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Determinants of Corporate Cash Holdings in Private and Public Companies: Insights from Latin America

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1. INTRODUCTION

A central question in corporate finance is related to how much of its total assets a firm should keep in the form of cash and cash equivalents to maximize its value. How a company manages corporate cash holdings is an important concern to managers, researchers, investors, and policymakers. As an example, managers must ensure that they have enough cash holdings within the firm so as to take advantage of growth opportunities, as well as to overcome unforeseen problems. In this regard, many CFOs consider decisions about cash levels to be among the most relevant decisions they make in imperfect capital markets (Almeida, Campello, Cunha, & Weisbach, 2014; Manoel & Moraes, 2022a). A large body of literature has recently emerged to increase the understanding of the firm, industry, and country-level factors that explain why companies around the world maintain considerable amounts of cash on their balance sheets (Deloof, Du, & Vanacker, 2020; Manoel & Moraes, 2022b).

Although liquidity management has become a relevant research topic, the literature is characterized by some remarkable gaps that we address in this research. More precisely, despite the growing efforts to determine firms' cash holdings, empirical studies about the theme focus almost exclusively on the context of publicly traded companies, largely due to the lack of available data for private firms. In addition, while providing relevant insights, the scarce literature on corporate cash holdings by private firms generally focuses on a single developed country (Bigelli & Sánchez-Vidal, 2012; Gao, Harford, & Li, 2013; García-Teruel & Martínez-Solano, 2008; Martínez-Solano, García-Teruel, & Martínez-Sola, 2018), especially in the U.S. setting (Gao et al., 2013), which are often dissimilar to the context of emerging economies' private firms.

The lack of research on privately held firms from emerging markets is remarkable because privately held firms are the dominant organization form across the world and because the rise of companies from emerging countries is a relevant factor in the globalization of the world economy (Deloof et al., 2020). In the present article, we fill this gap in the empirical literature by analyzing cash and its determinants in private and public companies in the Latin American setting. We also investigate whether Latin American privately held firms maintain lower cash holdings than their public counterparts. Towards our objective, we use a wide sample of private and public companies from the six largest Latin American economies: Argentina, Brazil, Chile, Colombia, Mexico, and Peru. All data are from the Capital IQ database. Our final sample is composed of a comprehensive unbalance panel data of 7,222 Latin American firms (46,040 firm-year observations) with data available over the 2000-2019 period.

Private firms internationally outnumber public companies, employ a large proportion of the workforce, and are considered an indispensable part of any economy (Gogineni, Linn, & Yadav, 2012). Therefore, studies involving privately held firms themselves are of great interest to shareholders (Gao et al., 2013). Still, the studies based on public companies may not be generalizable to private firms, as private firms differ from public companies in important aspects. One fundamental difference between public and private companies, for example, is the ownership structure and, consequently, the degree to which control is valued by their shareholders. While public firms have thousands of shareholders, private ones generally have one or a few shareholders (Brav, 2009). Thus, considering that managers and owners are often the same individuals, then private firms usually have lower manager-shareholder agency conflicts than their public counterparts (Brav, 2009). Another relevant distinction is the level of information asymmetry, given that private firms are generally more opaque to outsiders.

Additionally, cash holdings may be particularly relevant for private firms because they generally have less access to external funds. Whereas managers in public companies can usually smooth their activities and invest when appropriate by accessing public markets, private firm managers have to rely more on cash holdings and current cash flow. All these factors are likely to impact the cash policies of private firms relative to their public counterparts (Gogineni et al., 2012; Manoel, Moraes, Santos, & Neves 2017; Deloof et al., 2020).

Furthermore, cash holdings can differ across countries because differences in institutions cause differences in firms' characteristics (Almeida et al., 2014). For instance, different access to external funds, different levels of development of financial institutions, and creditor protection might impact the percentage of total assets invested in cash and cash equivalents in public and private firms from emerging economies. Hence, it is relevant to distinguish the differences in corporate cash holdings in private and public companies from emerging countries and whether it differs from more or less developed capital markets (Hall, Mateus, & Mateus, 2014).

It is also relevant to note that one can observe some notable differences in the findings across studies. For example, using a wide panel data of firms from Central and Eastern Europe for the period from 2001 to 2010, Hall et al. (2014) document that private firms tend to hold more cash holdings than public companies. Gao et al. (2013), on the other hand, observe that public companies in the U.S. hold significantly more cash holdings than private firms. Such differences suggest that the literature about corporate cash holdings needs more cross-country studies on cash holdings of private firms such as ours.

Latin America offers a good setting for this research. First, despite the importance of Latin American countries to the world economy, this region has been largely neglected in the cash management literature (Manoel & Moraes, 2022a; Manoel & Moraes, 2022b). Indeed, we know of no investigation on whether Latin American privately held firms hold more cash holdings relative to their public counterparts. Resolving the issue of whether private firms hold fewer cash holdings in relation to their public counterparts is relevant in understanding the cash holdings of these firms and the determinants of cash holdings in general. Secondly, there are some features in the Latin American setting that, we believe, may have relevant implications regarding the cash management behavior of firms. For example, Latin America is characterized as an underdeveloped market, with weak institutional environments and a highly concentrated ownership structure. Moreover, the level of investor protection (French civil law) is low in Latin America and the problem of investor expropriation is more severe when compared to countries of Common Law origin (Chong & Lopez-de-Silanes, 2007).

The poor investor protection, in turn, leads Latin American companies to face more constraints in accessing external funds relative to firms from developed economies. In this environment, higher cash levels will be prevalent to take advantage of growth opportunities, which would be bypassed due to costly external finance (Manoel & Moraes, 2022a). In the same way, the insufficient external market discipline of the Latin American context can provide self-interested managers with greater freedom to pursue their personal objectives in lieu of shareholders' interests (Manoel & Moraes, 2022a). In sum, Latin America is an under-researched region that has the potential to yield relevant insights into the cash management literature (Manoel & Moraes, 2022a; Manoel & Moraes, 2022b).

After controlling for firm-specific characteristics and for country-level variables identified by prior research as relevant in determining cash levels, we find that Latin American private firms hold significantly fewer cash holdings than their public counterparts. More precisely, we find that private firms in Latin America hold, on average, 4.92% of cash and cash equivalents relative to total assets, while public companies hold 6.40%. Therefore, even though private firms from Latin America have less access to external funds and would be expected to

have a higher precautionary saving motive to hold cash, we document that they hold significantly less cash relative to public companies.

In the main analyses, we use Ordinary Least Squares (OLS) regressions with country, industry, and year fixed effects. However, our main conclusions are the same when firm fixed effects and the weighted least squares (WLS) methodology are applied. Furthermore, we perform a battery of robustness checks that provide additional support for our main findings, including the use of the propensity-score matching approach.

This paper provides several important contributions to the literature. First, despite the importance of private firms in most economies, only a handful of prior research has analyzed the determinants of cash levels in private firms. Thus, in using a dataset of privately held companies from the six largest Latin American economies, we join a recent surge of articles using data on private firms to draw new insights into publicly-traded companies' behavior (Gao et al., 2013). Secondly, this is the first study to analyze the determinants of cash levels in a wide sample of private firms from emerging markets. Then, we also contribute to the literature by improving the understanding of the determinants of corporate cash holdings in private firms from emerging economies. This is of particular importance for companies from emerging economies because they are often more affected by market imperfections. Third, our sample also allows us to establish the generalizability of prior evidence with a limited set of single developed country studies about private firms. In this respect, Bettis, Helfat and Shaver (2016) highlight the relevance of establishing the external validity of prior studies. Fourth, our sample period extends up to 2019 and, therefore, provides us with an opportunity to examine cash holdings in public and private firms over a longer sample period relative to the other studies.

