Cheap US Dollar Credit: Panacea or Poison? Firm-level Evidence from Emerging Markets

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Abstract

Using firm-level data from emerging markets, we find that the dollar debt issuance significantly increases issuers' risk-taking. While the dollar debt issuance significantly increases issuers' investment spending, it reduces their investment efficiency substantially. We also show that macroprudential policies can help mitigate the risk-taking effect of dollar debt issuance. In addition, we provide evidence that non-issuers exhibit increased risk-taking when faced with rising intra-industry competition pressure from issuers. Overall, the cross-sectional risk distributions at the industry level are more tilted towards the downside.

Keywords: corporate risk-taking, USD debt issuance, non-financial firms, macroprudential policy, spillover effect, downside risk

JEL classification: F21, F34, F61, G15, G32

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1. INTRODUCTION

Conventional wisdom has it that accessing international financial markets offers many benefits to firms, such as funding diversification, corporate governance enhancement (Boubakri et al., 2013a), and information friction reduction (Stulz, 2005). In the low-interest-rate environment following the 2007-2008 global financial crisis (GFC), non-financial firms in emerging market economies (EMEs) have actively borrowed in US dollars (USD) to take advantage of ample cheap credit (Gozzi, Levine, and Schmukler, 2010; Bruno and Shin, 2017; Caballero et al., 2019). According to the Bank of International Settlements (BIS) data, the non-financial corporate debt in the EMEs has skyrocketed from 445.4 to 1401.8 billion dollars between 2009 and 2017. While the low-cost international funding may help mitigate the financial constraint problem prevalent in the EMEs, it can also be conducive to corporate risk-taking in the EMEs, posing a threat to local financial stability. Therefore, it is unclear whether accessing international financial markets is a panacea or poison.

This paper empirically investigates the risk consequence of USD debt issuance on non-financial firms using a micro-level dataset for publicly listed non-financial firms from 15 EMEs between 2009 and 2017. Specifically, we ask the following questions: 1) Does USD debt issuance associate with more corporate risking-taking? 2) Can capital controls or macroprudential policies help mitigate the risk-taking effect of the USD debt issuance? 3) Does USD debt issuance have a spillover effect on non-USD debt issuers? 4) What are the impacts of the USD debt issuance on the industry-level cross-sectional risks?

We provide robust evidence that USD debt issuance is associated with more corporate risk-taking behavior manifested by greater volatilities of return to assets (ROA), investment, stock return, and return on equity (ROE). We employ two strategies to deal with potential self-selection bias in firms' debt issuance decisions. One is to use propensity score matching methods to match issuing firms with their comparable non-issuing ones and re-estimate the effect of USD debt issuance using matched sample. The other strategy is to conduct a falsification test by randomly shuffling USD debt issuance across firms and over time. The results from these two exercises confirm that the risk-taking effect of the USD debt issuance we document is not driven by the self-selection bias in firms' decisions to borrow in the USD. Furthermore, we also find some evidence that high leverage of global banks tends to amplify the risk-taking effect of USD debt issuance.

We then take one step further to carry out four extensions to our main analysis. First, we investigate the potential overinvestment problem arising from USD debt issuance and subsequent corporate risk-taking. We provide robust evidence that, after issuing the USD debt instruments, EME firms increase their investment spending but end up with reduced investment efficiency in the short and longer run. Second, we study the role of capital controls and a set of macroprudential policies in the risk-taking effect of the USD debt issuance. We show that while capital controls generally play an insignificant role in mitigating the risk-taking effect, macroprudential policies that limit banks' lending capacity, especially their foreign currency lending, can help significantly dampen the risk-taking effect of the USD debt issuance. Third, we examine the spillover effect from USD debt issuers to non-issuers. We provide novel evidence of the intra-industry spillover of risk-taking to non-issuers through a competition channel. We show that when faced with fierce competition from industry peers with USD debt issuance, non-issuing firms tend to take on more risks to maintain their competitive advantage. Finally, we assess the implication of USD debt issuance for intra-industry cross-sectional risk distribution. We find that industries with more USD debt issuances at the industry level face a notable increase in downside risks with little change in upside risks, causing the intra-industry cross-sectional risk distribution to tilt towards the downside.

Our study contributes to the related literature in several ways. First, our study complements and expands the corporate risk-taking literature. Previous studies (e.g., John, Litov, and Yeung, 2008; Boubakri, Cosset, and Saffar, 2013a, 2013b) have primarily focused on *internal* corporate governance and paid less attention to *external* environments faced by firms.[1] In this study, we examine the issue of corporate risk-taking in the context of globalization. We show that the low-interest-rate environment prevailing in international markets after the GFC is also inductive to corporate risk-taking, especially in emerging market economies.

Second, our results add to the burgeoning literature on risking-taking behaviors in a low-interest-rate environment. The existing studies have extensively studied the risk-taking behavior of financial institutions (e.g., Schnabl, 2012; Borio and Zhu, 2012; Adrian and Shin, 2010, 2014; Chodorow-Reich, 2014; Dell' Ariccia et al., 2017) or individual investors (e.g., Lian et al., 2019). Our study focuses on *non-financial firms*. We provide evidence that accessing cheap USD credit in international markets encourages risk-taking by firms from EMEs.

Third, in a related vein, we also contribute to the broad international shock transmission literature by identifying a non-financial firm risk-taking channel for the transmission of international shocks to EMEs. Previous studies have focused mainly on the role of macro-level factors, such as exchange rate regimes and capital account openness (Obstfeld and Taylor 2003; Frankel, Schmukler, and Servén, 2004; Aizenman, Chinn and Ito, 2016). Recently, a growing number of studies have started to examine how financial institutions and the bank lending channel facilitate the international transmission of shocks (e.g., Khwaja and Mian, 2008; Morais et al., 2019). Our finding that USD debt issuance impacts corporate risk-taking thus highlights the role of non-financial firms in transmitting global shocks to EMEs and identifies a risk-taking channel for international shock transmission. It also implies that USD debt issuing firms need to closely monitor the global leverage factors and strengthen their risk management when global leverage conditions may lift the hazard rate of the crisis.

Last, this study is also related to the broad literature on the economic impacts of financial globalization. There has been a perennial debate on whether capital account liberalization is beneficial or detrimental to firms in EMEs. Theoretical studies have argued that financial globalization can lead to a more efficient international allocation of resources. However, evidence from empirical studies generally shows that EMEs are more prone to the balance of payment crises following capital account liberalization due to domestic market distortions, currency or maturity mismatches (Chang and Velasco, 2001; Stulz, 2005; Aguiar, 2005; Bleakley and Cowan, 2008; Burger, Warnock, and Warnock, 2018; Wei, 2018). Our study of the micro-level data provides additional evidence for the harmful consequences of capital account liberalization. Moreover, we identify the corporate risk-taking channel as a separate mechanism, distinct from the currency or maturity mismatch channel, for understanding the linkage between capital account liberalization and the balance of payment crises in EMEs.

Our findings of the corporate risk-taking consequence of USD debt issuance have important policy implications. They highlight a dilemma that emerging market policymakers face: the ultra-low interest rate in the global capital market has improved firms' access to finance but also encourages firms to take more risks that may result in macro vulnerability and financial instability. Our findings that macro-prudential policy can mitigate USD debt issuance and therefore the resulting risk-taking provide useful guidance for EMEs in designing and implementing their macro-prudential policies. Policymakers in EMEs should be mindful of potential risks associated with the cheap USD credit and consider tightening their macroprudential policies on banks' lending practice, their foreign currency lending in particular, to avoid excessive corporate risk-taking associated with the USD debt issuance. These findings are consistent with recent policy discussions (IMF 2020, BIS 2022) that advocate preemptive use of macroprudential policy to reduce the buildup of vulnerabilities stemming from global financial conditions and insulate monetary policy to better focus on domestic conditions.

The remaining part of this paper is organized as follows. Section 2 briefly reviews the conceptual framework, and Section 3 describes the data. Section 4 analyzes the effect on corporate risk-taking. Section 5 extends the analysis to potential consequences of USD debt issuance, the role of capital controls and macroprudential policies, spillovers to non-issuers, and intra-industry cross-sectional risk distributions. Section 6 concludes.

2. CONCEPTUAL FRAMEWORK

While low-cost funding allows a firm to expand its investment, how it affects the firm's risk-taking behavior is less clear-cut in the corporate finance literature. On the one hand, the traditional portfolio allocation theory predicts that a decrease in the risk-free rate causes a reallocation from safe assets toward riskier assets (Fishburn and Porter, 1976; Dell' Ariccia, et al. 2017). By this logic, as nominal USD interest rates fall to near zero, USD debt issuance by EME firms would encourage reallocation towards risky projects, thus bolstering corporate risk-taking.

Meanwhile, the risk-shifting models associated with the shareholder-debtholder conflicts also predict the risk-taking effect of debt issuance (e.g., Jensen and Meckling,1976; Galai and Masulis, 1976; Barnea, Haugen, and Senbet, 1980; Parrino and Weisbach, 1999). Due to the limited liability of shareholders, shareholders can obtain most of the benefits from a risky project if it is successful but transfer the costs of the project to debtholders if it is unsuccessful. As such, indebted firms have strong incentives to engage in risky projects to maximize shareholders' value rather than total firm value.

On the other hand, the "hurdle rate effect" model in Chodorow-Reich (2014) argues that a low risk-free rate could have an ambiguous effect on corporate risk-taking, depending on the composition of the investment project pool. A firm would invest in a project when the expected return from the project exceeds the project's hurdle rate, which is jointly determined by the cost of capital and the riskiness of the project. A decrease in the risk-free rate lowers the hurdle rate, turning marginal projects with either lower expected returns or higher risks into viable ones. If the newly viable ones are high-risk projects, the total investment risk in the firm will increase. However, if the newly viable ones have lower expected returns and thus lower risk, the overall risk will decline. As such, the net change in the risk of the total investment portfolio will depend on the risk composition of these newly viable ones.

The above discussion suggests that the overall effect of the USD debt issuance by EME firms in the environment of near-zero nominal interest rates is ultimately an empirical question. In what follows, we shall empirically examine whether non-financial firms' borrowing of USD debt leads to increased corporate risk-taking using firm-level data from EMEs.

3. DATA

Our sample covers publicly listed firms in 15 EMEs, including Argentina, Brazil, Chile, China, Colombia, India, Indonesia, Malaysia, Mexico, Peru, Philippines, Poland, Thailand, Turkey, and South Africa over the period from 2009 to 2017. The 15 countries included in our sample are representative of emerging market economies that have frequently issued USD debt instruments in Asia, Latin America, Europe, and Sub-Saharan Africa. Following conventions in the literature, we exclude firms in public utility industries, financial industries, and public administration industries from the sample. We then merge Bloomberg's USD debt issuance data into the Compustat Global data based on firm names.[2] After removing firm-year observations with negative assets, negative sales revenue, or missing information on key balance sheet variables, we have 10,934 firms included in the sample.

