Heterogeneous macroprudential policies and corporate financing decisions

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Abstract

Utilizing data from 31,336 firms across 69 countries from 2011 to 2017, we find evidence suggesting that corporate debt depends significantly on the macroprudential policies in force. Specifically, macroprudential policies shorten corporate's debt maturity structure and limit corporate ability to undertake long-term debt. Findings relative to long-term debt are driven by financial institutions targeted macroprudential instruments, whereas those related to short-term debt seem to be attributed to the borrowing targeted ones. We further find that macroprudential policies have heterogeneous effects, with a more significant impact observed among firms facing binding credit constraints and high market competition and those operating in countries with less developed institutions. These findings underscore the importance of institutional factors in determining the effectiveness of macroprudential policies.

Keywords: Capital structure, debt maturity, macroprudential policies.
JEL classification: G20;G30; G32.

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Highlights

- The heterogeneous effects of macroprudential-policies on financing decisions are examined.
- Tighter macroprudential policies tend to limit corporate debt, but not short-term debt.
- Macroprudential policies have a heterogeneous effects on financing decisions.
- There is a trade-off between effectiveness and adverse effects of macroprudential policies.

Abstract

Utilizing data from 31,336 firms across 69 countries from 2011 to 2017, we find evidence suggesting that corporate debt depends significantly on the macroprudential policies in force. Specifically, macroprudential policies shorten corporate's debt maturity structure and limit corporate ability to undertake long-term debt. Findings relative to long-term debt are driven by financial institutions targeted macroprudential instruments, whereas those related to short-term debt seem to be attributed to the borrowing targeted ones. We further find that macroprudential policies have heterogeneous effects, with a more significant impact observed among firms facing binding credit constraints and high market competition and those operating in countries with less developed institutions. These findings underscore the importance of institutional factors in determining the effectiveness of macroprudential policies.

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1 Introduction

Macroprudential policies have profoundly affected how banking is regulated and, thus, firms' ability to obtain bank finance. As such, there has been extensive research on the effectiveness of macroprudential instruments in mitigating instability and their heterogeneous effects across banks and emerging and developed countries, as documented by Cerutti et al. (2018), Akinci and Olmstead-Rumsey (2018) and Apergis et al. (2021). However, much remains unknown about how macroprudential policies affect the real economy, particularly corporate debt financing, which is highly sensitive to changes in macroprudential policies and banking conditions. Understanding this linkage is paramount given the evidence presented in the literature that macroprudential policies can have significant real micro-impacts on firms (Ayyagari et al., 2018; Ćehajić and Košak, 2022).

Our study provides a valuable contribution to addressing this research gap by providing comprehensive insights into how macroprudential instruments affect corporate financing decisions and the potential for heterogeneous effects arising from policy tools, firm-level attributes, and the underlying institutional characteristics.[1] In this respect, our paper aims to fill a gap in the corporate finance literature relating to the effect of macroprudential policy on non-financial firms by examining its implications on corporate capital structure and access to finance and focusing on its heterogeneity.

The effectiveness of macroprudential policies in stimulating credit growth, alleviating financial constraints, and addressing financial imbalances remains a central issue in academic research and policy discussions. Since the 2008 global financial crisis (GCF), the macro-regulatory frameworks have become increasingly important tools for central banks in tackling systemic risks of the banking industry to ensure stability, manage financial imbalances, and stabilize credit cycles while smoothing banks' pro-cyclical behavior in contrast to macroprudential regulations aiming at only guaranteeing the soundness of individual financial institutions and limit their idiosyncratic risks (see Claessens et al., 2013; Cerutti et al., 2018; Akinci and Olmstead-Rumsey, 2018; Apergis et al., 2021). While macroprudential policies do not intend to regulate the activities of corporate (non-financial) firms directly, they mainly affect financial institutions' capacity to provide credit, which in turn affects the vast majority of corporate firms relying on credit as end-users, hampers their access to credit resources and exacerbates bank-firm information asymmetry, leading to more risk and inefficiency in bank lending (see Yang and Suh, 2023; Ayyagari et al., 2018; Ćehajić and Košak, 2022). Despite the growing application of macroprudential policies in recent years, our understanding of their effectiveness at

[1] There is a growing literature noting various asymmetric effects of macroprudential policies on bank financing of Chinese firms (Kang et al., 2021), small and medium-sized enterprises access to finance (Ćehajić and Košak, 2022) and firm leverage (Yang and Suh, 2023).

the microeconomic level, particularly in corporate financing, still needs to be improved. Moreover, from a policy perspective, few studies have explicitly explored the potential trade-offs between the ultimate goal of macroprudential policies — maintaining financial stability—and their intermediary objectives, such as promoting financial development (see Ayyagari et al., 2018; Ćehajić and Košak, 2022).

Our study is closely related to the following works investigating the effects of the current state of the economy as measured by macroprudential policy indicators on individual firms' access to bank credit. Ayyagari et al. (2018) use micro firm data across 59 countries to study the effect of macroprudential policies on firms' loan accessibility. They argue that macroprudential policy is negatively associated with credit growth; such an effect is significant primarily for small firms with credit constraints. Kang et al. (2021) focus on firms in China to study the impact of macroprudential policy on bank financing of Chinese firms. They confirm that macroprudential policy tightening is negatively associated with the bank-firm financing level. They argue that such tightening induces banks to change their borrowing policies by becoming more selective in providing credit based on firms' financial status. Further, Ćehajić and Košak (2022) analyzes EU firm-level survey data and shows that macroprudential policies can limit small and medium-sized firms' access to bank financing. Thus, they suggest that tighter macroprudential policies are associated with a lower likelihood of SMEs gaining access to bank credit and vice versa. Yang and Suh (2023) combine corporate panel data across 35 countries to investigate the effect of macroprudential policies on heterogeneous firms. They show that tightened macroprudential policies effectively decrease firm leverage, whereas policy loosening actions increase leverage for large and highly leveraged firms. They also argue that the net macroprudential policy actions reduce the procyclicality of leverage, specifically for small and highly leveraged firms.

Our empirical analysis of macroprudential policies transmission suggests that firms' expectations about future credit conditions play an important —and hitherto undocumented— role in the bank-lending channel of such policies. These implications are reflected in corporate financing, access to credit, and credit growth, and thus in firms' capital structure. Whether macroprudential policy should affect firm-level debt or in what direction is unclear. This paper is a first attempt at assessing the distributional effects of macroprudential instruments across firms. Beyond these mean effects, we examine the heterogeneous effects of these instruments depending on financial constraints, market competition, institutional quality, and financial development. This opens up avenues for future research and we look forward to further exploration in this area.

Using an expanded sample spanning 69 countries from 2001-2017, encompassing 31,336

non-financial firms with 333,979 firm-year observations, we find that tighter macroprudential policies decrease firms' total corporate debt, particularly long-term debt. This has significant practical implications for firms and policymakers. While tighter macroprudential policies enable banks to manage their risk exposure better, they adversely affect corporate financing decisions. These effects manifest in increased debt refinancing, higher debt service costs, asset-liability maturity mismatches, and reductions in long-term investments. Additionally, our findings highlight significant heterogeneity in the impact of macroprudential policies tightening across firms, with the adverse effects being more pronounced for financially constrained firms and those operating in highly competitive industries, particularly in countries with less developed institutional frameworks. These results suggest that macroprudential policies exert real and varied effects on corporate financing decisions, with their impact being shaped by firm-specific characteristics and the broader institutional context. This underscores the importance of considering firm-level heterogeneity and institutional development when assessing the wider economic consequences of macroprudential regulation.

These findings show that the effectiveness of macroprudential policies is prior heterogeneous across firms for the following reasons. First, banks have little choice but to reduce loans to accommodate tightened macroprudential policies. Second, such macroprudential policies may render banks more selective in providing credit, considering factors such as a firm's growth potential and profitability. Third, how non-financial firms respond to these changes in macroprudential policies can be heterogeneous; for instance, firms with fewer financial constraints and sufficient internal resources are less likely to be directly impacted by financial institution-targeted macroprudential policies. Fourth, existing empirical evidence, at the aggregate level, indicates that macroprudential policies reduce the overall bank credit in the real economy.

The paper proceeds in the following way. Section 2 presents the data and the selection of the sample. We describe the macroprudential database, explain the construction of the macroprudential policy index, and define our measures of firm-level capital structure. Section 3 explains the methodology and the empirical specifications we use to assess the effects of macroprudential policy on corporate capital structure. Section 4 presents the main empirical results and discusses the study's findings. In contrast, Section 5 sets out the cross-firm heterogeneity of the effects of macroprudential policy on corporate financing decisions. Section 6 provides additional results and robustness checks. Section 7 concludes.

2 Data

Information on macroprudential regulations is from the updated Global Macroprudential Policy Instruments (GMPI) database of Ćehajić and Košak (2022). The integrated Macroprudential Policy (iMaPP) database by Zohair and Adrian (2019)[2], and from the updated versions of Cerutti et al. (2017, 2018). The data on the actual use of macroprudential policies is based on comprehensive IMF surveys on the GMPI database as well as on national sources surveys of country authorities and desk economists, both advanced countries and emerging markets (see further Lim et al. (2011) for the exact coverage and definitions). The GMPI database, as used in Cerutti et al. (2017, 2018) and Apergis et al. (2021, 2022), offers several advantages compared to existing databases such as the IMF database used in Lim et al. (2011), the BIS database used in Kuttner and Shim (2016), the iMaPP database used in Zohair and Adrian (2019), and the MaPPED database used in Meuleman and Vander Vennet (2020). Three main advantages need to be highlighted. First, it provides comprehensive coverage of different macroprudential policies, the instruments, the countries, and the timing for many countries worldwide. These features ensure comparability across measures and countries. Second, it combines detailed information from five existing databases, the recent survey of country authorities conducted by the IMF, and various additional sources, such as authorities' official announcements and IMF country documents. Third, it tracks twelve macroprudential policies over time and the nature of the policy actions (either as borrower-based or financial institutions-based policy).

In this study, we use the macroprudential policies index (MPI), constructed by Cerutti et al. (2017, 2018) and adopted by Gaganis et al. (2020) and Apergis et al. (2021, 2022). MPI indicates how many of the following instruments are applicable in each country and in each year throughout our analysis: (i) Loan-to-Value Ratio Caps (LTV_CAP), (ii) Debt-to-Income Ratio (DTI), (iii) General Countercyclical Capital Buffer/Requirement (CTC), (iv) Leverage Ratio (LEV), (v) Capital Surcharges on Systemically Important Financial Institutions (SIFI), (vi) Time-Varying/Dynamic Loan-Loss Provisioning (DP), (vii) Limits on Interbank Exposures (INTER), (viii) Limits on the fraction of assets held by a limited number of borrowers (CONC), (ix) Limits on Foreign Currency Loans (FC), (x) Limits on Domestic Currency Loans (CG), (xi) FX and Countercyclical Reserve Requirements (RR_REV), (xii) Levy/Tax on Financial Institutions (TAX). Cerutti et al. (2017, 2018) assign one value in each of the twelve instances where a specific policy is in effect and a zero otherwise. The sum of these values creates a composite overall index,

[2]We cross-check our data against the historical data in the MacroPrudential Policies Evaluation Database (MaPPED) and against cross-country databases used by Apergis et al. (2021) and (Ćehajić and Košak, 2022).

theoretically ranging from 0 to 12. Higher MPI scores indicate a stricter macroprudential framework, meaning the regulator applies the twelve instruments.

Based on the transmission mechanisms, the macroprudential instruments are commonly detangled using a two-way classification of measures aimed at (i) financial institutions and (ii) borrowers. Financial institution-targeted Instruments (FTI) consider restrictions on financial institutions' assets, liabilities, or building buffers and include ten instruments: limits on LTV, LEV, FC, CG, INTER, TAX, DP, RR, CTC, SIFI, and CONC. The main objective of this set of instruments is to enhance the financial sector's resilience. Borrower-Targeted Instruments (BTI) refers to the two main instruments that focus on reducing household indebtedness, i.e., loan-to-value and debt-to-income caps, and aim at dampening the credit cycle and leverage.

Firm-level data is obtained from *Thompson Reuters Datastream*. The indicators of institutional quality are drawn from the World Governance Indicators (WGIs),[3] the Fraser Institute,[4] the IMF and Kuncic (2014). As is standard in the literature, we filter out firms in regulated sectors (utility and financial sectors) and those with missing data on critical variables and assets/sales growth greater than 100%. We also filter country countries with missing data on indicators of macroprudential policies. To reduce the effect of outliers, we winsorize the firm-level data at the distribution's upper and lower one percentiles. The final sample comprises 31,336 firms (333,797 firm-year observations) from 69 countries from 2001 to 2017. Data description, sample distribution, and summary statistics and correlations for the variables used are presented in the Online Appendix, in Tables A, B, and C.