Fifth, our results also shed light on whether emerging economies have some common characteristics in the cash management of private and public corporations. As a result, this article will also be interesting for policymakers and academics leading to further discussions on corporate cash holdings. Sixth, this paper also contributes to the empirical literature on cash holdings by providing evidence for a sample of Latin America in the context of code law (French legal origin), which is characterized by less developed capital markets. Seventh, we also add to the literature on corporate cash holdings by demonstrating that in the Latin American context, where shareholders are generally poorly protected and firms have limited access to external finance, private firms hold significantly fewer cash holdings than their public counterparts. Therefore, this paper also has relevant implications for managers and policymakers, as we demonstrate that firms' cash reserves are significantly influenced by the business environment in which they operate, in that, Latin American private firms, despite higher precautionary demand for cash, maintain higher cash holdings. In this sense, we also contribute to the tradeoff discussion between agency problems and precautionary motives for holding cash between public and private firms in Latin America.

2. HYPOTHESIS DEVELOPMENT

In the absence of market imperfections, the decision about cash levels would not affect firm value, given that in this theoretical situation, external finance is always readily available at a reasonable price. In this scenario, firms would be able to fund all positive net present value (NPV) projects, regardless of the existence of cash. However, in the real world of taxes, information asymmetries, and agency problems, the decision about how many assets a firm should keep in the form of cash and cash equivalents indeed affect their value (Myers & Majluf, 1984; Kim, Mauer, & Sherman, 1998; Opler, Pinkowitz, Stulz, & Williamson, 1999; Dittmar & Mahrt-Smith, 2007; García-Teruel & Martínez-Solano, 2008).

The empirical literature on cash holdings identified three main reasons for companies to keep part of their total assets in the form of cash and cash equivalents. The first motive is called precautionary. Firms stockpile cash under the precautionary motive to protect themselves against adverse cash flow shocks that might force them to forgo positive NPV projects, especially during periods of poor business conditions. Second, for transactional motives, companies hold cash to meet the needs that come from their normal activities without having to liquidate assets. In addition to the precautionary and transactional reasons, firms also hold cash to take timely advantage of their growth opportunities that might otherwise be forgone due to costly external financing. The literature refers to this as the speculative motive for holding cash (Keynes, 1936; Opler et al., 1999; Mortal, Nanda, & Reisel, 2020).

The existence of the aforementioned benefits makes cash holdings valuable to shareholders. However, cash can be a double-edged sword (Opler et al., 1999; Almeida et al., 2014). In fact, the literature identifies two main costs of holding cash. First, holding liquid assets implies an opportunity cost, given that cash earns a low rate of return relative to more productive but less liquid assets (Kim et al., 1998; Dittmar, Mahrt-Smith, & Servaes, 2003). Second, cash holdings can cause agency concerns between managers and shareholders due to managerial discretion. The free cash flow theory (Jensen, 1986) postulates that cash is detrimental for companies since cash holdings imply agency costs. This occurs because cash is the most vulnerable asset to opportunistic behavior by entrenched managers, given that the access to cash is with little scrutiny and its use is discretionary. For example, self-interested managers can have incentives to spend cash on negative NPV projects or on opportunistic behaviors that benefit themselves but do not create value for shareholders, such as the consumption of perquisites, excessive compensation, or outright stealing. Therefore, when agency problems from the separation of ownership and control are relevant, self-interested managers can more easily derive the private benefits from cash resources to pursue personal objectives instead of maximizing shareholders' wealth (Jensen & Meckling, 1976; Jensen, 1986; Dittmar & Mahrt-Smith, 2007; Harford, Mansi, & Maxwell, 2008).

Given all the above, cash can have both benefits and costs to shareholders, in that, firms' cash policy should balance the positive and negative sides of holding cash (Kim et al., 1998). Particularly, one would expect private firms to hold more precautionary cash than their public peers. As mentioned earlier, corporate liquidity decisions are affected by imperfections in capital markets. Since capital markets are subject to frictions, such as information asymmetry and agency conflicts, companies cannot always obtain external funds on a timely basis (Myers & Majluf, 1984; García-Teruel & Martínez-Solano, 2008). In this respect, previous empirical literature suggests that companies that are exposed to greater imperfections in capital markets are expected to maintain larger cash holdings, as cash increases their ability to undertake all positive NPV projects when internal funds are not enough, and external funds are excessively costly. Hence, considering that private firms are generally more exposed to market imperfections, one would expect them to have a higher precautionary demand for cash than public companies, in order to avoid the risk of distress (Gao et al., 2013; Deloof, et al., 2020).

Evidence in favor of this explanation has been found by Hall et al. (2014). By using a sample of public and private firms from Central and Eastern Europe from 2001 through 2010, they document that the latter holds more cash reserves than publicly traded companies. Hall et al. (2014) attribute their results to the fact that public companies have easier access to capital markets relative to private firms. Hence, private firms accumulate more precautionary cash because higher cash levels can play the role of a buffer against future financial distress.

However, contrary to these predictions, prior empirical evidence with U.S. data shows that private corporations tend to hold less cash than publicly listed companies (Gao et al., 2013). Based on a sample of public and private U.S. firms from 1995 to 2011, Gao et al. (2013) observe that privately held firms hold about half as much cash as public companies do even though they

have less access to external funds. Gao et al. (2013) attribute their findings to the fact that private firms often have fewer managers-shareholders agency problems than their public counterparts because they typically have concentrated ownership. As a consequence of the lower agency costs in private firms, private firm managers have lower incentives to maintain higher cash levels. In sum, their evidence suggests that U.S. public companies hold more cash than private firms due to the countervailing effect of agency problems, despite higher precautionary demand for cash by private companies.

The aforementioned evidence indicates a clear trade-off between agency conflicts and precautionary motives on cash behavior between public and private firms. On the one hand, if the precautionary motive for cash holdings dominates the agency concerns for private firms, then these firms should hold more cash holdings relative to public companies. On the other hand, if the agency's explanation for holding cash dominates the precautionary demand, then private firms should maintain lower cash levels than public companies. To sum up, due to financial constraints' private firms may have greater precautionary demand for cash holdings relative to public firms, but at the same time, the former may have lower agency problems, which leads to lower cash levels (Gao et al., 2013; Hall et al., 2014).

Another relevant factor that can influence the cash levels of private firms relative to public companies is the cost of holding cash. In this regard, Mortal et al. (2020) suggest that in extreme cases, when external financing is extremely costly, firms accumulate relatively little cash holdings because the opportunity cost of holding cash is high. The high cost of cash may impair the ability of private firms to respond to the precautionary reasons for holding cash (Mortal et al., 2020). Consistent with the hypothesis that holding cash is relatively costlier for private firms, Mortal et al. (2020) provide evidence that European private firms hold significantly fewer cash reserves relative to their public counterparts. For that, they used a sample of non-financial firms from Western European countries over the 1996-2011 period.

Last but not least, despite the evidence of Denis and Sibilkov (2010) indicating that cash reserves are more valuable to constrained firms, they find that many constrained companies have surprisingly low cash levels. The authors attribute this puzzling behavior to the fact that some of the firms that face higher financial constraints exhibit weaker financial health, in that they are unable to accumulate cash. Stated differently, the poor financial performance has drained the prior cash holdings of low cash-constrained firms and/or prevent them from building their adequate cash levels. This appears to inhibit the ability of some constrained firms to stockpile higher cash holdings (Denis & Sibilkov, 2010).

For the Latin American context, we expect private firms to keep lower cash levels relative to their public peers. As mentioned previously, Latin America is characterized as an underdeveloped market, where firms often have less access to external capital at fair terms. In this setting, greater cash holdings allow companies to avoid underinvestment and reduced growth (Manoel & Moraes, 2022a). However, one cannot ignore that private firms are more constrained in accessing external funds relative to public companies, in a context where Latin American companies already face more difficulties in raising external finance compared to corporations from developed countries. Hence, the higher level of financial constraints faced by many Latin American private firms may imply that they cannot hold the desired levels of corporate cash holdings. Based on the aforementioned arguments, our research hypothesis is:

H1: *Ceteris paribus*, Latin American private firms hold significantly fewer cash holdings than their public counterparts.