3.1. Firm's USD Debt Issuance

We draw the data on USD debt issuance by firms in the 15 EMEs from Bloomberg. We aggregate the total USD debt issuance volume at the firm level for each year over 2009 – 2017.[3] In Figure 1, we graph the total amount of USD debt issuance computed from our sample alongside the BIS's official statistics on the aggregate USD debt issuance by non-financial corporations from these 15 EMEs from 2009 to 2017. The total amount of USD debt issuance calculated from our sample exhibits similar patterns as the aggregate data from the BIS during this period, with the former accounting for around 42% of the latter on average.[4]

[Figure 1 is about here]

For our primary analysis, we create a dummy variable (*Issuance_USD*) that takes on the value of one if a firm has at least one USD debt issuance in that year and zero otherwise. In addition, we also consider two alternative firm-level measures in robustness checks. One is log USD debt issuance volume (*IssuanceSize_USD*) and the other is the outstanding USD debt stock scaled by total liabilities (*DebtStock_USD*).

In Appendix Table A3, we also provide some aggregate-level statistics on USD debt issuance. During the sample period 2009-2017, over one third of borrowers have issued the USD debt instruments each year, with the proportion of USD debt issuers rising gradually from 20.6% in 2009 to 37.1% in 2017. Moreover, the volumes of the USD debt issuances have also been on the rise, increasing from about 252 million USD in 2009 to more than 461 million USD in 2017. For the USD debt issuers, their USD debt issuance volume and outstanding USD debt stock (both scaled by their respective total assets) also exhibit a modest upward trend, increasing from 0.134 in 2009 to 0.236 in 2017 and from 0.198 in 2009 to 0.253 in 2017, respectively.

3.2. Corporate Risk-Taking

Following the literature (e.g., Bromiley, 1991; John et al., 2008; Boubakri et al., 2013a, 2013b; Bruno and Shin, 2015a), we use the volatility of return to assets (*ROAVOL*) as our primary measure of firm's risk-taking in business operations. Specifically, we obtain the quarterly balance sheet information at the firm level from Compustat Global. For each firm, we compute the deviation of its ROA from the country-industry average in a given quarter to purge off potential confounding effects associated with country-industry-specific time trends. We then calculate the firm-level ROA volatility as the standard deviation of the adjusted quarterly ROA over a three-year period from year t to $t + 2$. The larger the ROA volatility, the more risk-taking a firm is engaged. To capture the longer-run impact on corporate risk-taking, we also compute the ROA volatility over a five-year period from year t to $t + 4$.

For robustness, we also consider three alternative measures of corporate risk-taking commonly used in the finance literature (e.g., Bargeron, Lehn, and Zutter, 2010; Bruno and Shin, 2015a), including firm's investment volatility (*INVVOL*), measured by the volatility of the capital expenditure to asset ratio, stock return volatility (*RVOL*), and the volatility of return on equity (*ROEVOL*). Likewise, we compute these alternative volatility measures for each firm over the three-year and the five-year periods, respectively.

We provide detailed variable definitions and data sources in Appendix Table A1. Summary statistics of key variables are reported in Appendix Table A2.

4. MAIN RESULTS

4.1. Basic Results

Prior to our analysis on the corporate risk-taking effect of the USD debt issuance, we first provide some empirical evidence on the linkage between the low USD interest rate and the USD debt issuance in EMEs. To that end, we regress the USD debt issuance dummy on the USD interest rate measure, domestic interest rate in EMEs, the percentage change in the broad USD index, a set of firm-level controls, and the country×sector fixed effects.[5] To measure the USD interest rate, we consider two alternative proxies. One is the US policy rate and the other is the US 10-year treasury yield (Burger et al., 2017).

Table 1 reports the estimation results from Probit regressions. No matter which USD interest rate measure is used, we always find a significantly negative coefficient on the USD interest rate variable. This finding is robust to the inclusion of additional controls, such as domestic credit-to-GDP gap, sovereign CDS spread, and domestic real GDP growth. Overall, our evidence suggests that lower USD interest rate is significantly associated with higher probability of the USD debt issuance by EME firms.

[Table 1 is about here]

Next, we proceed to investigate the effect of the USD debt issuance on corporate risk-taking. Specifically, we estimate the following model specification:

$$\ln\left(Vol_{i,j,c,t}\right) = \beta_0 + \beta_1 Issuance\_USD_{i,t-1} + \theta Issuance\_NonUSD_{i,t-1} + \gamma' X_{i,t-1} + \mu_{c,t} + \omega_{j,t} + \varepsilon_{i,j,c,t} \quad (1)$$

where *i* denotes firm, *j* denotes industry, *c* denotes country, and *t* denotes year. The dependent variable is the log of a firm's corporate risk-taking. $Issuance\_USD_{i,t}$ is the dummy variable that equals one if the firm *i* issued any debt instrument denominated in the US dollar in year *t* and zero otherwise. We are particularly interested in the coefficient on the USD issuance dummy, β_1, which captures the effects of the USD debt issuance on corporate risk-taking.

To rule out the possibility that our results are driven by firms' borrowing in local currency or other foreign currencies than the USD, our baseline regression also controls for a dummy variable (*Issuance_NonUSD*) that takes on the value of one if the firm issued any debt instrument denominated in non-USD currencies.[6] In addition, we also control for a rich set of firm characteristics in the vector *X*, including size, leverage, gross profit margin, working capital to total assets ratio, and cash balance to total assets ratio. All the firm-level control variables enter the regression with one-year lag. The country-year fixed effects ($\mu_{c,t}$) and industry-year fixed effects ($\omega_{j,t}$) are included in the regression to control for the impacts of various country-specific and industry-specific shocks.[7]

We present the baseline results on the corporate risk-taking effect of the USD debt issuance in Table 2. The first four columns examine the impacts on log volatilities constructed over a 3-year period. We find that the estimated coefficient on the USD issuance dummy is always positive and statistically significant, regardless of the risk-taking measure used. These results indicate that the USD debt issuance is associated with a substantial increase in corporate risk-taking. Moreover, the estimated impact is economically sizable. Holding other things constant, three years after issuing the USD debt, firms' ROA volatility increases by around 5%, investment volatility by 19.5%, stock return volatility by 6.6%, and ROE volatility by 9.5%, respectively. Consider a firm with its ROA volatility, investment volatility, stock return volatility and ROE volatility at the 75th percentile of the distribution. In three years after its USD debt issuance, the aforementioned volatility measures would move up to the 77th, 82nd, 82nd, and 78th of the distribution, respectively.

As for control variables included in the baseline regressions, the effects of firm size on various risk-taking measures are uniformly negative and statistically significant, while the risk-taking effects of other controls are mixed. For example, firms' non-USD debt issuance turns out to be associated with significantly higher volatilities of investment, stock return, and ROE but lower ROA volatility, albeit not statistically significant in some cases. We also conduct formal statistical tests and show that the risk-taking effect of the USD debt issuance is significantly different from that of the non-USD debt issuance. We find that higher leverage ratios are related with significantly higher ROA volatility, stock return volatility, and ROE volatility but with significantly lower investment volatility. A higher profit margin is associated with significantly higher volatilities of ROA and investment yet with lower volatilities of stock return and ROE.

In the remaining four columns of Table 2, we also examine the longer-run impacts of the USD debt issuance on corporate risk-taking by using the volatility measures constructed over the five-year period as dependent variables. The estimated coefficients on the USD debt issuance dummy are always positive and statistically significant at the 1% level. Furthermore, we notice that the magnitude of the effect of the USD debt issuance is slightly larger within the five years than the three years after the issuance. The five-year ROA volatility, investment volatility, return volatility and ROE volatility increase by 8.2%, 22.2%, 6.7%, and 12.7%, respectively.

[Table 2 is about here]

In Table 3, we also examine how the USD debt issuance volume (in natural log) and the outstanding USD debt stock (scaled by total asset size) affect corporate risk-taking. Here the corporate risk-taking is measured by the ROA volatility over the three-year and five-year periods, respectively. The estimated coefficients on the USD debt issuance volume and debt stock are all positive and statistically significant. These results confirm that both the flow and stock of the USD debt issuance are significantly and positively related to the corporate risk-taking. In contrast, we find that the non-USD debt issuance volume and debt stock are negatively related to the corporate risk-taking, albeit statistically insignificant in the case of the

ROA volatility over the five-year period.

4.2. Dealing with Endogeneity

A potential threat to identifying the corporate risk-taking effect of USD debt issuance is that a firm's issuance decision may not be random. As such, the positive relationship between the USD debt issuance and corporate risk-taking we document above could be driven by some firm-level characteristics correlated with both firm's issuance decision and its subsequent corporate risk-taking behavior. Here we employ two strategies to deal with this potential endogeneity bias.

One strategy is to use propensity score matching methods to match each issuer with its comparable non-issuers and then estimate the effect of USD debt issuance on corporate risk-taking in the matched sample. Specifically, we group firms into country-sector cells and match each issuer with non-issuers within the same cell, based on firm characteristics like asset size, leverage, profit margin, working capital to asset ratio, cash to asset ratio, and the non-USD debt issuance while controlling for the impacts of the USD interest rate and changes in the nominal USD broad index. To ensure that our results are not driven by a specific matching method, we employ a radius matching and a kernel matching to generate matched samples, respectively.[8]

We then re-estimate the baseline regressions using the matched sample and report the estimation results in Table 4. The estimated coefficients on the USD debt issuance are always positive and mostly statistically significant, regardless of the matching method used. These findings thus make us more confident that the corporate risk-taking effect of the USD debt issuance we document is unlikely to be entirely driven by firms' non-random selection into borrowing in dollars.

[Table 4 is about here.]

Another strategy is to perform a placebo test. Specifically, we randomly reshuffle the USD debt issuance indicator across firms and over time, and then re-estimate equation (1) using the artificially generated data (e.g., Lu et al., 2017; Egger et al., 2021; Wang et al., 2023).[9] Conceptually, the artificially generated issuance dummy should have no impact on corporate risk-taking given the nature of the random assignment. If we were to observe statistically significant estimate for β_1 in equation (1) with reshuffled data, this would indicate that some unobserved firm heterogeneity, rather than the USD debt issuance, is responsible for our previous results. To the extent that the estimated coefficient of β_1 from this placebo test is statistically insignificant and close to zero, this would further ensure that the unobserved firm-level heterogeneity is unlikely to drive our main results.

In Figure 2, we graph the distribution of the estimated coefficient on the issuance dummy (β_1) from 5000 repetitions. The distribution of these estimates turns out to have a mean of 0.0006 and a standard deviation of 0.0292. Notably, the baseline estimate (0.049) from column (1) of Table 1 exceeds the 95th percentile of the distribution. Hence, the result from this placebo test provides another piece of evidence that omitted variables correlated with the issuance indicator alone are not driving our main results.

[Figure 2 is about here.]

4.3. Amplification Effect

Having established that USD debt issuance induces corporate risk-taking in EMEs, we explore further potential heterogeneity in the risk-taking effect associated with the risk tolerance of global banks. Global banks have played a crucial role in USD debt issuance in international capital markets. As documented in the recent growing literature (e.g., Maddaloni and Peydro, 2011; Jimenez, Ongena, Peydró, and Saurina, 2014; Dell' Ariccia et al., 2017), in the ultra-low interest rate environment following the GFC, global banks relaxed their lending standards and extended loans to borrowers with poor credit history or riskier projects. For example, with the increasing risk-taking capacity of global banks, previously *disqualified* borrowers could now issue the USD debt instruments to finance their investment projects; previously *qualified* borrowers could now use the cheap dollar credit for investments that were riskier than those usually would be approved. As such, global banks' increased risk tolerance could induce additional credit creation at the core of the global financial system, causing the global financial conditions to ease. (Bruno and Shin, 2015a and 2015b; Avdjiev et al., 2019b) This thus makes one wonder whether global banks' risk-taking has exacerbated the risk-taking of the borrowers in EMEs.

