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

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Resumo/Abstract

Despite the growing academic and press interest on cash management recently, little is known about cash holdings in private firms, especially companies from emerging economies. In this article we fill this gap in the literature by analyzing the determinants of cash holdings in private and public companies in the Latin American setting. Toward our objective, we use a wide sample of 7,222 firms (46,040 firm-year observations) from the six largest Latin American economies (Argentina, Brazil, Chile, Colombia, Mexico, and Peru) over the period of 2000-2019. We present evidence that Latin American private firms hold significantly less cash than their public traded counterparts. Finally, the results reveal that firms' growth opportunities, dividends, cash flows, profitability, liquid assets, leverage, age, investor protection, governance quality and the macroeconomic conditions are important in determining cash holdings in Latin America. We contribute to the literature by improving the understanding of the determinants of cash holdings in private firms from emerging economies. Our main results hold after controlling for a large number of firm and country characteristics that affect cash holdings.

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Abstract:

Despite the growing academic and press interest on cash management recently, little is known about cash holdings in private firms, especially companies from emerging economies. In this article we fill this gap in the literature by analyzing the determinants of cash holdings in private and public companies in the Latin American setting. Toward our objective, we use a wide sample of 7,222 firms (46,040 firm-year observations) from the six largest Latin American economies (Argentina, Brazil, Chile, Colombia, Mexico, and Peru) over the period of 2000-2019. We present evidence that Latin American private firms hold significantly less cash than their public traded counterparts. Finally, the results reveal that firms' growth opportunities, dividends, cash flows, profitability, liquid assets, leverage, age, investor protection, governance quality and the macroeconomic conditions are important in determining cash holdings in Latin America. We contribute to the literature by improving the understanding of the determinants of cash holdings in private firms from emerging economies. Our main results hold after controlling for a large number of firm and country characteristics that affect cash holdings.

Keywords: Cash holdings; Private Firms; Emerging Markets; Latin America.

1. INTRODUCTION

A central question in corporate finance is related to how much of total assets a firm should keep in the form of cash and cash equivalents to maximize its value. The way in which companies manage corporate cash holdings is an important concern to managers, researchers, investors, and policy makers. As an example, managers must ensure that they have enough cash holdings within the firm so as to take advantage of growth opportunities and 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; Bates, Chang, & Chi, 2018; Graham & Leary, 2018; Manoel & Moraes, 2021). Firms around the world maintain considerable amounts of cash in their balance sheet and the literature on the theme has received increasing academic and press attention since the 2000s due to the growing cash levels of U.S. multinational corporations (Harford, Wang, & Zhang, 2017; Bates et al., 2018; Faulkender, Hankins, & Petersen, 2019).

Although cash management has become a relevant research topic in corporate finance, the literature is characterized by some remarkable gaps that we address in this research (Gao, Harford, & Li, 2013; Deloof, Du, & Vanacker, 2020). More precisely, despite the growing efforts to determine the determinants of firms' cash holdings, empirical studies about the theme focus almost exclusively on the context of publicly traded companies, in large part due to lack of available data for private firms. In addition, while providing relevant insights, the scarce literature on corporate cash holdings of private firms generally focuses on a single developed country (Bigelli & Sánchez-Vidal, 2012; Gao et al., 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 private firms from emerging economies. The lack of research in privately held firms from emerging economies is remarkable because privately held firms are the dominant organization form across the world and also because the rise of companies from emerging countries is a relevant factor in the globalization of the world economy (Deloof et al., 2020).

In this research, we fill this gap in the empirical literature by analyzing cash holdings 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. Toward 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 the data is from Capital IQ database. Our final sample is composed of a comprehensive unbalanced panel data of 7,222 Latin American firms (46,040 firm-year observations) with annual data available over the 2000-2019 period.

Private firms internationally outnumber public companies, employ a large proportion of the work force, and are considered an indispensable part of any economy (Gogineni, Linn, & Yadav, 2012). Therefore, studies involving privately held firms in themselves are of great interest to shareholders (Gao et al., 2013). Still, the studies based on publicly traded companies may not be generalizable to private firms, as private firms differ from public companies in several important ways. 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, the private ones generally have one or a few shareholders (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 at fair terms. Whereas managers in public companies can usually smooth their activities and invest when appropriate by accessing public markets, managers in private firms have to rely more on cash holdings and current cash flows.