3. RESEARCH METHODOLOGY

3.1. The sample

Our initial sample consists of all firms from the six largest Latin American economies (Argentina, Brazil, Chile, Colombia, Mexico, and Peru), for which data are available on the Capital IQ database[1]. We opt to limit our sample to these countries mainly for two reasons. First, due to their relevance in the Latin American economy. Second, because we were able to construct a significant sample size of private and public companies from these countries. The sample includes public and private[2] companies from these countries for the period 2000-2019. The data include surviving and non-surviving firms that appear on the Capital IQ database at any time in the sample period to mitigate the concern of survivorship bias. All data are in USD.

It is relevant to note that the Capital IQ database reports only contemporaneous information on the legal form of the companies, i.e., private and public, rather than historical information. As an example, if a company had an Initial Public Offering (IPO) in 2010 and it also has information available from 2000 to 2019, then the Capital IQ database classifies the company as public throughout the sample period. We complement the data provided by the Capital IQ database by collecting data on initial public offerings and delisting from each stock exchange. Thus, for each firm-year, we check its IPO date and delisting date to reclassify it as public or private.

Consistent with prior empirical literature (Opler et al., 1999), we exclude financial companies from the initial sample because they hold cash to maintain reserve requirements. We also remove utility firms from our sample because they are subject to regulatory supervision. Finally, we also exclude firms with negative equity to avoid capturing effects that may be related to financial stress (Opler et al., 1999). After applying these filters, we built an unbalanced panel data comprising 7,222 unique Latin American firms (46,040 firm-year observations). Among 46,040 firm-year observations, 37,619 firm-year observations are of private firms, and 8,421 firm-year observations are of public companies. The country with the most observations is Brazil with 32,684 firm-year observations, followed by Chile (5,046), Mexico (2,702), Peru (2,379), Argentina (2,194), and Colombia (1,045).

3.2. Variables

3.2.1. Dependent variable

In the initial analyses[3], we use the natural logarithm of cash and cash equivalents to net assets as our dependent variable, where net assets are computed as total assets minus cash and cash equivalents (Opler et al., 1999). In other words, cash was measured by the natural log[4] of (Cash/Net assets).

3.2.2. Independent variable

Our main interest variable is the *Listed Companies* dummy variable that takes the value 1 for Latin American public firms and 0 for their private counterparts.

3.2.3. Firm-level control variables

In this subsection, we provide a brief review of the firm-specific characteristics identified by previous literature as relevant in explaining firms' cash position. The definitions of these variables are provided in Table 1. To alleviate the undue effects of outliers and possible data errors, we winsorize all continuous variables throughout the analyses at the 1st and 99th percentile levels of their distributions.

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Size: Larger firms maintain smaller amounts of cash on their balance sheets due to the economies of scale in cash management. Furthermore, larger companies are better known in the market and have a lower level of information asymmetry compared to smaller ones. Hence, a negative association is expected between firm size and cash holdings. As a proxy of firm size, we use the natural logarithm of net assets, that is, total assets net of cash and cash equivalents (Almeida, Campello, & Weisbach, 2004; Ozkan & Ozkan, 2004).

Dividend dummy: A firm that currently pays dividends is better able to accumulate cash by reducing its dividend payments (Opler et al., 1999; Ozkan & Ozkan, 2004; Dittmar & Mahrt-Smith, 2007). Thus, we expect Latin American firms that pay dividends to hold fewer cash reserves than non-dividend paying firms. Similar to Opler et al. (1999), we use a binary variable set equal to one in years where a firm pays dividends, and 0 otherwise.

Cash Flow: Companies with high cash flows may be able to accumulate more corporate cash holdings. In this sense, we expect a positive association between cash flow, computed as the ratio of cash flow to net assets, and cash holdings (Mortal et al., 2020).

Net Working Capital (NWC): Firms can use non-cash liquid assets when they have cash shortfalls. In addition, the cost to convert non-cash liquid assets into cash is lower in comparison with other assets (Ozkan & Ozkan, 2004). Thus, we expect a negative association between Net Working Capital, measured by the ratio of working capital (non-cash current assets minus current liabilities) to net assets, and cash levels.

Growth Opportunities (GO): Firms with valuable growth opportunities are likely to demand greater funds to avoid the necessity of resorting to costly external funds and to minimize the opportunity costs of foregone profitable investment. In this sense, we expect a positive association between cash levels and growth opportunities. Given that our sample comprises private firms for which no information about their market value is available, then we opt to use sales growth[5], measured as the yearly growth rate of a firm's sales, as a proxy of growth opportunities (Bigelli & Sánchez-Vidal, 2012; Mortal et al., 2020; Deloof et al., 2020).

Short-Term Debt (STD): Companies can increase their level of short-term debt to build cash reserves. From this perspective, a negative association between short-term debt, measured by the ratio of total short-term debt to total assets, and cash is expected (Almeida et al., 2004).

Leverage: Leverage plays a significant role in understanding a firm's cash position. Companies with a high degree of leverage are more likely to accumulate cash due to the greater likelihood of financial distress, which suggests a positive relationship between leverage and cash (Al-Najjar, 2013). However, Ozkan and Ozkan state that a negative association is another possible outcome, given that leverage act as a proxy for the ability of firms to issue debt. These facts may indicate an ambiguous association between leverage, measured by the ratio of total debt to net assets, and cash.

Return on Assets (ROA): Profitable organizations are better able to distribute dividends, pay their debts, and stockpile cash (Al-Najjar, 2013). These facts, taken together, indicate a positive association between a firm's profitability and cash levels. The Return on Assets, obtained as Operating Income to Net Assets, was used as a measure of profitability.

Tangibility: Firms with a greater number of tangible assets, such as Property, Plant, and Equipment (PPE) may sell part of their tangible assets if a sudden need for cash holdings arises. This suggests a negative association between tangible assets, computed as the ratio of net PPE to net assets, and cash holdings (Ozkan & Ozkan, 2004).

Age: Older firms generally have more stable cash flows, lower investment opportunities, and require fewer cash holdings (Mortal et al., 2020). In this sense, Mortal et al. (2020) suggest a negative association between firms' age and cash holdings. To measure firm age, we use the natural logarithm of firm age, that is, the number of years since the company was founded.

3.2.4. Country-level institutional control variables

In addition to the aforementioned firm-level control variables, we also include the following country-level institutional control variables (Almeida et al., 2014):

Investor Protection: Dittmar et al., (2003) document that investor protection (shareholder rights) explains a significant portion of the cross-country variation in cash holdings. The anti-director rights index is an "aggregated" index of shareholder rights. This index measures how strongly a legal system favors minority shareholders over managers or dominant shareholders in a corporate decision-making process (La Porta, Lopez-de-Sinales, Shleifer, & Vishny, 1998). In this sense, we also add shareholder rights (Anti-director rights index) from La Porta et al. (1998) as an additional country-level institutional control variable.

Worldwide Governance Indicators (WGI) index: following Kraay, Kaufmann, and Mastruzzi, (2010), we also control for the average of six corporate governance indices from the World Bank. The WGI index of the World Bank provides a summary of the overall governance quality of a country. The data of the WGI index are from the World Bank Development Indicators database. The WGI index ranges between -2.5 and 2.5. A lower index indicates weak governance, while a higher index indicates stronger governance.

Gross Domestic Product (GDP) Growth: Macroeconomic conditions may influence the cash levels by affecting the opportunity cost of holding cash or by influencing investment opportunities and uncertainty (Deloof et al., 2020). Thus, we also include GDP Growth, as an additional control variable.