To that end, we add an interaction term between the USD issuance dummy and an measure of global banks' leverage into the baseline specification:

$$\ln\left(Vol_{i,j,ct}\right) = \beta_0 + \beta_1 Issuance_{USD\,i,t-1} + \beta_2 Issuance_{USD\,i,t-1} \times GBL_{t-1} + \theta Issuance\_NonUSD_{i,t-1} + \gamma' X_{i,t-1} + \mu_{c,t} + \omega_{j,t} + \varepsilon_{i,j,ct} \quad (2)$$

where *GBL* is the leverage ratio of the US primary dealers. As well documented in the finance literature (e.g., Adrian and Shin, 2010, 2014; Bruno and Shin, 2015a, 2015b), the leverage of financial intermediaries is an appropriate empirical proxy for the risk tolerance of these institutions. When their balance sheets become stronger, financial intermediaries can either increase leverage or keep leverage unchanged and accumulate net worth. Thus, a higher leverage generally corresponds to a greater risk tolerance of financial intermediaries. Furthermore, since the US primary dealers are marginal investors in all of the global capital markets, their leverage ratios can be viewed as a measure of global banks' risk-tolerance. We follow He et al. (2017) to construct the primary dealers' leverage ratio as the aggregate market equity plus aggregate book debt of primary dealers divided by their aggregate market equity, based on the New York Fed's primary dealer list, the CRSP/Compustat and Datastream data. Note that the level effect of the global banks' leverage per se is common to all countries and thus absorbed by the time-varying country fixed effects in the model.

We are particularly interested in the coefficient on the interaction between the USD issuance dummy and the high global bank leverage indicator (β_2). A positive coefficient on this interaction term (β_2) would suggest a stronger corporate risk-taking effect of the USD debt issuance in times of high leverage of global banks, consistent with our hypothesis of the amplification effect through global banks' risk-taking capacity.

Table 5 presents the estimation results on the amplification effect associated with global banks' leverage. Column (1) shows that the estimated coefficient on the interaction with global banks' leverage is positive and statistically significant, suggesting that higher leverage of global banks magnifies the corporate risk-taking effect of the USD debt issuance. In the remaining columns of Table 5, we also check whether the amplification effects are driven by other concurrent changes in the global and local economic conditions, by including interactions of the USD issuance dummy with a set of international and regional factors as additional controls.[10]

To the extent that the global banks' leverage tends to co-move with the USD monetary policy stance and global financial uncertainty, we control for the interaction of the issuance dummy with the US effective federal funds rate (*EFFR*) and change in log VIX index ($\Delta\ln(VIX)$) in columns (2) and (3), respectively. Recently, a growing body of literature (e.g., Avdjiev et al., 2019a, 2019b; Bruno and Shin, 2015a, 2015b) suggests that exchange rate fluctuations, the movements in the USD exchange rate in particular, have important impacts on risk-taking capacity of both borrowers and lenders through a financial channel of exchange rates. To ensure that our results on the amplification effect of high global bank leverage is not driven by the financial channel of exchange rates, we include the interaction of the USD debt issuance dummy with the change in nominal USD broad index (Δln(*USDBI*)) as an additional control in column (4).

In column (5), we also add an interaction of the USD debt issuance dummy with the global financial cycle factor (*GFC*), whose movements are closely linked to variations in international investors' risk tolerance (Miranda-Agrippino and Rey, 2020). To control for the confounding effect of firms' carry trade motives (Bruno and Shin, 2017; Lee and Wu, 2023) associated with their USD debt issuances, we interact the USD debt issuance with interest rate differentials relative to the US (*RateDiff*) and local currency's depreciation relative to the US dollar (*LCDep*). We include the two interaction terms in Column (6).

One may be concerned that other country-specific characteristics, such as subdued sovereign risk, local credit booms, or economic growth may drive our results. To address this concern, we include the interaction terms of the issuance dummy with the country-level sovereign credit default swaps spread (*CDSSpread*), credit-to-GDP gap (*CreditGap*), and real GDP growth rate (*RGDPG*) in the last three columns of Table 5, respectively.

Overall, we find that the inclusion of these additional controls does not affect our main results on the amplification effect. The estimated coefficient on the interaction of the issuance dummy with global banks' leverage ratio remains positive and statistically significant in all the regressions. While most of the newly added interaction terms have statistically insignificant impacts on corporate risk-taking, the interactions of the USD debt issuance dummy with the interest rate differential, the CDS spread, and the credit-to-GDP gap are related to the corporate risk-taking in a statistically significant way. For instance, the estimated coefficients on the sovereign CDS spread is significantly negative and that on the credit-to-GDP gap is significantly positive. These findings suggest that the corporate risk-taking effect of the USD debt issuance is more pronounced when a country is perceived to have lower sovereign risks by the market or experiences a strong credit growth in local financial markets.

Besides, we also check whether the amplification effect of global banks' leverage holds for alternative measures of corporation risk-taking and report the estimation results in the Appendix Table A6. We find that the amplification effect of global banks' high leverage remains unchanged in the case of the 5-year ROA volatility. When the investment volatility, stock return volatility, and ROE volatility are considered, however, the estimated coefficients on the interaction term between the USD debt issuance and global banks' leverage ratio become statistically insignificant.

[Table 5 is about here.]

5. EXTENSIONS

In this section, we extend our analysis in four aspects. First, we check whether the USD debt issuance is linked to overinvestment problems in EMEs. Second, we investigate whether capital controls and macroprudential policies can help mitigate the risk-taking effect of the USD debt issuance. Third, we examine potential spillover effects on non-issuing firms. Last, we also evaluate the impact of USD debt issuance on the cross-sectional risks within industries.

5.1. Overinvestment

As non-financial firms in EMEs take more risks following their USD debt issuance, this could lead to a potential overinvestment problem. After obtaining the cheap USD credit, firms may increase their spending on investment projects more than they would have otherwise, fueling an investment boom. Moreover, the risk-shifting incentives would stimulate indebted firms to forgo low-risk projects with positive net present value (NPV) but instead approve risky NPV projects (Parrino and Weisbach, 1999). As a result, firms' investment efficiency would decline, and their financial vulnerability would rise (Alfaro et al., 2019).

To test this idea, we examine the impacts of firms' USD debt issuance on their investment size and investment efficiency. Specifically, we measure each firm's investment size with its capital expenditure to asset ratio (*CAPX*). To measure each firm's investment efficiency, we consider three variables commonly used in the literature. One is the log of the marginal revenue product of capital (*MRPK*). Following Gopinath et al. (2018), we compute MRPK as the ratio of sales revenue to fixed assets and use its natural log in the regression. The higher the log MRPK, the more efficient the investment. The other two are the firm's *ex-post* realized return on assets (*ROA*) or on equity (*ROE*), with a higher realized ROA or *ROE* indicating greater investment efficiency achieved. We then replace the dependent variable in the baseline specification (equation (1)) with the above four measures.

Table 6 presents the estimated effects of the USD debt issuance on investment size and efficiency in the short run (i.e., one year after the debt issuance). Panel A reports the results from the entire sample, while panels B and C summarize the results from the matched samples based on radius matching and kernel matching, respectively. In both the full sample and the matched sample, the USD debt issuance dummy is always significantly positive in the capital expenditure to asset ratio regression yet significantly negative in the log MRPK, ROA and ROE regressions. That is, for the USD debt issuers, they invest substantially more but face significantly lower MRPK, ROA and ROE one year after their debt issuance.

[Table 6 is about here.]

How about the impacts of the USD debt issuance on firms' investment size and efficiency in the longer run? To answer this question, we compute the three-year and five-year averages of the above four measures, including the capital expenditure to asset ratio, log MRPK, ROA and ROE, respectively. Table 7 reports the estimated effects of the USD debt issuance on investment size and efficiency in the longer run. Regardless of the estimation sample used or the time horizon examined, we find that the USD debt issuance dummy significantly boosted firms' capital expenditure yet sharply reduced their investment efficiency, measured by log MRPK, ROA or ROE, in the longer run.

Taken together, there is strong evidence that the USD debt issuance leads to overinvestment in the short and longer run. For firms in EMEs, borrowing in the USD boosts their investment but at the cost of reduced investment efficiency.

[Table 7 is about here.]

5.2. Capital Controls and Macroprudential Policies

Given that the USD debt issuance leads to greater corporate risk-taking and serious overinvestment in the short and longer run, we take one step forward to investigate whether capital control policies and macro prudential policies implemented in the 15 EMEs have helped alleviate these adverse impacts of the USD debt issuance.[11] Specifically, we estimate the following specification:

$$\ln\left(Vol_{i,j,ct}\right) = \beta_0 + \beta_1 Issuance_{USD\,i,t-1} + \beta_3 Issuance_{USD\,i,t-1} \times Policy_{c,t-1} + \theta Issuance\_NonUSD_{i,t-1} + \gamma^{'} X_{i,t-1} + \mu_{c,t} + \omega_{j,t} + \varepsilon_{i,j,ct} \quad (3)$$

where $Policy_{c,t}$ is a measure of country *c*'s capital control policy stance or macroprudential policy stance in year *t*. The coefficient on the interaction term between the USD debt issuance and the policy variable reflects how the risk-taking effect of the USD debt issuance is shaped by a country's capital control policies or macro prudential policies. Note that the level effect of the policy variable per se is submerged by the country-year fixed effect ($\mu_{c,t}$).

We first examine whether imposing capital controls helps alleviate corporate risk-taking associated with the USD debt issuance. The country-level data on capital control policies are collected from a new comprehensive dataset of capital flow restrictions for 100 countries over 1995-2017 (Fernández et al., 2016). Since the USD debt issuance brings capital inflows to EMEs, we are particularly interested in the role of controls on capital inflows, including overall inflow restrictions (*KAI*), bond inflow restrictions (*BOI*), and equity inflow restrictions (*EQI*), in the risk-taking effect of the USD debt issuance. Given the nature of endogenous adoption of capital control policies, we follow the literature (e.g., Ahnert et al., 2021; Chari et al., 2022; Gelos et al., 2022) to extract the capital control policy shocks as the component of capital controls orthogonal to a rich set of factors relevant to a country's financial stability.[12] To facilitate interpretation, we use the standardized capital control policy shocks in our estimation.

We report the estimation results on capital inflow controls in panel A of Table 8. The estimated coefficient on the interaction term with the inflow control policies are all negative but statistically significant. These results suggest that while imposing restrictions on capital inflows may help to attenuate the risk-taking effect of the USD debt issuance, such an attenuation effect is largely statistically insignificant.

Next, we also study the role of macroprudential policies in the risk-taking effect of the USD debt issuance. The country-level data on macroprudential policies are obtained from the IMF's integrated Macroprudential Policy (iMaPP) Database, originally constructed by Alam et al. (2019). Among various types of macroprudential policy instruments, we focus on the set of policy instruments that are closely related to foreign exchange transactions, foreign currency lending, and credit to corporates, including capital requirements for banks' foreign exchange loans (*CapFX*), limits on foreign currency lending (*LFC*), limits on net or gross open foreign exchange positions (*LFX*), limits on the growth of corporate-sector credit (*LCGCorp*), limits to the debt-service-to-income ratio (*DSTI*), and the inverse of the loan-to-value ratio (inverse-LTV). Following Chari et al. (2022), we first accumulate each of the five policy indices since 2000 to measure the intensity of the macroprudential policy and then obtain orthogonal shocks to each of the six policy intensity measures (including the inverse-LTV ratio) in the same way as the capital control policy shocks are constructed. As before, we use the standardized policy shock in our regression to facilitate interpretation.

