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The Market Value of Cash in Brazil and the Creation of a High-Governance Listings of Voluntary Adoption

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Abstract: In spite of the major changes in the Brazilian Stock Market in recent years, especially after the creation of three high-governance listings (New Market, Level I and Level II) of voluntary adoption, little is known about how much worth a dollar of cash in Brazil and if this value is different in firms that voluntarily commit to these levels with stricter governance standards. Our article fills this gap in the literature by providing a fresh inside about the market value of cash in Brazil. For that, we used a sample of 197 Brazilian nonfinancial firms with panel data from 2000 to 2018. Our results show that the value of an additional $1.00 of cash is higher in firms from the Premium Listing ($0.427) relative to the full sample of Brazilian companies ($0.291). Our study also provides relevant practical implications, by showing that the market value of cash is higher in firms from New Market ($0.547) where companies, among other things, follow the "one share, one vote" principle. Therefore, we also contribute to the literature by demonstrating that the decision to migrate to a more demanding listing of corporate governance, especially to New Market, increases the market value of cash.

Keywords: Cash holdings**;** Dual-class shares; Corporate governance; Agency theory.

1. INTRODUCTION

Cash holdings constitute a considerable portion of firm's total assets and have important implications on shareholder value and in several strategic decisions (OPLER *et al*., 1999; FAULKENDER; WANG, 2006; DITTMAR; MAHRT-SMITH, 2007; PINKOWITZ; WILLIAMSON, 2007; HARFORD; MANSI; MAXWELL, 2008; BATES; KAHLE; STULZ, 2009; MASULIS; WANG; XIE, 2009; MARTÍNEZ-SOLA; GARCÍA-TERUEL; MARTÍNEZ-SOLANO, 2013). According to De Simone, Piotroski and Tomy (2018), U.S. nonfinancial firms amounted to $1.7 trillion of cash at 2015, representing 9.5% of U.S. gross domestic product (GDP).

The literature on cash management has recently attracted much attention from both academic and press, especially driven by the secular trend in cash trapped overseas by U.S. industrial firms due to repatriation tax law (BATES; KAHLE; STULZ, 2009; DUCHIN, 2010; HARFORD; WANG; ZHANG, 2017; DE SIMONE; PIOTROSKI; TOMY, 2018; GRAHAM; LEARY, 2018; FAULKENDER; HANKINS; PETERSEN, 2019). In a world of perfect financial markets, firms would have access to external capital at a fair price to finance all their investment opportunities when they arise (KIM; MAUER; SHERMAN, 1998; ALMEIDA; CAMPELLO; WEISBACH, 2004), which would make cash management irrelevant (MODIGLIANI; MILLER, 1958; OPLER *et al*., 1999; GRAHAM; LEARY, 2018).

However, the assumptions of perfect capital markets can be considered as platonic abstractions (MANOEL; MORAES; NAGANO; SOBREIRO, 2018), since that transaction costs are never irrelevant and external capital cannot be considered an ideal substitute for internal funds (MYERS, 1977; MYERS; MAJLUF, 1984). Hence, considering that firms operate in imperfect capital markets and that they cannot finance all their investments opportunities using external capital, cash balances is an important tool that companies can use

to finance their investments (HARFORD, 1999; DUCHIN, 2010; MARTÍNEZ-SOLA; GARCÍA-TERUEL; MARTÍNEZ-SOLANO, 2013; GRAHAM; LEARY, 2018; FAULKENDER; HANKINS; PETERSEN, 2019).

Keeping part of firm's assets in form of cash and cash equivalents provide benefits to companies, such as financing day-to-day operations (KEYNES, 1936; KIM; MAUER; SHERMAN, 1998; DITTMAR; MAHRT-SMITH, 2007; MARTÍNEZ-SOLA; GARCÍA-TERUEL; MARTÍNEZ-SOLANO, 2013), taking advantage of growth opportunities due to precautionary motives (KEYNES, 1936; MYERS; MAJLUF, 1984; OPLER *et al*., 1999), reducing the problems associated with imperfections in capital markets (ALMEIDA; CAMPELLO; WEISBACH, 2004; OZKAN; OZKAN, 2004; FAULKENDER; WANG, 2006; DENIS; SIBILIKOV, 2010; AMESS; BANERJI; LAMPOUSIS, 2015), serving as a buffer against adverse cash flow shocks (KEYNES, 1936; OPLER *et al*., 1999; OZKAN; OZKAN, 2004; GARCÍA-TERUEL; MARTÍNEZ-SOLANO, 2008; LINS; SERVAES; TUFANO, 2010), among others things.

While maintaining cash resources provides benefits in the presence of costlier external funds, holding liquid assets implies an opportunity costs due to the low return of these assets in comparison to other investments of the same risk (KIM; MAUER; SHERMAN, 1998; MARTÍNEZ-SOLA; GARCÍA-TERUEL; MARTÍNEZ-SOLANO, 2013; GRAHAM; LEARY, 2018). In addition, although cash is a desirable asset, the literature suggests that there is reason for shareholders to be concerned about managers' stewardship of large cash reserves (HARFORD; 1999; DITTMAR; MAHRT-SMITH, 2007; HARFORD; MANSI; MAXWELL, 2008).

