pre}$	135	0.0208	0.00548	0.0145	0.0269	0.0210
$Exposure\text{-}Foreign\text{-}Log_{i,pre}$	135	1.607	0.594	1.437	2.433	1.244
$Exposure\text{-}Foreign\text{-}Log_{i,pre}$	135	1.956	0.786	1.721	3.045	1.321
$Size_{i,yq-1}$	135	8.764	8.059	8.540	9.036	1.017
$ROA_{i,yq-1}$	135	0.0329	0.0187	0.0345	0.0555	0.0275
$Imports_{i,yq-1}$	135	6.543	5.569	6.752	7.892	1.799
$Exports_{i,yq-1}$	135	5.630	4.174	6.274	7.243	2.221

Firm-level Variables. $ExposureLiab_{f,pre}$ is the average of the ratio between FX-debt flows and total liabilities over the period 2005:Q1-2007:Q1. $Exposure_{f,2007:Q1}$ is the ratio between FX-debt flows and total assets as of 2007:Q1. $AvgLogExposure_{f,pre}$ is the average of the logarithm of (1 + FX-debt flow) during the period 2005:Q1-2007:Q1. $Exposure_{f,2005}$ is the average of the ratio between FX-debt flows and total assets over the period 2005:Q1-2005:Q4. $Exposure\text{-}Foreign\text{-}Liab_{i,pre}$ is the average of the ratio between FX-debt flows from foreign banks and total liabilities over the period 2005:Q1-2007:Q1. $Exposure\text{-}Foreign_{f,2007:Q1}$ is the ratio between FX-debt flows from foreign banks and total assets as of 2007:Q1. $Exposure\text{-}Foreign\text{-}Log_{f,pre}$ is the average of the logarithm of (1 + FX-debt flow from foreign banks during the period 2005:Q1-2007:Q1). $Exposure\text{-}Local\text{-}Liab_{i,pre}$ is the average of the ratio between FX-debt flows from local banks and total liabilities over the period 2005:Q1-2007:Q1. $Exposure\text{-}Local_{f,2007:Q1}$ is the ratio between FX-debt flows from local banks and total assets as of 2007:Q1. $Exposure\text{-}Local\text{-}Log_{f,pre}$ is the average of the logarithm of (1 + FC-debt flow from local banks during the period 2005:Q1-2007:Q1). $-\Delta_{1y}Liabilities_{f,2007}^{predicted}$ is the yearly reduction in total liabilities predicted by $Exposure\text{-}Foreign_{f,pre}$ in a cross-sectional regression in 2007 with industry fixed effects. Its summary statistics are computed over companies ex-ante active in foreign FX-debt markets (for all others, the value is constant and equal to 0). The residual heterogeneity in total liabilities from same regression is $-\Delta_{1y}Liabilities_{f,2007}^{residual}$. Macroeconomic Variables (2006:Q1-2008:Q2). Δi_{yq-1} is the lagged yearly growth of the interbank rate. $\Delta\pi_{yq-1}$ is the lagged yearly inflation rate. ΔGDP_{yq-1} is the lagged yearly growth rate of GDP. ΔVIX_{yq-1} is the lagged yearly growth rate of VIX. Δe_{yq-1} is the lagged yearly growth rate of the exchange rate – defined as Colombian pesos per 1US$. Industry-Level Variables (2006:Q1-2007:Q1). $Employment_{i,yq}$ is the logarithm of the employment index. The following exposure measures are retrieved as weighted averages of firm-level correspondent variables. Weights are given by the ratio of a company's total assets to total industrial assets, as of the end of 2006. $Exposure\text{-}Foreign_{i,pre}$ is the industry-level weighted average of firm-level FX-exposure to foreign banks, rescaled by total assets. $Exposure\text{-}Local_{i,pre}$ is the industry-level weighted average of firm-level FX-exposure to local banks, rescaled by total assets. $Exposure\text{-}Foreign\text{-}Liab_{i,pre}$ is the industry-level weighted average of firm-level FX-exposure to foreign banks, rescaled by total liabilities. $Exposure\text{-}Local\text{-}Liab_{i,pre}$ is the industry-level weighted average of firm-level FX-exposure to local banks, rescaled by total liabilities. $Exposure\text{-}Foreign\text{-}Log_{i,pre}$ is the industry-level weighted average of firm-level FX-exposure to foreign banks, defined in logs. $Exposure\text{-}Local\text{-}Log_{i,pre}$ is the industry-level weighted average of firm-level FX-exposure to local banks, defined in logs. The remaining variables are defined as weighted averages of firm-level correspondent variables. Weights are given by the time-varying ratio of a company's total assets to total industrial assets. $Size_{i,yq-1}$ is the lagged average of firm log(assets). $ROA_{i,yq-1}$ is the lagged average firm ROA. $Imports_{i,yq-1}$ is the lagged average of log-firm imports. $Exports_{i,yq-1}$ is the lagged average of log-firm exports.