Panel B of Table 8 presents the estimation results for macroprudential policies. We find that the estimated coefficients on the interaction term of the USD debt issuance with the macroprudential policy variables are all negative. Most of these coefficients are statistically significant at the 10% level except for the policy that imposes limits on net or gross open foreign exchange positions (*LFX*). Our results from this exercise suggest that tightening macroprudential policies can be remarkably effective in mitigating the risk-taking effect of the USD debt issuance in EMEs.

[Table 8 is about here]

5.3. Spillovers to Non-issuers

So far, we have established that the USD debt issuance results in a significant increase in corporate risk-taking by issuing firms in EMEs. This sub-section explores the potential spillover effects of USD debt issuance to non-issuing industry peers. More concretely, we check whether the corporate risking-taking of *non-issuers* would be affected by the USD debt issuance of their industry peers through the channel of market competition. After obtaining cheap USD credit, firms can fund more investment projects, which allows them to gain a competitive edge over their peers and expand their market shares. Amid the rising competition pressure from issuers, non-issuing firms within the same industry would also like to invest and take on more risks to maintain or even strengthen their market power.

To check for the potential spillover effects, we now restrict our attention to non-issuers. Specifically, we consider a firm as a *broadly defined non-issuer* in year *t* if the firm has no USD debt up to year *t* - 1 and belongs to an industry with at least one USD debt issuers. For a firm to be a *narrowly defined non-issuer* in year *t*, it must have no USD debt up to year t + 2 and belongs to an industry with at least one USD debt issuers. For both types of non-issuers, we estimate the spillover effects using the following model specification:

$$\ln(Vol_{i,j,c,t}) = \alpha_0 + \alpha_1 \ln(ICP_{i,t-1}) + \theta Issuance\_NonUSD_{i,t-1} + \gamma' X_{i,t-1} + \mu_{c,t} + \omega_{j,t} + \varepsilon_{i,j,c,t} \quad (4)$$

where ln(*ICP*) measures the competition pressure on non-issuer from its debt-issuing industry peers. We are particularly interested in the estimated coefficient on the competition pressure measure. A positive coefficient on this variable ($\alpha_1 > 0$) reflects that greater competition pressure from issuing peers would incentivize non-issuers to indulge in more risk-taking.

Following the management literature (e.g., Porter, 1976, 1979; Cool and Dierickx, 1993), for each non-issuing firm, we construct four measures of competition pressure posed by its industry peers that have issued USD debt.[13] The first three measures are computed using the distance (i.e., the absolute difference) in sales share between a non-issuer and all issuers within the same industry. According to Porter's Five Force model (Porter, 1976, 1979), the rivalry amongst firms within an industry intensifies when the firms have a similar market share, leading to a struggle for market leadership. Along this line of reasoning, we use the distance to the issuer's sales share as an inverse proxy for the competition pressure from issuers. Specifically, for a non-issuing firm *i* in year *t*, we sum the absolute value of the difference in sales share between the non-issuing firm and each issuer within the industry. Then we use the logged inverse of the summed distance (ln(*ICP_U*)) as a proxy for competition pressure from issuers. A larger value of this competition pressure proxy implies greater competition pressure faced by the non-issuer as its sales share is similar to the issuers within the same industry.

We also try to account for the impacts of different sizes of USD debt by weighting the sales-share-based distance with the share of the issuer's USD debt issuance volume in the industry each year. We then use the logged inverse of this weighted sum of distances (ln(*ICP_W*)) as the second proxy for competition pressure from issuers. The third proxy for competition pressure is computed by dividing the total unweighted distance for sales share by the number of issuers and using the logged inverse of this average distance as (ln(*ICP_AVG*)).

Our fourth proxy for competition pressure from issuers is constructed in a similar spirit of the Herfindahl-Hirschman index (HHI), which is typically considered to be a good indicator of competitive rivalry within an industry, with a smaller index value reflecting more intense rivalry. For each non-issuer, we compute the HHI as the sum of its sales share squared and the sales share squared of each issuer within the same industry. We then measure the competition pressure from issuers using the log of the inverse of the HHI (ln(*ICP_HHI*)).

Table 9 presents the estimation results on the spillover effect of the USD debt issuance on non-issuers through the competition channel. Panel A reports the results for broadly defined non-issuers, and panel B summarizes the results for narrowly defined non-issuers. No matter which definition of non-issuers or the competition pressure measure is used, the estimated coefficient on the competition pressure measure is always positive and statistically significant. These results thus confirm that non-issuers tend to engage in more risk-taking when facing more substantial competition pressure from their industry peers that have issued the USD debt instruments.

[Table 9 is about here.]

5.4. *Intra-industry Cross-Sectional Risks*

Our last extension provides additional evidence for the impact of the USD debt issuance on the intra-industry cross-sectional risk distribution. Conceptually, as the investments of both issuers and non-issuers tilt toward riskier projects, this shift will expose the entire industry or even the whole economic system to more significant downside risks. To test this idea, we estimate the following model specification using the industry-level data aggregated from the firm-level data:

$$CSR_{j,c,t} = \delta_0 + \delta_1 IssuValueSH_{j,c,t} + \gamma' Z_{j,c,t} + \mu_{c,t} + \omega_{j,t} + \varepsilon_{j,c,t} \quad (5)$$

where $CSR_{j,c,t}$ is a proxy for the cross-sectional risk within industry *j* at country *c* in year *t*, and $IssuValueSH_{j,t}$ is the total USD debt issuance volume scaled by total debt at the industry level. Z is a set of country-specific industry-level controls, including the industry-level averages for size, profit margin, leverage, working capital to asset ratio, cash balance to asset ratio, and each industry's non-USD debt issuance volume (scaled by total debt). The coefficient on the issuance to liability ratio (δ_1) reflects the impact of the USD debt issuance on the intra-industry cross-sectional distribution of risks.

Following Kelly and Jiang (2014) and Ferreira (2018), we construct four measures based on stock returns to capture the cross-sectional risks within an industry, especially tail risks. They are the downside risk, upside risk, and return skewness. For each industry in a given country-year, we compute downside risk (*Downside*) as the difference between the median return and the 5th percentile of the distribution of firms' stock return in year *t* (i.e., $r_t^{50} - r_t^{5}$), and upside risk (*upside*) as the difference between the 95th percentile of the return distribution and the median return in year *t* (i.e., $r_t^{95} - r_t^{50}$). Return skewness (*Skewness*) is calculated as the difference between the upside and downside risks (i.e., $[(r_t^{95} - r_t^{50}) - (r_t^{50} - r_t^{5})]$). In addition, we also compute the return coefficient of skewness, which scales the return skewness by the difference between the 95th and 5th percentile of the return distribution (i.e., $[(r_t^{95} - r_t^{50}) - (r_t^{50} - r_t^{5})]/(r_t^{95} - r_t^{5})$). A decline in the value of the two skewness-related measures indicates that the industry is faced with relatively higher downside risk as the return distribution tilts towards the downside.

We report the estimation results from these industry-level regressions in Table 10. Panel A construct the cross-sectional risk measures based on the 5th and 95th percentiles of the return distribution. The first two columns show that the estimated coefficient on the issuance share variable is significantly positive at the 1% level in the downside risk regression but insignificant in the upside risk regression. These results indicate that the issuance of USD debt instruments significantly raises downside risks at the industry level without having notable impacts on upside risks. Columns (3) and (4) use return skewness and the coefficient of skewness as the dependent variables, respectively. In both cases, the estimated coefficient on the USD debt issuance share variable is significantly negative, suggesting that the cross-sectional risks are more tilted to the downside, in line with the results from the first two columns.

In panel B of Table 10, we reconstruct the four measures of cross-sectional risks by using the 10th and 90th percentiles of the return distribution and use them as the dependent variables. The results are similar to those reported in panel A. We again find that the issuance of USD debt instruments leads to significantly heightened downside risks yet no material impacts on upside risks, causing the balance of cross-sectional risks to tilt more toward the downside.

[Table 10 is about here.]

6. CONCLUSIONS

The global financial crisis and the subsequent low-interest-rate policies adopted by the US and other advanced economies have led to a heated discussion on risk-taking in times of near-zero nominal interest rates. While recent work has examined the effects on the risk-taking of financial institutions or that of individual investors, much is unknown about its potential impact on the risk-taking behavior of non-financial firms, especially those in EMEs. A good study of non-financial firms' risk-taking in the low-interest-rate environment can help us better understand the interaction between real economic activities and movements in international credit markets.

This study aims to investigate the effect of USD debt issuance on EME non-financial firms' risk-taking in the post-GFC ultra-low interest rate environment. Using firm-level data from 15 EMEs over the period 2009-2017, we find robust evidence that the USD debt issuance encourages risk-taking by non-financial firms. Global banks' increasing leverage tends to amplify the risk-taking effect of the USD debt issuance in EMEs. Moreover, we show that the USD debt issuance is associated with a sizable increase in issuers' investment spending yet a sharp decline in their investment efficiency. It is worth noting that tightening macroprudential policies can help to significantly mitigate the risk-taking effect of the USD debt issuance. Finally, the risk-taking effect of the USD debt issuance is not limited to issuers but instead spilled over to non-issuers within the industry thanks to the rising competition pressure from issuers. As both issuers and non-issuers indulge in risk-taking behavior, the within-industry cross-sectional risk distribution tilts towards the downside, posing a potential threat to local economic and financial stability.

From a policy perspective, our findings also have important implications. When nominal interest rates have stayed close to zero for a prolonged period, more accessible cheap USD credit in international capital markets encourages non-financial firms, particularly those in EMEs, to take on more risk in their business operations. Such an increase in corporate risk-taking can potentially lead to a buildup of real risks and financial vulnerabilities in the local economic system, setting the stage for future crises. As such, policymakers must take into consideration the risk-taking effect of borrowing in the cheap USD credit when implementing their domestic macroeconomic policies. Particularly, our findings on the role of macroprudential policies in the risk-taking effect of the USD debt issuance provide useful guidance for EMEs in designing and implementing their macro-prudential policies. For example, to avoid excessive corporate risk-taking associated with the USD debt issuance, EMEs can consider imposing more stringent capital requirements for banks' foreign exchange loans and/or stricter debt-service-to-income ratios.

