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Full length Article

Internationalization and the capital structure of firms in emerging markets: Evidence from Latin America before and after the financial crisis

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ABSTRACT

This study examines the impact of internationalization on the capital structure of firms in emerging markets before and after the financial crisis of 2008, with evidence from five countries in Latin America (Argentina, Brazil, Chile, Mexico, and Peru). We find that before the financial crisis, Latin American MNCs are characterized by lower debt levels than purely domestic firms. However, after the financial crisis, we find that the MNCs are characterized by higher debt levels. This finding suggests that after the financial crisis, the Latin American MNCs (like many firms) may be taking advantage of their access to low interest rates in the global capital markets.

1. Introduction

In recent decades, with the globalization of the world economy, including the financial markets, many growth and financial opportunities have become available to firms in emerging markets. Specifically, firms can now take advantage of free trade agreements, increased investment and capital flows, and increased access to both domestic and international financing. Access to the global financial markets is critical for firms to expand and be successful on the international stage. Along with this, however, managers must learn to overcome the financial obstacles that are inherent in global expansion and make significant financing decisions for the firm.

There have been numerous studies on the topic, but the capital structure remains a puzzling issue in modern corporate finance. The conundrum is further complicated when it comes to examining the capital structure of firms in emerging markets, as there has been less research focusing on these firms. Specifically, the literature is lacking as it pertains to the impact of internationalization on the capital structure of firms in emerging markets and how this association has changed after the global financial crisis of 2008. The seminal study on capital structure by Modigliani and Miller (1958) forms the basis of all capital structure research. At the time, the authors posited that in a world with perfect capital markets with no taxes and bankruptcy costs, capital structure is irrelevant. Since then, the theory has evolved, and the consensus is that an optimal capital structure of a firm is a realistic concept motivated by things such as agency costs, bankruptcy costs, taxes, and asymmetric information. Moreover, the optimal capital structure concept is one
that is equally important to both managers and researchers, specifically as it relates to its impact on firm value. In addition, the optimal capital structure is of the utmost importance for firm efficiency, profitability, and competitiveness, all of which are critical determinants of economic growth.

The capital structure of multinational corporations (MNCs) is of particular interest, as the world economy has transformed and is now dominated by global investment and trade. According to international financial management textbooks (Eun and Resnick, 2004; Madura, 2012), MNCs operate in different global economies that are less correlated with each other and are subsequently more diversified than domestic firms. Therefore, they experience more earnings stability (less cash flow volatility) and a lower likelihood of bankruptcy. As a result, MNCs should be able to bear more debt in their capital structure than strictly domestic corporations (DCs). In other words, MNCs should have higher debt ratios. Interestingly, though, empirical research shows that MNCs have lower debt ratios than DCs because of the additional business risks they face as a result of their global operations (Burgman, 1996; Fatemi, 1988; Lee and Kwok, 1988).

This study is especially important as it bridges the gap in the capital structure literature and adds to the literature on the impact of the financial crisis of 2008 by providing new insights on the financing behavior of firms in emerging markets before and after the financial crisis. Specifically, the existing literature focuses almost exclusively on firms in developed economies, with many studies focusing on US and Eurozone firms. However, this study investigates the impact of internationalization on the capital structure of firms in emerging markets before and after the financial crisis, with evidence from five countries in Latin America (Argentina, Brazil, Chile, Mexico, and Peru). First, this study is warranted as it adds to the body of work on the financing patterns of MNCs in the region. Second, we examine whether financing structures changed after the financial crisis. Third, the study is unique in that it specifically looks at the capital structure policy of Latin American firms.

The findings presented in this study document important new information, as it relates to the financing patterns of MNCs and domestic firms in Latin America before and after the financial crisis. Specifically, the study documents the use of lower leverage ratios before the financial crisis for both domestic firms and MNCs, which is consistent with prior empirical studies. On the other hand, the study documents higher leverage ratios for MNCs after the financial crisis, which is consistent with international financial management textbooks. We surmise that the global financial crisis, followed by unprecedentedly low interest rates aimed at stimulating economies, and access to global capital markets, together make financing with debt a lot more attractive for Latin American MNCs. This is supported by Karagiannis et al. (2010), who investigate the interest rate transmission mechanism for the Eurozone and the United States after the recent financial crisis. The authors find that in the context of efficient monetary policy, changes in a central bank’s policy interest rate are transferred to retail interest rates, thereby influencing both consumer and business lending rates. Also, we find that international diversification mitigates the negative impact of the home country’s political risk on debt financing after the financial crisis in Latin American firms.