3 Methodology

In this study, we follow Apergis et al. (2021) and estimate the following models to examine the impact of macroprudential policies on debt financing:

$$y_{ijkt} = \gamma_0 + \gamma_1 MPI_{kt-1} + \boldsymbol{\theta} \boldsymbol{X}_{ijkt-1} + \eta_i + \eta_t + \xi_{ijkt} \tag{1a}$$

$$y_{ijkt} = \gamma_0 + \gamma_1 MPI_{kt-1} + \gamma_2 HIGH_{ijkt-1} + \gamma_3 MPI_{kt-1} \times HIGH_{ijkt-1} + \boldsymbol{\theta} \boldsymbol{X}_{ijkt-1} + \eta_i + \eta_t + \xi_{ijkt} \tag{1b}$$

where i, j, k, and t index for firm, industry, country, and year, respectively. y is debt financing (total debt to total assets — *TDA*, long-term debt to total assets — *LDA* and short-term debt to total assets — *SDA*), γ_0 is a constant. γ_1, γ_2, γ_3 and $\boldsymbol{\theta}$ are coefficients to be estimated. *MPI* is an indicator of macroprudential policies. For robustness, we detangle between tools targeted at borrowers' leverage and financial positions (BTI) and

[3] https://info.worldbank.org/governance/wgi/

[4] https://www.fraserinstitute.org/economic-freedom/approach.

tools targeted at financial institutions (FTI).[5] *HIGH* is an indicator variable that takes the value of one if a firm is categorized in the upper tercile group based on measures of financial constraints, market competition, and zero otherwise.[6] In order to analyze heterogeneity based on institutional quality, we substitute the *HIGH* variable in Equation (1) with the DEME dummy variable. The DEME dummy variable is time-invariant and equal to one for firms that are based in countries with low levels of institutional quality and financial development and zero for firms based in other countries.[7] $\boldsymbol{X}_{ijkt}$ is a vector of lagged research and development (*RD/TA*), a dummy for firms not reporting R&D (*Non-R&D*), Tobin's *q*, return on assets (*ROA*), firm-size (*Size*), property, plant and equipment (*PPE*), depreciation (*NDTS*), GDP growth (*GDP growth*), inflation (*Inflation*), private credit to GDP (*Private Credit/GDP*) and market capitalization (*Market Cap./GDO*). η_j, η_i and η_t are firm and year-fixed effects, respectively. Finally, ξ_{ijkt} is the error term.

4 Results and Discussion

In this section, we begin by presenting the descriptive statistics, a comprehensive overview of our research. We then reveal the main findings of our estimations, demonstrating the thoroughness of our analysis. Next, we examine the institutional environment's impact and implement robustness tests, ensuring the reliability of our results. For better interpretation, Table 2 shows the average marginal effect for different values of the MPI index. We then analyze the heterogeneous impacts of MPI using firm-level financial constraints and market competition (Table 3), further solidifying our findings. Finally, we assess the impact of institutional quality and economic development (Table 4), providing a complete picture of our research.

4.1 Descriptive statistics

Table 1 reports the summary statistics: sample size (N), mean (Mean), standard deviation (StdDev), maximum (Max), third quartile (Q3), median (Median), first quartile

[5] As macroprudential tools vary significantly across countries, we use aggregate indicators.

[6] To evaluate the heterogeneous effects of MPI on financing decisions, we utilize four indices - Herfindahl-Hirschman Index (HHI) based on total sales (HHI-Sales) and total assets (HHI-Assets) and two financial constraint indices - the WW Index and KZ Index. We categorize firms into upper or lower tercile groups based on each index in each country-year combination. Firms falling within the upper tercile face lower levels of competition or higher levels of financial constraints. In comparison, those in the lower tercile are characterized by higher levels of competition or lower levels of financial constraints. To simplify our analysis, we introduce a dummy variable, HIGH, which takes on the value of one if a firm is subject to higher levels of financial constraints or competition and zero otherwise.

[7] Countries with institutional settings considered less developed (as indicated by the DEME dummy) are those ranking below the median of the following indicators: IQ, KOFGI, EFI, FDI, FII, and FMI. According to the Morgan Stanley Capital International Market Framework, countries with high institutional constraints are designated as emerging and developing markets (as proxied by the DEME dummy). We cannot estimate the direct effect of the DEME dummy variable since it is measured at the country level, time-invariant, and subsumed in the firm fixed effects.

(Q1), and minimum (Min) for our main regression variables used in the study, over the entire sample period. This comprehensive stylized fact information ensures a thorough understanding of the data. More information about the specific definitions of these variables is provided in Appendix A. Panel A of Table 1 presents the firm-level debt measures and other firm-level characteristics over the sample period. The average TDA and LDA (SDA) ratios are 0.21 and 0.12 (0.09). As expected, there is heterogeneity across firms that is evident by the standard deviation of 0.17 and 0.13 (0.11), respectively, and the range of the value of the TDA (LDA and SDA) is from 0 (0 and 0) to 0.92 (0.83 and 0.86). These values also suggest that firms of our sample are moderately indebted, which frees their available income from paying off debt and offers them a higher borrowing capacity. We provide summary statistics for the macroprudential policy instruments in Panel B of Table 1. The average country in the sample has around three macroprudential policies in place at a given point in time; however, we observe values across almost the entire theoretical range of the MPI index, that is, from one (e.g., Cote d'Ivoire, Kenya, and New Zealand) to ten (e.g., China). The breakdown shows that the average country in the sample has around two FTI instruments (ranging from zero to eight) and around one of the two BTI instruments. We also provide descriptive statistics for the firm-level characteristics we use to control corporate capital structure systemic risk (see Panel C). The mean of the natural logarithm of total assets (Size) is 15.12, and the standard deviation is 9.67 (which corresponds to about $3.69 million and $0.16 million, respectively), exhibiting considerable heterogeneity across firm size. We observe that an average firm in our sample has R&D to total assets of 0.01, a non-R&D value of 0.61, a profit-generating potential (Tobin's Q) of 1.05, a return on assets ratio (ROA) of 0.07, tangibility ratio (PPE) of 0.31 and a depreciation to total assets ratio (NDTS) of 0.040. These numbers are comparable to those in previous studies in the literature (Ćehajić and Košak, 2022; Yang and Suh, 2023, see). Panel D of Table 1 reports summary statistics of the other country-level properties. Panels E and F present the summary statistics for firm- and country-level conditioning variables, demonstrating the thoroughness of our research.

Table 1 here

Table 2 presents the pairwise correlation coefficients. These coefficients provide insights into the relationships between the variables. For instance, TDA and LDA (SDA) are positively correlated at 0.77 (0.62), indicating a strong relationship between these debt measures. On the other hand, LDA and SDA are negatively correlated at -0.02, suggesting a weak inverse relationship. These debt measures also show different correlations with our three macroprudential policy indicators. TDA shows a positive correlation with MPI, FTI, and BTI (0.03, 0.02,0.03), whereas LDA (SDA) is negatively (positively) correlated with MPI and BTI and positively (negatively) correlated with FTI. However, the magnitude of the correlation coefficients shows that the three debt indicators capture

different aspects of firm capital structure.

Table 2 here

4.2 The effect macroprudential policies on financing decisions

In this section, we present the main findings of our estimations and examine the explanatory power of traditional demand-side determinants, macroeconomic factors, and supply-side factors. Table 3 reports our baseline results of the impact of macroprudential tools (MPI) on corporate firm's debt, with each column corresponding to a different debt measure: LDA and SDA.

Table 3 presents our baseline results for Eq. (1). Columns in Panel A show the results without country-level control, while Panel B reports the results, including both firm-level and country-level controls. Looking at our key variables, we find that the coefficient of the MPI index, the aggregate macroprudential index, is positive and statistically significant at 1% level for TDA (LDA), with a coefficient of -0.224 (-0.330) and p-value of 0.044 (0.032) in Columns (4 and 5), suggesting that tighter macroprudential policy is associated with significantly lower corporate debt funding, specifically long-term debt level. The baseline regression results also highlight that the aggregated macroprudential index is positively associated and statistically significant at 1% level with the SDA, indicating that tighter macroprudential policy enhances corporate short-term funding.

Table 3 here

Table 3 shows that the coefficient of MPI is negative for total and long-term debt but positive for short-term debt, all being significant at the 1% level. In Table 3, estimated marginal effects indicate that the average marginal effect of MPI on TDA (SDA) ranges between 0.219 (0.088) when the MPI is zero to 0.029 (0.239) when the MPI is at the maximum of its range in our sample (i.e., 10). Interestingly, the marginal effect on LDA enters negative and significant when the MPI equals or exceeds five tools. These results suggest that tightening macroprudential tools reduces corporate total debt, especially long-term, but increases short-term debt. In other words, the tightness of MPI shortens the firm's debt maturity structure. This is plausible because shortening the debt tenor helps banks manage their risk exposure during tight MPI periods. In contrast, it has adverse implications on firms as this may result in higher installments due to the shorter repayment period and refinancing management and limit their ability to undertake long-term investments. These findings are consistent with Ayyagari et al. (2018), who argue that firms' long-term financing is negatively associated with macroprudential policies, and with Kang et al. (2021), who show that macroprudential policy tightening is related to the change in bank borrowing policies and negatively associated with firms' short-term financing.

To provide a better interpretation of this finding (Table 3), Table 4 shows the average marginal effect of the MPI on TDA (Column 1), LDA (Column 2), and SDA (Column 3), for different values of the macroprudential policy index. We find that the average marginal effect on bank TDA ranges between 0.2195 when the MPI is 0 and -0.0205 when the MPI policy rate is at the maximum of its range in our sample (i.e. 10). Thus, the relationship between macroprudential policies and corporate total debt can change depending on the macroprudential policies. More investigations of such partial derivatives indicate that the average marginal effect of the MPI on TDA is insignificant for MPI values in the range of 8 to 10 and positive and statistically significant after that. This indicates that the tightening (vis-à-vis loosening) of macroprudential policies decreases corporate debt funding. We reach pretty similar conclusions in the case of the LDA. Yet, further inspection of the partial derivatives indicates that the average marginal effect of the MPI on LDA is positive and statistically significant for MPI ranging between 0 and 3; such effect reverts and becomes hostile and statistically significant for MPI ranging between 5 and 10. Turning to the SDA, the average impact of MPI on short-term debt is positive and statistically significant for all MPI values, without exception. Contrary to TDA and LDA, tightening (vis-à-vis loosening) of macroprudential policies leads corporations to increase short-term financing.

Table 4 here

4.3 Supply-based versus demand-based macroprudential policy instruments

In this section, we estimate the baseline specification while differentiating between the effect of supply-based vis-à-vis demand-based macroprudential policy measures. To do so, we follow Cerutti et al. (2017) and Apergis et al. (2022) and disaggregate the MPI index into two sub-indices, namely the Borrower-Targeted Instruments index (BTI, supply-based measures) and the financial institution-Targeted Instruments (FTI, demand-based measures). BTI considers the first two policies of the MPI index (i.e., LTV-CAP, DTI), while FTI considers the remaining ten other macroprudential instruments. The results in Table 5 show that our findings in Section 4.2 relative to TDA and LDA are driven mainly by the FTI that has the same sign and significance as MPI. In contrast, results related to SDA are driven by BTI, which is positive and significant. Thus, regulations imposing tighter policies related to capital, lending, levy/tax, foreign exchange, and counter-cyclical reserve requirements on financial institutions hinder the corporate external funding capacity and reduce corporate total debt, notably long-tenor debt. Yet, regulations that limit household indebtedness and loan-to-value ratio caps appear to boost corporate short-term tenor debts.

Table 5 here

4.4 The effect of Fed's easing and tightening

Table 6 reports the effects of US Fed's policy tightening and easing actions. We use two dummies of the US tightening policy based on the FED's easing and tightening cycles. TIGHT2004 is a dummy equal to 1 in the 2002-2004 period during the first FED's tightening, and TIGHT2018 is a dummy equal to 1 in the 2014-2018 period during the second FED's tightening. This issue is fundamentally important in emerging market economics, suggested by (Aizenman et al., 2024), and they indicate that the determinants of resilience differ depending on the tightening vs. easing cycle. The interaction coefficients of MPI and TIGHT2018 are positive and significant for TDA and LDA (Columns 4 and 5). This suggests that the negative effect of Fed's tightening on total debt and long-term debt is significantly reduced (inversely related) during the Fed's tightening, specifically during the Taper Tantrum period of 2014-20018. However, the Fed's tightening cycles do not statistically affect corporate short-term funding. These findings confirm that the spillover effect of Fed's policy exists and suggest that tighter policy is associated with better conditions to access credit and credit growth and, thus, more effective in enhancing the corporates' long-term financing and total debts.These key findings provide a robust understanding of the spillover effect of Fed's policy on corporate funding structure.