Table A2: Impact of Capital Controls on FX-Debt Inflows – Robustness Checks

Panel A: Unconditional impact across market segments

	(1)	(2)	(3)
$Post_{yq}$	-0.002**	-0.006*	-0.010***
	(0.001)	(0.003)	(0.003)
N	16741	7622	3925
R^2	0.4044	0.3746	0.3696
Companies	Local	Both	Foreign
Quarter FE	YES	YES	YES
Macro Controls	YES	YES	YES
Firm Controls	YES	YES	YES
Bank Controls	YES	YES	YES

Panel B: Conditional impact on different time windows around the policy shock

	(1) 2007:Q1-2007:Q2	(2) 2006:Q4-2007:Q3	(3) 2006:Q3-2007:Q4	(4) 2006:Q2-2008:Q1	(5) 2006:Q1-2008:Q2
$Post_{yq}$ *$Exposure_{f,pre}$	-0.3054***	-0.3930***	-0.3984***	-0.5038***	-0.4609***
	(0.089)	(0.070)	(0.065)	(0.059)	(0.051)
N	5636	11327	16980	22650	28288
R^2	0.7071	0.5357	0.4999	0.4850	0.4615
Firm FE	YES	YES	YES	YES	YES
Industry*Year-quarter FE	YES	YES	YES	YES	YES
Firm Controls*Post	YES	YES	YES	YES	YES
Bank Controls*Post	YES	YES	YES	YES	YES

Panel C: Conditional Impact - Alternative Definitions of Exposure

	(1)	(2)	(3)	(4)
Post*ExposureLiab$_{f,pre}$	-0.2447***			
	(0.027)			
Post*Exposure$_{f,2007:Q1}$		-0.2119***		
		(0.036)		
Post*AvgLogExposure$_{f,pre}$			-0.0040***	
			(0.000)	
Post*Exposure$_{f,2005}$				-.1675***
				(0.031)
N	28288	28288	28288	28288
R^2	0.4590	0.4525	0.4497	0.4464
Firm FE	YES	YES	YES	YES
Industry*Year-quarter FE	YES	YES	YES	YES
Firm Controls*Post	YES	YES	YES	YES
Bank Controls*Post	YES	YES	YES	YES

The dependent variable is FX Inflows$_{f,yq}$. Panel A shows the effect of the introduction of capital controls on total FX debt inflows for firms borrowing in FX from local intermediaries (column 1), both local intermediaries and foreign (column 2), and foreign only (column 3). Panel B shows the effect of the introduction of capital controls on total FX debt inflows in different symmetric time-windows around the introduction of capital controls in 2007:Q2. Panel C shows the effect of the introduction of capital controls on total FX debt inflows, depending on different definitions of pre-policy exposure to FX debt inflows. Post$_{yq}$ is a dummy with value 1 (0) from 2007:Q2 to 2008:Q2 (2006:Q1 to 2007:Q1). ExposureLiab$_{f,pre}$ is the average of the ratio between FX debt inflows and total liabilities from 2005:Q1 to 2007:Q1. Exposure$_{f,2007:Q1}$ is the dependent variable as of 2007:Q1. AvgLogExposure$_{f,pre}$ is the average log FX debt inflows in the period from 2005:Q1 to 2007:Q1. Exposure$_{f,2005}$ is the average FX-debt inflow rescaled by total assets between 2005:Q1 and 2005:Q4. Macro Controls include lagged: GDP growth rate; inflation rate and log(VIX). Firm Controls include ROA$_{f,y-1}$, Size$_{f,y-1}$, Imports$_{f,yq-1}$, Exports$_{f,yq-1}$. Bank Controls include: BankCET1$_{f,yq-1}$; BankROA$_{f,yq-1}$; BankSIZE$_{f,yq-1}$; BankNPL$_{f,yq-1}$; BankSaving$_{f,yq-1}$; BankChecking$_{f,yq-1}$; BankFX$_{f,yq-1}$. Standard errors in parentheses are double-clustered at the firm and industry*year-quarter level.*** p<0.01, ** p<0.05, *p<0.1.

Table A3: Impact of Capital Controls on FX-Debt Inflows – Oster Test

	(1) $\tilde{R}^2 = 1.3\,\hat{R}^2$	(2) $\tilde{R}^2 = 1$
$\tilde{\delta}$	4.712	1.350

This table shows the robustness of our estimates in Table 3 to the Oster (2019) test for selection into the treatment along unobservables. In column (1), the coefficient of proportionality $\tilde{\delta}$ is estimated under the assumptions that the maximum R-squared is equal to 1.3 $\hat{R}^2$, where $\hat{R}^2$ is the R-squared reported in column (7) of Table 3. In column (2), the maximum R-squared is assumed to be equal to 1. Note: the baseline version of the model only includes the full interaction of the $Post_{yq}$ dummy with $Exposure_{f,pre}$. The test refers to the stability of the coefficient for $Post_{yq}$*$Exposure_{f,pre}$.