Therefore, the above factors are likely to impact the cash policies of private firms relative to their public counterparts (Brav, 2009; Gogineni et al., 2012; Deloof et al., 2020).

Furthermore, cash holdings can differ across countries because differences in institutions cause differences in firm characteristics (Almeida et al., 2014; Pinkowitz, Stulz, & Williamson, 2016). For instance, different access to external funds, different level 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 differ for more or less developed capital markets (Hall, Mateus, & Mateus, 2014).

We 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, document 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 need more cross-country studies on cash holdings of private firms, such as ours. Moreover, studying cash holdings outside of the U.S. setting is relevant to capture the variation that exists in country-level external shareholders protection (Kalcheva & Lins, 2007).

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 cash management literature (Manoel & Moraes, 2021). Indeed, in our best knowledge, there is no investigation of whether Latin American privately held firms hold more cash holdings relative to their public counterparts. Second, there are some features in the Latin American setting which, we believe, may have relevant implications about the cash management behavior of companies. For example, Latin America is characterized as an emerging market, with weak institutional environments and 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 (Chong & Lopez-de-Silanes, 2007). The poor investor protection, in turn, lead Latin American companies to face more constraints in accessing external funds. 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, 2021). 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, 2021). In sum, Latin America is an under researched region that has the potential to yield relevant insights into the cash management literature.

After controlling for firm-specific characteristics and for country level variables identified by prior research as determinants of cash levels, we find that Latin American private firms hold significantly less cash holdings than their public counterparts. In the main analyzes, we ran pooled OLS regressions with country, industry, and year fixed effects. Our main conclusions are also the same when firm fixed effects and the weighted least squares (WLS) methodology are applied.

Univariate analyzes also indicate that Latin American public companies hold higher cash balances relative to private firms for every year in the sample period. Additionally, summary statistics show that private firms in Latin America hold, on average, 4.92% of cash and cash equivalents relative to total assets, while public companies hold on average 6.40%. For the entire sample, we document that Latin American firms have an average level of 5.19%. Univariate tests also show that compared with their private peers, Latin American public companies are larger, older, more leveraged, more likely to pay dividends, more profitable,

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

This research provides several important contributions to the literature on cash holdings. First, despite the importance of privately held firms in majority of economies, only a handful of prior research have 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). Second, at our best knowledge, this is the first study to analyze the determinants of cash levels in a wide sample of private firms from emerging economies. Moreover, our sample also allows us to establish the generalizability of prior evidence with a limited set on single developed country studies about private firms.

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 research will also be interesting for policymakers and academics leading to further discussions on corporate cash holdings. 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, which is characterized by less developed capital markets. Finally, we also add to the literature on corporate cash holdings by demonstrating that in the Latin American context, where shareholders are generally poorly protected, private firms hold significantly less cash holdings than their public counterparts.

This research continues as follows: In Section 2, we develop the research hypothesis. In Section 3, we present the sample and the variables used. Section 4 describes the results and Section 5 concludes the article.

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 available at fair terms. In this scenario, firms would be able to fund all positive net present value (NPV) investments, regardless the existence of cash. However, in the real world of taxes, information asymmetries and agency problems, the decision about how much 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; García-Teruel & Martínez-Solano, 2008).

The empirical literature on cash holdings identified four 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, 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 liquidating 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; Martínez-Sola, García-Teruel, & Martínez-Solano, 2013; Graham & Leary, 2018; Mortal, Nanda, & Reisel, 2020).

The existence of the aforementioned benefits makes cash holdings valuable to shareholders. However, cash can be a double-edge sword (Opler et al., 1999; Myers & Rajan, 1998). In fact, the literature identifies two main costs of holding cash reserves. First, holding

liquid assets implies an opportunity cost, given that cash earn a low rate of return relative to more productive but less liquid assets. 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 are detrimental for companies since cash holdings imply agency costs. This occurs because cash is the asset most vulnerable 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 net present value (NPV) projects or on opportunistic behaviors that benefit themselves but do not create value for shareholders. Therefore, when agency problems from the separation of ownership and control are relevant, self-interested managers can derive more easily the private benefits from cash resources to pursue personal objectives instead of maximizing shareholders wealth (Jensen & Meckling, 1976; Jensen, 1986; Myers & Rajan, 1998; Ozkan & Ozkan, 2004; Dittmar & Mahrt-Smith, 2007; Harford, Mansi, & Maxwell, 2008).