The remainder of this paper is organized as follows. Section 2 presents the research background and hypotheses. Section 3 describes the data. Section 4 discusses the research methodology used in the study. Section 5 reports the results, Section 6 concludes, and Section 7 presents the limitations of the study.

2. Literature review

The capital structure of a firm has always been a significant issue for academicians and practitioners alike. In the seminal study by Modigliani and Miller (1958), the authors propose that assuming perfect capital markets and a world with no taxes, the capital structure of a firm is irrelevant to firm value. In a world with corporate taxes, Modigliani and Miller (1963) suggest that the value of a firm is maximized with 100 percent debt in its capital structure, as interest on debt is tax-deductible. Therefore, debt financing is preferred over equity financing. In reality, however, many firms factor in the costs of financial distress and bankruptcy and carry only moderate levels of debt in their capital structure.

Lindner et al. (2018) analyze the extant literature on the relationship between internationalization and capital structure policy. Using a meta-analysis of 31 studies, including 223,658 firm observations and at least two separate samples, the authors investigate the direction, size of any effect, and multiple contingencies of the relationship. Their results show that MNCs are characterized by lower debt ratios than domestic corporations, supporting the argument that there are increased risks and agency costs associated with international operations.

Using US firms, Park et al. (2013) examine whether there is a difference between the leverage policies of MNCs and domestic corporations (DCs) by attempting to answer two main questions: (1) Do MNCs have higher or lower debt levels than DCs? (2) To return to the optimal debt level following an economic shock, do MNCs adjust their debt level faster or slower than DCs? After controlling for the usual firm characteristics related to debt levels, the authors find that the debt levels of MNCs are not much lower than those of DCs. Interestingly, the authors also find that there is no significant difference in the debt maturity structure, speed of debt level changes, or the issuance of debt vs. equity between MNCs and DCs. However, after analyzing non-US MNCs (Australia, Canada, France, Germany, Japan, and the UK), the authors find that non-US MNCs issue securities more often and modify debt levels faster than their domestic counterparts.

The following sections discuss the capital structure theories and other pertinent literature related to firm internationalization and capital structure policy.

2.1. Capital structure theories

Myers (1984) put forth the pecking order theory. When examining MNCs and the level of debt, the pecking order theory posits
that a higher level of internationalization leads to lower debt levels. MNCs are more diversified than are DCs, having many divisions in many countries and industries, which naturally gives them access to an extensive network of international financing markets. These internal markets provide cheaper sources of financing when compared to external sources of financing (Gonenc and de Haan, 2014). Therefore, we expect an inverse relationship between MNCs and debt levels based on the pecking order theory (Shleifer and Vishny, 1992; Stein, 1997).

Jensen and Meckling (1976) posit that the accessibility of free cash flow leads to an agency problem, which reduces the value of the firm. Agency cost theory predicts a negative relationship between MNCs and debt levels, as there is more information asymmetry because MNCs are spread across several countries, making it more difficult and costly to gather and process information, which translates into less monitoring (Doukas and Pantzalis, 2003). As a result, Chen et al. (1997) point out that there is a higher probability that managers will use funds for non-value-maximizing purposes. This leads to a higher cost of debt, and as such, the capital structure is characterized by less debt.

In the trade-off theory, firms make capital structure decisions based on the advantages and disadvantages of using more debt. Gonenc and de Haan (2014) point out that MNCs may have subsidiaries in geographic locations with favorable tax rates or interest deduction regulations. Thus, these firms have the opportunity to maximize their tax shield advantages. Moreover, Chen et al. (1997) and Doukas and Pantzalis (2003) posit that a higher level of geographic diversification might reduce a firm’s business risks, thereby reducing the possible financial distress and bankruptcy costs. Therefore, MNCs may hold more debt in their capital structure as a result of the advantages of international geographic diversification.

2.2. Exchange rate risk

Exchange rate risk is the risk that fluctuations in currency will adversely affect the demand, supply, price, and costs associated with a firm. Choi (1989) investigates the relationship between a firm’s capital structure decisions and foreign exchange risk. The author finds that the higher the firm’s foreign exchange risk exposure, the lower the optimal level of debt in the capital structure. Moreover, Bartov et al. (1996) find that foreign exchange rate risk affects the earnings and cash flows of a firm as well as the discount rate used to value these cash flows. As a result, MNCs with greater foreign exchange risk exposure are expected to hold less debt.