Table A4: Substitution of FX with Peso Debt: Intensive Margin - Oster Test

	(1) $\tilde{R}^2=\tilde{R}^2_{ft}$	(2) $\tilde{R}^2=1$
Quantity		
$\tilde{\delta}$* $_{Post*Both}$	8.843	2.618
$\tilde{\delta}$* $_{Post*Foreign}$	17.23	5.117
Price		
$\tilde{\delta}$* $_{Post*Both}$	-1.343	-0.386
$\tilde{\delta}$* $_{Post*Foreign}$	-7.866	-2.263

This table shows the robustness of our estimates in Tables 5 to the Oster (2019) test for selection into the treatment along unobservables. In column (1), the coefficient of proportionality $\tilde{\delta}$ is estimated under the assumptions that the maximum R-squared is equal to the R-square obtained by saturating the model with firm*bank, firm*year-quarter and bank*year-quarter fixed effects. In column (2), the maximum R-squared is assumed to be equal to 1. Note: the baseline version of the model only includes the full interaction of the $Post_{yq}$ dummy with the $Foreign_{f,pre}$ and $Both_{f,pre}$ dummies, respectively. The tests refer to the stability of the coefficient for $Post_{yq}$*$Both_{f,pre}$ and $Post_{yq}$*$Foreign_{f,pre}$, respectively, compared in the baseline version of the model and in one including firm*bank, bank*year-quarter fixed effects and firm controls interacted with the $Post_{yq}$ dummy.

Table A5: Substitution with Peso Debt from Local Banks - Collapsed Pre-Post Time Dimension

	(1) Peso Loan$_{f,b,yq}$	(2) Interest Rate$_{f,b,yq}$
Post$_{yq}$*Both$_{f,pre}$	-0.002	0.175
	(0.037)	(0.142)
Post$_{yq}$*Foreign$_{f,pre}$	-0.103**	0.478**
	(0.045)	(0.195)
N	17074	17074
R^2	0.913	0.823
Firm Controls*Post	YES	YES
Firm*Bank FE	YES	YES
Bank*Year-quarter FE	YES	YES
Industry*Year-quarter FE	YES	YES
Loan Controls*Post	YES	YES

This table shows the effect of capital controls on the quantity and price of commercial (peso) credit granted from Colombian banks. The baseline category is given by companies borrowing in FX before 2007:Q2 from local banks only. In column (1), the dependent variable is formally defined as the logarithm of the mean of (1+stock of peso debt provided by bank b to firm f) in the pre-period (2006:Q1 to 2007:Q1) and the post-period (2007:Q2 to 2008:Q2). In column (2), the dependent variable is formally defined as the mean of the interest rate applied on debt provided by bank b to firm f in the pre-period (2006:Q1 to 2007:Q1) and the post period (2007:Q2 to 2008:Q2). Equally, independent variables are mean-collapsed in the pre-period (2006:Q1 to 2007:Q1) and the post period (2007:Q2 to 2008:Q2). Foreign$_{f,pre}$ is a dummy with value 1 if a company borrowed in FX only from foreign banks before 2007:Q2 and 0 otherwise. Both$_{f,pre}$ refers to companies resorting to both local and foreign banks for FX credit before 2007:Q2. Post$_{yq}$ is a dummy with value 1 from 2007:Q2 to 2008:Q2 and 0 from 2006:Q1 to 2007:Q1. Firm Controls include ROA$_{f,y-1}$, Size$_{f,y-1}$, Imports$_{f,yq-1}$, Exports$_{f,yq-1.}$ Default$_{f,yq}$ and Relationships$_{f,yq.}$ Loan Controls include: Maturity$_{f,b,yq}$ and Collateral$_{f,b,yq}$. Both Firm and Loan controls are fully interacted with the Post$_{yq}$ dummy. Standard errors in parentheses are clustered at the firm level.*** p<0.01, ** p<0.05, *p<0.1.

Table A6: Substitution with Peso Debt from Local Banks: Impact Conditional on Pre-policy FX Exposure

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	Peso $Loan_{f,b,yq}$					Interest $Rate_{f,b,yq}$				
$Post_{yq}$*Exposure-$Foreign_{f,pre}$	-3.035**	-3.159*	-2.014	-1.846	-2.007*	2.990	8.888***	6.208*	9.936***	9.103**
	(1.235)	(1.761)	(1.448)	(1.421)	(1.134)	(3.198)	(3.433)	(3.501)	(3.357)	(3.552)
$Post_{yq}$*Exposure-$Local_{f,pre}$	4.383***	3.700***	4.382***	4.291***	3.793***	-36.107***	-27.055***	-33.134***	-30.305***	-30.710***
	(1.313)	(1.422)	(1.248)	(1.247)	(1.199)	(3.999)	(3.984)	(4.116)	(3.973)	(4.135)
N	102035	102035	102035	102035	102035	102035	102035	102035	102035	102035
R^2	0.005	0.262	0.789	0.791	0.802	0.067	0.109	0.537	0.609	0.625
Firm Controls*Post	NO	YES	YES	YES	YES	NO	YES	YES	YES	YES
Firm*Bank FE	NO	NO	YES	YES	YES	NO	NO	YES	YES	YES
Bank*Year-Quarter FE	NO	NO	NO	YES	YES	NO	NO	NO	YES	YES
Industry*Year-Quarter FE	NO	NO	NO	NO	YES	NO	NO	NO	NO	YES
Loan Controls*Post	NO	NO	NO	NO	YES	NO	NO	NO	NO	YES