Companies' total and long-term debt (the debt of US firms) are significantly less affected by macroprudential policy tightening compared to corporates' debt (other than US corporations), which is more negatively affected by macroprudential policy tightening.

Table 6 here

4.5 Subsampling analysis: industrial vs non-industrial & developed vs developing countries

In this subsection, we conduct further heterogeneity analysis of macroprudential policy across corporation's types and country of operation and re-estimate the specification of Table 3. For that, we gauge different subsampling using sub-samples of industrial (capital intensive) and non-industrial (non-capital intensive) corporates and differentiating between those operating in developed and emerging countries.

Macroprudential policy's effect on corporate funding structure may differ between industrial and non-industrial corporate. In Panel A of 7, we first report results for the aggregated sample, in which we only detangle between industrial and non-industrial corporate. Overall, we find that macroprudential policy has a significant and negative (positive) impact on LDA (SDA) for industrial corporate, the relative magnitudes of these estimated coefficients is slightly larger for LDA (vs SDA). Most strikingly in that such effect enters also negative and statistically significant on TDA for non-industrial corporate,

while the relative magnitudes of these estimated coefficients is much larger for LDA (vs SDA), which drivers the effect on TDA. Moreover, the results in Panel B of Table 7 show that in the case of industrial cooperates operating in developed countries, macroprudential policy has a significant and positive impact on corporates' long-term funding. In contrast, it has a significant and negative effect on short-term financing. However, in this specification, such an effect is not statistically significant on total debt. In the case of the non-industrial corporate subsample (see Panel C of Table 7), the results remain consistent with the findings of the baseline analysis. Taken together, our findings show that the tightening of macroprudential policy restricts more non-industrial corporates' long-term access to finance, concerning industrial corporates, and enhances more industrial corporates' short-term access to finance compared with respect to non-industrial peers. These implications are crucial for understanding the dynamics of corporate funding structure in the context of macroprudential policy.[8]

Table 7 here

5 Heterogeneity in the effects of macroprudential policy on corporate financing decisions

Now, we investigate whether and how heterogeneous corporate characteristics and country-level institutional traits differentiate the effects of macroprudential policies.

5.1 Firm-specific characteristics

In Table 8, we present the result of Eq. (1b), where we investigate whether and how heterogeneous corporate characteristics differentiate the effect of macroprudential policy on corporate funding. We use two firm-level characteristics: (1) financial constraints, defined using two indicators (i) WW index (Whited and Wu, 2006) and (ii) KZ index (Kaplan and Zingales, 1997); and (2) Product market competition, defined using two measures (i) the Herfindahl-Hirschman Index based on total sales (HHI-Sales) and (ii) the Herfindahl-Hirschman Index based on total assets (HHI-Assets). At this point, it should be remembered that higher figures of the WW index and KZ index correspond to higher financial constraints, whereas in the case of HHI-Sales and HHI-Assets, lower figures indicate higher product market competition.

Table 8 estimates the interaction effects of these firm-level characteristics and macroprudential policy. Models (1) to (6) report results of the impact of firm financial con-

[8]Further details are presented in Figure 1. This figure plots the coefficients of the cross-sectional effects of macroprudential policies, i.e. MPI, BTI and FTI, on corporate financing decisions across the six regions in the world: Africa, Asia, Europe, North America, Oceania and South America.

straints, while Models (7) to (12) report results for the effect of product market competition. In the interest of brevity, we report the results of the net policy effect heterogeneity that interacted with firm-level characteristics and focus on the factors that have consistent and significant results in both individual and joint specifications.

Results show that all these factors are important. The interaction terms MPI×HIGH are mostly significantly negative for TDA and LDA, indicating that in high financial constraints and product market competition and tighter macroprudential policies reduce access to debt, more specifically long-term debt.

We also find that the interaction term coefficient (MPI×HIGH) is significantly positive for SDA (Column 3), suggesting that macroprudential tightening continues to exert a significant positive effect on short-term debt in the presence of high financial constraints. Whereas interactions term enters significantly negative for SDA (Column 12), this reveals that the positive effect of macroprudential tightening on short-term debt weakens at higher financial constraints.

Table 8 here

5.2 Do institutions matter?

We next proceed to the estimations of the heterogeneity of macroprudential instruments' effect on corporate funding depending on the institutional quality and the financial development and present our findings for various model specifications in Table 9. For brevity of the analysis, we only report the results of net policy effect heterogeneity interacted with institutional characteristics. In this case, we use three country institutional quality characteristics in Panel A: (i) IQ, (ii) KOFGI, (iii) KUIQ, and (iv) FDI. Here, we postulate that institutional settings improve the implementation capacity of macroprudential policies and their efficacy in improving financial and real economic conditions and thus influencing corporates' access to finance Ćehajić and Košak (2022).

Results in Panel A of Table 9 show that all the intersection terms between MPI and institutional quality for TSA and LDA enter negative and significant at the 1% level. In contrast, intersection terms for SDA are not statistically significant. In Panel B of Table 9, we also find that the interaction terms between the MPI and financial development and institutional quality are negative and significant. More interestingly, such interaction terms are positive and significant for SDA. This suggests that the negative individual effect of stringent macroprudential instruments on both corporate total debt and long-term debt subdues at higher levels of institutional quality and financial development, whereas the positive individual effect of macroprudential policies on corporate short-term debts strengthens if corporates are operating in financial developed countries.

Table 9 here

We go further with this analysis and employ the quantile regression approach to explore the heterogeneous effects of macroprudential policy on corporates' financing decisions under different institutional quality and financial development aspects. We adopt the unconditional quantile regression (QR) approach proposed by Kang et al. (2021) to identify the varying force of macroprudential policies along with the quantiles of corporates' characteristics and country-level institutional aspects. We report our estimation results in Table 10.

Table 10 here

These results suggest that tightening macroprudential tools significantly reduces corporate total debt in countries with high institutional quality (KUIQ). In contrast, such reduction is considerably higher in countries with low (vs. higher) financial development. Findings show that tightening of macroprudential tools significantly affects corporate long-term debt regardless of the country's institutional quality. In contrast, reduction in corporate long-term debt is considerably higher in countries with low (vs. higher) financial development. However, the tightening of macroprudential tools significantly causes corporate short-term debt in countries with low institutional quality and high financial development and significantly corporate long-term in countries in countries with high institutional quality (IQ, KUI) and high financial development (FDI).

Overall, the quantile regression results suggest a non-uniform pattern for the impact of macroprudential restrictions conditional on the level of corporate financing decision, partially in line with Apergis et al. (2021) who find that institutional settings condition the efficacy of macroprudential policies.

6 Additional identification and robustness checks?

To check the robustness of the empirical findings, we perform a number of tests to provide greater confidence in our base results and to rule out potential threats to identification and alternative explanations.

6.1 Alternative specifications

We employ four alternative regression specifications. Results are presented in Appendix C. First, we follow alternative estimation methods, including Tobit, weighted, and aggregated regressions. For the weighted regressions, the weights are the reciprocal of the number of observations for a country (WLS1) and the reciprocal of the square root of the number of observations for a country (WLS2). For the aggregated regressions,

the observations are aggregated at the industry-country-year level. The sample consists of 14,363 listed non-financial and non-utility firms (148,790 firm-year observations) from 23 countries drawn from Thomson Reuters Datastream from 2003—2012. Applying the Tobit regression to TDA, LDA SDA, and TDA while also controlling for year and firm fixed effects. Second, we follow weighted least squares (WLS) estimations to control for country representation in the sample's total observations while also controlling for year-fixed effects. Weights are defined using two different methods: (i) the reciprocal of the number of observations for a country (WLS1) and (ii) the reciprocal of the square root of the number of observations for a country. Third, we use the aggregated regressions; the observations are aggregated at the industry-country-year level.[9]

Appendix C here

6.2 Alternative heterogeneous effects of macroprudential polices: firm characteristics

Next, to provide confidence in the results of Appendix D, we evaluate the heterogeneity of the macroprudential policy impact on corporate funding using alternative firm-level characteristics and country-level traits. In Appendix D, we consider firms being in the upper versus lower quartile, based on each index in each country-year combination based on the HHI-Sales, the HHI-Assets, the WW Index, and the KZ Index. Under these specifications, all coefficient estimates remain practically unchanged and thus consistent with our findings in Appendix D. The results support the negative effect of macroprudential on corporates' total debt and long-term debt in the presence of high financial constraints and product market competition. In contrast, such a negative effect on corporates' short-term debt weakens at higher financial constraints.

Appendix D here

6.3 Alternative heterogeneous effects of macroprudential polices: institutional settings

The results confirm that the negative effect of macroprudential policy tightening on TDA is related to corporates located in countries with high institutional quality (IQ1; EFI and KUIQ) and financial development (FDI and FMI). The negative effect of the macroprudential policy tightening on LDA is significantly predominant in countries with high institutional quality and financial development compared to firms located in countries with low institutional quality and financial development. The positive effect of the macroprudential policy tightening on SDA is significantly predominant in countries with low institutional quality and financial development compared to firms located in countries with high institutional quality and financial development. We have also considered the ease of doing business as an alternative proxy of institutional quality and found consistent

[9]Our results are robust to controlling for financial openness using the Chinn-Ito Index (KAOPEN) (see Chinn and Ito, 2006) and using the Ito-Kawai Index (ITO-KAWAI) (see Ito and Kawai, 2024). The details are available on the online Appendix A.1.

results.The details results are presented in Appendix F.

Appendix E here

Appendix F here

6.4 Does inflation targeting matter?

Macroprudential policy, especially its tools oriented to financial institutions such as the capital banks are required to hold, may be in conflict with the objectives of monetary policy, including inflation targeting (see Garcia Revelo and Levieuge, 2022). A body of literature identified the complementary role that monetary and macroprudential policies can play (e.g., Gadea Rivas et al., 2020). Other studies discussed the interaction between monetary policy and macroprudential regulations (e.g., De Paoli and Paustian, 2017) and argue that macroprudential policies are more effective compared to monetary policies, especially in developed countries (Apergis et al., 2021). Against this background, to account whether inflation targeting regime reinforces or dilutes the effects of macroprudential policy on corporate capital structure, Appendix G reports coefficient estimates of the model in Eq. (1b) by categorizing countries with inflation and non-inflation targeting regimes. Results shows that in non-inflation targeting countries, tightening macroprudential policies renders access to funding difficult (TDA), specifically it reduces long-term corporate funding (LDA), but not SDA. However, in inflation targeting countries, this tightening increase corporate ability to access to finance, specially it increases corporate short-term debt (SDA), but not LDA.[10]

Appendix G here

7 Conclusion

Our research uncovers that a strict macroprudential policy significantly alters the term structure of firms' debt, particularly affecting long-term debt. This study examines the heterogeneous effects of macroprudential policies on financing decisions. The tighter macroprudential policies tend to limit corporate debt but not short-term debt. We find evidence of differential effects across firms with different financial and market constraints and show that such effects are tied to the country's institutional design quality. Our results point to a trade-off in the effectiveness of macroprudential policy and its unintended adverse effects. These findings underscore the importance of institutional factors in determining the effectiveness of macroprudential policies.

[10]Based on the IMF's Annual Report on Exchange Arrangements and Exchange Restrictions (AREAER), we construct a dummy variable for the countries that have implemented the inflation targeting regime (IT dummy) during the period considered in accordance with the IMF's classification. The dummy variable takes the value of 1 if the country has the respective regime during the year considered, and zero otherwise. The monetary regime classification is based on the IMF specification.

Our evidence indicates that macroeconomic and institutional conditions are associated with corporate debt financing, particularly long-term debt and that determinants of debt financing differ among short- and long-term debt. Macroprudential policies have heterogeneous effects, with a more significant impact observed among firms facing binding credit constraints and high market competition and those operating in countries with less developed institutions. Our specific findings are broadly consistent and robust with alternative estimation techniques, alternative measures of the heterogeneous impact (financial constraints and product market competition) of macroprudential policies, developed vs developing countries, the cost of doing business, financial openness and economic intuition, which are all important determinants of debt financing.