Burgman (1996) also finds that the higher the sensitivity of a firm’s cash flows and earnings to foreign exchange rate changes, the lower the optimal level of debt. However, the author goes further and argues that MNCs with higher economic exchange rate exposure should have higher optimal levels of debt, by pointing out the difference between transaction and economic exchange rate exposure of firms. According to the author, MNCs are able to hedge transaction exposure to exchange rate fluctuations somewhat easier than hedging (or even measuring) economic exchange rate risk. Moreover, an MNC has the ability to use its financing policy to manage economic exchange rate risk exposure by raising foreign currency-denominated capital. The author surmises that since it usually is easier and cheaper to issue debt rather than equity in global markets, MNCs’ foreign debt holdings may rise to hedge their economic exchange rate exposure. As a result, there could be a positive relationship between foreign exchange rate sensitivity and MNCs’ increased use of debt in their capital structure.

2.3. Political risk

In addition to exchange rate risk, MNCs are also subject to political risk. Political risk is the chance that political events, decisions, policies, or conditions will have a significant adverse effect on a firm’s business operations. Jodice (1985) highlights examples of political risks, which include confiscation of assets, trade wars, sudden tax rate changes, wars, social unrest, political coups, political violence, international disputes, government regime changes, and regulatory restrictions. Akhtar (2005) argues that MNCs with greater political risk exposure should have less debt in their capital structure as a result of the increased probability of financial losses.

Burgman (1996) points out that it is challenging to completely diversify political risk because of the uniqueness of foreign direct investment. However, the author posits that MNCs can use their debt financing policy to mitigate their expected wealth losses due to political risk. Specifically, MNCs can minimize the impact of political risk by financing primarily with local debt, or by using a syndicate of international banks to facilitate any borrowing. Therefore, the author surmises that MNCs operating in countries characterized by high political risk should have a greater proportion of debt in their capital structure.

2.4. Diversification and capital structure policy

Chkir and Cosset (2001) examine the relationship between MNCs’ debt policy and their diversification strategy. The authors find that MNCs with a high level of international and product diversification have less default risk. In addition, the MNCs that are less diversified have less debt in their capital structure than the MNCs that are more diversified. Moreover, according to the authors, international and product diversification together enable MNCs to enjoy higher levels of profitability than the MNCs following just one diversification strategy. Also, the authors conclude that the impact of agency costs and default risk on the leverage ratio of MNCs is dependent on their diversification strategy.

2.5. Latin American firms and capital structure policy

The capital structure policy of firms in Latin American (and other developing) countries is unique. These countries are characterized by less developed and sophisticated capital markets, financial institutions, and legal, regulatory, and judicial environments,
as well as less stable macroeconomic environments. Moreover, the aforementioned factors all have a significant impact on the optimal capital structure of Latin American firms through their ability to tap into external sources of financing (McLean et al., 2012). Khurana et al. (2006) investigate the relationship between cash flow sensitivity and capital market development. The authors find that firms experiencing capital limitations (such as firms in developing countries) will defer immediate spending in favor of financing future growth opportunities. In contrast, firms that are able to tap into external financing do not need to depend solely on their internal cash flows to take advantage of real growth opportunities. As a result, this contributes to higher economic growth, which is significant for developing countries. Gonenc and de Haan (2014) conclude that more developed capital markets markedly affect the level of debt financing for firms in developing countries.

Fauver et al. (2003) posit that a firm’s ability to tap into external sources of financing capital is directly related to the level of sophistication of the home country’s capital markets. The more developed the capital markets, the easier it will be for firms to access external financing. Likewise, Love (2003) points out that capital market development facilitates firms’ access to cheaper external capital and allows these developing country firms to take advantage of the high growth opportunities that are inherent in such markets. Without this capital market development, developing country firms are viewed as being riskier and are characterized by a higher cost of capital, which limits positive NPV investments. On the other hand, as the financial markets become more sophisticated, developing country firms have access to cheaper external capital, are viewed as being less risky, and enjoy a lower cost of capital, more growth opportunities, and by extension, more positive NPV investments as a direct result of the cheaper sources of capital (Love, 2003; McLean et al., 2012).

Elnahas et al. (2018) investigate the effect of natural disaster risk based on firms’ capital structure policy. The authors find that firms located in more disaster-prone (riskier) areas are characterized by a lower level of leverage than those in less disaster-prone regions. They surmise that the systematic difference in leverage is directly related to higher operating uncertainty, greater costs of capital, and less financial flexibility. The authors conclude that firms consider natural disaster risk in their capital structure decisions.