This table shows the effect of capital controls on the quantity (columns 1-5) and price (columns 6-10) of commercial (peso) credit granted from Colombian banks. The dependent variable is defined as the logarithm of the loan in pesos granted from bank b to firm f in year-quarter yq or as the interest rate (in percentage points) applied over the same loans. Exposure-$Foreign_{f,pre}$ and Exposure-$Local_{f,pre}$ are the average of FX-Foreign Inflows $_{f,yq}$ and of FX-Local Inflows $_{f,yq}$ in the period from 2005:Q1 to 2007:Q1, respectively. Firm Controls include $ROA_{f,y-1}$, $Size_{f,y-1}$, $Imports_{f,yq-1}$, $Exports_{f,yq-1,}$ $Default_{f,yq}$ and $Relationships_{f,yq.}$ Loan Controls include: $Maturity_{f,b,yq}$ and $Collateral_{f,b,yq}$. Both Firm and Loan controls are eventually fully interacted with the $Post_{yq}$ dummy. The sign "-" denotes cases where a variable (or a group of variables or of fixed effects) is spanned out by other controls and/or fixed effects. Standard errors in parentheses are clustered at the firm level. *** p<0.01, ** p<0.05, *p<0.1.

Table A7: Substitution of FX with Peso Debt - Intensive Margin: Impact Conditional on Pre-policy FX Exposure – Different Definitions

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	PesoLoan$_{f,b,yq}$				InterestRate$_{f,b,yq}$			
Post$_{yq}$*Exposure-Foreign-Liab$_{f,pre}$	-1.1788*				4.6610**			
	(0.668)				(2.181)			
Post$_{yq}$*Exposure-Local-Liab$_{,pre}$	1.8453***				-17.0125***			
	(0.715)				(2.399)			
Post$_{yq}$*Exposure-Foreign$_{f,2007:Q1}$		-1.4477**				6.3302***		
		(0.673)				(2.375)		
Post$_{yq}$*Exposure- Local$_{f,2007:Q1}$		1.3919*				-12.1667***		
		(0.768)				(2.689)		
Post$_{yq}$*Exposure-Foreign-Log$_{f,pre}$			-0.0204*				0.1279***	
			(0.011)				(0.038)	
Post$_{yq}$*Exposure-Local-Log$_{f,pre}$			0.0296***				-0.2563***	
			(0.011)				(0.037)	
Post$_{yq}$*Exposure- Foreign$_{f,2005}$				-1.6130**				3.7388*
				(0.810)				(2.248)
Post$_{yq}$*Exposure- Local$_{f,2005}$				2.6620**				-25.8490***
				(1.190)				(4.033)
N	102035	102035	102035	102035	102035	102035	102035	102035
R^2	0.8019	0.8019	0.8019	0.8019	0.6249	0.6245	0.6248	0.6248
Firm Controls*Post	YES	YES	YES	YES	YES	YES	YES	YES
Firm*Bank FE	YES	YES	YES	YES	YES	YES	YES	YES
Bank*Year-Quarter FE	YES	YES	YES	YES	YES	YES	YES	YES
Industry*Year-Quarter FE	YES	YES	YES	YES	YES	YES	YES	YES
Loan Controls*Post	YES	YES	YES	YES	YES	YES	YES	YES

This table shows the effect of capital controls on the quantity (columns 1-4) and price (columns 1-8) of peso-credit granted to companies from Colombian banks, depending on a firm's pre-policy FX-exposure to foreign and local banks, respectively. Post$_{yq}$ is a dummy with value 1(0) from 2007:Q2 to 2008:Q2 (2006:Q1 to 2007:Q1). In columns (1) and (5), Exposure-Foreign-Liab$_{f,pre}$ and Exposure-Local-Liab$_{f,pre}$ are the average firm-level FX debt inflows from foreign and local banks in the period 2005:Q1-2007:Q1, rescaled by total liabilities. In columns (2) and (6), Exposure-Foreign$_{f,2007:Q1}$ and Exposure-Local$_{f,2007:Q1}$ are given by the 2007:Q1 firm-level values of foreign and local FX-debt inflows over total assets. In columns (3) and (7), Exposure-Foreign-Log$_{f,pre}$ and Exposure-Local-Log$_{f,pre}$ are the average firm-level log FX debt inflows from foreign and local banks in the period 2005:Q1- 2007:Q1. In columns (4) and (8), Exposure-Foreign$_{f,2005}$ and Exposure-Local$_{f,2005}$ represent the average firm-level FX-debt inflow (rescaled by total assets) from local and foreign banks over the period 2005:Q1 to 2005:Q4. Firm Controls include ROA$_{f,y-1}$, Size$_{f,y-1}$, Imports$_{f,yq-1}$, Exports$_{f,yq-1.}$ Default$_{f,yq}$ and Relationships$_{f,yq.}$ Loan Controls include: Maturity$_{f,b,yq}$ and Collateralized$_{f,b,yq}$. Each regression includes Firm and Loan controls, fully interacted with the Post$_{yq}$ dummy and firm*bank, bank*year-quarter and industry*year-quarter fixed effects. Standard errors in parentheses are clustered at the firm level.*** p<0.01, ** p<0.05, *p<0.1.