3.3. Final Regression Model

In addition to the aforementioned variables, we add country, industry, and year fixed effects in our regression model. We opt to include industry and year dummies to control for industry-specific factors and any macroeconomic events (Dittmar & Mahrt-Smith, 2007). Moreover, we add country-fixed effects to ensure that we are measuring within-country differences between public and private firms, as well as controlling for unobserved time-invariant country effects (Mortal et al., 2020). Thus, to test our research hypothesis, we estimate Equation 1 using OLS estimation with robust standard errors clustered at the firm level[6] to consider the fact that residuals may not be independent within a company (Manoel & Moraes, 2022b):

$$\begin{aligned} Cash_{it} = {} & \beta_0 + \beta_1 Listed\ Companies_{i,t} + \beta_2 Size_{i,t} + \beta_3 Dividend\ dummy_{i,t} \\ & + \beta_4 Cash\ Flow_{i,t} + \beta_5 Net\ Working\ Capital_{i,t} \\ & + \beta_6 Growth\ Opportunities_{i,t} + \beta_7 STD_{i,t} + \beta_8 Leverage_{i,t} + \beta_9 ROA_{i,t} \\ & + \beta_{10} Tangibility_{i,t} + \beta_{11} Age_{i,t} + \beta_{12} Investor\ Protection_{i,t} + \beta_{13} WGI_{i,t} \\ & + \beta_{14} GDP_{i,t} + Country + Year + Industry + u_{i,t} \quad (1) \end{aligned}$$

4. RESULTS

4.1. Descriptive statistics

Table 2 reports the descriptive statistics of the variables used in this research over the sample period of 2000-2019. We first present in Panel A the means for each of the six countries and for the full sample of 46,040 firm-years observations. Panel B of Table 2, in turn, provides the mean and medians of the variables, as well as the *T*-test and the Wilcoxon rank-sum (Mann-Whitney) test for the means and medians difference tests between public and private firms.

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The results reported in Panel A of Table 2 indicate that for the whole sample of Latin American firms, cash holdings represent, on average, 5.19% of total assets. The average ranges from 3.94% in Peru to 6.66% in Mexico. Comparing with the findings of Opler et al. (1999), which find an average value of 17% in the U.S. setting, we show that Latin American companies keep significantly lower cash holdings than publicly traded U.S. firms.

Our sample is composed of 18.29% public companies. With 58.36%, Mexico is the country in the sample with the highest percentage of public companies relative to private firms, followed by Colombia with 55.78%, Peru with 54.89%, Chile with 36.02%, Argentina with 35.50%, and Brazil with 7.23%. As mentioned previously, we use the natural logarithm of net assets and firm age as our measures of firm size and age, respectively. Among the Latin American countries, Mexico (6.58) has the highest mean of size, and Brazil (3.93) has the lowest. Regarding firms' age, we observe that Argentine companies are the oldest, while Brazilian firms are the youngest.

Additionally, 41.19% of firms pay dividends. The mean ratio of cash flow to net assets is positive for all the countries in our sample, with an overall mean of 5.99%. Brazil has the lowest mean cash flow of 5.25% and Peru has the highest, with 8.92%. Investment in net working capital, which is a potentially relevant alternative source of cash holdings, is on average 8.17% of net assets. Further, the mean annual sales growth, as a proxy of growth opportunities, is 13.54%. Companies from Argentina have the highest mean of sales growth, with 32.38%, while Peruvian companies have the lowest mean with 10.49%. The mean of short-term debt to net assets is 4.57%, while the mean value of leverage is 22.47%. Furthermore, the average firm in the sample has an average ROA of 6.72%. Finally, the amount of property, plant and equipment, as a percentage of net assets, is 35.17%.

Regarding the country-level institutional control, we note that Chile is the country with the highest investor protections (Anti-director rights index) with 5, while Mexico is the nation with the lowest score with 1. Moreover, when compared with the other Latin American economies, Chile ranks much higher on the WGI index, followed by Brazil, Peru, Argentina, Mexico, and Colombia. Finally, Peru is the country with the highest GDP growth (4.89).

Turning to Panel B of Table 2, we first see that Latin American public companies hold significantly more cash and cash equivalents than their private counterparts: publicly traded companies hold on average 6.40% of their total assets in cash and cash equivalents, while private firms hold an average value of 4.91%. This difference is statistically significant at the 1% level and is consistent with the research hypothesis. Similarly, the Wilcoxon test indicates that the median cash holdings of public companies are significantly higher than that of private firms. Therefore, the results of the summary statistics provide some initial support for the research hypothesis, i.e., Latin American private firms maintain a lower proportion of their assets in cash and cash equivalents than do their publicly traded counterparts.

Panel B of Table 2 also shows that Latin American public companies differ from their private counterparts in some important dimensions. The results of the *T*-test suggest significant differences at least at the 10% level for all of the variables. For example, 62.48% of public companies pay dividends, while 36.42% of private firms pay dividends. Hence, Latin American public companies are more likely to pay dividends. Additionally, public companies have higher sales growth, which is used as a proxy for growth opportunities, suggesting that public firms in Latin America have greater growth opportunities than their private counterparts. Univariate tests also indicate that Latin American public companies have higher cash flows to net assets and have more tangible assets than private firms. Finally, the results reported in Panel B of Table 2 show that Latin American public companies are, on average, larger, older, more

profitable, and more leveraged in relation to privately held firms. Latin American private firms, in turn, have higher levels of net working capital and more short-term debt.

In sequence, Figure 1 depicts the evolution of the average proportion of total assets invested in cash and cash equivalents over the period 2000-2019 for the full sample and for public and private firms.

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Observing Figure 1, we see that the average cash holdings for the full sample represent about 3.87% of total assets in 2000 compared to 5.85% in 2019. We also observe that Latin American public companies hold higher cash levels than their private counterparts for every year in the sample period. Hence, Figure 1 confirms that Latin American public companies maintain higher cash levels than non-public firms in the sample period from 2000 to 2019. For Latin American public companies, the average cash ratio increased from 3.88% in 2000 to 6.85% in 2019. For Latin American private firms, the average cash ratio increased from 3.87% in 2000 to 5.65% in 2019. Furthermore, the average cash held by Latin American private firms reached its lowest level in 2001 with 3.69% and was highest in 2019 with 5.65%. Latin American public companies also reached their lowest level in 2001, with 3.88%, and were highest in 2010 with 7.80%. The minimum mean cash/net asset ratio for the full sample is 3.75% in 2001 and the maximum is 6.33% in 2010.

Moreover, unreported results of the Variance Inflation Factor (VIF) test indicate that multicollinearity is not a concern in our paper, given that all VIF values are below the threshold indicator of 10. Therefore, none of the variables should be dropped from our regression model.

4.2. Cash holdings regressions

In this subsection, we test whether Latin American private firms maintain lower cash levels than their public counterparts using regression analysis. More precisely, in column 1 of Table 3, we analyze Equation 1 for the full sample of Latin American firms. In columns 2 and 3, we study the determinants of cash holdings in private and public companies separately. Our main interest variable is the $Listed\ Companies$ dummy variable that takes the value 1 for Latin American public firms and 0 for their private counterparts. When we estimate Equation 1 separately for private and public firms, we remove the $Listed\ Companies$ dummy variable. The dependent variable ($Cash_{i,t}$) is the natural logarithm of the ratio of cash and cash equivalents to net assets. To conserve space, we do not tabulate the coefficients on the industry, country, and year dummies in this and subsequent tables. Standard errors are clustered at the firm level.

Table 3 presents the OLS results with country, industry, and time fixed effects.