### 2.6. Effects of the financial crisis on capital structure policy

Huang et al. (2020) examine the existence of debt policy persistence and the effect of an economic shock such as a financial crisis. The authors find that capital structure policy and debt maturity policy are persistent. Moreover, they find that the macro-level financial crisis drastically decreases the persistence of debt policy, but micro-level environmental risk has no effect on the debt policy persistence. The authors conclude that the firms’ debt policy persistence will more likely change as a result of significant macro-level systemic risk (such as a financial crisis) rather than with micro-level non-systemic risk.

Tang and Upper (2010) investigate debt financing after financial crises. The authors find that there is a marked reduction in debt financing in the nonfinancial private sector. However, they find far fewer signs of debt reduction in the corporate sector after financial crises. Moreover, concerning the 2008 financial crisis, the authors find that corporate debt relative to GDP increased during the initial stages of the crisis in most countries, only partly due to firms drawing on previously arranged lines of credit. Harrison and Widjaja (2014) investigate the effect of the 2008 financial crisis on the capital structure policy of firms. As in previous studies, the authors find that tangibility and firm size are positively correlated with leverage, while profitability, liquidity, and market-to-book (MTB) ratio are negatively correlated. Specifically, the authors find that profitability is not a strong determinant of capital structure decisions after the financial crisis because of firms’ weaker internal financing options. More importantly, they find a stronger impact of the MTB ratio, indicating that firms favor debt financing after the financial crisis.

### 2.7. Evidence from other emerging markets

Agnihotri and Bhattacharya (2019) investigate the effect of related party transactions (RPTs) on firms in emerging economies with a specific look at 367 manufacturing firms in India. The authors find that RPTs, (e.g., cash injections, credit provisions, or debt guarantees), have a negative effect on internationalization. They also find that business group ownership enhances the negative relationship, while foreign shareholding weakens the relationship between RPTs and internationalization.

Using a survey of firms in Lebanon, Mora et al. (2013) examine the motivations behind both large and small firms’ decisions to undertake foreign currency borrowing in an economy characterized by domestic banks. The results show that exporters are more likely to incur dollar debt because of the natural hedge against exchange rate risk. Also, firms create a hedge by passing on any currency risk to customers and suppliers. In addition, the authors find that more transparent firms are more likely to use dollar credit, and firms that rely on formal financing are more likely to access dollar debt than firms that rely primarily on informal funding. Interestingly, the authors find that profitable firms are less likely to contract dollar debt. Using a sample of Middle Eastern and North African (MENA) firms over the period 1998–2011, Guyot et al. (2014) examine whether foreign financial shocks have an impact on the cost of equity in emerging markets. The findings show that external shocks can increase the cost of capital in mature emerging markets. Specifically, the authors conclude that the international cost of equity can increase for large emerging markets during times of foreign financial crises where emerging-market firms are characterized by higher global betas leading to higher risk premiums.

Neaime (2012) investigates the global and regional financial linkages between MENA stock markets and the more developed capital markets, and on the intra-regional financial linkages between MENA countries’ capital markets after the 2007 US financial crisis. The results show that short-term or long-term capital flows have so far not been a dependable source of financing for development and growth in MENA countries. Moreover, FDI is concentrated in a number of emerging-market economies, not including MENA countries, and MENA countries have received very little financial flow since the financial crisis.
Table 1
Definition of variables.

| Variable      | Definition                                                                 |
|---------------|---------------------------------------------------------------------------|
| Leverage \( i,t \) | Firm \( i \)'s long-term debt scaled by total debt plus market value of equity in year \( t \) |
| International \( i,t \) | Dummy variable that equals 1 if firm \( i \) has international operations in year \( t \) |
| After_FC \( i,t \) | Dummy variable that equals 1 if the observation corresponds to years after 2008 |
| Political_Risk \( i \) | Home country political risk in year \( t \) obtained from the International Country Risk Guide (ICRG) developed by the Political Risk Services Group |
| Size \( i,t \) | Firm \( i \)'s log of total assets in US$ in year \( t \) |
| Age \( i,t \) | Firm \( i \)'s log of years from the date of incorporation in year \( t \) |
| FCF \( i,t \) | Firm \( i \)'s EBIT plus depreciation and amortization minus total taxes scaled by the book value of assets in year \( t \) |
| Collateral \( i,t \) | Firm \( i \)'s book value of tangible assets divided by the book value of assets in year \( t \) |
| NDTS \( i,t \) | Firm \( i \)'s total annual depreciation expense divided by the book value of assets in year \( t \) |
| ROA \( i,t \) | Firm \( i \)'s EBIT divided by book value of assets in year \( t \) |
| Growth \( i,t \) | Firm \( i \)'s market value of common equity divided by the book value of common equity in year \( t \) |
| Exchange_Risk \( i,t \) | Standard deviation of the monthly effective exchange rate of each country in year \( t \) |