Table A8: Real Effects – Capital Controls and Trade during the Boom and the Bust – Robustness Checks

Panel A: Different Specifications of the Model - Exports

	(1)	(2)	(3)	(4)
			$Exports_{f,yq}$	
$Crisis_{yq}$ *$Exposure\text{-}Foreign_{f,pre}$	4.9321**	4.5420**	5.1335***	5.2213***
	(2.213)	(2.092)	(1.617)	(1.814)
$Crisis_{yq}$*$Exposure\text{-}Local_{f,pre}$	2.4782	-0.7784	-1.0380	-1.1536
	(4.900)	(4.699)	(2.893)	(3.439)
$Post_{yq}$ *$Exposure\text{-}Foreign_{f,pre}$	-0.6415	-1.0928	-0.2990	-1.0216
	(2.717)	(2.486)	(2.388)	(2.254)
$Post_{yq}$*$Exposure\text{-}Local_{f,pre}$	-0.7232	-3.6735	-2.1139	-1.4590
	(5.006)	(4.401)	(2.646)	(3.349)
N	15269	15269	15269	15269
R^2	0.0019	0.1015	0.8173	0.8476
Firm Controls*[Post; Crisis]	NO	YES	YES	YES
Bank Controls*[Post; Crisis]	NO	YES	YES	YES
Firm FE	NO	NO	YES	YES
Industry*Year-quarter FE	NO	NO	NO	YES
Companies active in both	Excluded	Excluded	Excluded	Excluded

Panel B: Different specifications of the model - Imports

	(1)	(2)	(3)	(4)
		$Imports_{f,yq}$		
$Crisis_{yq}$ *$Exposure\text{-}Foreign_{f,pre}$	-1.7073	-0.6695	-1.2383	-1.7723
	(1.938)	(2.670)	(2.030)	(1.722)
$Crisis_{yq}$*$Exposure\text{-}Local_{f,pre}$	2.9436	1.9500	2.2959	2.7480
	(2.724)	(2.792)	(1.781)	(2.032)
$Post_{yq}$ *$Exposure\text{-}Foreign_{f,pre}$	-5.1875***	-4.9645***	-4.7530***	-3.1762**
	(1.323)	(1.758)	(1.351)	(1.255)
$Policy_{yq}$*$Exposure\text{-}Local_{f,pre}$	0.6495	0.1407	0.3781	0.9796
	(2.502)	(2.528)	(1.305)	(1.634)
N	25294	25294	25294	25294
R^2	0.0705	0.2629	0.8166	0.8396
Firm Controls*[Post; Crisis]	NO	YES	YES	YES
Bank Controls*[Post; Crisis]	NO	YES	YES	YES
Firm FE	NO	NO	YES	YES
Industry*Year-quarter FE	NO	NO	NO	YES
Companies active in both	Excluded	Excluded	Excluded	Excluded

Panel C: Oster Test – Imports and Exports

	$\tilde{R}^2 = 1$
Imports $\tilde{\delta}_{Post*Exposure\text{-}Foreign}$	5.38
Exports $\tilde{\delta}_{Crisis*Exposure\text{-}Foreign}$	32.97

Panel D: Different Definitions of the Exposure variables – Imports and Exports

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Exports$_{f,yq}$				Imports$_{f,yq}$			
Crisis$_{yq}$*Exposure-Foreign-Liab$_{f,pre}$	3.7067***				-0.9834			
	(1.234)				(1.008)			
Crisis$_{yq}$*Exposure-Local-Liab$_{f,pre}$	-0.4594				0.9091			
	(1.839)				(1.153)			
Post$_{yq}$*Exposure-Foreign-Liab$_{f,pre}$	-0.1352				-1.8852**			
	(1.225)				(0.785)			
Post$_{yq}$*Exposure-Local-Liab$_{f,pre}$	-0.7201				0.3475			
	(1.792)				(0.915)			
Crisis$_{yq}$*Exposure-Foreign$_{f,2007:Q1}$		2.3085*				0.1307		
		(1.292)				(0.911)		
Crisis$_{yq}$*Exposure-Local$_{f,2007:Q1}$		-1.6043				3.2150*		
		(2.334)				(1.678)		
Post$_{yq}$*Exposure-Foreign$_{f,2007:Q1}$		1.4143				-0.8845		
		(1.391)				(0.722)		
Post$_{yq}$*Exposure-Local$_{f,2007:Q1}$		0.9935				0.6597		
		(2.217)				(1.266)		
Crisis$_{yq}$*Exposure-Foreign-Log$_{f,pre}$			0.0823***				-0.0217	
			(0.030)				(0.023)	
Crisis$_{yq}$*Exposure-Local-Log$_{f,pre}$			0.0092				-0.0011	
			(0.031)				(0.019)	
Post$_{yq}$*Exposure-Foreign-Log$_{f,pre}$			-0.0362				-0.0547**	
			(0.032)				(0.023)	
Post$_{yq}$*Exposure-Local-Log$_{f,pre}$			-0.0010				-0.0084	
			(0.027)				(0.018)	
Crisis$_{yq}$*Exposure-Foreign$_{f,2005}$				4.1977**				-0.6689
				(1.978)				(1.431)
Crisis$_{yq}$*Exposure-Local$_{f,2005}$				0.5461				1.7655
				(3.353)				(1.784)
Post$_{yq}$*Exposure-Foreign$_{f,2005}$				-0.6775				-2.6736**
				(1.794)				(1.228)
Post$_{yq}$*Exposure-Local$_{f,2005}$				-2.0408				1.4118
				(3.198)				(1.562)
N	15269	15269	15269	15269	25294	25294	25294	25294
R^2	0.8477	0.8476	0.8476	0.8476	0.8395	0.8395	0.8395	0.8395
Firm Controls	YES	YES	YES	YES	YES	YES	YES	YES
Bank Controls	YES	YES	YES	YES	YES	YES	YES	YES
Firm FE	YES	YES	YES	YES	YES	YES	YES	YES
Industry*Year-Quarter FE	YES	YES	YES	YES	YES	YES	YES	YES
Companies active in both	Excluded	Excluded	Excluded	Excluded	Excluded	Excluded	Excluded	Excluded