APPENDIX

Table A1. Variable Definitions and Sources

Variables	Definition & Source
Firm-Industry-Country-Year Level	
$ROAVOL_{t,\ t+2}$	The standard deviation of quarterly ROA (EBIT/total assets) over a three-year period. *Source: Compustat Global*
$INVVOL_{t,\ t+2}$	The standard deviation of the ratio of capital expenditure to asset over a three-year period. *Source: Compustat Global*
$RVOL_{t,\ t+2}$	The standard deviation of the daily stock return over a three-year period. *Source: Compustat Global*
$ROEVOL_{t,\ t+2}$	The standard deviation of quarterly ROE (EBIT/total assets) over a three-year period. *Source: Compustat Global*
Issuance_USD	A dummy variable that equals 1 if a firm issues at least one USD debt instrument in a year, and 0 otherwise. *Source: Bloomberg*
Issuance_NonUSD	A dummy variable that equals 1 if a firm issues at least one non-USD debt instrument in a year, and 0 otherwise. *Source: Bloomberg*
Issuance Size_USD	Ln(the USD debt issuance volume + 1). *Source: Bloomberg & Compustat Global*
Issuance Size_NonUSD	Ln(the Non-USD debt issuance volume + 1). *Source: Bloomberg & Compustat Global*
Debt Stock_USD	The ratio of total outstanding USD debt to firm total assets. *Source: Bloomberg & Compustat Global*
Debt Stock_NonUSD	The ratio of total outstanding non-USD debt to firm total assets. *Source: Bloomberg & Compustat Global*
Size	Log of total assets. *Source: Compustat Global*
Leverage	The ratio of total liabilities to total assets. *Source: Compustat Global*

Profit	The ratio of gross profit (revenue – cost of goods sold) to total revenue. *Source: Compustat Global*
Working Capital	The ratio of working capital to total assets. *Source: Compustat Global*
Cash	The ratio of cash balances to total assets. *Source: Compustat Global*
CAPX	*CAPX is* the ratio of capital expenditure scaled by total assets. *Source: Compustat Global*
ln(*MRPK*)	Marginal revenue product of capital, computed as log sales revenue to fixed asset ratio. *Source: Compustat Global*
ROA	*ROA* is the ratio of EBIT to total assets. *Source: Compustat Global*
ROE	*ROE* is the ratio of EBIT to total equity. *Source: Compustat Global*
ICP_U	The inverse of the total sum of absolute values of differences in sales share (i.e., the distance in sales share) from the non-issuer to all issuers within the industry. *Source: Compustat Global*
ICP_W	The inverse of the distance in sales share from the non-issuer to each issuer within the industry, weighted by each issuer's relative issuance size. *Source: Compustat Global*
ICP_AVG	The inverse of the average distance in sales share from the non-issuer to issuers within the industry. *Source: Compustat Global*
ICP_HHI	The inverse of the sum of the sales share squared of the non-issuer and all issuers. *Source: Compustat Global*
Country-Industry-Year Level	
Downside	The difference between the median return and the 5^{th} (or 10^{th}) percentile of the industry stock return distribution, $(r^{50} - r^{5})$ (or $(r^{50} - r^{10})$). *Source: Compustat Global*

Upside	The difference between the 95th (or 90th) percentile of the industry stock return distribution and the median return, $(r^{95} - r^{50})$ (or $r^{90} - r^{50}$). *Source: Compustat Global*
Skewness	The difference between upside risk and downside risk, $[(r^{95} - r^{50}) - (r^{50} - r^{5})]$ (or $[(r^{90} - r^{50}) - (r^{50} - r^{10})]$). *Source: Compustat Global*
CoeffSkew	Relative measure of skewness, [$(r^{95} + r^{5} - 2r^{50})/(r^{95} - r^{5})$ or $(r^{90} + r^{10} - 2r^{50})/(r^{90} - r^{10})$). *Source: Compustat Global*
IssuValueSH_USD	The ratio of an industry's total USD debt issuance size to the industry's total liabilities. *Source: Bloomberg & Compustat Global*

Table A2. Summary Statistics of Key Variables

Variable	N	Mean	Std. Dev.	Min	Max
ln($ROAVOL_{t,t+2}$)	65,091	-4.462	0.843	-16.124	-1.823
ln($INVVOL_{t,t+2}$)	47,019	-4.229	1.148	-8.104	-1.655
ln($RVOL_{t,t+2}$)	42,746	-3.591	0.387	-4.763	-2.858
ln($ROEVOL_{t,t+2}$)	64,399	-3.669	1.007	-12.626	-0.626
ln($ROAVOL_{t,t+4}$)	46,763	-4.300	0.745	-11.487	-1.823
ln($INVVOL_{t,t+4}$)	33,515	-4.044	1.067	-7.539	-1.321
ln($RVOL_{t,t+4}$)	42,746	-3.590	0.372	-4.713	-2.881
ln($ROEVOL_{t,t+4}$)	46,578	-3.471	0.925	-12.220	-0.651
Issuance_USD	65,091	0.011	0.106	0	1
Issuance_NonUSD	65,091	0.024	0.152	0	1
IssuanceSize_USD	65,091	0.228	2.123	0	30.015
IssuanceSize_NonUSD	65,091	0.431	2.803	0	23.666
DebtStock_USD	64,821	0.007	0.057	0	0.999
DebtStock_NonUSD	64,741	0.011	0.066	0	1.240
Size	65,091	4.600	2.103	-0.847	9.486
Leverage	65,091	0.486	0.274	0.020	1.898
Profit	65,091	0.311	0.208	-0.288	0.941
Working Capital	65,091	0.185	0.267	-0.932	0.836
Cash	65,091	0.107	0.126	-0.030	0.636
CAPX	62,347	0.064	0.083	0.000	0.515
ln(*MRPK*)	64,876	1.161	1.399	-2.621	5.804
ROA	57,563	0.028	0.098	-0.481	0.298
ROE	49,755	0.041	0.243	-1.563	0.554
$CAPX_{t, t+2}$	57,868	0.064	0.067	0.001	0.396
ln($MRPK_{t, t+2}$)	62,292	1.155	1.328	-2.157	5.488
$ROA_{t, t+2}$	55,339	0.025	0.089	-0.403	0.256
$ROE_{t, t+2}$	47,057	0.035	0.206	-1.239	0.422
$CAPX_{t, t+4}$	54,121	0.060	0.056	0.001	0.329
ln($MRPK_{t, t+4}$)	59,443	1.132	1.274	-2.003	5.252
$ROA_{t, t+4}$	52,823	0.023	0.082	-0.353	0.231
$ROE_{t, t+4}$	44,375	0.033	0.190	-1.141	0.377
ln*ICP_U*)	21,411	3.252	1.706	-0.315	15.740
ln(*ICP_W*)	21,411	8.527	2.659	-0.274	20.844
ln(*ICP_AVG*)	21,411	3.702	1.678	0.003	15.740
ln(*ICP_HHI*)	21,418	6.370	3.050	0.003	18.175
Downside(5%)	3,841	0.193	0.178	0	0.834
Upside(5%)	3,841	0.202	0.180	0	0.896
Skewness(5%)	3,841	0.008	0.165	-0.748	0.687
Coeffsknewness(5%)	3,428	0.019	0.360	-0.997	1
Downside(10%)	3,841	0.162	0.150	0	0.830
Upside(10%)	3,841	0.168	0.148	0	0.896
Skewness(10%)	3,841	0.006	0.148	-0.748	0.611

Coeffsknewness(10%)	3,428	0.021	0.358	-0.997	1
IssuValueSH_USD	3,428	0.017	0.371	-0.997	1

Table A3. Aggregate USD Debt Statistics

Year	USD Debt Issuers (% of all debt issuers)	USD Debt Issuance Volume (in natural log)	USD debt Issuance Volume (scaled by total assets)	USD Debt Stock (scaled by total assets)
2009	20.6	19.346	0.134	0.198
2010	26.1	19.675	0.154	0.202
2011	35.9	19.911	0.211	0.225
2012	36.3	19.969	0.228	0.246
2013	37.2	20.112	0.208	0.260
2014	28.6	20.149	0.163	0.272
2015	27.9	20.277	0.218	0.278
2016	29.7	19.835	0.186	0.262
2017	37.1	19.948	0.236	0.253
Average	31.0	19.914	0.193	0.244

Table A4. Controlling for More Stringent Fixed Effects

Dependent Variable:	$\ln(ROAVOL_{t, t+2})$	$\ln(INVVOL_{t, t+2})$	$\ln(RVOL_{t, t+2})$	$\ln(ROEVOL_{t, t+2})$	$\ln(ROAVOL_{t, t+2})$		$\ln(ROAVOL_{t, t+4})$		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
$Issuance\_USD_{t-1}$	0.058**	0.213***	0.073***	0.113***			0.092***		
	(0.028)	(0.042)	(0.013)	(0.036)			(0.028)		
$IssuanceSize\_USD_{t-1}$					0.003**			0.005***	
					(0.001)			(0.001)	
$DebtStock\_USD_{t-1}$						0.171***			0.215***
						(0.051)			(0.056)
N	65,057	53,904	51,614	64,386	65,057	64,471	53,279	53,279	52,875
R^2	0.196	0.116	0.421	0.246	0.196	0.196	0.234	0.234	0.234
Controls	Y	Y	Y	Y	Y	Y	Y	Y	Y
Country×Sector×Year FE	Y	Y	Y	Y	Y	Y	Y	Y	Y

Notes. This table estimates the impact of USD debt issuance (stock) on corporate risk-taking by controlling for country-sector-year fixed effects. All regressions include a constant term, firm-level controls, and country×sector×year fixed effects. Firm-level controls include firm's size, leverage, profit margin, working capital to asset ratio, cash to asset ratio, and a dummy (issuance size or debt stock to asset ratio) for non-USD debt issuance. Robust standard errors clustered at the country-industry-year level are reported in parentheses. *, ** and *** indicate the significance levels of 10%, 5% and 1%, respectively.

Table A5. Balancing Test Results

A. Radius Matching:

	Mean			*t*-Test	
	Treated	Control	%Bias	*t*-stat	*p*-value
Issuance_NonUSD	0.166	0.169	-0.9	-0.10	0.919
Size	7.565	7.458	6.2	1.10	0.271
Leverage	0.600	0.594	2.2	0.38	0.703
Profit	0.339	0.339	0.5	0.07	0.942
WorkCaptial	0.095	0.096	-0.7	-0.13	0.900
Cash	0.098	0.098	-0.3	-0.05	0.958

B. Kernel Matching:

	Mean			*t*-Test	
	Treated	Control	%Bias	*t*-stat	p-value
Issuance_NonUSD	0.167	0.173	-2.5	-0.28	0.776
Size	7.565	7.489	4.4	0.79	0.429
Leverage	0.600	0.595	2.0	0.35	0.728
Profit	0.339	0.339	-0.0	-0.00	0.998
WorkCaptial	0.095	0.095	-0.3	-0.06	0.955
Cash	0.098	0.098	0.3	0.06	0.951

Table A6. The Amplification Effect on Alternative Corporate Risk-taking Measures

Dependent Variable:	$\ln(INVVOL_{t,\,t+2})$	$\ln(RVOL_{t,\,t+2})$	$\ln(ROEVOL_{t,\,t+2})$	$\ln(ROAVOL_{t,\,t+4})$	$\ln(INVVOL_{t,\,t+4})$	$\ln(RVOL_{t,\,t+4})$	$\ln(ROEVOL_{t,\,t+4})$
	(2)	(3)	(4)	(5)	(6)	(7)	(8)
$Issuance\_USD_{t-1}$	0.190***	0.066***	0.099***	0.071**	0.233***	0.068***	0.121***
	(0.042)	(0.013)	(0.036)	(0.028)	(0.042)	(0.012)	(0.036)
$Issuance\_USD_{t-1} \times Global\ bank\ leverage_{t-1}$	-0.012	0.002	0.012	0.016*	-0.017	0.002	0.010
	(0.013)	(0.004)	(0.011)	(0.009)	(0.014)	(0.004)	(0.012)
N	53,932	51,683	64,420	53,299	41,256	51,683	53,105
R^2	0.120	0.412	0.243	0.231	0.134	0.420	0.264
Country×Year FE	Y	Y	Y	Y	Y	Y	Y
Industry×Year FE	Y	Y	Y	Y	Y	Y	Y

Notes. This table examines the amplification effect of global banks' risk tolerance using alternative measures of corporate risk-taking. All regressions include a constant term, firm-level controls, country×year fixed effects, and industry×year fixed effects. Firm-level controls include firm's size, leverage, profit margin, working capital to asset ratio, cash to asset ratio, and a dummy for non-USD debt issuance. Robust standard errors clustered at the country-industry-year level are reported in parentheses. *, ** and *** indicate the significance levels of 10%, 5% and 1%, respectively.