3. Data

We use a sample of 706 Latin American firms from the period 1996–2016. We selected all firms listed on the stock exchanges of Buenos Aires (Argentina), Sao Paolo (Brazil), Santiago (Chile), Mexico City (Mexico), and Lima (Peru). Financial data was obtained from Economática, a database that contains annual financial information, including long-term debt, sales, net profits, and assets for all the public firms on these five major Latin American stock exchanges. In addition to assembling the financial information database, we perform a thorough examination of the data of each firm using its website, annual reports, archival data, and filings with local regulators. We identify a firm's year of creation, whether it had international operations, the year that it established international services, and other variables, which are described below as in Table 1. Our final sample contains 7,012 firm-year observations. Table 2 presents the distribution of observations by country. The country with more observations in our sample is Brazil (46 %). The Sao Paolo stock exchange is the biggest in South America. The other countries in our sample have a very similar distribution in the number of observations: Argentina (16 %), Chile (14 %), Mexico (14 %), and Peru (10 %).

3.1. Variables

The dependent variable is the firms' debt level (leverage \( i,t \)) defined as the firms' long-term debt scaled by total debt plus market value of equity in year \( t \). Our primary explanatory variables are International \( i,t \), which is a dummy variable that equals 1 if firm \( i \) has international operations in year \( t \), or zero otherwise, and After_FC \( i,t \), which is a dummy variable that takes the value of 1 for observations after the financial crisis of 2008, or zero otherwise. We also include as controls, variables that are determinants of the firm's leverage level based on previous studies. We include the level of political risk of the firm's home country. Political_Risk \( i \) is the home country political risk index in year \( t \) obtained from the International Country Risk Guide (ICRG) developed by the Political Risk Services Group. Higher numbers denote higher political risk in the country. The ICRG quantitative analysis is based on 22 weighted variables grouped into political, financial, and economic risk categories. Firms based in a country with a high level of political uncertainty might be perceived as riskier and, therefore, present lower levels of debt than firms in other countries. We also add as control variables the firms' size, age, level of free cash flow, amount of collateral, net-debt tax shield, profitability, and foreign exchange risk. Size \( i,t \) is the size of the firm, and it is equal to firm \( i \)'s log of total assets in US$ in year \( t \). Previous studies have found that larger firms tend to be more diversified and have more resources and, therefore, present lower default risk (Chkir and Cosset, 2001). Age \( i,t \) is the age of the firm. It is equal to firm \( i \)'s log of years from the date of incorporation. Older firms might have more stable earnings, and therefore they might be perceived to have lower default risk, and consequently, higher levels of debt financing. FCF \( i,t \) is the firm's free cash flow. It is defined as firm \( i \)'s EBIT plus depreciation and amortization minus total taxes scaled by the book value of assets in year \( t \). Collateral \( i,t \) is the tangible value of assets of the firm, and it is equal to firm \( i \)'s book value of physical assets divided by the book value of assets in year \( t \). Firms with a more tangible value of assets might have higher levels of debt because they
might be perceived as having lower default risk. NDTS_i,t is the nondebt tax shield. This variable is defined as firm i's total annual depreciation expense divided by the book value of assets in year t. Firms with higher nondebt tax shields are expected to have lower leverage, as the tax benefits of leverage are relatively less valuable. ROA_i,t is the return on assets, and it is equal to firm i's EBIT divided by book value of assets in year t. The pecking order theory of capital structure argues that if a firm is profitable, then it is more likely to use internal sources of financing (Myers, 1984). Therefore, a negative relation between profitability and leverage is expected. Growth_i,t is the MTB ratio, a measure of growth opportunities, and it is calculated as firm i's market value of common equity divided by the book value of common equity in year t. Previous studies have used this measure to proxy for future growth opportunities. Firms with more growth options are expected to have higher information asymmetries and agency costs. Therefore, they are expected to have lower debt levels. The variable Exchange_Risk is the home country exchange risk measured as the standard deviation of the monthly effective exchange rate for each country in year t. The descriptive statistics are presented in Table 3. The mean value of leverage is 0.32. Around 45 % of the observations have international operations. The average age of the sample is 36 years, and the average return on assets is 2%. More than half of the observations correspond to the period after the financial crisis.