Panel E: Collapsed Pre/Policy/Crisis Time Dimension – Imports and Exports

	(1) $Exports_{f,yq}$	(2) $Imports_{f,yq}$
$Crisis_{yq}$*$Exposure\text{-}Foreign_{f,pre}$	5.5847***	-1.7361
	(1.919)	(2.136)
$Post_{yq}$*$Exposure\text{-}Foreign_{f,pre}$	-1.8223	-3.5427**
	(2.322)	(1.504)
$Crisis_{yq}$*$Exposure\text{-}Local_{f,pre}$	-1.4024	2.6373
	(3.219)	(1.785)
$Post_{yq}$*$Exposure\text{-}Local_{f,pre}$	-1.9005	0.8679
	(3.108)	(1.345)
N	2859	4735
R^2	0.9522	0.9485
Firm Controls*[Post; Crisis]	YES	YES
Bank Controls*[Post; Crisis]	YES	YES
Firm FE	YES	YES
Industry*Year-Quarter FE	YES	YES

Panel F: Different Definitions of Crisis and Policy Periods – Imports and Exports

	(1) $Exports_{f,yq}$	(2) $Imports_{f,yq}$	(3) $Exports_{f,yq}$	(4) $Imports_{f,yq}$
$Crisis_{yq}$*$Exposure\text{-}Foreign_{f,pre}$	5.3119**	-1.8240	4.3898**	-1.5481
	(2.083)	(1.942)	(2.112)	(1.892)
$Crisis_{yq}$*$Exposure\text{-}Local_{f,pre}$	-1.5080	2.6928	-1.1866	2.0264
	(3.865)	(2.196)	(3.732)	(2.048)
$Policy_{yq}$*$Exposure\text{-}Foreign_{f,pre}$	-0.9619	-3.1646**	-0.1561	-3.4418***
	(2.257)	(1.254)	(2.328)	(1.283)
$Policy_{yq}$*$Exposure\text{-}Local_{f,pre}$	-1.3959	0.9558	-1.5456	1.5529
	(3.341)	(1.640)	(3.465)	(1.691)
N	14312	23708	15269	25294
R^2	0.8485	0.8395	0.8476	0.8395
Firm Controls*[Post; Crisis]	YES	YES	YES	YES
Bank Controls*[Post; Crisis]	YES	YES	YES	YES
Firm FE	YES	YES	YES	YES
Industry*Year-quarter FE	YES	YES	YES	YES
2008:Q3	Excluded	Excluded	Policy	Policy

Panel G: Excluding companies in oil-related sector – Imports and Exports

	(1) $Exports_{f,yq}$	(2) $Imports_{f,yq}$	(3) $Exports_{f,yq}$	(4) $Imports_{f,yq}$
$Crisis_{yq}$*$Exposure\text{-}Foreign_{f,pre}$	5.1864***	-0.6222	2.4086*	-0.2356
	(1.831)	(1.561)	(1.262)	(1.088)
$Crisis_{yq}$*$Exposure\text{-}Local_{f,pre}$	-1.8740	2.9694	-1.9950	1.7760
	(3.489)	(2.042)	(2.443)	(1.571)
$Post_{yq}$* $Exposure\text{-}Foreign_{f,pre}$	-0.5144	-2.8107**	1.7117	-3.0807***
	(2.315)	(1.253)	(1.550)	(1.021)
$Post_{yq}$*$Exposure\text{-}Local_{f,pre}$	-1.3191	1.5712	-1.9078	0.5051
	(3.414)	(1.636)	(2.391)	(1.258)
N	14200	24072	23698	35542
R^2	0.8466	0.8424	0.8739	0.8545
Firm Controls*[Post; Crisis]	YES	YES	YES	YES
Bank Controls*[Post; Crisis]	YES	YES	YES	YES
Firm FE	YES	YES	YES	YES
Industry*Year-Quarter FE	YES	YES	YES	YES

Panel H: Control group: companies inactive in FX-debt market (unaffected by CC)