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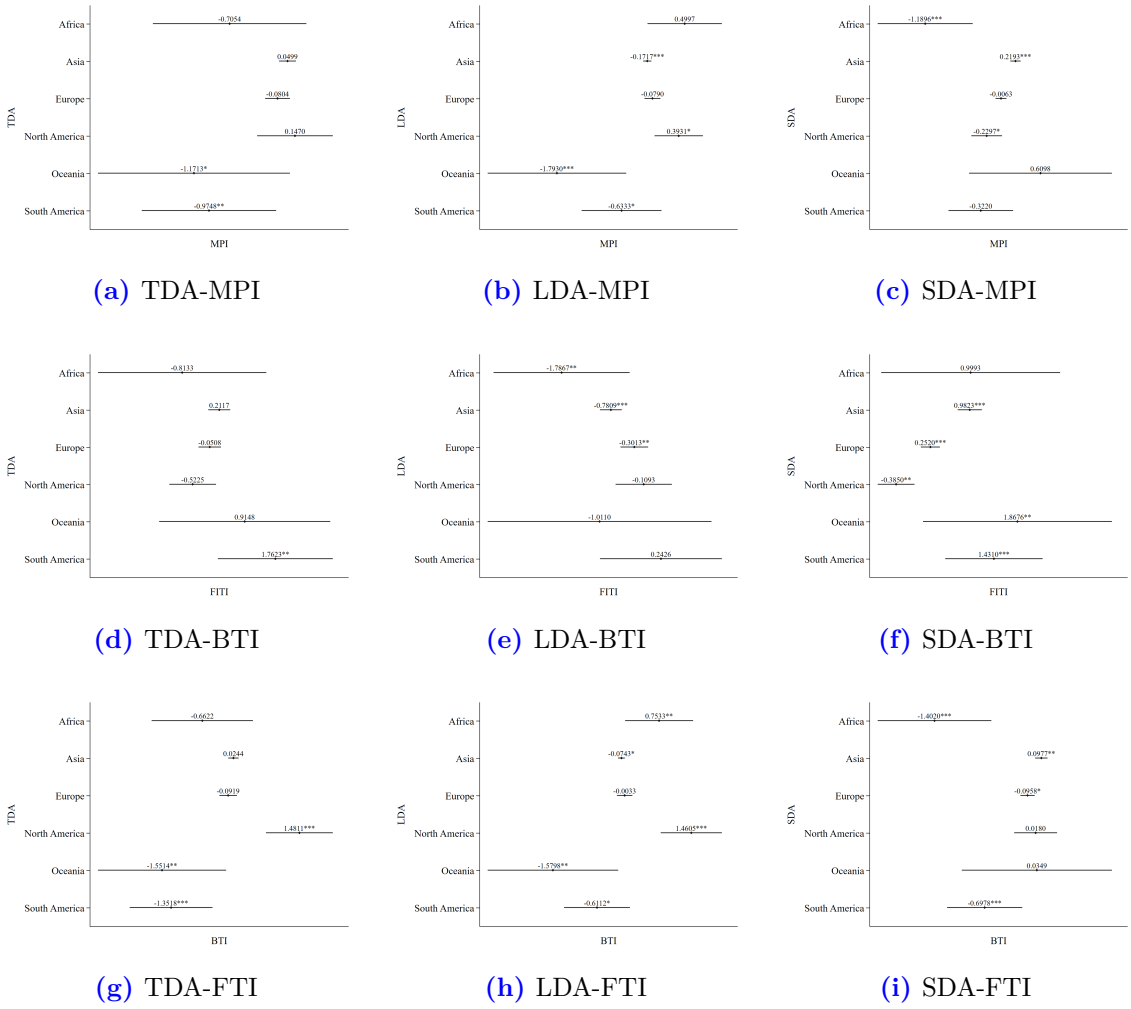

(a) TDA-MPI **(b)** LDA-MPI **(c)** SDA-MPI

(d) TDA-BTI **(e)** LDA-BTI **(f)** SDA-BTI

(g) TDA-FTI **(h)** LDA-FTI **(i)** SDA-FTI

Figure 1 The cross-sectional effects of macroprudential policies on corporate financing decisions
The figure plots the coefficients for MPI, BTI and FTI. These are estimated from Equation (1) for subsamples that exclude countries in the six continents. The sample consists of 14,363 listed non-financial and non-utility firms (148,790 firm-year observations) from 23 countries drawn from *Thomson Reuters Datastream* over the period 2003—2012. A detailed description of variables is provided in Appendix A. ***, **, * indicate significance at the one, five, and ten percent levels, respectively.

Table 1 Summary statistics

#	Variables	N	Mean	Std.Dev	Min	p25	Median	p75	Max	Trend
Pane A: Dependent variables										
(1)	TDA	333,797	0.214	0.171	0.000	0.060	0.197	0.331	0.920	-0.034***
(2)	LDA	333,797	0.121	0.133	0.000	0.004	0.080	0.198	0.831	-0.051***
(3)	SDA	333,797	0.092	0.107	0.000	0.010	0.054	0.136	0.863	0.018***
Pane B: Independent variables										
(4)	MPI	333,797	0.024	0.017	0.000	0.010	0.020	0.030	0.100	0.175***
(5)	FTI	333,797	0.018	0.014	0.000	0.010	0.020	0.030	0.080	0.128***
(6)	BTI	333,797	0.006	0.008	0.000	0.000	0.000	0.010	0.020	0.047***
Pane C: Firm-level control variables										
(7)	RD/TA	333,797	0.013	0.033	0.000	0.000	0.000	0.009	0.455	-0.016***
(8)	Non-R&D	333,797	0.606	0.489	0.000	0.000	1.000	1.000	1.000	-0.349***
(9)	Tobin'sq	333,797	1.492	1.102	0.050	0.895	1.159	1.679	29.124	0.436***
(10)	ROA	333,797	0.065	0.089	-0.999	0.024	0.060	0.106	0.915	-0.048***
(11)	Size	333,797	15.122	2.968	6.756	13.022	15.003	17.134	26.276	7.328***
(12)	PPE	333,797	0.309	0.215	0.000	0.132	0.275	0.450	0.993	-0.311***
(13)	NDTS	333,797	0.040	0.029	0.000	0.020	0.034	0.051	0.549	-0.059***
Pane D: Country-level control variables										
(14)	GDP Growth	333,797	0.030	0.031	-0.148	0.014	0.027	0.047	0.262	-0.028***
(15)	Inflation	333,797	0.024	0.038	-0.260	0.004	0.019	0.032	0.529	-0.010***
(16)	Private Credit/GDP	333,797	1.254	0.490	0.002	0.951	1.289	1.626	2.553	0.280***
(17)	Market Cap./GDP	333,797	1.360	2.084	0.000	0.543	0.836	1.245	12.545	3.522***
Pane E: Firm-level condition variables										
(18)	WW Index	333,797	-0.712	0.143	-1.233	-0.811	-0.713	-0.613	-0.259	-0.364***
(19)	KZ Index	308,089	-0.012	0.268	-98.550	-0.007	-0.002	0.000	0.030	-0.076***
(20)	HHI-Sales	331,908	0.061	0.070	0.010	0.024	0.037	0.070	0.992	0.133***
(21)	HHI-Assets	331,908	0.064	0.070	0.009	0.026	0.041	0.076	0.964	0.110***
Pane F: Conutry-level condition variables										
(22)	IQ	333,797	2.284	1.840	-3.395	0.998	3.071	3.612	4.871	-5.656***
(23)	KOFGI	333,797	75.249	9.309	45.920	67.268	77.071	82.503	91.070	19.247***
(24)	KUIQ	333,797	1.681	1.285	-1.989	0.787	2.239	2.577	3.453	-4.297***
(25)	FDI	333,797	0.710	0.171	0.113	0.606	0.755	0.842	1.000	-0.064***
(26)	MSCI	333,797	0.654	0.476	0.000	0.000	1.000	1.000	1.000	-1.415***

The table presents the summary statistics for the variables used. The sample consists of 14,363 listed non-financial and non-utility firms (148,790 firm-year observations) from 23 countries drawn from *Thomson Reuters Datastream* over the period 2003—2012. A detailed description of variables is provided in Appendix A. ***, **, * indicate significance at the one, five, and ten percent levels, respectively.

Table 2 Pairwise correlations

#	Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
(1)	TDA	1.0000										
(2)	LDA	0.7708***	1.0000									
(3)	SDA	0.6226***	-0.0153***	1.0000								
(4)	MPI	0.0267***	-0.0266***	0.0757***	1.0000							
(5)	FTI	0.0178***	0.0348***	-0.0149***	0.8936***	1.0000						
(6)	BTI	0.0270***	-0.1199***	0.1922***	0.6043***	0.1823***	1.0000					
(7)	RD/TA	-0.1631***	-0.1069***	-0.1255***	-0.0174***	0.0511***	-0.1287***	1.0000				
(8)	Non-R&D	0.0879***	0.0864***	0.0306***	-0.0004	-0.0362***	0.0636***	-0.4808***	1.0000			
(9)	Tobin'sq	-0.1558***	-0.0853***	-0.1410***	0.1319***	0.1573***	0.0096***	0.2096***	-0.0864***	1.0000		
(10)	ROA	-0.1422***	-0.0310***	-0.1845***	-0.0451***	-0.0095***	-0.0819***	-0.0891***	0.0209***	0.4056***	1.0000	
(11)	Size	0.1945***	0.1453***	0.1298***	-0.0098***	-0.0730***	0.1081***	-0.1176***	-0.1625***	-0.0934***	0.0989***	1.0000
(12)	PPE	0.2885***	0.2935***	0.0934***	-0.0030	-0.0386***	0.0620***	-0.2242***	0.1653***	-0.1302***	-0.0005	0.1539***
(13)	NDTS	0.0738***	0.1522***	-0.0710***	-0.0726***	-0.0287***	-0.1079***	0.0823***	0.0030	0.0489***	-0.0267***	-0.0864***
(14)	GDP Growth	0.0169***	-0.0944***	0.1442***	0.2560***	0.1127***	0.3607***	-0.1174***	0.1238***	0.1137***	0.0476***	0.0192***
(15)	Inflation	0.0409***	0.0225***	0.0374***	0.0573***	0.0665***	0.0075***	-0.1020***	0.1768***	0.0314***	0.1314***	0.0298***
(16)	Private Credit/GDP	-0.0618***	-0.0324***	-0.0592***	-0.0207***	-0.0290***	0.0060***	0.1473***	-0.1977***	0.0180***	-0.0860***	-0.0141***
(17)	Market Cap./GDP	-0.0666***	-0.0708***	-0.0182***	0.0952***	-0.1118***	0.4068***	-0.0363***	0.0434***	-0.0141***	-0.0358***	-0.0444***
(18)	WW Index	-0.1483***	-0.1189***	-0.0899***	0.0245***	0.0785***	-0.0857***	0.1315***	0.1647***	0.0761***	-0.1683***	-0.9710***
(19)	KZ Index	0.0198***	0.0129***	0.0154***	-0.0038*	-0.0039*	-0.0013	-0.0054**	-0.0078***	-0.0288***	-0.0285***	0.0158***
(20)	HHI-Sales	-0.0037*	-0.0085***	0.0057**	0.1035***	0.0309***	0.1718***	-0.0342***	0.0677***	0.0025	0.0166***	-0.0396***
(21)	HHI-Assets	-0.0061***	-0.0029	-0.0054**	0.0807***	0.0251***	0.1322***	-0.0164***	0.0458***	-0.0088***	0.0209***	-0.0340***
(22)	IQ	-0.0816***	0.0788***	-0.2276***	-0.2983***	-0.2409***	-0.2258***	0.1933***	-0.1872***	-0.0310***	-0.0501***	-0.2202***
(23)	KOFGI	-0.0438***	0.1318***	-0.2330***	-0.1924***	-0.0804***	-0.2787***	0.1974***	-0.1237***	0.0342***	-0.0252***	-0.3521***
(24)	KUIQ	-0.0807***	0.1000***	-0.2525***	-0.3338***	-0.2479***	-0.2912***	0.2039***	-0.1931***	-0.0251***	-0.0269***	-0.2053***
(25)	FDI	-0.0644***	0.0444***	-0.1584***	-0.1204***	-0.0537***	-0.1683***	0.2100***	-0.2519***	0.0033	-0.0898***	-0.1556***
(26)	MSCI	-0.0739***	0.0919***	-0.2319***	-0.2824***	-0.1437***	-0.3634***	0.2021***	-0.1761***	-0.0019	-0.0419***	-0.2206***

The table presents the pairwise correlations. The sample consists of 14,363 listed non-financial and non-utility firms (148,790 firm-year observations) from 23 countries drawn from *Thomson Reuters Datastream* over the period 2003—2012. A detailed description of variables is provided in Appendix A. ***, **, * indicate significance at the one, five, and ten percent levels, respectively.