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FOOTNOTES

1. Bruno and Shin (2014) investigate the effect of global liquidity on corporate risk-taking over 1987-2010. Our study is related to theirs but differs in two crucial ways. One is the differences in research perspectives and sample periods. Bruno and Shin (2014) rely on the time variation in the aggregate-level global liquidity, mainly during the pre-GFC period. By contrast, we focus on the USD debt issuance by individual firms in the post-GFC period when the nominal dollar interest rate has hit the zero lower bound. The other is that we also investigate intra-industry spillover effects to non-issuers and explore the impacts on the cross-sectional risk distributions within the industry.
2. A caveat to bear in mind is that our sample does not cover the entire universe of nonfinancial firms in the 15 EMEs. Since there is no micro-level data available on privately owned firms, our study focuses on publicly listed firms in the 15 EMEs. However, given that these publicly listed firms are typically important players in the local markets, our results from the sample of publicly listed firms could pertain to the general implications of USD borrowings for the aggregate economy.
3. The proportion of USD debt issuance at the firm-year level is approximately 1.1 percent, comparable to 1.23 percent in Bruno and Shin (2017).
4. Note that the discrepancy between our data on the USD debt issuance volume and the BIS' aggregate data is largely due to the difference in sample coverage. Our sample includes publicly listed nonfinancial firms only, while the BIS data is constructed based on all non-financial firms, including both publicly-listed and privately-owned firms.
5. To have sufficient amount issuers within each country-sector cell, we group firms into sectors, such as agriculture/forestry/fishing, mining, construction, manufacturing, transportation and utilities, wholesale and retail trade, and services.
6. In our sample, about 2.3% of the firm-year observations have issued debt instruments in non-USD currencies. Over 73% of the non-USD debt issuers borrowed in their local currencies.
7. Given that very few firms have multiple USD debt issuances during the sample period, controlling for firm fixed effects is not feasible here. However, we tried to control for the more stringent country-sector-year fixed effects and obtained similar results. We report the estimation results from this exercise in Appendix Table A4.
8. We provide results from balancing tests in Appendix Table A5. Comparisons of firm size, leverage, profitability, working capital, and cash holding between issuers and their matched non-issuers indicate a good balance in the matched samples. Note that both matching methods include all similar non-issuers within criteria to ensure that results are robust to control group choice.
9. Our placebo test is in the spirit of the falsification test in Rosenbaum (1987), whereby a treatment effect is estimated in an environment where such an effect should not exist. As pointed out in Roberts and Whited (2013), it helps to alleviate the concerns over violating the unconfoundedness assumption in propensity score matching.
10. We obtain most of the aggregate-level variables for global economic and financial conditions from the Federal Reserve Economic Data (FRED). We draw the macroeconomic and financial variables for the sampled 15 EMEs from these

countries' central banks. The data on the real GDP growth rate and exchange rates are extracted from World Economic Outlook. We obtain the information on the credit gap from the BIS. The sovereign credit default swaps spread data are from the IHS Markit.

11. We would like to thank an anonymous reviewer for suggesting this important analysis.
12. Following Chari et al., (2022), we consider four sets of variables that would play a role in shaping a country's macroprudential policy stance. The first set of variables is related to the experience of financial crisis, including a dummy for experience a crisis in the past 12 months (Laeven and Valencia, 2020), the distance to default of a country's banking sector, the number of countries in crisis last year, the intensity of the financial crisis last year, the number of countries in sovereign debt, currency, or banking crises (Laeven and Valencia, 2020). The second set of variables reflects the macroeconomic and credit condition, which includes domestic credit growth, property price growth, real GDP growth, forecast GDP growth, and CPI inflation. The third set contains variables relevant to a country's external conditions, like real exchange rate appreciation, foreign exchange rate volatility, policy rate differential with respect to the US policy rate, and a fixed exchange rate dummy. The last set of variables capture a country's institutional characteristics, including policy interest rate and institutional quality. We regress each capital control policy index on the four sets of variables and obtain the residuals from this regression as a measure of the policy shock.
13. For all four measures of competition pressure from issuers, we compute their values using the firm-level data from Compustat Global.

Table 1. The Effect of the USD Interest Rate on the USD Debt Issuance

Dependent Variable:	Prob(Issuance_USD)							
	A. US Policy Rate				B. US 10-Year Treasury Yield			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
InterestRate_USD$_t$	-0.087**	-0.075*	-0.078*	-0.081*	-0.088***	-0.088**	-0.092**	-0.091**
	(0.040)	(0.043)	(0.044)	(0.046)	(0.033)	(0.037)	(0.039)	(0.038)
PolicyRate_DOM$_t$	0.011	0.012	0.011	0.006	0.005	0.008	0.006	0.002
	(0.011)	(0.012)	(0.011)	(0.012)	(0.010)	(0.011)	(0.010)	(0.011)
$\Delta\ln(USDBI)_t$	-1.234***	-1.012***	-1.041***	-1.241***	-1.589***	-1.380***	-1.436***	-1.588***
	(0.312)	(0.281)	(0.280)	(0.362)	(0.391)	(0.374)	(0.374)	(0.402)
CreditGap$_t$		0.105**	0.108**	0.103**		0.117***	0.120***	0.116***
		(0.045)	(0.045)	(0.046)		(0.042)	(0.043)	(0.042)
CDSSpread$_t$			1.379	0.801			1.579	1.101
			(1.708)	(1.441)			(1.681)	(1.514)
RGDPG$_t$				-0.011				-0.009
				(0.010)				(0.009)
N	72,471	71,008	70,968	70,968	72,471	71,008	70,968	70,968
Pseudo R^2	0.385	0.390	0.389	0.390	0.385	0.390	0.390	0.390
Controls	Y	Y	Y	Y	Y	Y	Y	Y
Country×Sector FE	Y	Y	Y	Y	Y	Y	Y	Y

Notes. This table estimates the effect of USD interest rate on the probability of USD debt issuance by using a probit specification. The dependent variable is the issuance dummy in year *t*. Panel A uses the US policy rate as a measure of the USD interest rate. Panel B uses the 10-year US treasury yield as the measure of the USD interest rate. All regressions include a constant term, firm-level controls, and country×sector fixed effects. Firm-level controls include firm's size, leverage, profit margin, working capital to asset ratio, cash to asset ratio, and a dummy for non-USD debt issuance. Robust standard errors clustered at the country-sector level are reported in parentheses. *, ** and *** indicate the significance levels of

10%, 5% and 1%, respectively.

Table 2. Basic Results on Corporate Risk-Taking

Dependent Variable:	$\ln(ROAVOL_{t, t+2})$	$\ln(INVVOL_{t, t+2})$	$\ln(RVOL_{t, t+2})$	$\ln(ROEVOL_{t, t+2})$	$\ln(ROAVOL_{t, t+4})$	$\ln(INVVOL_{t, t+4})$	$\ln(RVOL_{t, t+4})$	$\ln(ROEVOL_{t, t+4})$
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
$Issuance\_USD_{t-1}$	0.049*	0.195***	0.066***	0.095***	0.082***	0.222***	0.067***	0.127***
	(0.027)	(0.041)	(0.013)	(0.035)	(0.027)	(0.042)	(0.012)	(0.035)
$Issuance\_NonUSD_{t-1}$	-0.084***	0.155***	0.024***	0.002	-0.032	0.151***	0.025***	0.052**
	(0.019)	(0.027)	(0.009)	(0.022)	(0.019)	(0.028)	(0.008)	(0.024)
$Size_t$	-0.136***	-0.043***	-0.080***	-0.103***	-0.134***	-0.078***	-0.079***	-0.100***
	(0.002)	(0.005)	(0.002)	(0.003)	(0.003)	(0.005)	(0.002)	(0.004)
$Leverage_t$	0.403***	-0.629***	0.160***	1.265***	0.366***	-0.541***	0.162***	1.185***
	(0.022)	(0.046)	(0.011)	(0.032)	(0.022)	(0.045)	(0.011)	(0.030)
$Profit_t$	0.080***	0.428***	-0.144***	-0.067***	0.058***	0.366***	-0.139***	-0.121***
	(0.021)	(0.037)	(0.010)	(0.025)	(0.021)	(0.040)	(0.009)	(0.026)
$Working\ Capital_t$	-0.000	-0.652***	0.050***	0.019	-0.019	-0.662***	0.052***	0.000
	(0.025)	(0.046)	(0.011)	(0.032)	(0.026)	(0.047)	(0.011)	(0.033)
$Cash_t$	0.322***	0.660***	-0.191***	0.010	0.305***	0.577***	-0.192***	0.045
	(0.035)	(0.055)	(0.021)	(0.043)	(0.035)	(0.055)	(0.021)	(0.044)
N	65,091	53,932	51,683	64,420	53,299	41,256	51,683	53,105
R^2	0.195	0.120	0.412	0.243	0.231	0.134	0.420	0.264
$H_0: \beta_{USD} = \beta_{NonUSD}$	14.83***	0.63	6.86***	4.67**	10.00***	1.80	7.49***	2.87*
Country×Year FE	Y	Y	Y	Y	Y	Y	Y	Y
Industry×Year FE	Y	Y	Y	Y	Y	Y	Y	Y

Notes. This table estimates the impact of USD debt issuance on corporate risk-taking. All regressions include a constant term, the country×year fixed effects and the industry×year fixed effects. Robust standard errors clustered at the country-industry-year level are reported in parentheses.

F-statistics for testing equal coefficients on the two dummies (*Issuance_USD* and *Issuance_NonUSD*) are reported in the bottom panel. *, ** and *** indicate the significance levels of 10%, 5% and 1%, respectively.

Table 3. Issuance Size and Debt Stock

Dependent Variable:	$\ln(ROAVOL_{t, t+2})$		$\ln(ROAVOL_{t, t+4})$	
	(1)	(2)	(3)	(4)
IssuanceSize_USD$_{t-1}$	0.003*		0.004***	
	(0.001)		(0.001)	
IssuanceSize_NonUSD$_{t-1}$	-0.004***		-0.002	
	(0.001)		(0.001)	
DebtStock_USD$_{t-1}$		0.148***		0.197***
		(0.052)		(0.056)
DebtStock_NonUSD$_{t-1}$		-0.169***		-0.064
		(0.047)		(0.052)
N	65,091	64,509	53,299	52,899
R^2	0.195	0.195	0.231	0.231
$H_0: \beta_{USD} = \beta_{NonUSD}$	15.19***	20.24***	9.37***	11.26***
Controls	Y	Y	Y	Y
Country×Year FE	Y	Y	Y	Y
Industry×Year FE	Y	Y	Y	Y

Notes. This table estimates the impacts of USD debt issuance size and debt stock on corporate risk-taking measured by log ROA volatility. *IssuanceSize_USD* and *IssuanceSize_NonUSD* are log issuance size of USD debt and non-USD currency debt, respectively. *DebtStock_USD* and *DebtStock_NonUSD* are the stocks of USD debt and non-USD debt, scaled by firm-level asset size, respectively. All regressions include a constant term, firm-level controls, the country×year fixed effects and the industry×year fixed effects. Firm-level controls include firm's size, leverage, profit margin, working capital to asset ratio, and cash to asset ratio. Robust standard errors clustered at the country-industry-year level are reported in parentheses. F-statistics for testing equal impacts of USD- and non-USD debt issuance size (debt stock) are reported in the bottom panel. *, ** and *** indicate the significance levels of 10%, 5% and 1%, respectively.