	(1)	(2)	(3)	(4)
	$Exports_{f,yq}$		$Imports_{f,yq}$	
$Crisis_{yq}$*$Exposure\text{-}Foreign_{f,pre}$	3.6200*		-2.2746	
	(1.952)		(2.197)	
$Crisis_{yq}$*-$\Delta Liabilities_{f,2007}^{predicted}$		3.2271*		-2.2771
		(1.775)		(2.027)
$Crisis_{yq}$*-$\Delta Liabilities_{f,2007}^{residual}$		0.0794		-0.2093
		(0.286)		(0.230)
$Post_{yq}$*$Exposure\text{-}Foreign_{f,pre}$	-0.0309		-5.1293***	
	(2.429)		(1.650)	
$Post_{yq}$*-$\Delta Liabilities_{f,2007}^{predicted}$		-1.1613		-4.4119***
		(2.010)		(1.450)
$Post_{yq}$*-$\Delta Liabilities_{f,2007}^{residual}$		-0.4094		-0.1692
		(0.257)		(0.262)
N	17274	17274	35187	35187
R^2	0.8367	0.8367	0.8145	0.8145
Firm Controls	YES	YES	YES	YES
Bank Controls	YES	YES	YES	YES
Firm FE	YES	YES	YES	YES
Industry*Year-Quarter FE	YES	YES	YES	YES
Sample of Companies	Foreign + Inactive	Foreign + Inactive	Foreign + Inactive	Foreign + Inactive

Panel I: Only companies constrained by capital controls

	(1)	(2)	(3)	(4)
	$Exports_{f,yq}$		$Imports_{f,yq}$	
$Crisis_{yq}$*$Exposure\text{-}Foreign_{f,pre}$	4.1191**		-1.1893	
	(1.872)		(2.202)	
$Crisis_{yq}$*-$\Delta Liabilities_{f,2007}^{predicted}$		3.3117**		-1.6573
		(1.618)		(2.085)
$Crisis_{yq}$*-$\Delta Liabilities_{f,2007}^{residual}$		-0.0726		-0.1470
		(0.270)		(0.240)
$Post_{yq}$* $Exposure\text{-}Foreign_{f,pre}$	0.9091		-2.9797*	
	(2.646)		(1.411)	
$Post_{yq}$*-$\Delta Liabilities_{f,2007}^{predicted}$		0.0689		-2.3853*
		(2.227)		(1.323)
$Post_{yq}$*-$\Delta Liabilities_{f,2007}^{residual}$		-0.4443		-0.0804
		(0.271)		(0.233)
N	3956	3861	5640	5453
R^2	0.8343	0.8347	0.8106	0.8105
Firm Controls*[Post; Crisis]	YES	YES	YES	YES
Bank Controls*[Post; Crisis]	YES	YES	YES	YES
Firm FE	YES	YES	YES	YES
Industry*Year-Quarter FE	YES	YES	YES	YES

This table shows the effect of capital controls on firm-level trade, depending on pre-policy exposure to foreign and local FX-debt markets, during the implementation of the policy and the following Crisis. In Panel A and B, respectively, we report progressively saturated versions of the model for exports and imports. In Panel C, we perform the Oster (2019)'s test on the coefficient $Crisis_{yq}$*$Exposure\text{-}Foreign_{f,pre}$ ($Post_{yq}$*$Exposure\text{-}Foreign_{f,pre}$) for exports (imports) regressions, based on the comparison of columns 1 and 4 of Panel A (B) – under the assumption that the maximum R^2 is equal to 1. In Panel D, we check the robustness of results to different definitions of the exposure variables. In Panel E, we collapse data by taking averages of firm-level dependent and independent variables over the periods: 2006:Q1-2007:Q1 (pre); 2007:Q2-2008:Q2 (policy); 2008:Q3-2008:Q4 (crisis). In Panel F, we either exclude observations for 2008:Q3 (columns 1 and 2) or relabel them as a year-quarter with CC in place (i.e. with $Post_{yq}$ equal to 1 and $Crisis_{yq}$ equal to 1 in columns 3 and 4). In Panel G, we repeat baseline regressions excluding companies in involved in the production, distribution and refinement of oil (ISIC sectors 10, 11, 12, 13, 14, 23 and industries 2521, 2529 and 2924). In Panel H, we replicate regressions in Table 8, Panels A and B, contrasting the firm-level exports and imports of firms exposed to CC (i.e. firms ex-ante borrowing in FX from foreign banks only, whose growth of total liabilities is limited by the policy) and of firms inactive in the FX-debt market (unaffected by CC). In Panel I, we replicate regressions in Table 8, Panels A and B, based only on the sample of companies exposed to capital controls. List of Variables. $Exports_{f,yq}$ is defined as the logarithm of (1+Exports of firm f in period yq), $Imports_{f,yq}$ is defined as the logarithm of (1+Imports of firm f in period yq). $Exposure\text{-}Foreign_{f,pre}$ is the average of FX-Foreign $Inflows_{f,yq}$ over the period from 2005:Q1 to 2007:Q1; $Exposure\text{-}Local_{f,pre}$ is the average of FX-Local $Inflows_{f,yq}$ over the period from 2005:Q1 to 2007:Q1. $Exposure\text{-}Foreign\text{-}Liab_{f,pre}$ and $Exposure\text{-}Local\text{-}Liab_{f,pre}$ are the average firm-level FX debt inflows from foreign and local banks in the period 2005:Q1-2007:Q1, rescaled by total liabilities. $Exposure\text{-}Foreign_{f,2007:Q1}$ and $Exposure\text{-}Local_{f,2007:Q1}$ are given by the 2007:Q1 firm-level values of foreign and local FX-debt inflows over total assets. $Exposure\text{-}Foreign\text{-}Log_{f,pre}$ and $Exposure\text{-}Local\text{-}Log_{f,pre}$ are the average firm-level log FX debt inflows from foreign and local banks in the period 2005:Q1- 2007:Q1. $Exposure\text{-}Foreign_{f,2005}$ and $Exposure\text{-}Local_{f,2005}$ represent the average firm-level FX-debt inflow (rescaled by total assets) from local and foreign banks over the period 2005:Q1 to 2005:Q4. $-\Delta_{1y}Liabilities_{f,2007}^{predicted}$ is the yearly reduction in total liabilities predicted by $Exposure\text{-}Foreign_{f,pre}$ in a cross-sectional regression in 2007 with industry fixed effects. The residual heterogeneity in total liabilities from same regression is $-\Delta_{1y}Liabilities_{f,2007}^{residual}$. $Post_{yq}$ is a dummy with value 1 from 2007:Q2 onwards. $Crisis_{yq}$ is a dummy with value 1 from 2008:Q3 to 2009:Q4 and 0 from 2006:Q1 to 2008:Q2. Firm Controls include $ROA_{f,y-1}$, $Size_{f,y-1}$ and $Imports_{f,yq-1}$ ($Exports_{f,yq-}$) in regressions where exports (imports) is the dependent variable. Bank Controls include: $BankCET1_{f,yq-1}$; $BankROA_{f,yq-1}$; $BankSIZE_{f,yq-1}$; $BankNPL_{f,yq-1}$; $BankSaving_{f,yq-1}$; $BankChecking_{f,yq-1}$; $BankFX\text{-}Funds_{f,yq-1}$. Both Bank and Firm controls are fully interacted with the $Post_{yq}$ and $Crisis_{yq}$ dummies. Standard errors in parentheses are double-clustered at the firm and industry*year-quarter level. *** p<0.01, ** p<0.05, *p<0.1.