Table 2 Pairwise correlations (continued)

#	Variables	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)
(12)	PPE	1.0000										
(13)	NDTS	0.3373***	1.0000									
(14)	GDP Growth	0.0820***	-0.0781***	1.0000								
(15)	Inflation	0.1138***	0.0257***	0.3053***	1.0000							
(16)	Private Credit/GDP	-0.1369***	-0.0682***	-0.2745***	-0.4700***	1.0000						
(17)	Market Cap./GDP	-0.0668***	-0.0758***	0.0749***	-0.0745***	0.3518***	1.0000					
(18)	WW Index	-0.1491***	0.0730***	0.0144***	-0.0020	0.0171***	0.0464***	1.0000				
(19)	KZ Index	0.0481***	0.0162***	-0.0001	0.0021	0.0037*	-0.0064***	-0.0108***	1.0000			
(20)	HHI-Sales	0.0741***	0.0637***	0.0972***	0.1476***	-0.2338***	0.0179***	0.0417***	-0.0121***	1.0000		
(21)	HHI-Assets	0.0478***	0.0657***	0.0712***	0.1320***	-0.2046***	-0.0028	0.0370***	-0.0099***	0.8988***	1.0000	
(22)	IQ	-0.1769***	0.0825***	-0.4288***	-0.4903***	0.4875***	0.2432***	0.1875***	-0.0066***	-0.1408***	-0.0924***	1.0000
(23)	KOFGI	-0.1752***	0.1271***	-0.3888***	-0.3037***	0.1672***	-0.1476***	0.3138***	-0.0099***	-0.0765***	-0.0343***	0.7319***
(24)	KUIQ	-0.1685***	0.0997***	-0.4781***	-0.4547***	0.4708***	0.2130***	0.1752***	-0.0071***	-0.1277***	-0.0779***	0.9718***
(25)	FDI	-0.2012***	0.0206***	-0.3952***	-0.5133***	0.7038***	0.1435***	0.1420***	-0.0020	-0.2138***	-0.1670***	0.7668***
(26)	MSCI	-0.2068***	0.0614***	-0.4479***	-0.4832***	0.5236***	0.2173***	0.1882***	-0.0095***	-0.2143***	-0.1659***	0.8669***

#	Variables	(23)	(24)	(25)	(26)
(23)	KOFGI	1.0000			
(24)	KUIQ	0.7112***	1.0000		
(25)	FDI	0.6295***	0.7533***	1.0000	
(26)	MSCI	0.5970***	0.8556***	0.7259***	1.0000

The table presents the pairwise correlations. The sample consists of 14,363 listed non-financial and non-utility firms (148,790 firm-year observations) from 23 countries drawn from *Thomson Reuters Datastream* over the period 2003—2012. A detailed description of variables is provided in Appendix A. ***, **, * indicate significance at the one, five, and ten percent levels, respectively.

Table 3 The impact of macroprudential policies on debt financing

	Panel A			Panel B		
Dependent Variables	TDA	LDA	SDA	TDA	LDA	SDA
Independent Variables	(1)	(2)	(3)	(4)	(5)	(6)
MPI	-0.1901***	-0.3415***	0.1507***	-0.2242***	-0.3295***	0.1043***
	(0.0435)	(0.0316)	(0.0293)	(0.0435)	(0.0321)	(0.0292)
RD/TA	-0.0134	-0.0307*	0.0212*	-0.0177	-0.0302*	0.0163
	(0.0233)	(0.0176)	(0.0123)	(0.0233)	(0.0177)	(0.0123)
Non-R&D	0.0036***	0.0005	0.0033***	0.0033***	0.0005	0.0029***
	(0.0013)	(0.0010)	(0.0009)	(0.0013)	(0.0010)	(0.0009)
Tobin's q	-0.0020***	-0.0024***	0.0003	-0.0020***	-0.0024***	0.0002
	(0.0004)	(0.0003)	(0.0002)	(0.0004)	(0.0003)	(0.0002)
ROA	-0.2275***	-0.1023***	-0.1212***	-0.2266***	-0.1028***	-0.1198***
	(0.0051)	(0.0038)	(0.0034)	(0.0051)	(0.0038)	(0.0033)
Size	0.0545***	0.0337***	0.0207***	0.0537***	0.0341***	0.0196***
	(0.0012)	(0.0009)	(0.0008)	(0.0012)	(0.0009)	(0.0008)
PPE	0.1313***	0.0976***	0.0333***	0.1312***	0.0971***	0.0337***
	(0.0049)	(0.0039)	(0.0028)	(0.0049)	(0.0039)	(0.0028)
NDTS	-0.1245***	-0.1405***	0.0167	-0.1192***	-0.1397***	0.0211*
	(0.0193)	(0.0155)	(0.0124)	(0.0193)	(0.0155)	(0.0124)
GDP Growth				-0.0136	-0.0168*	0.0042
				(0.0121)	(0.0100)	(0.0094)
Inflation				0.0250***	0.0348***	-0.0097
				(0.0091)	(0.0069)	(0.0061)
Private Credit/GDP				0.0133***	-0.0010	0.0144***
				(0.0022)	(0.0017)	(0.0014)
Market Cap./GDP				-0.0011***	-0.0008***	-0.0003
				(0.0004)	(0.0003)	(0.0003)
Constant	-0.6250***	-0.3937***	-0.2310***	-0.6275***	-0.3976***	-0.2296***
	(0.0182)	(0.0136)	(0.0120)	(0.0182)	(0.0137)	(0.0120)
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
# of observations	333,797	333,797	333,797	333,797	333,797	333,797
Adj.R^2	0.785	0.746	0.706	0.785	0.746	0.706

The table presents the results estimating Equation (1a). Panel A presents results for models with firm-level control variables, while Panel B presents results for models with firm-and country-level control variables. Standard errors are reported in parentheses below their coefficient estimates and adjusted for both heteroskedasticity and within correlation clustered at the firm-level. ***, **, * indicate significance at the one, five, and ten percent levels, respectively, based on robust standard errors.

Table 4 Average marginal effects

Dependent Variables	TDA	LDA	SDA	TDA	LDA	SDA
dy/dx @ MPI=c	(1)	(2)	(3)	(4)	(5)	(6)
0	0.2187***	0.1297***	0.0883***	0.2195***	0.1294***	0.0894***
	(0.0010)	(0.0008)	(0.0007)	(0.0010)	(0.0008)	(0.0007)
1	0.1997***	0.0955***	0.1034***	0.1971***	0.0965***	0.0999***
	(0.0033)	(0.0024)	(0.0022)	(0.0033)	(0.0024)	(0.0022)
2	0.1807***	0.0614***	0.1185***	0.1747***	0.0635***	0.1103***
	(0.0076)	(0.0056)	(0.0051)	(0.0077)	(0.0057)	(0.0051)
3	0.1616***	0.0272***	0.1335***	0.1522***	0.0306***	0.1207***
	(0.0120)	(0.0087)	(0.0081)	(0.0120)	(0.0089)	(0.0080)
4	0.1426***	-0.0069	0.1486***	0.1298***	-0.0024	0.1312***
	(0.0163)	(0.0119)	(0.0110)	(0.0164)	(0.0121)	(0.0110)
5	0.1236***	-0.0411***	0.1637***	0.1074***	-0.0353**	0.1416***
	(0.0207)	(0.0151)	(0.0139)	(0.0207)	(0.0153)	(0.0139)
6	0.1046***	-0.0752***	0.1787***	0.0850***	-0.0683***	0.1521***
	(0.0250)	(0.0182)	(0.0169)	(0.0251)	(0.0185)	(0.0168)
7	0.0856***	-0.1094***	0.1938***	0.0625**	-0.1013***	0.1625***
	(0.0294)	(0.0214)	(0.0198)	(0.0294)	(0.0217)	(0.0197)
8	0.0666**	-0.1435***	0.2089***	0.0401	-0.1342***	0.1729***
	(0.0337)	(0.0246)	(0.0227)	(0.0338)	(0.0249)	(0.0226)
9	0.0476	-0.1777***	0.2239***	0.0177	-0.1672***	0.1834***
	(0.0381)	(0.0277)	(0.0256)	(0.0381)	(0.0281)	(0.0255)
10	0.0286	-0.2118***	0.2390***	-0.0047	-0.2001***	0.1938***
	(0.0424)	(0.0309)	(0.0286)	(0.0425)	(0.0313)	(0.0285)
Firm-specific controls	Yes	Yes	Yes	Yes	Yes	Yes
Country-specific controls	No	No	No	Yes	Yes	Yes
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
# of observations	333,797	333,797	333,797	333,797	333,797	333,797

The average marginal effects presented in this table are for the baseline models (Equation (1a)) tabulated in Table 3, with standard errors obtained by the Delta-method. Columns (1)—(6) reports the marginal effects for the 11 values of the lagged MPI covariate, which ranges from 0 to 10 in the sample. The sample consists of 14,363 listed non-financial and non-utility firms (148,790 firm-year observations) from 23 countries drawn from *Thomson Reuters Datastream* over the period 2003—2012. A detailed description of variables is provided in Appendix A. Standard errors are reported in parentheses below their coefficient estimates and adjusted for both heteroskedasticity and within correlation clustered at the firm-level. ***, **, * indicate significance at the one, five, and ten percent levels, respectively, based on robust standard errors.

Table 5 Supply-side based macroprudential policies

Macroprudential Policies	FTI			BTI		
Dependent Variables	TDA	LDA	SDA	TDA	LDA	SDA
Independent Variables	(1)	(2)	(3)	(4)	(5)	(6)
FTI	-0.2476***	-0.2524***	0.0037			
	(0.0472)	(0.0352)	(0.0321)			
BTI				-0.1839*	-0.7615***	0.5773***
				(0.1011)	(0.0805)	(0.0689)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
# of observations	333,797	333,797	333,797	333,797	333,797	333,797
Adj.R^2	0.785	0.746	0.706	0.785	0.746	0.706

The table presents the results estimating Equation (1a). The sample consists of 14,363 listed non-financial and non-utility firms (148,790 firm-year observations) from 23 countries drawn from *Thomson Reuters Datastream* over the period 2003—2012. A detailed description of variables is provided in Appendix A. Standard errors are reported in parentheses below their coefficient estimates and adjusted for both heteroskedasticity and within correlation clustered at the firm-level. ***, **, * indicate significance at the one, five, and ten percent levels, respectively, based on robust standard errors.

Table 6 Spillover effects of US policies

Dependent Variables	TDA	LDA	SDA	TDA	LDA	SDA
Independent Variables	(1)	(2)	(3)	(4)	(5)	(6)
MPI	-0.2260***	-0.3960***	0.1636***	-0.3536***	-0.4616***	0.1024***
	(0.0558)	(0.0418)	(0.0351)	(0.0520)	(0.0402)	(0.0339)
MPI#D20042002	-0.1265***	-0.0734*	-0.0430	0.0400	0.0130	0.0359
	(0.0473)	(0.0382)	(0.0294)	(0.0450)	(0.0373)	(0.0289)
MPI#D20142018	0.4580***	0.3247***	0.1381***	0.2025***	0.2113***	-0.0027
	(0.0437)	(0.0320)	(0.0290)	(0.0417)	(0.0314)	(0.0288)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
# of observations	333,797	333,797	333,797	333,797	333,797	333,797
Adj.R^2	0.767	0.735	0.698	0.786	0.746	0.706

The table presents the results estimating Equation (1b). The sample consists of 14,363 listed non-financial and non-utility firms (148,790 firm-year observations) from 23 countries drawn from *Thomson Reuters Datastream* over the period 2003—2012. A detailed description of variables is provided in Appendix A. Standard errors are reported in parentheses below their coefficient estimates and adjusted for both heteroskedasticity and within correlation clustered at the firm-level. ***, **, * indicate significance at the one, five, and ten percent levels, respectively, based on robust standard errors.

Table 7 Sub-samples analyses

Panel A: Full sample

	Industrials			Non-Industrials		
Dependent Variables	TDA	LDA	SDA	TDA	LDA	SDA
Independent Variables	(1)	(2)	(3)	(4)	(5)	(6)
MPI	-0.0289	-0.1711***	0.1425***	-0.3017***	-0.3897***	0.0870**
	(0.0818)	(0.0635)	(0.0523)	(0.0514)	(0.0371)	(0.0351)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
# of observations	93,102	93,102	93,102	240,695	240,695	240,695
Adj.R^2	0.784	0.753	0.688	0.786	0.743	0.713
bStdX	0.000	-0.003	0.002	-0.005	-0.007	0.002
bStdY	-0.173	-1.287	1.403	-1.748	-2.938	0.798

Panel B: Developing countries

	Industrials			Non-Industrials		
Dependent Variables	TDA	LDA	SDA	TDA	LDA	SDA
Independent Variables	(1)	(2)	(3)	(4)	(5)	(6)
MPI	0.3194**	-0.0610	0.3857***	-0.1417*	-0.3297***	0.1852***
	(0.1345)	(0.0958)	(0.0911)	(0.0774)	(0.0530)	(0.0559)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
# of observations	30,233	30,233	30,233	85,103	85,103	85,103
Adj.R^2	0.748	0.703	0.678	0.775	0.708	0.713
bStdX	0.007	-0.001	0.008	-0.003	-0.007	0.004
bStdY	1.856	-0.487	3.238	-0.787	-2.635	1.436

Panel C: Developed countries

	Industrials			Non-Industrials		
Dependent Variables	TDA	LDA	SDA	TDA	LDA	SDA
Independent Variables	(1)	(2)	(3)	(4)	(5)	(6)
MPI	-0.3786***	-0.2491***	-0.1281**	-0.3814***	-0.3885***	0.0091
	(0.1101)	(0.0950)	(0.0599)	(0.0728)	(0.0617)	(0.0394)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
# of observations	62,869	62,869	62,869	155,592	155,592	155,592
Adj.R^2	0.805	0.770	0.667	0.792	0.759	0.680
bStdX	-0.005	-0.003	-0.002	-0.005	-0.005	0.000
bStdY	-2.309	-1.842	-1.463	-2.278	-2.860	0.100

The table presents the results estimating Equation (1a). Pane A presents the results based on alternative variable definitions and subsamples of Industrials and Non-Industrials firms. Pane B presents the results of alternative estimation methods, including tobit, weighted, and aggregated regressions. For the weighted regressions, the weights are the reciprocal of the number of observations for a country (WLS1) and the reciprocal of the square root of the number of observations for a country (WLS2). For the aggregated regressions, the observations are aggregated at the industry-country-year level. The sample consists of 14,363 listed non-financial and non-utility firms (148,790 firm-year observations) from 23 countries drawn from *Thomson Reuters Datastream* over the period 2003—2012. A detailed description of variables is provided in Appendix A. Standard errors are reported in parentheses below their coefficient estimates and adjusted for both heteroskedasticity and within correlation clustered at the firm-level. ***, **, * indicate significance at the one, five, and ten percent levels, respectively, based on robust standard errors.