Table 4. Results from Matched Samples

Dependent Variable:	ln($ROAVOL_{t, t+2}$)	ln($INVVOL_{t, t+2}$)	ln($RVOL_{t, t+2}$)	ln($ROEVOL_{t, t+2}$)	ln($ROAVOL_{t, t+4}$)	ln($INVVOL_{t, t+4}$)	ln($RVOL_{t, t+4}$)	ln($ROEVOL_{t, t+4}$)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
A. Radius Matching								
Issuance_USD$_{t-1}$	0.042***	0.051***	0.014***	0.060***	0.046***	0.016	0.019***	0.084***
	(0.007)	(0.010)	(0.004)	(0.008)	(0.007)	(0.012)	(0.003)	(0.008)
N	43,274	27,759	27,852	42,708	30,602	19,024	27,852	30,461
R^2	0.395	0.432	0.561	0.432	0.385	0.436	0.569	0.453
B. Kernel Matching								
Issuance_USD$_{t-1}$	0.046***	0.056***	0.015***	0.061***	0.043***	0.024**	0.022***	0.080***
	(0.007)	(0.010)	(0.004)	(0.008)	(0.007)	(0.012)	(0.003)	(0.008)
N	43,274	27,759	27,852	42,708	30,602	19,024	27,852	30,461
R^2	0.400	0.437	0.566	0.433	0.385	0.445	0.578	0.458
Controls	Y	Y	Y	Y	Y	Y	Y	Y
Country×Year FE	Y	Y	Y	Y	Y	Y	Y	Y
Industry×Year FE	Y	Y	Y	Y	Y	Y	Y	Y

Notes. This table estimates the effect of USD debt issuance using matched samples. Panels A and B construct the matched samples using the radius matching method and the kernel matching method, respectively. All regressions include a constant term, firm-level controls, country×year fixed effects, and industry×year fixed effects. Firm-level controls include firm's size, leverage, profit margin, working capital to asset ratio, cash to asset ratio, and a dummy for non-USD debt issuance. Standard errors are reported in parentheses. *, ** and *** indicate the significance levels of 10%, 5% and 1%, respectively.

Table 5. Amplification Effect by Global Banks' Risk Tolerance

Dependent Variable:	$\ln(ROAVOL_{t, t+2})$								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Issuance_USD$_{t-1}$	0.054**	0.039	0.054*	0.045	0.052*	0.137***	0.105***	-0.019	0.012
	(0.027)	(0.034)	(0.028)	(0.029)	(0.030)	(0.050)	(0.035)	(0.046)	(0.044)
Issuance_USD$_{t-1}$ ×*Global bank leverage*$_{t-1}$	0.016*	0.019*	0.016*	0.021*	0.016*	0.015*	0.017**	0.015*	0.015*
	(0.009)	(0.010)	(0.009)	(0.011)	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)
Issuance_USD$_{t-1}$ ×*Effectie Fed funds rate*$_{t-1}$		-0.017							
		(0.026)							
Issuance_USD$_{t-1}$ ×Δln*(VIX)*$_{t-1}$			0.008						
			(0.106)						
Issuance_USD$_{t-1}$ ×Δln*(USD broad idex)*$_{t-1}$				0.520					
				(0.660)					
Issuance_USD$_{t-1}$ ×*Global financial cycle*$_{t-1}$					0.006				
					(0.053)				
Issuance_USD$_{t-1}$ ×*Policy rate differential*$_{t-1}$						-0.013*			
						(0.007)			
Issuance_USD$_{t-1}$ ×*Local currency depreciation*$_{t-1}$						-0.000			
						(0.002)			
Issuance_USD$_{t-1}$ ×*CDS spread*$_{t-1}$							-2.282**		
							(0.894)		
Issuance_USD$_{t-1}$ ×*Domestic credit gap*$_{t-1}$								0.119**	
								(0.056)	
Issuance_USD$_{t-1}$ ×*Real GDP growth*$_{t-1}$									0.008
									(0.008)

N	65,091	65,091	65,091	65,091	65,091	65,091	65,047	63,433	65,091
R^2	0.195	0.195	0.195	0.195	0.195	0.195	0.195	0.196	0.195
Controls	Y	Y	Y	Y	Y	Y	Y	Y	Y
Country×Year FE	Y	Y	Y	Y	Y	Y	Y	Y	Y
Industry×Year FE	Y	Y	Y	Y	Y	Y	Y	Y	Y

Notes. This table examines the amplification effect on corporate risk-taking associated with global banks' risk tolerance. All regressions include a constant term, firm-level controls, country×year fixed effects, and industry×year fixed effects. Firm-level controls include firm's size, leverage, profit margin, working capital to asset ratio, cash to asset ratio, and a dummy for non-USD debt issuance. Robust standard errors clustered at the country-industry-year level are reported in parentheses. *, ** and *** indicate the significance levels of 10%, 5% and 1%, respectively.

Table 6. Evidence on Overinvestment in the Short Run

Dependent Variable:	$CAPX_t$ (1)	$\ln(MRPK_t)$ (2)	ROA_t (3)	ROE_t (4)
A. Full Sample				
$Issuance\_USD_{t-1}$	0.023***	-0.097***	-0.017***	-0.028**
	(0.003)	(0.037)	(0.003)	(0.012)
N	75,958	79,115	69,137	58,056
R^2	0.086	0.358	0.186	0.082
B. Radius Matching				
$Issuance\_USD_{t-1}$	0.016***	-0.021**	-0.004***	-0.013***
	(0.001)	(0.009)	(0.001)	(0.003)
N	41,663	43,232	38,350	33,028
R^2	0.403	0.539	0.442	0.356
C. Kernel Matching				
$Issuance\_USD_{t-1}$	0.016***	-0.025***	-0.005***	-0.018***
	(0.001)	(0.009)	(0.001)	(0.003)
N	41,663	43,232	38,350	33,028
R^2	0.407	0.540	0.448	0.360
Controls	Y	Y	Y	Y
Country×Year FE	Y	Y	Y	Y
Industry×Year FE	Y	Y	Y	Y

Notes. This table examines the effects of USD debt issuance on firm's post-issuance performance in the short run. Panel A estimates the effects of the USD debt issuance using the full sample. Panels B and C use the matched samples obtained by using the radius and kernel matching methods, respectively. All regressions include a constant term, firm-level controls, country×year fixed effects, and industry×year fixed effects. Firm-level controls include firm's size, leverage, profit margin, working capital to asset ratio, cash to asset ratio, and a dummy for non-USD debt issuance. Robust standard errors clustered at the country-industry-year level are reported in parentheses. *, ** and *** indicate the significance levels of 10%, 5% and 1%, respectively.

Table 7. Evidence on Overinvestment in the Longer Run

Dependent Variable:	$CAPX_{t, t+2}$ (1)	$\ln(MRPK_{t, t+2})$ (2)	$ROA_{t, t+2}$ (3)	$ROE_{t, t+2}$ (4)	$CAPX_{t, t+4}$ (5)	$\ln(MRPK_{t, t+4})$ (6)	$ROA_{t, t+4}$ (7)	$ROE_{t, t+4}$ (8)
A. Full Sample								
Issuance_USD$_{t-1}$	0.021***	-0.112***	-0.016***	-0.020**	0.019***	-0.158***	-0.018***	-0.018**
	(0.003)	(0.035)	(0.003)	(0.008)	(0.002)	(0.035)	(0.003)	(0.007)
N	70,051	75,388	66,035	54,533	65,624	72,036	63,069	51,369
R^2	0.110	0.373	0.159	0.081	0.130	0.376	0.140	0.079
B. Radius Matching								
Issuance_USD$_{t-1}$	0.012***	-0.037***	-0.007***	-0.001	0.008***	-0.049***	-0.011***	-0.008***
	(0.001)	(0.009)	(0.001)	(0.002)	(0.000)	(0.009)	(0.001)	(0.002)
N	39,008	41,875	37,133	31,423	36,781	40,325	35,728	29,852
R^2	0.441	0.551	0.437	0.405	0.435	0.559	0.411	0.340
C. Kernel Matching								
Issuance_USD$_{t-1}$	0.011***	-0.039***	-0.007***	-0.004**	0.008***	-0.050***	-0.011***	-0.010***
	(0.001)	(0.009)	(0.001)	(0.002)	(0.000)	(0.009)	(0.001)	(0.002)
N	39,008	41,875	37,133	31,423	36,781	40,325	35,728	29,852
R^2	0.448	0.554	0.441	0.415	0.442	0.562	0.418	0.352
Controls	Y	Y	Y	Y	Y	Y	Y	Y
Country×Year FE	Y	Y	Y	Y	Y	Y	Y	Y

Industry×Year FE	Y	Y	Y	Y	Y	Y	Y	Y

Notes. This table examines the effects of USD debt issuance on firm's post-issuance performance in the medium run. Panel A estimates the effects of the USD debt issuance using the full sample. Panels B and C use the matched samples obtained by using the radius and kernel matching methods, respectively. All regressions include a constant term, firm-level controls, country×year fixed effects, and industry×year fixed effects. Firm-level controls include firm's size, leverage, profit margin, working capital to asset ratio, cash to asset ratio, and a dummy for non-USD debt issuance. Robust standard errors clustered at the country-industry-year level are reported in parentheses. *, ** and *** indicate the significance levels of 10%, 5% and 1%, respectively.

Table 8. The Role of Capital Controls and Macroprudential Policies

Dependent Variable:	ln($ROAVOL_{t, t+2}$)								
	A. Capital Controls			B. Macroprudential Policies					
	(1) KAI	(2) BOI	(3) EQI	(4) CapFX	(5) LFC	(6) LFX	(7) LCG_Corp	(8) DSTI	(9) inverse-LTV
Issuance_USD$_{t-1}$	0.045	0.043	0.048	0.044	0.044	0.042	0.066**	0.045	0.045
	(0.030)	(0.030)	(0.031)	(0.030)	(0.032)	(0.031)	(0.029)	(0.029)	(0.029)
Issuance_USD$_{t-1}$ ×Capital controls$_{t-1}$	-0.015	-0.038	-0.058						
	(0.035)	(0.033)	(0.035)						
Issuance_USD$_{t-1}$ ×Macroprudential$_{t-1}$				-0.076**	-0.080**	-0.023	-0.053**	-0.059*	-0.055**
				(0.031)	(0.035)	(0.031)	(0.025)	(0.032)	(0.027)
N	51,183	51,183	51,183	52,779	52,779	52,779	52,779	52,779	52,779
R^2	0.190	0.190	0.190	0.193	0.193	0.193	0.193	0.193	0.193
Controls	Y	Y	Y	Y	Y	Y	Y	Y	Y
Country×Year FE	Y	Y	Y	Y	Y	Y	Y	Y	Y
Industry×Year FE	Y	Y	Y	Y	Y	Y	Y	Y	Y

Notes. This table examines the role of capital controls and macroprudential policies in the effect of USD debt issuance on corporate risk-taking. Panel A estimates the role of capital control policies based on the capital control data from Fernández et al. (2016). The capital control policy variable (*Capital controls*) in columns (1) to (3) are the standardized policy shocks of the overall controls on capital inflows (*KAI*), controls on bond inflows (*BOI*), and controls on equity inflows (*EQI*), respectively. Panel B estimates the role of macroprudential policies using the policy measures constructed in Alam et al. (2019). The macroprudential policy variable (*Macroprudential*) in columns (4) to (9) are the standardized policy shocks to capital requirements for banks' foreign exchange loans (*CapFX*), limits on foreign currency lending (*LFC*), limits on net or gross open foreign exchange positions (*LFX*), limits on the growth of corporate-sector credit (*LCGCorp*), limits to the debt-service-to-income ratio (*DSTI*), and the inverse of the loan-to-value ratio (*inverse-LTV*). All regressions include a constant term, firm-level controls, country×year fixed effects, and industry×year fixed effects. Firm-level controls include firm's size, leverage, profit margin, working capital to asset ratio, cash to asset ratio, and a dummy for non-USD debt issuance. Bootstrapped standard errors obtained through 1,000 repetitions are reported in parentheses. *, ** and *** indicate the significance levels of 10%, 5% and 1%, respectively.