Table A9 – The Impact of Capital Controls on Industrial Employment

	(1)	(2)	(3)	(4)	(5)	(6)
			Employment$_{i,yq}$			
Crisis$_{yq}$ * Exposure-Foreign$_{i,pre}$	2.2977	3.4812	2.6434*	2.3676*	1.3606*	0.0357***
	(7.036)	(7.372)	(1.341)	(1.385)	(0.731)	(0.010)
Crisis$_{yq}$ * Exposure-Local$_{i,pre}$		0.0300	0.7628	1.1700	0.4724	0.0180
		(15.589)	(1.717)	(1.777)	(0.593)	(0.012)
Post$_{yq}$ * Exposure-Foreign$_{i,pre}$	-1.5892	-0.1510	-0.3714	-0.2195	0.1173	-0.0113
	(6.489)	(6.125)	(1.438)	(1.517)	(0.888)	(0.011)
Post$_{yq}$ * Exposure-Local$_{i,pre}$		1.9501	2.5174	2.8305	1.1627*	0.0230
		(15.246)	(2.100)	(2.117)	(0.686)	(0.015)
Exposure-Foreign$_{i,pre}$	-1.4168	-0.5089	-	-	-	-
	(4.466)	(3.999)				
Exposure-Local$_{i,pre}$		5.0855	-	-	-	-
		(10.128)				
N	432	432	432	432	432	432
R^2	0.0076	0.1777	0.9705	0.9732	0.9733	0.9754
Firm Controls*[Post; Crisis]	NO	YES	YES	YES	YES	YES
Industry FE	NO	NO	YES	YES	YES	YES
Time FE	NO	NO	NO	YES	YES	YES
Expo. Rescaling	Assets	Assets	Assets	Assets	Liabilities	Logs

This table shows the impact of capital controls on industrial employment. The dependent variable is defined as the logarithm of Employment in industry i in year-quarter yq. Exposure-Foreign$_{i,pre}$ is a proxy of industry-level exposure to foreign banks. In columns (1) to (4), this is computed as the weighted average of the mean FX-debt flow from 2005:Q1 to 2007:Q1 across firms; weights are given by the ratio between a firm total assets and total assets at the end of 2006. In column (5), FX-debt flows at the firm level are rescaled by total liabilities. In column (6), they are defined in logs. Similar measures are used for FX-debt flows from local banks, whose exposure is denoted by Exposure-Local$_{i,pre}$. Post$_{yq}$ is a dummy with value 1 from 2007:Q2 onwards and 0 from 2006:Q1 to 2007:Q1. Crisis$_{yq}$ is a dummy with value 1 from 2008:Q3 to 2009:Q4 and 0 from 2006:Q1 to 2008:Q2. Controls include ROA$_{i,y-1}$, Size$_{i,y-1}$, Exports$_{i,yq-1}$, Imports$_{i,yq-1}$. All controls are interacted with the Post$_{yq}$ and Crisis$_{yq}$ dummies. Standard errors in parentheses are clustered at the industry*Period level. Period is a categorical variable with value: 1 from 2006:Q1 to 2007:Q1; 2 from 2007:Q2 to 2008:Q2; 3 from 2008:Q3 to 2009:Q4. *** p<0.01, ** p<0.05, *p<0.01.