Table 8 Heterogeneous impact of macroprudential policies

Channels	Financial constraints						Product market competition					
Proxies	WW Index			KZ Index			HHI-Sales			HHI-Assets		
Dependent Variables	TDA	LDA	SDA	TDA	LDA	SDA	TDA	LDA	SDA	TDA	LDA	SDA
Independent Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
MPI	-0.0544	-0.1444***	0.0897**	0.0975	-0.0253	0.1242***	0.0711	-0.0460	0.1088*	0.1484*	-0.0673	0.2099***
	(0.0710)	(0.0543)	(0.0436)	(0.0686)	(0.0538)	(0.0459)	(0.0848)	(0.0634)	(0.0557)	(0.0846)	(0.0621)	(0.0563)
HIGH	0.0315***	0.0361***	-0.0038	0.0771***	0.0457***	0.0309***	0.0196***	0.0162***	0.0032	0.0267***	0.0164***	0.0101***
	(0.0060)	(0.0041)	(0.0044)	(0.0031)	(0.0025)	(0.0023)	(0.0045)	(0.0030)	(0.0032)	(0.0042)	(0.0032)	(0.0027)
MPI × HIGH	-0.1800**	-0.3415***	0.1670***	-0.6684***	-0.6784***	0.0061	-0.5102***	-0.4822***	-0.0232	-0.6666***	-0.5330***	-0.1318**
	(0.0847)	(0.0608)	(0.0587)	(0.0740)	(0.0602)	(0.0539)	(0.0862)	(0.0649)	(0.0576)	(0.0902)	(0.0666)	(0.0603)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
# of observations	164,400	164,400	164,400	150,994	150,994	150,994	171,268	171,268	171,268	167,320	167,320	167,320
Adj.R^2	0.793	0.763	0.712	0.839	0.783	0.742	0.796	0.767	0.717	0.794	0.759	0.713

The table presents the results estimating Equation (1b). Firms are categorised into two categories - upper or lower quartile - based on each index in each country-year combination based on the Herfindahl-Hirschman Index (HHI) based on total sales (HHI-Sales) and total assets (HHI-Assets) and two financial constraint indices - the WW Index (Whited and Wu, 2006) and KZ Index (Kaplan and Zingales, 1997). Firms falling within the upper quartile are considered to experience lower levels of competition or higher levels of financial constraints, while those in the lower quartile are characterized by higher levels of competition or lower levels of financial constraints. *HIGH* is a dummy variable that takes on the value of one if a firm is subject to higher levels of financial constraints or competition, and zero otherwise. The sample consists of 14,363 listed non-financial and non-utility firms (148,790 firm-year observations) from 23 countries drawn from *Thomson Reuters Datastream* over the period 2003—2012. A detailed description of variables is provided in Appendix A. Standard errors are reported in parentheses below their coefficient estimates and adjusted for both heteroskedasticity and within correlation clustered at the firm-level. ***, **, * indicate significance at the one, five, and ten percent levels, respectively, based on robust standard errors.

Table 9 Institutional quality, financial development and macroprudential policies

Institutions (HIGH)	IQ			KOFGI			KUIQ			FDI		
Dependent Variables	TDA	LDA	SDA	TDA	LDA	SDA	TDA	LDA	SDA	TDA	LDA	SDA
Independent Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
MPI	-0.0532	-0.1661***	0.1103***	0.0214	-0.1777***	0.1960***	-0.0553	-0.1562***	0.0985***	-0.1913***	-0.2522***	0.0596**
	(0.0538)	(0.0428)	(0.0338)	(0.0536)	(0.0423)	(0.0340)	(0.0541)	(0.0430)	(0.0340)	(0.0439)	(0.0322)	(0.0304)
MPI × HIGH	-0.3147***	-0.3006***	-0.0110	-0.4514***	-0.2790***	-0.1685***	-0.3119***	-0.3200***	0.0108	-0.2357**	-0.5536***	0.3203***
	(0.0699)	(0.0513)	(0.0480)	(0.0661)	(0.0487)	(0.0449)	(0.0706)	(0.0517)	(0.0485)	(0.1069)	(0.0812)	(0.0628)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
# of observations	333,797	333,797	333,797	333,797	333,797	333,797	333,797	333,797	333,797	333,797	333,797	333,797
Adj.R^2	0.786	0.746	0.706	0.786	0.746	0.706	0.786	0.746	0.706	0.785	0.746	0.706

The table presents the results estimating Equation (1b). Standard errors are reported in parentheses below their coefficient estimates and adjusted for both heteroskedasticity and within correlation clustered at the firm-level. ***, **, * indicate significance at the one, five, and ten percent levels, respectively, based on robust standard errors.

Table 10 Quartiles of institutional variables

			IQ	KOFGI	KUIQ	FDI
Dependent variables	Quartiles	Independent variables	(1)	(2)	(3)	(4)
TDA	Q1	MPI	-0.1021	-0.3070***	0.1133	-0.8051***
			(0.1028)	(0.1058)	(0.0900)	(0.2056)
		N	37,601	50,664	47,290	17,172
		Adj.R^2	0.77	0.78	0.77	0.75
	Q2	MPI	0.0982	-0.2931**	0.3599**	0.2635
			(0.1642)	(0.1418)	(0.1736)	(0.1843)
		N	50,884	98,055	36,098	27,472
		Adj.R^2	0.76	0.81	0.77	0.79
	Q3	MPI	-0.8322***	-0.3495**	0.0563	-0.2292***
			(0.1179)	(0.1386)	(0.0872)	(0.0775)
		N	142,877	86,467	120,887	70,170
		Adj.R^2	0.81	0.77	0.82	0.77
	Q4	MPI	-0.0352	-0.0958	-0.5200***	-0.2225***
			(0.0689)	(0.0674)	(0.0807)	(0.0621)
		N	102,435	98,611	129,522	218,983
		Adj.R^2	0.76	0.78	0.77	0.80
LDA	Q1	MPI	-0.2323***	-0.6036***	-0.0730	-0.5787***
			(0.0775)	(0.0792)	(0.0653)	(0.1588)
		N	37,601	50,664	47,290	17,172
		Adj.R^2	0.70	0.74	0.72	0.69
	Q2	MPI	-0.2993***	-0.2861***	-0.1738	-0.0490
			(0.1145)	(0.0976)	(0.1200)	(0.1301)
		N	50,884	98,055	36,098	27,472
		Adj.R^2	0.73	0.74	0.73	0.75
	Q3	MPI	-1.0730***	-0.6897***	-0.3626***	-0.2476***
			(0.0921)	(0.1036)	(0.0651)	(0.0543)
		N	142,877	86,467	120,887	70,170
		Adj.R^2	0.77	0.74	0.76	0.74
	Q4	MPI	-0.0569	-0.1208**	-0.3483***	-0.3771***
			(0.0592)	(0.0584)	(0.0722)	(0.0501)
		N	102,435	98,611	129,522	218,983
		Adj.R^2	0.73	0.75	0.75	0.76
SDA	Q1	MPI	0.1335*	0.3044***	0.1853***	-0.2318
			(0.0705)	(0.0704)	(0.0660)	(0.1432)
		N	37,601	50,664	47,290	17,172
		Adj.R^2	0.74	0.73	0.73	0.67
	Q2	MPI	0.4062***	-0.0139	0.5398***	0.3119***
			(0.0997)	(0.0884)	(0.1029)	(0.1061)
		N	50,884	98,055	36,098	27,472
		Adj.R^2	0.68	0.72	0.69	0.72
	Q3	MPI	0.2318***	0.3296***	0.4102***	0.0212
			(0.0816)	(0.0989)	(0.0667)	(0.0558)
		N	142,877	86,467	120,887	70,170
		Adj.R^2	0.73	0.72	0.71	0.70
	Q4	MPI	0.0255	0.0283	-0.1726***	0.1497***
			(0.0386)	(0.0371)	(0.0373)	(0.0382)
		N	102,435	98,611	129,522	218,983
		Adj.R^2	0.61	0.58	0.60	0.70

TThe table presents the results estimating Equation (1a). The quartiles are formed based on each of the four measures of institutional and financial development. The sample consists of 14,363 listed non-financial and non-utility firms (148,790 firm-year observations) from 23 countries drawn from *Thomson Reuters Datastream* over the period 2003—2012. A detailed description of variables is provided in Appendix A. Standard errors are reported in parentheses below their coefficient estimates and adjusted for both heteroskedasticity and within correlation clustered at the firm-level. ***, **, * indicate significance at the one, five, and ten percent levels, respectively, based on robust standard errors.

Appendix A Variable definitions

Variables	Definitions
TDA	Total debt to total assets.
LDA	Long-term debt to total assets.
SDA	Short-term debt to total assets.
MPI	The macroprudential policies index (MPI) is the aggregation of the Borrower-Targeted Instruments index (BTI) and the Financial institution-Targeted Instruments (FTI).
FTI	The Financial institution-Targeted Instruments index.
BTI	The Borrower-Targeted Instruments index.
R&D/TA	Research and development to total assets.
Non-R&D	A dummy variable equals one for firms not reporting research and development and zero otherwise.
Tobin's q	Market value of equity plus debt to total assets.
ROA	Return on total assets.
Size	The logarithm of total assets.
PPE	Property, plant and equipment to total assets.
NDTS	Depreciation to total assets.
WW Index	$-0.091 \times \frac{Cash\ Flow}{Total\ Assets} - 0.062 \times Dividend\ Dummy + 0.021 \times \frac{Total\ debt}{Total\ Assets}$ $-0.044 \times Size + 0.102 \times Industry\ Sales\ Growth - 0.035 \times Sales\ Growth$ The WW Index is based on Whited and Wu (2006).
KZ Index	$-1.002 \times \frac{Cash\ Flow}{Total\ Assets} + 0.283 \times \frac{Total\ debt}{Total\ Assets} - 39.368 \times \frac{Dividends}{Total\ Assets} - 1.315 \times \frac{Cash}{Total\ Assets}$ The KZ Index is based on Kaplan and Zingales (1997).
HHI-Sales	The Herfindahl-Hirschman Index (HHI) based on total sales.
HHI-Assets	The Herfindahl-Hirschman Index (HHI) based on total assets.
GDP Growth	The growth rate of real GDP.
Inflation	The inflation rate based on the consumer price index (CPI).
Private Credit/GDP	Private credit to GDP.
MarketCap./GDP	Stock market capitalisation to GDP
IQ	The first principal component of the six world governance indices (WGI), namely, voice and accountability, political stability and absence of violence/terrorism, government effectiveness, regulatory quality, rule of law and control of corruption (Kaufmann et al., 2011) [WGI].
KOFGI	The KOF Globalisation Index that measures the economic, social and political dimensions of globalisation.
KUIQ	The first principal component of the economic, legal and political indicators of Kuncic (2014). Source: https://sites.google.com/site/aljazkuncic/
FDI	Financial Institutions index (FDI) is a comparative ranking of economies based on the combination of their scores on the access, depth, and efficiency of financial institutions and the financial market (see Sviridzenka, 2016).
MSCI	The classification of countries into developing (EME) and developed (DME) is determined by the Morgan Stanley Capital International Market Framework.

This table presents detailed variable definitions/constructions. The sample consists of 14,363 listed non-financial and non-utility firms (148,790 firm-year observations) from 23 countries drawn from *Thomson Reuters Datastream* over the period 2003—2012. A detailed description of variables is provided in Appendix A.