Cash can have both benefits and costs to shareholders, and firms' cash policy should balance the positive and negative sides of holding cash (Kim et al., 1998; Graham & Leary, 2018). Particularly, one would expect private firms to hold more precautionary cash than their public peers. As mentioned before, corporate liquidity decisions are affected by the imperfections in the capital markets. Since capital markets are subject to frictions, such as information asymmetry and agency conflicts, then companies cannot always obtain external funds on a timely basis (Myers & Majluf, 1984; Opler et al., 1999; García-Teruel & Martínez-Solano, 2008). Arslan, Florackis and Ozkan (2006) suggest 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 when internal funds are not enough, and external funds is excessively costly. Hence, considering that private firms are generally more expose to market imperfections, then one would expect them to have a higher precautionary demand for cash than public companies to avoid the risk of distress (Brav, 2009; Deloof, et al., 2020). The previous arguments suggest that privately held firms may have higher precautionary demand for cash holdings relative to their public counterparts.

However, contrary to these predictions, prior empirical evidence with U.S. data show 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, Gao et al. (2013) find that, on average, privately held firms hold about half as much cash as public companies do despite the fact that 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. Therefore, their evidence suggest that U.S. public companies hold more cash than private firms because public companies are subjected to higher levels of agency costs. Hence, consistent with this agency argument, Gao et al. (2013) document that U.S. public companies stockpile more cash holdings than private firms, despite a higher precautionary demand for cash by private companies.

Moreover, despite the evidence of Denis and Sibilkov (2010) indicate 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. In other words, 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. Thus, considering that private firms are generally more financially constrained than public companies, then the poor financial performance of some private firms may be another plausible explanation for their lower cash reserves.

These arguments could lead to lower cash reserves for Latin American private firms relative to their public counterparts. Hence, from the aforementioned arguments, we hypothesize Latin American private firms to have lower cash holdings relative to their public peers. Based on the above arguments, our research hypothesis is:

H1: Latin American private firms, *ceteris paribus*, hold less cash holdings than their public counterparts.

3. RESEARCH METHODOLOGY

3.1. The sample

Our initial sample consist 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 database¹. We opt to limit our sample to these countries mainly for two reasons. First, due to their relevance to the Latin American economy. Second, because we were able to construct a significative sample size of private and public companies from these countries during the sample period. The sample includes public and private companies from these countries from 2000 to 2019. These data include surviving and no surviving firms that appear on 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 Capital IQ database reports only contemporaneous informational 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 Capital IQ database classifies the company as public throughout the sample period. We complement the data provided by Capital IQ database by collecting data on initial public offerings and delisting from each stock exchange. Hence, for each firm-year we check its IPO date and delisting date to reclassify 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 holdings to maintain reserve requirements. We also remove utilities 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. 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 observation are private firms, and 8,421 firm-year observation are public companies.

The country with 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). As is commonly observed for international datasets, the number of firm-year observations from one country (Brazil) dwarfs the number of firm-year observations of the other Latin American countries. In the robustness subsection, we demonstrate that our main results are not driven by the bigger representation of Brazil in our sample.

3.2. Variables

3.2.1. Dependent variable

¹ Capital IQ is an affiliate of Standard & Poor's which produces the Compustat database.

In the initial analyzes, 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 of (Cash/Net assets). Following Harford et al. (2008). To alleviate the undue effects of outliers and possible data errors, we winsorize all continuous variables in all the analyzes at the 1st and the 99th percentile levels.

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.

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 the smaller ones. Hence, a negative association is expected between firm size and cash holdings. As a proxy of 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; García-Teruel & Martínez-Solano, 2008; Graham & Leary, 2018).

Dividend dummy: A firm that currently pays dividends are better able to accumulate cash by reducing its dividend payments (Opler et al., 1999; Ozkan & Ozkan, 2004; Dittmar & Mahrt-Smith, 2007). Thus, we expect that Latin American firms that pay dividends hold less 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 dividend for a given year, and 0 otherwise.

Cash Flow: The risk of having to pass up valuable growth opportunities is lower for firms with higher cash flows (Guney, Ozkan, & Ozkan, 2007). 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), and cash and net working capital are substitutes (Dittmar, Mahrt-Smith, & Servaes, 2003). These facts suggest a negative association between Net Working Capital, measure 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 growth², measured as the yearly growth rate of a firm's sales, as a proxy of growth opportunities (García-Teruel, & Martínez-Solano, 2013; Bigelli & Sánchez-Vidal, 2012; Harford et al., 2017; Manoel & Moraes, 2018; 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 associate between short-term debt, measured

² Unfortunately, Capital IQ database does not report data on R&D expenses.

by the ratio of total short-term debt to total assets, and cash is expected (Almeida et al., 2004; Arslan et al., 2006).