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The results displayed in Table 3 confirm the univariate findings from Table 2. Specifically, the results of Table 3 show a positive and significant coefficient on the public firm indicator variable, indicating that Latin American public companies hold significantly higher cash holdings. Therefore, we continue to find that public firms from Latin America hold more cash than their private counterparts when controlling for other determinants of cash levels. Overall, the above evidence supports our research hypothesis that private firms retain significantly fewer cash holdings. Hence, although privately held firms arguably face higher financial constraints and would be expected to have a higher precautionary demand for cash holdings, we demonstrate that Latin American privately held firms hold fewer corporate cash

holdings relative to their public peers. Our findings, therefore, are similar to the empirical evidence of Gao et al. (2013), which document that U.S. private firms tend to hold less cash than public companies.

Regarding the control variables, we observe that more profitable firms and those with higher cash flows maintain higher cash holdings. The estimated coefficient on sales growth is positive and significant (1% level), suggesting that Latin American firms with better investment opportunities maintain higher cash levels. This result is consistent with the argument that firms with more attractive growth opportunities tend to hold large amounts of cash in order not to be obliged to pass up profitable investment opportunities because they are short of cash resources.

The result of the dividend dummy variable indicates that firms that pay dividends hold more cash holdings. This evidence, on the other hand, is contrary to the findings of Opler et al. (1999), which show that firms that pay dividends accumulate fewer cash reserves. It is relevant to mention, however, that those dividend-paying companies can also hold more cash than non-dividend-paying firms to avoid a situation in which they are short of cash holdings to support their dividend policies (Ozkan & Ozkan, 2004). Another issue that should be mentioned is the fact that corporate law in Brazil requires all profitable Brazilian public companies[7] to include in their Bylaws a percentage of annual profits, usually of 25%, to be paid out as dividends. Therefore, it is not so simple for profitable Brazilian public companies to cut dividends to raise more funds. Hence, the mandatory dividend rules in Brazil may have impacted, at least in part, the relationship between cash holdings and dividends in our paper.

Continuing with the results of Table 3, we find that leverage has a positive and statistically significant coefficient. This result is consistent with the argument of Ozkan and Ozkan (2004), suggesting that companies with high levels of leverage have a high probability of financial distress. Interestingly, the coefficient estimate on firm age is positive and statistically significant at the 5% level. Hence, we document that older firms in Latin America hold more cash, which does not support the prediction of Mortal et al. (2020) that more mature companies require fewer cash holdings. The coefficients on size, net working capital, short-term debt, and tangibility are not statistically significant at the conventional levels.

Regarding the results of the country-level control variables, we find that the coefficient on shareholders' rights, as measured by the anti-director rights index, is negative and statistically significant. This evidence is consistent with the findings of Dittmar et al. (2003) and suggests that firms with better investor protections stockpile lower cash holdings. Using cross-country data for 1998 from a sample of 45 countries, Dittmar et al. (2003) find that firms operating in countries characterized by weak investor protection hold more cash than those operating in nations with strong investor protection. Dittmar et al. (2003) attribute their evidence to the agency cost hypothesis, that is, companies maintain higher cash reserves when they can do so. Therefore, the evidence of this paper suggests that shareholders' rights, and therefore agency costs, are relevant in determining cash holdings in Latin America.

Moreover, there is a negative and significant relationship between the WGI index and cash reserves. This means that when the country-level governance is weak, corporate cash holdings are higher. Therefore, the worse the country's governance quality, the higher the level of cash reserves. Finally, the coefficient on the GDP growth has a significant positive coefficient. This result indicates that firms from high-growth countries maintain higher cash levels to avoid missing profitable growth opportunities.

Having established that the results are consistent with the research hypothesis, we can now explore whether the determinants of corporate cash holdings are the same for private and public companies in Latin America. In this sense, in columns 2 and 3 of Table 3, we provide the regression results for private and public firms separately. Interestingly, the results suggest that net working capital is positively related to cash holdings for private firms, which does not support the argument that NWC is a substitute for cash holdings. For public companies, on the

other hand, net working capital is not a significant determinant of cash levels. We also find that short-term debt is only statistically significant for public companies with a negative sign. Firms' age, in turn, is only statistically significant with a positive sign for private firms.

Furthermore, we now see that tangibility is a relevant determinant of cash levels for both public and private firms. It is relevant to observe, however, that the coefficient is statistically significant with a positive sign for private firms and with a negative sign for public companies. Companies that should have greater access to capital markets, such as those that have greater asset tangibility, are expected to hold less cash. Therefore, the negative and statistically significant coefficient on tangibility for public companies is consistent with the precautionary motive for stockpiling cash holdings. Private firms, on the other hand, have less access to capital markets and, consequently, presented a positive and statistically significant coefficient for tangibility.

Continuing with the findings of Table 3, the results show a negative association between investor protections (shareholder rights) and cash levels, but only statistically significant at the conventional levels for public companies. According to Dittmar et al. (2003), companies raise and hold higher corporate cash holdings when they can do so – which is consistent with the agency cost hypothesis. As stated by Gao et al. (2013), private firms often have much fewer agency problems than publicly traded companies. Our interpretation of this result is that shareholder rights and, consequently agency costs, are more important in determining cash holdings in public companies than in privately held firms. Therefore, consistent with the agency motive for cash holdings, we observe that greater agency conflicts in Latin American public companies lead public company managers to hold more cash holdings relative to private firm managers. Finally, we observe that the coefficients of GDP growth are positive but only statistically significant for private firms. The other results are qualitatively similar to those reported in column 1 of Table 3.

4.3. Robustness tests

In this subsection, we conduct several additional tests to study the robustness of our findings. To preserve space, we report only some of them[8]. In all the analyses made above, we use the natural logarithm of the ratio of cash and cash equivalents to net assets as a measure of cash holdings. Thus, as our first robustness check, we also consider an alternative measure of cash. In fact, following Harford (1999), Harford et al. (2008), and Manoel and Moraes (2022b), we use the natural logarithm of the ratio of cash and cash equivalents to total sales as our dependent variable. No other variables are redefined.

Untabulated results show that the coefficient on the public firm indicator variable is 0.325 and is statistically significant at the 1% level. Therefore, this robustness shows that our main conclusions are robust to the use of an alternative measure of cash holdings. Additionally, the estimated coefficient on size is now positive and statistically significant for the full sample and for private firms. According to Ozkan and Ozkan (2004), a positive association between firm size and cash holdings can arise if the firm size is seen as an index for financial distress. In this scenario, small companies retain more cash to avoid situations of financial distress. The signs and the significance of the other coefficients are generally similar to those reported in Table 3.

The number of companies differs sharply across our sample of Latin American countries. Brazil is heavily weighted in our analyses because it is the country with the largest representation with 70.97% of the firm-year observations. One question that emerges from our research is whether a single country may be driving our results. To assess whether our results are driven by Brazil, we first reestimate Equation 1 without Brazilian firms. As in Equation 1, the dependent variable is the natural logarithm of the ratio of cash and cash equivalents to net

assets. Standard error estimates are clustered by firm level, and the regression specifications also include country, industry, and year fixed effects. The results reported in Panel A of Table 4 suggest that our main findings are the same when we remove Brazilian firms from the sample.

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Furthermore, one approach to deal with the concern that Brazil is driving our conclusions is to estimate a weighted least-squares regression. In this approach, every country has equal weight irrespective of the number of firms it has (Manoel & Moraes, 2022b). Thus, as a further step, we estimate Equation 1 using the WLS methodology with weights equal to the inverse of the number of firm-year observations in each country. Panel B of Table 4 reports the results. From the results in Panel B of Table 4, we demonstrate that our main conclusions did not suffer any significant change. In fact, the results obtained with the weighted least squares methodology complement our earlier findings: Latin American private firms hold significantly fewer cash holdings than their public counterparts. We conclude, consequently, that our results are not driven by the bigger representation of Brazil in our sample.