4. Methodology

We estimate the coefficient of our models using generalized least squares (GLS) methods for panel data with correction for heteroscedasticity and panel-specific autocorrelation. We do not use fixed-effects models because this would drop some critical variables from the analysis that do not change over time. Also, the Hausman test suggests that the random-effects model is adequate. Specifically, the difference in the coefficients obtained from the fixed-effects and random-effects models for our base configuration is not statistically significant (chi2 = 10.23, p-value = 0.14). We also run the Breusch and Pagan (1980) Lagrange Multiplier test to evaluate whether a random effect model is preferred to a pool OLS regression estimation. Based on the test results (chi2 = 7,781, p-value < 0.0001), we conclude that the random-effect model is appropriate because there is evidence of significant differences across firms in the sample.

We estimate the following model to explore the effect of internationalization and the financial crisis on the firms' capital structure: Base Model

\[
\text{Leverage}_i,t = \alpha_0 + \alpha_1 \text{International}_i,t + \alpha_2 \text{After}_FC_{i,t} + \alpha_3 \text{Political}_Risk_{i,t} + \alpha_4 \text{Size}_i,t + \alpha_5 \text{Age}_i,t + \alpha_6 \text{FCF}_{i,t} + \alpha_7 \text{Collateral}_i,t + \alpha_8 \text{NDTS}_i,t + \alpha_9 \text{ROA}_i,t + \alpha_{10} \text{Growth}_i,t + \alpha_{11} \text{Exchange}_Risk + \text{Country Controls} + \text{Year controls} + \text{Industry Control} + \epsilon_{i,t}
\]

where the main variables of interest are International_i,t, which is a dichotomous variable equal to 1 if firm i has international operations in year t, and zero otherwise, and After_FC_{i,t}, which takes the value of 1 if the observation corresponds to a period after the financial crisis of 2008, and zero otherwise. We include the interaction of After_FC_{i,t} with the other independent variables to determine whether the effect of the control variables on leverage is different after the financial crisis. Also, we include a three-way interaction with International_i,t, After_FC_{i,t}, and the rest of the explanatory variables to explore whether the determinants of debt financing have a different impact on Latin American MNCs after the financial crisis.

To test whether our model has an omitted variable (endogeneity) problem, we run the Ramsey (1969) test on our base model. Given that the traditional Ramsey (1969) test is designed for pool OLS regressions, we include the correction for panel data models detailed in Santos Silva (2016). The results do not reject the null hypothesis that the model has no omitted variables (F-test = 2.01, p-value < 0.11). Therefore, our model is correctly specified.

5. Results

Table 4 presents the results of the univariate analysis. For all years under analysis, there is no significant difference in the debt ratio levels of MNCs and domestic firms. However, for the period before the financial crisis, MNCs have lower debt ratios compared to firms with only local operations. The opposite holds true after the financial crisis, where MNCs have higher debt ratios than domestic firms with only local operations.
firms. Our univariate results show that after the financial crisis, MNCs are perceived as being less risky, and therefore have the ability to enjoy higher levels of debt. In all the years under review, MNCs are bigger (size), older (more established), more profitable, and have higher free cash flow levels.

Table 5 presents the regression results. The first column shows the results for the base model. Our results show that Latin American MNCs do not have significantly different leverage ratios compared to firms in the region with only local operations. The coefficient of the variable International is not significant. After the financial crisis, all firms in Latin America present lower debt ratios. It seems that after the financial crisis, even though the global interest rates were lower, firms in the region found it difficult to get more debt in their capital structure as they might be perceived to be riskier. As expected, firms in home countries with higher political risk profiles are recognized to be risker and present lower levels of debt. The coefficient of the variable Political_Risk is negative and statistically significant (-0.1376, p-value < 0.05). Consistent with previous findings in the literature (Aggarwal and Kyaw, 2010), it seems that firms that are bigger, older, and with more collateral resources show higher debt ratios in Latin America. The coefficient of the variables Size (0.0383, p-value < 0.01), Age (0.0232, p-value < 0.05), and NDTS (0.5435, p-value < 0.01) are all positive and statistically significant. Latin American firms are perceived to have more resources and experience, and therefore are less risky and have fewer information asymmetry problems. Consistent with the pecking order theory, profitable firms and companies with higher growth prospects present lower debt ratios.