Leverage: Leverage plays a significant role in understanding a firm's cash position (Guney et al., 2007). Companies with a high degree of leverage are more likely to accumulate cash due to the greater likelihood of financial distress, which suggest 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 firm's profitability and cash levels. Following Faulkender et al. (2019), the Return on Assets (ROA), obtained as Operating Income to Net Assets, was used as a measured 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 PPE to net assets, and cash holdings (Ozkan & Ozkan, 2004).

Age: Older firms generally have more stable cash flows, lower investment opportunities and require less cash holdings (Mortal et al., 2020). In this sense, Mortal et al. (2020) suggests a negative association between firms' age and cash holdings. To measure firms' age, we use the natural logarithm of firms' 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 because prior literature document that cash can differ across countries because differences in institutions cause differences in firm characteristics (Almeida et al., 2014; Pinkowitz et al., 2016):

Investor Protection: Dittmar et al. (2003) document in their research 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-Siniales, 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) and Pinkowitz et al. (2016), we also control for the average of six corporate governance indices from the World Bank: (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. 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 and 2. A lower index indicate 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 (Graham & Leary, 2018; Deloof et al., 2020). In this sense, we also include GDP (Gross Domestic Product) Growth, obtained in the World Bank Data and defined as the annual percentage growth rate of each country GDP, as additional control variable.

3.3. Final Regression Model

In addition, 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 also include 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). Finally, given that the six largest Latin American countries have the same legal origin, French Civil Law, then we do not need to include in our model whether a country has a legal origin in common law or civil law as an additional institutional control variable (Manoel & Moraes, 2021).

Thus, to test our research hypothesis, we estimate Equation 1 using Ordinary Least Squares (OLS) estimation with robust standard errors clustered at the firm level³ to consider the fact that residuals may not be independent within a company (Fernandes & Gonenc, 2016):

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

As mentioned earlier, the details of the construction of these variables are shown in Table 1.

4. RESULTS

4.1. Descriptive statistics and correlations

Table 1 reports the descriptive statistics of the variables used in this research over the period 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 1, 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 1 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 corporate cash holdings than U.S. firms. Furthermore, 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 before, we use the natural logarithm of net assets and firm's age as our measures

³ Unreported results show that our main conclusions are qualitatively the same when we use the White robust standard errors.

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 firm's age, we observe that Argentine companies are the oldest, while the Brazilian ones 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 the highest mean 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 has the highest mean of growth opportunities with 32.38%, while Peruvian companies has 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 Return on Assets 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, 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) and Brazil with the lowest (0.67)

Turning to Panel B of Table 1, we see that Latin American public companies hold significantly more cash and cash equivalents than their private counterparts: publicly traded companies hold 6.40% of their total assets in cash, while unlisted firms hold 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 is 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. In terms of the standard deviation, Latin American public companies have a higher value (6.82%) compared with their private counterparts (5.58%).

Panel B of Table 1 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 of 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 short-term debt, higher cash flows to net assets and have more tangible assets than private firms. Finally, the results reported in Panel B of Table 1 also show that Latin American public companies, on average, are larger, older, more profitable, more leveraged and have lower levels of net working capital relative to privately held firms.

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

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INSERT FIGURE 1 HERE
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We can see in Figure 1 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 of 2000 to 2019. For Latin American public companies, the average cash ratio increases from 3.88% in 2000 to 6.85% in 2019. For Latin American private firms, the average cash ratio increases 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 its lowest level in 2001 with 3.88% and was highest in 2010 with 7.80%. The minimum of the mean cash/net asset ratio for the full sample is 3.75% in 2001 and the maximum is 6.33% in 2010.

Table 2 reports pairwise Pearson correlation coefficients between the variables used in this article.

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INSERT TABLE 2 HERE
=====

None of the correlations are high enough to present collinearity problems. 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 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, in turn, 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. As mentioned earlier, the dependent variable of our model ($Cash_{i,t}$) 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.

=====
INSERT TABLE 3 HERE
=====

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 less cash holdings. Our findings, therefore, are similar to the empirical evidence

of Gao et al. (2013), who document that U.S. private firms tend to hold less cash than public companies.