In our main analyses, we use pooled OLS regressions with country, industry, and year fixed effects. However, given that the decision to become a public company is not a random choice but a corporate decision, then studies involving public and private firms are subject to endogeneity concerns. Moreover, endogeneity is a crucial problem in the empirical analysis of corporate cash holdings (Ozkan & Ozkan, 2004). Hence, the OLS regression procedure may not be the best choice due to self-selection bias and omitted correlated variables problems. According to Kim, Simunic, Stein and Yi (2011), firm fixed effects allow researchers to mitigate part of the potential problems of correlated omitted variables by controlling for unobservable, time-invariant, and firm-specific characteristics. Furthermore, Mortal et al. (2020) indicate the use of firm fixed effects to exploit within-firm variation in listing status while controlling form time-invariant firm characteristics. In this sense, instead of using the OLS procedure, we now estimate Equation 1 with firm fixed effects as another robustness check. Standard errors are clustered at the firm level, and we also include year fixed effects. The results of the analysis are presented in Table 5.

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The results displayed in Table 5 indicate that Latin American private firms hold significantly fewer cash holdings than their public peers. Therefore, even after controlling for firm fixed effects, we continue to find evidence consistent with our research hypothesis.

As noted earlier, only 18.29% of the firm-year observation in our sample is from public companies. To make the samples of private and public companies from Latin America more comparable in size, we implement the propensity score matching procedure based on country, industry, and size (net assets) as an additional robustness check. We opt to keep the matching criteria simple, as Mortal et al. (2020), to allow for comparisons between public and private companies across multiple characteristics. The matching procedure helps us to mitigate the large difference in the sample size of public and private companies, and also the difference in sample firm distribution across industries (Gao et al., 2013; Mortal et al., 2020).

In order to match each Latin American public company to a private counterpart, we first consider all public companies in 2013. We choose this year because it contains the largest number of firms in our sample period. In sequence, we require exact matches on country and industry code and the closest possible match based on net assets. In other words, we match each Latin American private firm in our sample with a public company in the same country, industry, and closest in size. This matching procedure based on country and industry ensures that we

compare public companies to privately held firms from the same country and industry. In Table 6 we present results for our main specification using the combination of private firms and the matched public companies' sample (column 1), as well as for private firms (column 2) and for the matched public sample (column 3).

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The results displayed in Table 6 indicate that our main results continue to hold when we use the propensity score matching procedure. More precisely, we observe that the coefficient on the public firm indicator is 0.239 when the sample includes the combination of private firms and the matched public companies' sample. This evidence shows that the level of Latin American private firms' cash holdings is significantly lower than that of their propensity score-matched public counterparts.

In sequence, we assess the sensitivity of our results to the subprime crisis. We do so because market imperfections are more severe in times of crisis, which leads to a higher demand for precautionary cash holdings (Manoel et al., 2017). Accordingly, it is interesting to analyze the effects of the crisis on the cash levels of public and private firms. Following Manoel and Moraes (2022a), we split our sample period into three sub-periods: before the crisis (2000–2006), during the crisis (2007–2009), and after the crisis (2010–2019). After splitting the sample period into three sub-periods, we re-estimate Equation 1. Unreported results to preserve space show that Latin American private firms hold significantly lower cash levels than their public counterparts in the three sub-periods. In sum, the battery of robustness checks presented in this subsection provides strong support for our research hypothesis that Latin American private firms hold significantly fewer cash holdings relative to their public counterparts.

5. CONCLUDING REMARKS

Although private firms are the dominant organization form across the world, they have been largely neglected in the cash management literature, especially companies from emerging economies. In this research, we fill this gap in the literature by analyzing the determinants of cash holdings in private and public companies in the Latin American setting. We hypothesize in this paper that Latin American private firms maintain lower cash levels relative to their public peers. Supporting our research hypothesis, we find robust evidence that Latin American private firms hold a lower proportion of their assets in the form of cash and cash equivalents than do their public peers. This result is relevant because it shows that private firms from Latin America maintain significantly fewer cash holdings than their public companies, despite higher precautionary demand for cash by the former. Overall, our findings are important, as we demonstrate that firms' cash holdings are significantly influenced by the business environment in which they operate. Hence, in the Latin American setting, where companies often have less access to external capital at fair terms relative to companies from developed economies, we document that private firms maintain significantly fewer cash holdings. In this sense, our paper contributes to the tradeoff discussion between agency problems and precautionary motives for holding cash between public and private firms.

Our analysis also indicates that firms in countries with higher GDP growth maintain higher cash holdings in order to avoid missing growth opportunities. We also document that Latin American firms with better investor protections, as measured by the anti-director rights index, stockpile lower cash holdings. Furthermore, private and public companies from Latin America differ by more than their cash levels. Compared to private firms, public companies are larger, older, more profitable, more likely to pay dividends, have higher growth opportunities,

have higher cash flows, and have more tangible assets. Latin American private firms, in turn, have higher levels of net working capital and more short-term debt.

This paper has some limitations that provide challenges for future studies. One caveat of our research is the fact that we do not have variables to directly measure the effects of ownership concentration on our results. This analysis is not possible because ownership information is not available in the Capital IQ database. Therefore, future research should benefit from including additional firm characteristics, such as ownership concentration. Moreover, we acknowledge that despite our best efforts, we cannot claim to have completely solved the endogeneity concerns.

[1] Capital IQ is an affiliate of Standard & Poor's which produces the Compustat database.
[2] To be included in Capital IQ's database as a private firm, the company cannot be a law firm, investment bank, accounting firm, or equity research provider.
[3] Following Harford (1999), Harford et al. (2008), and Manoel and Moraes (2022b), we also use an alternative measure of cash as the logarithm of cash and cash equivalents to total sales. As explained in the robustness checks subsection, our main results are robust to the use of this alternative measure of cash holdings.
[4] Taking the natural logarithm of cash and cash equivalents to net assets mitigates the effects of extreme values in the ratio.
[5] Unfortunately, the Capital IQ database does not report data on R&D expenses for Latin American corporations.
[6] Unreported results show that our main conclusions are qualitatively the same when we use the White robust standard errors.
[7] Chile and Colombia also require their companies to pay out a certain fraction of income as dividends.
[8] All unreported robustness checks are available upon request.

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Table 1. Description of the variables

Variables	Abbreviation	Operational Definition
Cash Holdings	Cash	Natural log of (Cash and Cash Equivalents/Net Assets)
Net Assets	Net Assets	Total Assets net of Cash and Cash Equivalents
Dummy Public Company	Listed Companies	An indicator for the firm being listed = 1; otherwise = 0
Size	Size	Natural logarithm of Net Assets
Dividend dummy	DIV	If the firm paid a dividend in the year = 1; otherwise = 0
Cash Flow	Cash Flow	Cash Flow/Net Assets
Net Working Capital	NWC	(Non-Cash Current Assets - Current Liabilities)/Net Assets
Growth Opportunities	Growth Opportunities	The yearly growth rate of a firm's sales
Short-Term Debt Leverage	STDEBT Leverage	Short-Term Debt/Net Assets The ratio of Total Debt/Net Assets
Return on Assets	ROA	Operating Income/Net Assets
Tangibility	Tangibility	The ratio of net Property, Plant and Equipment (PPE) to Net Assets
Age	Age	Natural logarithm of firm age
Investor Protection (Shareholders Rights)	Investor Protection	This index measures how strongly a legal system favors minority shareholders over managers or dominant shareholders in a corporate decision-making process, including the voting process. The Investor Protection (Shareholder Rights) variable goes from zero to five (La Porta et al., 1998).
The Worldwide Governance Indicators (WGI) index	WGI	WGI is the equal-weighted average of the six components of the Worldwide Governance Indicators: (1) Voice and Accountability, (2) Political Stability and Absence of Violence/Terrorism, (3) Government Effectiveness, (4) Regulatory Quality, (5) Rule of Law and (6) Control of Corruption.
GDP Growth	GDP	Growth in GDP per capita, obtained from the World Bank

Notes: Table 1 presents the description of the variables used in this paper. All financial variables are expressed in USD. To alleviate the undue effects of outliers and possible data errors, we winsorize all continuous variables at the 1st and the 99th percentile levels.