The second column presents the results of the base model and the interaction of the variable denoting observations after the financial crisis (After_FC) and the determinants of leverage included in this study. The results show that after the financial crisis, Latin American firms with international operations have more debt in their capital structure compared to domestic firms; the coefficient of the interaction term of After_FC and International is positive and statistically significant (0.257, p-value < 0.01). This finding is consistent with the trade-off theory that predicts that a higher level of geographic diversification might reduce firms’ business risks, thereby reducing financial distress and bankruptcy costs. In addition, there is widespread consensus that the unprecedentedly low global interest rates have undoubtedly had an impact on financing decisions and, as a result, have influenced the debt levels that Latin American firms have in their capital structure. Latin American firms with international operations are better prepared to have access to better financing terms. We also find that the positive effect of size on the leverage ratio of Latin American firms is stronger after the financial crisis. The coefficient of the interaction between After_FC and size is positive and significant (0.016, p-value < 0.05). After the financial shock of 2008, larger firms in Latin America were perceived to be more prepared to have

Table 4
Difference in Means Analysis.

### Panel A. Full Sample

|                | Local       | International | Difference |
|----------------|-------------|---------------|------------|
| Leverage       | 0.329       | 0.322         | 0.007      |
| Size           | 12.839      | 13.358        | 0.518      |
| Age            | 3.351       | 3.873         | 0.522      |
| FCF            | 0.107       | 0.139         | 0.032      |
| Collateral     | 0.340       | 0.369         | 0.029      |
| N DTS          | 0.034       | 0.368         | 0.335      |
| ROA            | 0.018       | 0.037         | 0.019      |
| Growth         | 87.610      | 65.290        | 22.320     |

### Panel B. Before the Financial Crisis

|                | Local       | International | Difference |
|----------------|-------------|---------------|------------|
| Leverage       | 0.330       | 0.314         | 0.016      |
| Size           | 12.540      | 12.839        | 0.299      |
| Age            | 3.340       | 3.855         | 0.516      |
| FCF            | 0.111       | 0.159         | 0.049      |
| Collateral     | 0.421       | 0.394         | 0.027      |
| N DTS          | 0.038       | 0.040         | 0.002      |
| ROA            | 0.018       | 0.043         | 0.025      |
| Growth         | 153.4       | 130.9         | 22.5       |

### Panel C. After the Financial Crisis

|                | Local       | International | Difference |
|----------------|-------------|---------------|------------|
| Leverage       | 0.327       | 0.340         | 0.014      |
| Size           | 13.090      | 13.762        | 0.672      |
| Age            | 3.360       | 3.866         | 0.506      |
| FCF            | 0.104       | 0.124         | 0.020      |
| Collateral     | 0.271       | 0.348         | 0.077      |
| N DTS          | 0.031       | 0.032         | 0.001      |
| ROA            | 0.018       | 0.320         | 0.302      |
| Growth         | 14.0        | 18.2          | 4.2        |
The third column shows the three-way interaction among the determinants of leverage included in the base model, the dummy variable indicating Latin American firms with international operations (International_d), and observations after the financial crisis. Three interesting results emerge from this analysis. First, our results show that the negative effect of the home country’s political risk on leverage is less pronounced for firms with international operations after 2008. The coefficient of the interaction of Political Risk_d, After_FC_d, and International is positive and statistically significant (0.072, p-value < 0.05). Latin American MNCs located in home countries with high political risk present greater leverage ratios compared to firms with only local operations after the financial crisis. International diversification mitigates the negative impact of the home country’s political risk on debt financing after the financial crisis, as these firms are perceived to have the resources to mitigate the challenges and uncertainty present in their home country. Second, even though, as discussed previously, size should have a positive relationship with leverage, our results show that larger Latin American MNCs after the financial crisis have lower information asymmetries, making equity issues more attractive. The coefficient of the interaction of International, After_FC, and size is negative and significant (-0.214, p-value < 0.05). After the financial crisis, more profitable firms in Latin America prefer to use other financing options rather than debt.

The coefficient of the interaction term among International_d, After_FC_d, and NDTS_d is positive and significant (1.215, p-value < 0.01). This result is consistent with the findings of previous studies (Homaiifar et al., 1998). Therefore, we find that Latin American MNCs have higher levels of nondebt tax shields, leading to lower levels of debt financing. According to our results, this is more marked after the financial crisis.