Regarding the control variables, the results are generally consistent with prior empirical literature. For example, more profitable firms and those with higher cash flows maintain higher cash holdings. The estimate coefficient of sales growth is positive and significant at the 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), who shows that firms that pay dividends accumulate less cash. It is relevant to mention, however, that 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).

Continuing with the results of Table 3, we find that the relationship between cash holdings and leverage is positive and significant at the 1% level. The significant positive relationship between leverage and cash holdings is consistent with the argument of Ozkan and Ozkan (2004), suggesting that companies with high levels of leverage have high probability of financial distress. 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 first find that Latin American firms with better investor protections, as measured by the anti-director rights index, stockpile lower cash holdings. This evidence is consistent with the findings of Dittmar et al. (2003). Using cross-country data for 1998 from a sample of 45 countries, the authors find that firms operating in countries characterized by weak investor protection hold more cash than those operating in countries 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 have the ability to do so. Moreover, there is a negative and significant relationship between the WGI index and the level of cash holdings. This means that when the country-level governance is weak, cash holdings are higher. Therefore, the worse is the country governance quality, the higher is the level of cash reserves. Finally, the coefficient of the GDP growth has a significant positive coefficient. This result indicates that firms from high-growth countries maintain higher cash levels in order to avoid missing 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 from Latin America. In columns 2 and 3, we provide the regression results for private and public firms separately. 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 from Latin America, 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.

Furthermore, we now see that tangibility is a relevant determinant of cash levels for both public and private firms. It is relevant to note, however, that the coefficient is statistically significant with a positive sign for private firms and with a negative sign for public companies. Continuing with the findings of Table 3, the results show that there is a negative association between investor protections and cash levels, but only statistically significant at the conventional levels for public companies. Finally, we also observe that the coefficients of the GDP growth have a positive coefficient, but only significant for private firms. The other results are qualitatively similar to those reported in column 1 of Table 3.

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 study that Latin American private firms maintain lower cash levels relative to their public peers. Toward our objective, we use a comprehensive sample of private and public companies from the six largest Latin American economies: Argentina, Brazil, Chile, Colombia, Mexico and Peru. The final sample includes 7,222 firms (46,040 firm-year observations). The data are from the Capital IQ database and cover the period from 2000 to 2019.

Supporting our research hypothesis, we find strong evidence that Latin American private firms hold on average a lower proportion of their assets in the form of cash and cash equivalents than do their public peers. Our main results hold after controlling for a large number of firm and country characteristics identified by prior research as determinants of cash levels.

The mean (median) cash holdings of Latin American public firms are 6.40% (3.85%) of total assets, while the mean (median) cash holdings of private firms are 4.92% (2.69%) of total assets. This is consistent with the evidence shown by Gao et al. (2013). Furthermore, 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.

One limitation 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.

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Table 1. 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 (<i>n</i>)	2,194	32,684	5,046	1,045	2,702	2,379	46,040

Panel B						
Variables	Public Companies			Private Firms		
	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 (<i>n</i>)		8,421			37,619	

Notes: Table 1 provides the descriptive statistics of the variables used in this paper. Our sample consist 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) over the period of 2000-2019. The definitions of the variables are provided in Table 1. Panel A of Table 2 provides the number of observations and means of firm- and country-level variables for the Latin American countries. Panel B of Table 1 provides descriptive statistics of the firm-level variables used in the analyses. In Panel B of Table 1, 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 2. Correlation coefficients

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
(1) Cash	1.000														
(2) Listed Companies	0.118	1.000													
(3) Size	0.123	0.350	1.000												
(4) Dividend dummy	0.191	0.205	0.259	1.000											
(5) Cash Flow	0.167	0.058	0.133	0.297	1.000										
(6) Net Working Capital	0.000	-0.008	-0.171	0.102	-0.066	1.000									
(7) Growth Opportunities	0.036	0.012	0.038	-0.017	0.004	-0.024	1.000								
(8) Short-Term Debt	0.020	-0.091	-0.053	-0.037	-0.072	-0.169	-0.009	1.000							
(9) Leverage	0.122	0.064	0.339	0.003	0.007	-0.296	0.035	0.355	1.000						
(10) ROA	0.174	0.024	0.074	0.298	0.530	0.114	0.083	-0.021	-0.002	1.000					
(11) Tangibility	0.006	0.109	0.102	-0.002	0.110	-0.332	0.016	-0.028	0.103	-0.029	1.000				
(12) Age	0.052	0.212	0.168	0.145	0.065	0.043	-0.070	-0.012	-0.023	0.027	0.090	1.000			
(13) Investor Protection	-0.088	0.000	-0.071	0.066	0.022	0.004	0.012	0.007	0.039	-0.028	0.028	0.011	1.000		
(14) WGI	-0.076	-0.030	-0.011	0.076	0.004	0.006	-0.023	0.002	0.069	-0.039	0.025	-0.071	0.730	1.000	
(15) GDP	0.027	0.238	0.181	0.086	0.052	-0.023	0.023	-0.014	0.068	0.063	0.104	0.101	0.169	0.186	1.000