Table 2. Descriptive statistics

Panel A

Variables	Argentina	Brazil	Chile	Colombia	Mexico	Peru	Full Sample
Cash/Total Assets	0.0443	0.0536	0.0394	0.0401	0.0666	0.0509	0.0519
Listed Companies	0.3550	0.0723	0.3602	0.5578	0.5836	0.5489	0.1829
Size	4.7842	3.9360	4.8171	5.5701	6.5847	4.7169	4.3056
Dividend dummy	0.3714	0.3848	0.5465	0.5473	0.4163	0.4703	0.4119
Cash Flow	0.0778	0.0525	0.0771	0.0624	0.0763	0.0892	0.0599
Net Working Capital	0.0742	0.0888	0.7469	0.0357	0.0588	0.0516	0.0817
Growth Opportunities	32.3899	13.0387	10.8948	13.9630	11.8783	10.4916	13.5471
Short-Term Debt	0.03584	0.0476	0.0429	0.0130	0.0319	0.0643	0.0457
Leverage	0.2498	0.2085	0.2862	0.1884	0.2881	0.2366	0.2247
Return on Assets	0.0864	0.0651	0.0528	0.0772	0.0785	0.0908	0.0672
Tangibility	0.3516	0.3191	0.4251	0.4697	0.4317	0.5011	0.3517
Age	4.4255	3.3339	3.6384	4.1542	4.0131	3.9269	3.5079
Investor Protection	4.0000	3.0000	5.0000	3.0000	1.0000	3.0000	3.1490
WGI	-0.2183	0.1338	0.9422	-0.3081	-0.2190	-0.2047	0.1574
GDP	1.9778	0.6715	3.6628	3.8431	2.1062	4.8900	1.4318
Observations (*n*)	2,194	32,684	5,046	1,045	2,702	2,379	46,040

Panel B

	Public Companies			Private Firms		
Variables	Mean	Median	Stand. Dev.	Mean	Median	Stand. Dev.
Cash/Total Assets	0.0640***	0.0385‴	0.0682	0.0492	0.0269	0.0558
Size	5.9632***	6.0221‴	1.9330	3.9459	3.8914	2.1321
Dividend dummy	0.6248***	1.0000‴	0.4841	0.3642	0.0000	0.4812
Cash Flow	0.0781***	0.0720‴	0.1215	0.0558	0.0416	0.1542
Net Working Capital	0.0778*	0.0580‴	0.1915	0.0825	0.0382	0.2453
Growth Opportunities	14.7718**	8.7904‴	40.8326	13.2728	1.8589	50.9408
Short-Term Debt	0.0282***	0.0000‴	0.0631	0.0496	0.0000	0.0958
Leverage	0.2546***	0.2448‴	0.1863	0.2179	0.1504	0.2281
Return on Assets	0.0749***	0.0658‴	0.1159	0.0655	0.0516	0.1565
Tangibility	0.4169***	0.4165‴	0.2487	0.3371	0.2857	0.2870
Age	4.1043***	4.0430‴	1.2941	3.3743	3.4019	1.3033
Observations (*n*)		8,421			37,619	

Notes: Table 2 provides the descriptive statistics of the variables used in this paper. Our sample consists of 7,222 Latin American firms (46,040 firm-year observations) from the six largest Latin American economies (Argentina, Brazil, Chile, Colombia, Mexico, and Peru) from 2000 to 2019. The definitions of the variables are provided in Table 1. Panel A of Table 2 provides the number of observations and means of the firm- and country-level variables for the Latin American countries. Panel B of Table 2 provides descriptive statistics of the firm-level variables used in the analyses. In Panel B of Table 2, we also test for the difference in the mean and the median value across public and private companies. ***, ** and * (‴, ″ and ′) indicate significance levels of 1%, 5% and 10% of the *T*-test (Wilcoxon Test) for public and private firms having equal mean (median).

Table 3. OLS estimation explaining the determinants of cash holdings

	Full Sample (1)	Private Firms (2)	Public Companies (3)
Variables	Coefficients (*p*-value)	Coefficients (*p*-value)	Coefficients (*p*-value)
Constant	-4.808 (***)	-5.066 (***)	-3.340 (***)
Listed Companies	0.420 (***)	-	-
Size	0.005	0.003	-0.026
Dividend dummy	0.532 (***)	0.544 (***)	0.437 (***)
Cash Flow	1.090 (***)	1.009 (***)	1.532 (***)
Net Working Capital	0.146	0.174 (**)	-0.163
Growth Opportunities	0.001 (***)	0.000 (***)	0.002 (***)
Short-Term Debt	-0.014	0.140	-1.102 (**)
Leverage	1.161 (***)	1.139 (***)	0.893 (***)
Return on Assets	0.982 (***)	0.952 (***)	1.276 (***)
Tangibility	0.044	0.176 (**)	-0.713 (***)
Age	0.034 (**)	0.036 (**)	0.016
Investor Protection	-0.288 (***)	-0.090	-0.413 (***)
WGI	-0.633 (***)	-0.482 (***)	-0.659 (***)
GDP	0.035 (***)	0.041 (***)	0.002
Observations	46,040	37,619	8,421
p-Value	< 0.001	< 0.001	< 0.001
Country Effects	Yes	Yes	Yes
Industry Effects	Yes	Yes	Yes
Year Effects	Yes	Yes	Yes
Adjusted R^2	0.1031	0.0812	0.2317

Notes: Table 3 reports OLS estimation explaining the determinants of cash holdings in Latin America. The dependent variable is the natural logarithm of the ratio of cash and cash equivalents to net assets. The definitions of the other variables are provided in Table 1. Standard error estimates are clustered at the firm level. *, **, *** indicate the significance levels at 10%, 5% and 1% respectively.

Table 4. OLS and WLS estimations explaining the determinants of cash holdings

Panel A

Variables	Full Sample (1)	Private Firms (2)	Public Companies (3)
	Coefficients (*p*-value)	Coefficients (*p*-value)	Coefficients (*p*-value)
Constant	-3.542 (***)	-3.927 (***)	-3.072 (***)
Listed Companies	0.211 (***)	-	-
Size	0.002	-0.012	-0.001
Dividend dummy	0.400 (***)	0.451 (***)	0.304 (***)
Cash Flow	1.228 (***)	1.030 (***)	1.740 (***)
Net Working Capital	-0.387 (**)	-0.502 (**)	-0.241
Growth Opportunities	0.000	-0.000	0.000 (*)
Short-Term Debt	-0.382	-0.178	-1.079 (**)
Leverage	0.066	-0.033	0.363
Return on Assets	0.911 (***)	0.611 (**)	1.059 (**)
Tangibility	-0.767 (***)	-0.595 (***)	-0.971 (***)
Age	-0.013	-0.043 (*)	0.030
Investor Protection	-0.266 (***)	-0.107	-0.377 (***)
WGI	-1.017 (***)	-1.085 (***)	-0.656 (***)
GDP	0.001	0.007	-0.008
Observations	13,357	7,300	6,057
p-Value	< 0.001	< 0.001	< 0.001
Country Effects	Yes	Yes	Yes
Industry Effects	Yes	Yes	Yes
Year Effects	Yes	Yes	Yes
Adjusted R^2	0.1866	0.1619	0.2645

Pa

Variables	Full Sample (1)
	Coefficients (*p*-value)
Constant	-4.302 (***)
Listed Companies	0.246 (***)
Size	0.020
Dividend dummy	0.506 (***)
Cash Flow	1.331 (***)
Net Working Capital	0.081
Growth Opportunities	0.001 (***)
Short-Term Debt	-0.205
Leverage	0.902 (***)
Return on Assets	1.138 (***)
Tangibility	-0.167 (*)
Age	0.008
Investor Protection	-0.294 (***)
WGI	-0.451 (***)
GDP	0.039 (***)
Observations	43,846
p-Value	< 0.001
Country Effects	Yes
Industry Effects	Yes
Year Effects	Yes
Adjusted R^2	0.1284

Notes: Table 4 reports OLS (Panel A) and WLS (Panel B) estimations, explaining the determinants of cash holdings. The
of the ratio of cash and cash equivalents to net assets. The definitions of the other variables are provided in Table 1. Standard erro
, * indicate the significance levels at 10%, 5% and 1% respectively.