Appendix B Sample distribution and summary statistics

#	Country/Province	N	Firms	TDA	LDA	SDA	MPI	FTI	BTI	IQ	KOFGI	KUIQ	FDI	MSCI
(1)	Argentina	657	78	0.2031	0.1005	0.1026	0.0500	0.0500	0.0000	-0.6852	66.6244	-0.1737	0.3119	EME
(2)	Australia	4,733	505	0.1843	0.1318	0.0516	0.0273	0.0273	0.0000	3.9764	79.4991	2.8862	0.9084	DME
(3)	Austria	1,779	133	0.2550	0.1706	0.0842	0.0208	0.0108	0.0100	3.8767	87.3764	2.6599	0.6608	DME
(4)	Bahrain	129	12	0.0703	0.0255	0.0447	0.0300	0.0200	0.0100	0.1280	67.2416	0.7356	0.4377	EME
(5)	Bangladesh	225	35	0.1829	0.0459	0.1371	0.0428	0.0328	0.0100	-2.0293	50.1693	-0.9265	0.2256	EME
(6)	Belgium	1,935	175	0.2380	0.1781	0.0597	0.0205	0.0205	0.0000	3.3115	88.7178	2.5181	0.6525	DME
(7)	Bosnia & Herz.	157	21	0.0715	0.0492	0.0224	0.0151	0.0151	0.0000	-0.7258	67.4134	-0.5462	0.2507	EME
(8)	Brazil	4,595	466	0.2953	0.1913	0.1035	0.0423	0.0400	0.0023	0.0548	61.2177	0.1460	0.5472	EME
(9)	Bulgaria	433	54	0.2056	0.0929	0.1127	0.0290	0.0290	0.0000	0.4833	77.3693	0.7877	0.3723	EME
(10)	Canada	5,272	591	0.2042	0.1563	0.0472	0.0425	0.0309	0.0115	4.0342	81.9007	3.0721	0.8430	DME
(11)	Chile	2,206	193	0.2528	0.1735	0.0788	0.0644	0.0444	0.0200	2.9346	74.2880	2.0826	0.4799	EME
(12)	China	15,893	2,066	0.2275	0.0601	0.1667	0.0599	0.0414	0.0185	-1.2136	62.2158	-1.1682	0.5515	EME
(13)	Colombia	314	38	0.1823	0.1340	0.0483	0.0679	0.0479	0.0200	-0.7996	58.7029	-0.2300	0.3462	EME
(14)	Cote d'Ivoire	127	14	0.1598	0.0633	0.0965	0.0031	0.0031	0.0000	-2.5105	49.1966	-1.7508	0.1402	EME
(15)	Croatia	385	50	0.2158	0.1398	0.0760	0.0221	0.0221	0.0000	1.0407	77.7281	0.8155	0.4866	EME
(16)	Cyprus	286	37	0.2753	0.1571	0.1181	0.0115	0.0011	0.0105	2.6194	79.2602	2.1837	0.5904	EME
(17)	Denmark	2,781	234	0.2278	0.1537	0.0741	0.0146	0.0061	0.0085	4.5053	87.4429	3.2999	0.6677	DME
(18)	Egypt	1,073	112	0.1508	0.0555	0.0953	0.0012	0.0006	0.0006	-1.6291	65.7542	-0.6344	0.3408	EME
(19)	Estonia	149	21	0.1933	0.1342	0.0591	0.0113	0.0056	0.0056	2.8090	81.1961	2.2094	0.2948	EME
(20)	Finland	3,834	298	0.2190	0.1453	0.0728	0.0115	0.0110	0.0005	4.6313	85.5635	3.1593	0.6897	DME
(21)	France	16,281	1,358	0.2083	0.1381	0.0697	0.0240	0.0240	0.0000	3.0313	85.2864	2.1792	0.7734	DME
(22)	Germany	13,758	1,242	0.2015	0.1327	0.0682	0.0107	0.0107	0.0000	3.7259	86.3426	2.6245	0.7498	DME
(23)	Greece	2,728	280	0.3143	0.1568	0.1574	0.0169	0.0102	0.0067	1.5154	77.9805	1.1557	0.5713	EME
(24)	Hong Kong	20,136	2,050	0.1764	0.0813	0.0946	0.0312	0.0112	0.0200	3.5387	66.3060	2.4974	0.7487	DME
(25)	Hungary	606	44	0.1847	0.1261	0.0586	0.0153	0.0074	0.0080	1.9927	82.5472	1.7524	0.4795	EME
(26)	India	8,028	821	0.2666	0.1357	0.1300	0.0247	0.0196	0.0050	-0.5789	59.4329	0.1466	0.4311	EME
(27)	Indonesia	6,812	613	0.2437	0.1360	0.1062	0.0145	0.0109	0.0037	-1.1721	61.3900	-0.4355	0.3300	EME
(28)	Ireland	703	64	0.2474	0.2154	0.0320	0.0044	0.0032	0.0012	3.7087	84.0331	2.8778	0.7218	DME
(29)	Israel	1,368	143	0.2346	0.1491	0.0851	0.0189	0.0136	0.0053	1.6250	75.8412	1.5268	0.5741	DME
(30)	Italy	2,097	194	0.2732	0.1566	0.1161	0.0232	0.0215	0.0017	1.5053	80.5710	1.3415	0.7648	DME
(31)	Japan	52,088	3,915	0.2009	0.0935	0.1066	0.0123	0.0123	0.0000	3.0344	72.0530	2.2118	0.8029	DME
(32)	Jordan	563	61	0.1621	0.0462	0.1160	0.0298	0.0298	0.0000	-0.0669	73.2776	0.4331	0.4673	EME
(33)	Kenya	237	26	0.1613	0.0834	0.0779	0.0086	0.0000	0.0086	-1.6045	53.8162	-0.1401	0.1719	EME
(34)	Kuwait	553	59	0.1817	0.0897	0.0919	0.0559	0.0429	0.0131	0.1779	67.6176	0.4468	0.4600	EME
(35)	Lithuania	160	20	0.2341	0.1252	0.1089	0.0189	0.0067	0.0122	1.9982	76.9305	1.5468	0.2451	EME
(36)	Luxembourg	388	32	0.2424	0.1900	0.0524	0.0078	0.0078	0.0000	4.2296	84.5251	3.0049	0.7447	EME
(37)	Malaysia	11,324	1,054	0.2041	0.0848	0.1181	0.0200	0.0100	0.0100	0.9066	77.6760	0.3384	0.6195	EME
(38)	Mexico	3,421	282	0.2376	0.1924	0.0450	0.0225	0.0225	0.0000	-0.2432	63.4407	0.3459	0.3673	EME
(39)	Morocco	382	42	0.1445	0.0549	0.0896	0.0300	0.0300	0.0000	-0.6993	64.7780	-0.4070	0.3334	EME
(40)	Netherlands	4,088	363	0.2448	0.1840	0.0604	0.0088	0.0047	0.0042	4.2277	87.9695	3.0576	0.7830	DME

This table presents sample distribution across countries. The sample consists of 14,363 listed non-financial and non-utility firms (148,790 firm-year observations) from 23 countries drawn from *Thomson Reuters Datastream* over the period 2003—2012. A detailed description of variables is provided in Appendix A.

Appendix B Sample distribution and summary statistics (continued)

#	Country/Province	N	Firms	TDA	LDA	SDA	MPI	FTI	BTI	IQ	KOFGI	KUIQ	FDI	MSCI
(41)	New Zealand	1,686	158	0.2543	0.2030	0.0510	0.0028	0.0000	0.0028	4.4201	75.8508	3.2942	0.5580	DME
(42)	Nigeria	320	41	0.1775	0.0664	0.1111	0.0144	0.0144	0.0000	-2.6725	55.2745	-0.8723	0.2306	EME
(43)	Norway	2,947	316	0.2999	0.2468	0.0530	0.0230	0.0137	0.0093	4.2618	84.0672	2.8486	0.6786	DME
(44)	Oman	602	65	0.2013	0.0962	0.1051	0.0186	0.0065	0.0121	0.5580	60.1580	0.5251	0.3806	EME
(45)	Pakistan	1,927	200	0.2730	0.1070	0.1653	0.0799	0.0612	0.0187	-2.4734	53.0909	-1.3121	0.2653	EME
(46)	Peru	1,396	145	0.1797	0.1060	0.0734	0.0451	0.0451	0.0000	-0.5971	66.2776	0.6409	0.2925	EME
(47)	Philippines	1,464	133	0.2333	0.1519	0.0811	0.0269	0.0269	0.0000	-0.9534	63.5835	-0.1807	0.3414	EME
(48)	Poland	2,520	296	0.1614	0.0806	0.0804	0.0205	0.0138	0.0068	1.8987	78.4418	1.4408	0.4642	EME
(49)	Portugal	910	74	0.4287	0.3164	0.1124	0.0127	0.0127	0.0000	2.6337	80.7825	1.9031	0.7075	DME
(50)	Qatar	152	19	0.2183	0.1672	0.0511	0.0263	0.0124	0.0139	1.4480	71.6276	0.5181	0.5239	EME
(51)	Russia	2,540	283	0.2243	0.1449	0.0788	0.0114	0.0114	0.0000	-1.7525	69.4682	-0.8835	0.5082	EME
(52)	Saudi Arabia	726	75	0.1841	0.1029	0.0812	0.0253	0.0126	0.0127	-0.7640	65.0002	-0.3384	0.4462	EME
(53)	Serbia	107	16	0.1792	0.0747	0.1045	0.0429	0.0300	0.0129	-0.1812	73.5188	0.2401	0.2269	EME
(54)	Singapore	10,739	1,041	0.2018	0.0950	0.1062	0.0269	0.0146	0.0123	3.7696	82.0986	1.8181	0.7284	DME
(55)	Slovenia	282	29	0.2331	0.1242	0.1089	0.0151	0.0139	0.0012	2.3523	77.8513	1.5888	0.4928	EME
(56)	South Africa	5,249	459	0.1733	0.1007	0.0721	0.0087	0.0087	0.0000	0.7914	66.4186	0.9239	0.5493	EME
(57)	South Korea	17,374	1,703	0.2392	0.0758	0.1626	0.0310	0.0128	0.0182	1.8834	73.7238	1.4814	0.8211	EME
(58)	Spain	5,844	499	0.3256	0.2368	0.0882	0.0330	0.0230	0.0100	2.4231	82.4389	1.8764	0.8648	DME
(59)	Sri Lanka	1,330	140	0.2083	0.0884	0.1197	0.0117	0.0100	0.0017	-0.7296	58.1609	-0.6535	0.2707	EME
(60)	Sweden	9,285	816	0.1914	0.1306	0.0605	0.0232	0.0185	0.0047	4.3754	88.4330	3.1077	0.7714	DME
(61)	Switzerland	6,666	541	0.1808	0.1246	0.0558	0.0188	0.0188	0.0000	4.3357	88.4281	2.9577	0.9376	DME
(62)	Thailand	10,163	818	0.2524	0.1212	0.1307	0.0187	0.0098	0.0088	-0.3659	67.4937	-0.2586	0.6060	EME
(63)	Tunisia	420	45	0.1484	0.0614	0.0869	0.0209	0.0100	0.0109	-0.4416	66.5369	-0.4092	0.2137	EME
(64)	Turkey	3,112	294	0.2039	0.0918	0.1117	0.0455	0.0330	0.0124	-0.1797	68.8614	0.1683	0.4760	EME
(65)	UAE	404	41	0.1674	0.0904	0.0770	0.0296	0.0200	0.0096	1.3921	71.9194	0.4736	0.4716	EME
(66)	UK	11,705	1,156	0.1773	0.1260	0.0505	0.0023	0.0023	0.0000	3.6629	87.7453	2.9504	0.8806	DME
(67)	USA	37,826	3,694	0.1970	0.1612	0.0348	0.0299	0.0299	0.0000	3.2712	79.7765	2.5173	0.8799	DME
(68)	Ukraine	229	31	0.1852	0.0984	0.0868	0.0336	0.0336	0.0000	-1.5238	71.8590	-0.7523	0.2336	EME
(69)	Vietnam	3,188	412	0.2534	0.0692	0.1836	0.0221	0.0221	0.0000	-1.1935	58.1658	-1.2618	0.3968	EME

This table presents sample distribution across countries. The sample consists of 14,363 listed non-financial and non-utility firms (148,790 firm-year observations) from 23 countries drawn from *Thomson Reuters Datastream* over the period 2003—2012. A detailed description of variables is provided in Appendix A.