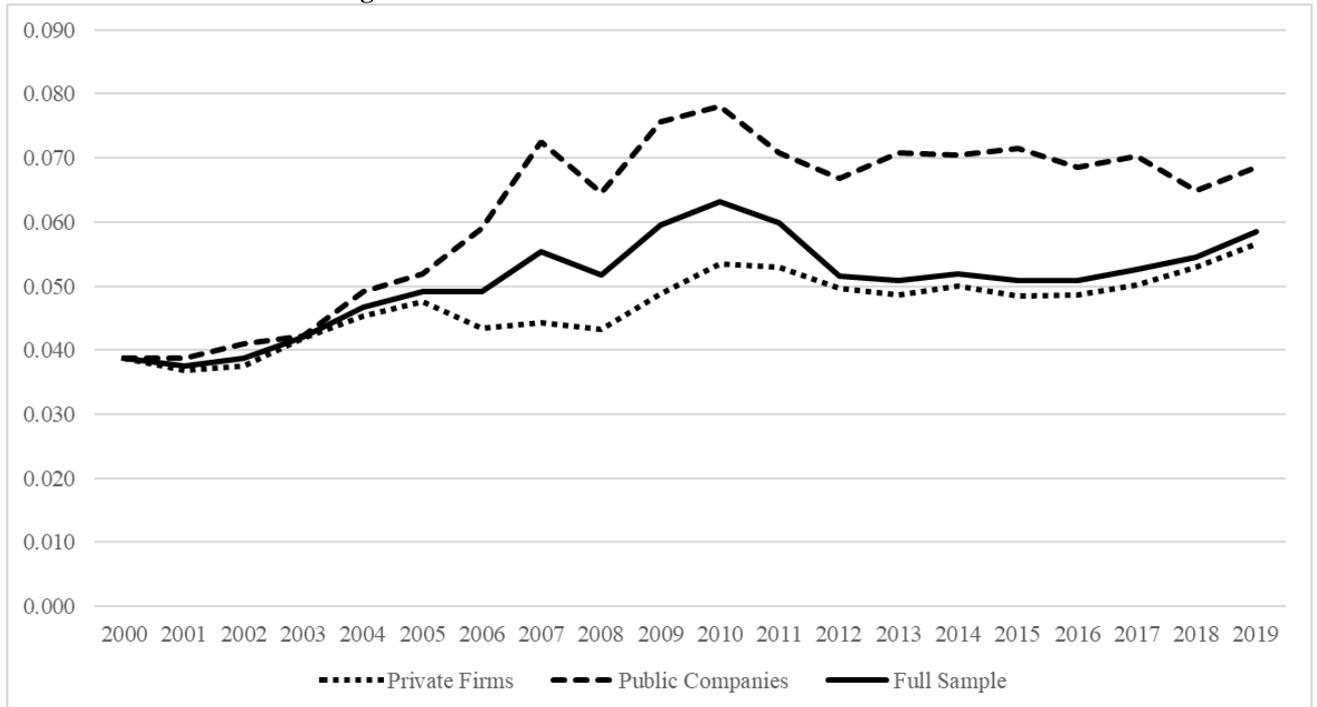
Notes: Table 2 reports Pearson correlation coefficients for the variables used in this paper.

Table 3. OLS estimation explaining the determinants of cash holdings

Variables	Full Sample (1)	Private Firms (2)	Public Companies (3)
	Coefficients (<i>p</i> -value)	Coefficients (<i>p</i> -value)	Coefficients (<i>p</i> -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
<i>p</i> -Value	< 0.001	< 0.001	< 0.001
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 the text. 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.