Table 5. Firm fixed effects estimation explaining the determinants of cash holdings

	Full Sample (1)	Private Firms (2)	Public Companies (3)
Variables	Coefficients (*p*-value)	Coefficients (*p*-value)	Coefficients (*p*-value)
Constant	-5.063 (***)	-5.163 (***)	-5.469 (***)
Listed Companies	0.326 (***)	-	-
Size	-0.130 (***)	-0.177 (***)	-0.036
Dividend dummy	0.166 (***)	0.150 (***)	0.174 (***)
Cash Flow	0.798 (***)	0.773 (***)	1.005 (***)
Net Working Capital	-0.507 (***)	-0.457 (***)	-0.665 (***)
Growth Opportunities	0.007 (***)	0.000	0.000
Short-Term Debt	-0.736 (***)	-0.456 (***)	-2.496 (***)
Leverage	0.669 (***)	0.779 (***)	0.347
Return on Assets	0.970 (***)	0.822 (***)	1.794 (***)
Tangibility	0.008	0.066	-0.047
Age	0.384 (***)	0.433 (***)	0.506 (***)
Investor Protection	-	-	-
WGI	0.206 (**)	-0.505 (***)	-0.565 (***)
GDP	0.012 (***)	0.016 (***)	-0.004
Observations	46,040	37,619	8,421
p-Value	< 0.001	< 0.001	< 0.001
Country Effects	No	No	No
Industry Effects	No	No	No
Year Effects	Yes	Yes	Yes
Adjusted R^2	0.0164	0.0066	0.0213

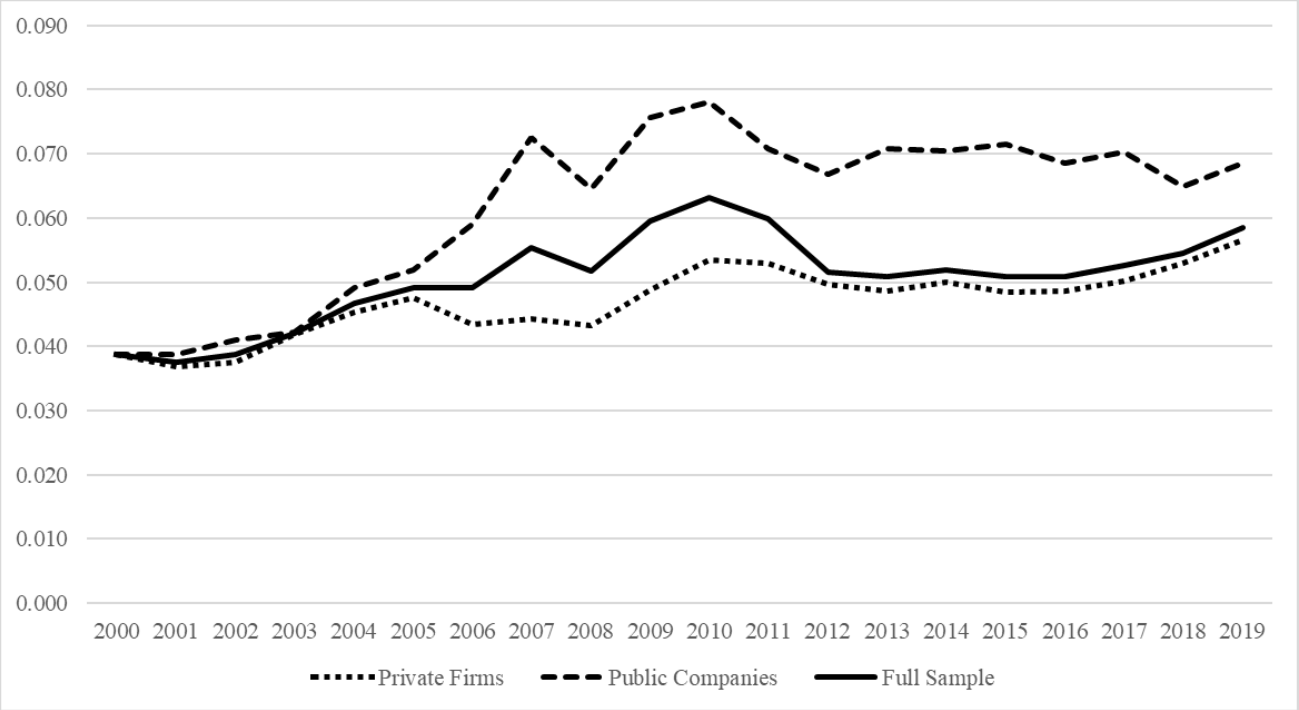
Notes: Table 5 reports firm fixed effects estimation explaining the determinants of cash holdings in Latin America. The dependent variable is the natural logarithm of the ratio of cash and cash equivalents to net assets. The definitions of the other variables are provided in Table 1. Standard error estimates are clustered at the firm level. *, **, *** indicate the significance levels at 10%, 5% and 1% respectively.

Table 6. OLS regressions explaining the determinants of cash holdings for the matched sample

	Combination of private firms and the matched public companies' sample (1)	Private Firms (2)	Matched Public Companies' sample (3)
Variables	Coefficients (*p*-value)	Coefficients (*p*-value)	Coefficients (*p*-value)
Constant	-4.002 (***)	-4.438 (***)	-3.622 (***)
Listed Companies	0.239 (***)	-	-
Size	-0.007	0.002	-0.011
Dividend dummy	0.460 (***)	0.450 (***)	0.413 (***)
Cash Flow	1.380 (***)	1.093 (***)	1.735 (***)
Net Working Capital	-0.299	-0.498 (*)	-0.117
Growth Opportunities	0.000 (*)	-0.000	0.001 (***)
Short-Term Debt	-1.003 (***)	-0.590	-1.255 (***)
Leverage	0.819 (***)	0.631 (**)	0.878 (***)
Return on Assets	1.218 (***)	0.889 (**)	1.433 (***)
Tangibility	-0.561 (***)	-0.440 (**)	-0.636 (***)
Age	-0.001	-0.031	0.025
Investor Protection	-0.286 (***)	-0.041	-0.382 (***)
WGI	-0.770 (***)	-0.654 (**)	-0.865 (***)
GDP	0.020 (***)	0.029 (***)	0.004
Observations	13,679	5,632	8,047
p-Value	< 0.001	< 0.001	< 0.001
Country Effects	Yes	Yes	Yes
Industry Effects	Yes	Yes	Yes
Year Effects	Yes	Yes	Yes
Adjusted R^2	0.1709	0.1194	0.2378

Notes: Table 6 presents the results of OLS regressions for the combination of private firms and the matched public companies' sample (column 1), as well as for private firms (column 2) and for the matched public companies' sample (column 3). Details of the matching procedure are provided in the text. The dependent variable is the natural logarithm of the ratio of cash and cash equivalents to net assets. The definitions of the other variables are provided in Table 1. Standard error estimates are clustered at the firm level. *, **, *** indicate the significance levels at 10%, 5% and 1% respectively.

Figure 1. Annual trend in mean cash ratio



Notes: Figure 1 depicts the evolution of the average proportion of total assets invested in cash and cash equivalents (Cash and Cash Equivalents/Total Assets) across the sample period of 2000 to 2019 for the full sample, public company sample and the private firm sample.