Table 5 presents the regression results of the following model: Leverage_d = α_0 + α_1 International_d + α_2 After_FC_d + α_3 Political_Risk_d + α_4 Size_d + α_5 Age_d + α_6 FCF_d + α_7 Collateral_d + α_8 NDTS_d + α_9 ROA_d + α_10 Growth_d + α_11 Exchange_Risk_d + Year Dummies + Industry Dummies + Country Dummies + e_d1.

t statistics in parentheses.
* p < 0.10.
** p < 0.05.
*** p < 0.01.
value < 0.05). We run some robustness checks to test the validity of our findings. We test the model for sensitivity to the particular measures we used to operationalize our constructs. Using several alternative measures of the country political risk, such as the regulatory quality and the rule of law of the home country (LaPorta et al., 1998) and the Organization for Economic Cooperation and Development's yearly ranking of the level of political risk in each country (OECD, 2016), we obtain results similar to those described above. We also move the definition of the After_FCi,t variable to 2007 and 2009. Even though the financial crisis began in March 2008, several preceding events could have an impact on Latin American firms’ capital structure. In 2006, housing prices started to fall, and in 2007 US financial institutions stopped lending to each other. On the other hand, the effects of the financial crisis might have arrived with some delay in some Latin American countries. Even with these definitional changes in the After_FCi,t dummy variable, our results remain the same. We also use other measures of leverage, such as total debt divided by total assets, with similar results.

6. Conclusion and implications

Multinational corporations (MNCs) enjoy the advantages and disadvantages of operating in a global environment. This means that, unlike their domestic counterparts, they have to deal with monetary policy of multiple central banks, as well as macroeconomic and other factors of other nations. Specifically, these MNCs have to deal with exchange rate risk, political risk, varying tax rates, and interest rates in several different countries. Therefore, in forming their capital structure policy, MNCs must consider all of these factors and the impact their financing choices will have on the firm. To further complicate matters, the 2008 financial crisis threw global economies and financial markets into uncertainty, causing MNCs to review their capital structure decisions.

To date, empirical researchers either ignore Latin American firms completely or speculate that their capital structure decisions are similar to those of firms in other more advanced countries. This study looks at the impact of internationalization on the capital structure of firms in emerging markets before and after the financial crisis of 2008, with evidence from five countries in Latin America (Argentina, Brazil, Chile, Mexico, and Peru). This is warranted, as it adds to the body of work on the firms’ capital structure. In 2006, housing prices started to fall, and in 2007 financial institutions stopped lending to each other.

The results indicate that, for the full sample, there is no statistical difference in the capital structure policy of MNCs and domestic firms in Latin America. However, we find that before the financial crisis, Latin American firms with international operations (MNCs) are characterized by lower debt levels, consistent with the perspective that MNCs are perceived to be riskier because of increased political risk and exchange risk and face a higher cost of debt, leading to lower debt levels. However, after the financial crisis, we find that the MNCs are characterized by higher debt levels. This finding suggests that after the financial crisis, Latin American MNCs (like many firms) may be taking advantage of their access to low global interest rates in the international capital markets. Domestic firms are not internationally diversified; they do not have access to these global capital markets and are generally deemed to be riskier, so they cannot take advantage of these low global interest rates. Therefore, their capital structure is characterized by a lower level of debt.

The negative association between leverage and profitability suggests that all firms in our sample still prefer to finance their investments using internal financing rather than external financing as a result of the higher costs of external financing. The pecking order theory supports this finding. We observe a positive association between leverage and collateral. These findings are supported by the trade-off theory, which suggests that firms with more collateral are expected to issue more debt, as there is less risk of default. Therefore, our results indicate that the pecking order and trade-off theories play an important role in the capital structure policy of Latin American MNCs and domestic firms.

7. Future research

The study has some limitations that can be addressed in future research. First, we analyze publicly traded Latin American firms because private firms rarely disclose financial information. Publicly traded firms tend to be the largest in the country and are subject to additional scrutiny by financial markets. Thus, in future studies, investigators can analyze the capital structure and its determinants of small firms and private firms in the region. Second, we study firms in Latin America because the similarities among countries facilitate comparisons, and this has been an understudied region of the world. In future research, investigators can analyze firms in other emerging markets and compare their findings to the ones presented here. Third, we have been constrained by the availability of data, and thus we do not measure the level of international diversification of Latin American MNCs using a continuous variable. Future research could incorporate a variable measuring the degree of internationalization of firms in the region. Fourth, Goodell (2020), in exploring several areas for possible research dealing with COVID-19 and finance, highlights the effect of macroeconomic shocks on firms’ capital structure. Future research could examine the effect of COVID-19 on the capital structure policy of MNCs and domestic firms in Latin America.

CRediT authorship contribution statement

Mauricio Melgarejo Duran: Conceptualization, Data curation, Methodology, Software, Visualization, Investigation. Sheryl-Ann Stephen: Conceptualization, Writing - original draft, Writing - review & editing, Visualization, Validation.
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