Table 9. Spillover Effects on Non-Issuers

Dependent Variable:	$\ln(ROAVOL_{t, t+2})$							
	A. Broadly-Defined Non-Issuers				B. Narrowly-Defined Non-Issuers			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	ICP_U	ICP_W	ICP_AVG	ICP_HHI	ICP_U	ICP_W	ICP_AVG	ICP_HHI
$\ln(ICP_{t-1})$	0.029***	0.020***	0.033***	0.026***	0.026***	0.015**	0.030***	0.023***
	(0.007)	(0.005)	(0.006)	(0.005)	(0.008)	(0.006)	(0.008)	(0.006)
N	21,410	21,410	21,410	21,418	14,451	14,451	14,451	14,456
R^2	0.153	0.153	0.154	0.154	0.171	0.170	0.171	0.171
Controls	Y	Y	Y	Y	Y	Y	Y	Y
Country×Year FE	Y	Y	Y	Y	Y	Y	Y	Y
Industry×Year FE	Y	Y	Y	Y	Y	Y	Y	Y

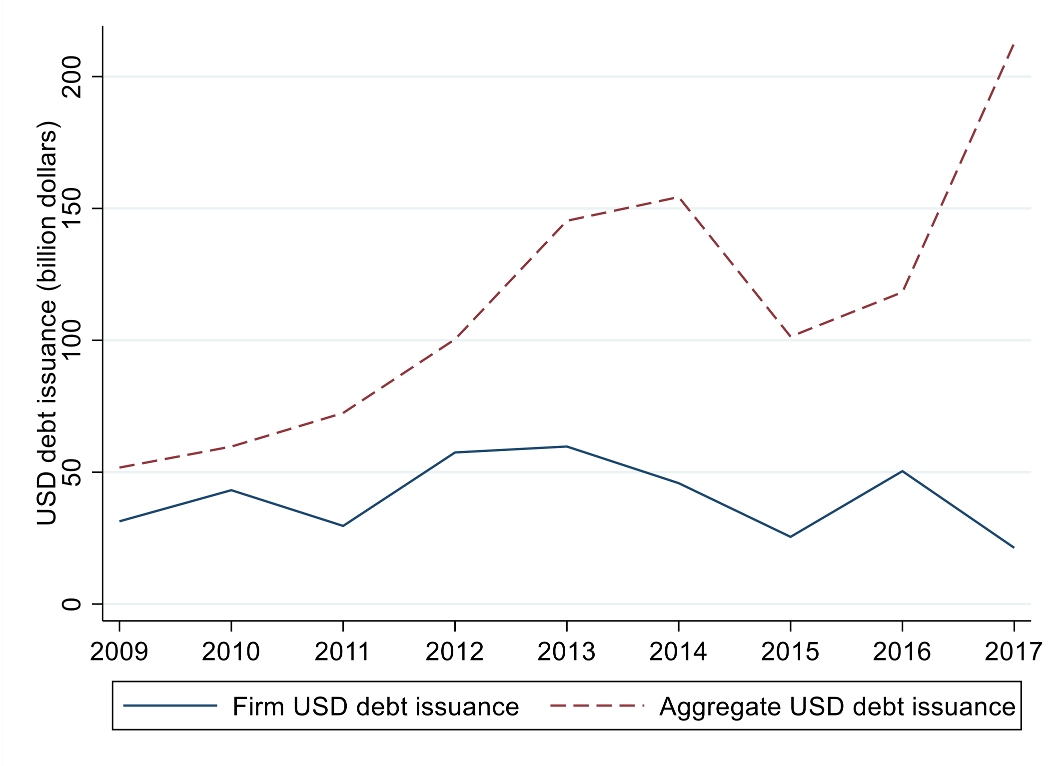
Notes. This table estimates the spillover effect on non-issuers' risk-taking using the sample of non-issuers only. Panel A uses a sample of non-issuers that have no USD debt up to year *t*-1 and at least one USD debt issuers in their industry. Panel B uses a sample of non-issuers that have no USD debt up to year *t*+2 and at least one USD debt issuers in their industry. Columns (1) and (5) measures the competition pressure of USD debt issuers on non-issuing peers as the inverse of the total sum of distance in sales share to each issuer (i.e., the size of sales share differential between the non-issuer and each issuer) within the industry (*ICP_U*). Columns (2) and (6) use the inverse of the distance in sales share to each issuer within the industry, weighted by each issuer's relative issuance size, (*ICP_W*), as the measure of competition pressure. Columns (3) and (7) measures the competition pressure with the inverse of the average distance in sales share to issuers within the industry (*ICP_AVG*). Columns (4) and (8) use the inverse of the sum of the sales share squared of the non-issuer and all issuers (*ICP_HHI*) as the competition pressure measure. All regressions include a constant term, firm-level controls, firm fixed effects, country×year fixed effects, and industry×year fixed effects. Firm-level controls include firm's size, leverage, profit margin, working capital to asset ratio, cash to asset ratio, and a dummy for non-USD debt issuance. Robust standard errors clustered at the country-industry-year level are reported in parentheses. *, ** and *** indicate the significance levels of 10%, 5% and 1%, respectively.

Table 10. Effects on Intra-Industry Cross-Sectional Distribution of Stock Returns

Dependent Variable:	A. Top and Bottom 5%				B. Top and Bottom 10%			
	$Downside_t$	$Upside_t$	$Skewness_t$	$CoeffSkew_t$	$Downside_t$	$Upside_t$	$Skewness_t$	$CoeffSkew_t$
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
$IssuValueSH\_USD_{t-1}$	0.101**	0.038	-0.063*	-0.229***	0.076**	0.022	-0.055*	-0.209***
	(0.041)	(0.043)	(0.036)	(0.071)	(0.035)	(0.032)	(0.030)	(0.071)
N	3,841	3,841	3,841	3,412	3,841	3,841	3,841	3,412
R^2	0.471	0.467	0.177	0.208	0.405	0.400	0.169	0.207
Controls	Y	Y	Y	Y	Y	Y	Y	Y
Country×Year FE	Y	Y	Y	Y	Y	Y	Y	Y
Industry×Year FE	Y	Y	Y	Y	Y	Y	Y	Y

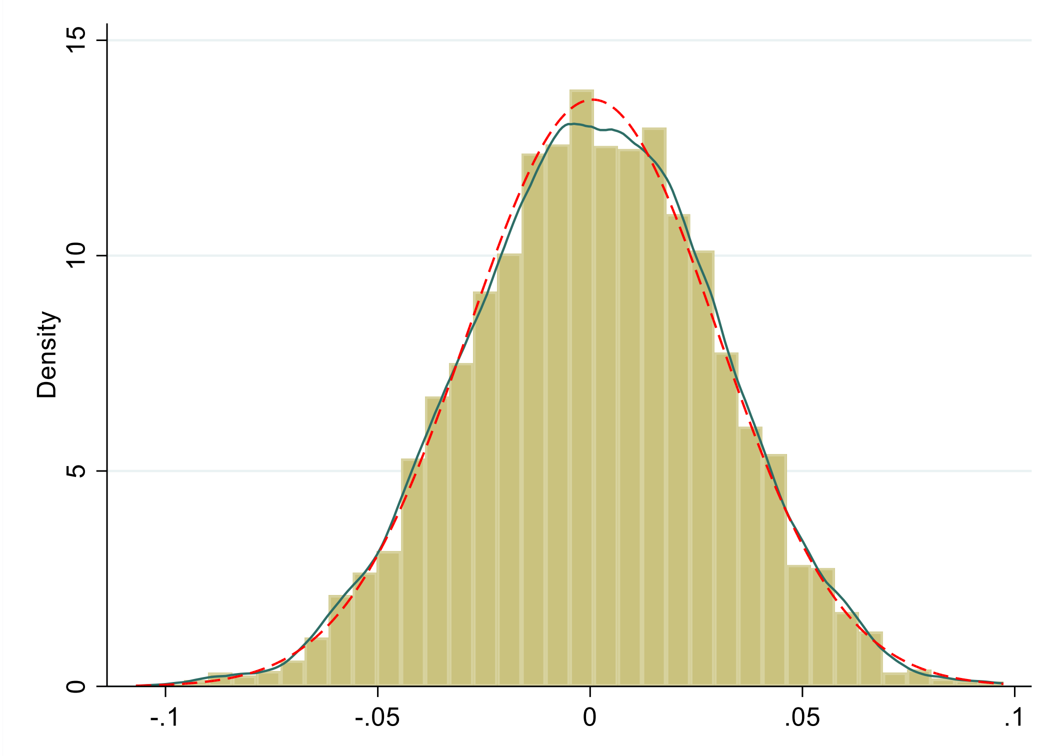
Notes. This table examines the effect of USD debt issuance on the cross-sectional distribution of stock returns at the industry level. Panel A uses the top and bottom 5^{th} percentiles of the industry stock return distribution to construct within-industry cross-sectional return distribution measures. Panel B uses the top and bottom 10^{th} percentiles of the industry stock return distribution to construct within-industry cross-sectional return distribution measures. All regressions include a constant term, industry-level controls, country×year fixed effects, and industry×year fixed effects. Industry-level controls are each industry's non-USD debt issuance size to total debt ratio, the industry averages of firm's size, leverage, gross profit margin, working capital to assets ratio, and cash to assets ratio. Robust standard errors clustered at the country-industry level are reported in parentheses. *, ** and *** indicate the significance levels of 10%, 5% and 1%, respectively

Figure 1. Total Amount of USD Debt Issuance (2009-2017)



Note: This figure plots the total amount of the USD debt issuance by firms included in our sample and the BIS' official data on the USD debt issuance by non-financial firms in the fifteen EMEs over the period 2009-2017. The solid line represents the total amount of the USD debt issuance by firms included in our sample. The dashed line represents the BIS' official data on the USD debt issuance by non-financial firms.

Figure 2. Distribution of Estimates in the Placebo Test



Note: This figure plots the distribution of the estimated coefficients on the issuance dummy from a placebo test. The placebo test is conducted by randomly assigning the issuance dummy across firms over time and re-estimate the baseline specification using the randomized data. This simulation is repeated 5000 times. Dashed line plots the normal distribution. Solid line plots the kernel density estimates produced using the Epanechnikov kernel.