Appendix C Alternative estimation techniques

Panel A

	Tobit			WLS1			WLS2			Aggregated regressions		
Dependent Variables	TDA	LDA	SDA	TDA	LDA	SDA	TDA	LDA	SDA	TDA	LDA	SDA
Independent Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
MPI	-0.5229***	-0.2681***	-0.2684***	-0.2374***	-0.2883***	0.0507	-0.3781***	-0.3477***	-0.0301	-0.3652**	-0.2777**	-0.0886
	(0.0533)	(0.0458)	(0.0360)	(0.0512)	(0.0391)	(0.0326)	(0.0949)	(0.0754)	(0.0640)	(0.1673)	(0.1262)	(0.0923)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
# of observations	333,797	333,797	333,797	333,797	333,797	333,797	333,797	333,797	333,797	7,479	7,479	7,479
Adj.R^2				0.781	0.747	0.687	0.788	0.761	0.680	0.369	0.479	0.333
Pseudo R^2	-0.666	-0.536	-0.139									

The table presents the results estimating Equation (1a) based on alternative estimation methods, including tobit, weighted, and aggregated regressions. For the weighted regressions, the weights are the reciprocal of the number of observations for a country (WLS1) and the reciprocal of the square root of the number of observations for a country (WLS2). For the aggregated regressions, the observations are aggregated at the industry-country-year level. The sample consists of 14,363 listed non-financial and non-utility firms (148,790 firm-year observations) from 23 countries drawn from *Thomson Reuters Datastream* over the period 2003—2012. A detailed description of variables is provided in Appendix A. Standard errors are reported in parentheses below their coefficient estimates and adjusted for both heteroskedasticity and within correlation clustered at the firm-level. ***, **, * indicate significance at the one, five, and ten percent levels, respectively, based on robust standard errors.

Appendix D Alternative analysis of the heterogeneous impact of macroprudential policies

Channels	Financial constraints						Product market competition					
Proxies	WW Index			KZ Index			HHI-Sales			HHI-Assets		
Dependent Variables	TDA	LDA	SDA	TDA	LDA	SDA	TDA	LDA	SDA	TDA	LDA	SDA
Independent Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
MPI	-0.0544	-0.1444***	0.0897**	0.0975	-0.0253	0.1242***	0.0711	-0.0460	0.1088*	0.1484*	-0.0673	0.2099***
	(0.0710)	(0.0543)	(0.0436)	(0.0686)	(0.0538)	(0.0459)	(0.0848)	(0.0634)	(0.0557)	(0.0846)	(0.0621)	(0.0563)
HIGH	0.0315***	0.0361***	-0.0038	0.0771***	0.0457***	0.0309***	0.0196***	0.0162***	0.0032	0.0267***	0.0164***	0.0101***
	(0.0060)	(0.0041)	(0.0044)	(0.0031)	(0.0025)	(0.0023)	(0.0045)	(0.0030)	(0.0032)	(0.0042)	(0.0032)	(0.0027)
MPI × HIGH	-0.1800**	-0.3415***	0.1670***	-0.6684***	-0.6784***	0.0061	-0.5102***	-0.4822***	-0.0232	-0.6666***	-0.5330***	-0.1318**
	(0.0847)	(0.0608)	(0.0587)	(0.0740)	(0.0602)	(0.0539)	(0.0862)	(0.0649)	(0.0576)	(0.0902)	(0.0666)	(0.0603)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
# of observations	164,400	164,400	164,400	150,994	150,994	150,994	171,268	171,268	171,268	167,320	167,320	167,320
Adj.R^2	0.793	0.763	0.712	0.839	0.783	0.742	0.796	0.767	0.717	0.794	0.759	0.713

The table presents the results estimating Equation (1b). Firms are categorised into two categories - upper or lower terciles - based on each index in each country-year combination based on the Herfindahl-Hirschman Index (HHI) based on total sales (HHI-Sales) and total assets (HHI-Assets) and two financial constraint indices - the WW Index (Whited and Wu, 2006) and KZ Index (Kaplan and Zingales, 1997). Firms falling within the upper quartile are considered to experience lower levels of competition or higher levels of financial constraints, while those in the lower quartile are characterized by higher levels of competition or lower levels of financial constraints. *HIGH* is a dummy variable that takes on the value of one if a firm is subject to higher levels of financial constraints or competition, and zero otherwise. The sample consists of 14,363 listed non-financial and non-utility firms (148,790 firm-year observations) from 23 countries drawn from *Thomson Reuters Datastream* over the period 2003—2012. A detailed description of variables is provided in Appendix A. Standard errors are reported in parentheses below their coefficient estimates and adjusted for both heteroskedasticity and within correlation clustered at the firm-level. ***, **, * indicate significance at the one, five, and ten percent levels, respectively, based on robust standard errors.

Appendix E Alternative subsamples of developing and developed economies

Panel A: TDA

Institutional factors	**IQ1**		**KOFGI**		**KUIQ**		**FDI**		**MSCI**	
Subsamples	Low	High	Low	High	Low	High	Low	High	EME	DME
Dependent Variables	TDA	TDA	TDA	TDA	TDA	TDA	TDA	TDA	TDA	TDA
Independent Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
MPI	-0.0748	-0.2365***	-0.2104***	-0.2354***	-0.0230	-0.2355***	-0.0359	-0.2366***	-0.0117	-0.3865***
	(0.0751)	(0.0577)	(0.0640)	(0.0622)	(0.0776)	(0.0578)	(0.1352)	(0.0458)	(0.0670)	(0.0607)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
# of observations	88,485	245,312	148,719	185,078	83,388	250,409	44,644	289,153	115,336	218,461
Adj.R^2	0.766	0.794	0.800	0.775	0.769	0.792	0.770	0.789	0.768	0.796

Panel B: LDA

Institutional factors	**IQ1**		**KOFGI**		**KUIQ**		**FDI**		**MSCI**	
Subsamples	Low	High	Low	High	Low	High	Low	High	EME	DME
Dependent Variables	LDA	LDA	LDA	LDA	LDA	LDA	LDA	LDA	LDA	LDA
Independent Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
MPI	-0.3028***	-0.3670***	-0.3404***	-0.3107***	-0.3213***	-0.3577***	-0.2595***	-0.3280***	-0.2573***	-0.3514***
	(0.0525)	(0.0473)	(0.0435)	(0.0508)	(0.0552)	(0.0474)	(0.0975)	(0.0339)	(0.0466)	(0.0517)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
# of observations	88,485	245,312	148,719	185,078	83,388	250,409	44,644	289,153	115,336	218,461
Adj.R^2	0.718	0.755	0.739	0.743	0.722	0.754	0.720	0.752	0.707	0.762

Panel C: SDA

Institutional factors	**IQ1**		**KOFGI**		**KUIQ**		**FDI**		**MSCI**	
Subsamples	Low	High	Low	High	Low	High	Low	High	EME	DME
Dependent Variables	SDA	SDA	SDA	SDA	SDA	SDA	SDA	SDA	SDA	SDA
Independent Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
MPI	0.2313***	0.1267***	0.1301***	0.0751**	0.3009***	0.1186***	0.2252***	0.0901***	0.2446***	-0.0337
	(0.0517)	(0.0350)	(0.0463)	(0.0365)	(0.0527)	(0.0350)	(0.0832)	(0.0314)	(0.0476)	(0.0330)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
# of observations	88,485	245,312	148,719	185,078	83,388	250,409	44,644	289,153	115,336	218,461
Adj.R^2	0.711	0.692	0.725	0.667	0.718	0.688	0.700	0.707	0.705	0.677

This table presents sample distribution across countries. The sample consists of 14,363 listed non-financial and non-utility firms (148,790 firm-year observations) from 23 countries drawn from *Thomson Reuters Datastream* over the period 2003—2012. A detailed description of variables is provided in Appendix A. Standard errors are reported in parentheses below their coefficient estimates and adjusted for both heteroskedasticity and within correlation clustered at the firm-level. ***, **, * indicate significance at the one, five, and ten percent levels, respectively, based on robust standard errors.

Appendix F Ease of doing business and macroprudential policies

Subsamples	Full Sample			Low	High	Low	High	Low	High
Dependent Variables	TDA	LDA	SDA	TDA	TDA	LDA	LDA	SDA	SDA
Independent Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
MPI	-0.1999***	-0.2597***	0.0577*	-0.1214	-0.2688***	-0.3815***	-0.3724***	0.2640***	0.1006***
	(0.0546)	(0.0433)	(0.0345)	(0.0850)	(0.0571)	(0.0618)	(0.0455)	(0.0570)	(0.0358)
MPI × CHANNEL	-0.0464	-0.1333***	0.0890*						
	(0.0702)	(0.0509)	(0.0483)						
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
# of observations	333,797	333,797	333,797	65,635	268,162	65,635	268,162	65,635	268,162
Adj.R^2	0.785	0.746	0.706	0.773	0.789	0.725	0.753	0.709	0.696

The sample consists of 14,363 listed non-financial and non-utility firms (148,790 firm-year observations) from 23 countries drawn from *Thomson Reuters Datastream* over the period 2003—2012. A detailed description of variables is provided in Appendix A. Standard errors are reported in parentheses below their coefficient estimates and adjusted for both heteroskedasticity and within correlation clustered at the firm-level. ***, **, * indicate significance at the one, five, and ten percent levels, respectively, based on robust standard errors.

Appendix G Subsamples of inflation and non-inflation targeting countries

Subsamples	Non-Inflation Targeting			Inflation Targeting		
Dependent Variables	TDA	LDA	SDA	TDA	LDA	SDA
Independent Variables	(1)	(2)	(3)	(4)	(5)	(6)
MPI	-0.3002***	-0.3221***	0.0237	0.6278***	-0.0536	0.6795***
	(0.0452)	(0.0340)	(0.0304)	(0.1469)	(0.1069)	(0.0937)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
# of observations	274,272	274,272	274,272	59,328	59,328	59,328
Adj.R^2	0.795	0.757	0.713	0.764	0.722	0.685

The table presents the results estimating Equation (1a). The sample consists of 14,363 listed non-financial and non-utility firms (148,790 firm-year observations) from 23 countries drawn from *Thomson Reuters Datastream* over the period 2003—2012. A detailed description of variables is provided in Appendix A. Standard errors are reported in parentheses below their coefficient estimates and adjusted for both heteroskedasticity and within correlation clustered at the firm-level. ***, **, * indicate significance at the one, five, and ten percent levels, respectively, based on robust standard errors.

Online Appendix
Heterogeneous macroprudential policies and corporate financing decisions

Table A.1 Further analyses controlling for financial openness

Panel A:

Dependent Variables	TDA	TDA	TDA	LDA	LDA	LDA	SDA	SDA	SDA
Independent Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
MPI	-0.2501***			-0.3591***			0.1077***		
	(0.0443)			(0.0333)			(0.0298)		
FTI		-0.2930***			-0.2990***			0.0043	
		(0.0487)			(0.0373)			(0.0328)	
BTI			-0.1629			-0.7251***			0.5624***
			(0.1012)			(0.0803)			(0.0709)
KAOPEN	0.4008***	0.3995***	0.3771***	0.2506***	0.2381***	0.2265***	0.1510***	0.1622***	0.1512***
	(0.0696)	(0.0697)	(0.0693)	(0.0531)	(0.0532)	(0.0526)	(0.0484)	(0.0485)	(0.0484)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
# of observations	314,021	314,021	314,021	314,021	314,021	314,021	314,021	314,021	314,021
Adj.R^2	0.791	0.791	0.791	0.749	0.749	0.749	0.710	0.710	0.711

Panel B:

Dependent Variables	TDA	TDA	TDA	LDA	LDA	LDA	SDA	SDA	SDA
Independent Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
MPI	-0.2366***			-0.3152***			0.0789***		
	(0.0456)			(0.0343)			(0.0301)		
FTI		-0.2958***			-0.2564***			-0.0389	
		(0.0509)			(0.0383)			(0.0342)	
BTI			-0.0714			-0.7112***			0.6394***
			(0.1040)			(0.0853)			(0.0700)
ITO-KAWAI	0.0122***	0.0128***	0.0115***	0.0085***	0.0088***	0.0066***	0.0038**	0.0042***	0.0051***
	(0.0023)	(0.0023)	(0.0023)	(0.0018)	(0.0018)	(0.0018)	(0.0016)	(0.0016)	(0.0016)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
# of observations	293,475	293,475	293,475	293,475	293,475	293,475	293,475	293,475	293,475
Adj.R^2	0.799	0.799	0.799	0.759	0.759	0.759	0.718	0.718	0.718

The table presents the results estimating an augmented version of Equation (1a) that includes financial openness as an additional control variable. The Chinn-Ito Index (KAOPEN), which used to measure financial openness, is based on Chinn and Ito (2006). The Ito-Kawai Index (ITO-KAWAI) measures the degree of monetary policy autonomy a country has under different configurations of the macroeconomic trilemma, evaluating the trade-offs between exchange rate stability, monetary independence, and capital mobility (Ito and Kawai, 2024). The sample consists of 14,363 listed non-financial and non-utility firms (148,790 firm-year observations) from 23 countries drawn from *Thomson Reuters Datastream* over the period 2003—2012. A detailed description of variables is provided in Appendix A. Standard errors are reported in parentheses below their coefficient estimates and adjusted for both heteroskedasticity and within correlation clustered at the firm-level. ***, **, * indicate significance at the one, five, and ten percent levels, respectively, based on robust standard errors.