Holding excessive cash may have negative implications if entrenched managers use these liquid assets in a way to benefit themselves at the expense of shareholders, such as, in the form of perquisites, excessive salaries or even by theft (JENSEN; MECKLING, 1976; MYERS; RAJAN, 1998; PINKOWITZ; STULZ; WILLIAMSON, 2006; HARFORD; MANSI; MAXWELL, 2008; FRÉSARD; SALVA, 2010). Aware of the vulnerability of corporate liquidity, cash holdings should be valued by shareholders based on whether these resource prevents underinvestment in positive Net Present Value (NPV) investments by well-intentioned managers and whether cash facilitates overinvestment in negative NPV projects or in opportunistic actions by self-interested managers at the expense of shareholders (DITTMAR; MAHRT-SMITH, 2007; KALCHEVA; LINS, 2007).

These opportunistic behaviors can create a wedge between the value of a dollar inside the company and the value of a dollar paid out (PINKOWITZ; STULZ; WILLIAMSON, 2006). In other words, shareholders will allow a firm to keep more cash if they believe that these resource will generate a higher return than if the cash were returned to them (PINKOWITZ; WILLIAMSON, 2007).

While an extensive literature analyzes the determinants of cash holdings, only a few of them, see, for example, Faulkender and Wang (2006), Pinkowitz, Stulz, and Williamson (2006), Dittmar and Mahrt-Smith (2007), Pinkowitz and Williamson (2007), Bates, Kahle and Stulz (2009) and Bates, Chang, and Chi (2018) attempts to estimate the value of a dollar in cash. Moreover, these efforts are concentrated mostly in developed markets. In this sense, we expand the efforts to emerging markets, being more precise to Brazil.

Brazil is one of the largest emerging market and is an interesting case to analyze (BLACK; DE CARVALHO; GORGA, 2012). In the early 2000s, Brazil was characterized by weak investor protection, low disclosure standards and the private benefits of control were pointed out as high and legal rules and firm-level governance as weak (BRAGA-ALVES; SHASTRI, 2011; BLACK; DE CARVALHO; GORGA, 2012; DE CARVALHO; PENNACCHI, 2012; BLACK; DE CARVALHO; SAMPAIO, 2014).

In response to the increase demand for superior shareholders protection and trading fragmentation in favor of the US stock exchanges in the late 1990s, in 2000, São Paulo Stock Exchange (Bovespa), now called "Brasil, Bolsa, Balcão" or B3, created three high-governance listings in addition to maintaining its traditional listing (BLACK; DE CARVALHO; GORGA, 2012; BORTOLON; LEAL, 2014; MANOEL *et al*., 2018). The three new premium listings (Level 1, Level 2, and New Market) are of voluntary adoption and firms that undertake to these levels are subject to "good corporate governance practices" and disclosure requirements in addition to those already required by the Brazilian laws (DE CARVALHO; PENNACCHI, 2012; BORTOLON; LEAL, 2014).

The initiative of the Brazilian Stock Market, that permitted its listed companies to voluntarily commit to these levels, provides a unique opportunity to analyze the effects of adopting higher corporate governance standards on the market value of cash and how it varies in comparison to those firms that did not migrate to the exchange's higher standards. Although it was not the first stock exchange to establish a premium listings, the Brazilian Market was the first to allow previously-listed companies to migrate optionally to higher listing levels, with stricter governance standards than the regular listing (BLACK; DE CARVALHO; GORGA, 2012; DE CARVALHO; PENNACCHI, 2012).

Furthermore, Brazil does not show an upward trend in cash reserves in recent years. Manoel and Moraes (2018) find that cash and cash equivalents represented 8.17% of the sum of total assets for Brazilian non-financial firms in 2017. However, the share of cash balances relative to total assets in Brazilian non-financial companies has decreased over the last 10 years, since that in 2007, firms in Brazil held on average 18.42% of their assets in cash. Thus, in a context of limited access to external financing and unlike the other countries, especially driven by U.S. multinational firms, Brazilian companies did not show a tendency to increase their cash levels recently (MANOEL; MORAES, 2018).

Therefore, in spite of these major changes in the Brazilian economy and in its stock market, little is known about "How much worth a dollar of cash on balance sheet in Brazilian public companies?" and "Is this value different in firms listed in the premium listing in comparison to those listed in the traditional non-premium list?" Our article fills this gap in the empirical literature by providing a detailed analysis of the market value of cash in Brazil. **Therefore, our main objective is to understand the market value of cash in Brazil and to analyze if this value is differently in firms from the premium listing than the others that did not migrate.**

If shareholders believe that firms that voluntarily adhere to these levels are subject to stricter governance standards than the regular listing and that these mechanisms reduce the agency costs of free cash flow, then we hypothesize that a dollar of cash may be worth more for them. Alternatively, if shareholders believe these corporate governance mechanism cannot reduce the agency problems of free cash flow, then a dollar of cash may not be worth more. We expect, *ceteris paribus*, that shareholders place a higher value on cash holdings in firms that voluntarily subscribe to these levels.

We contribute to the empirical literature on cash and corporate governance as follow. To date, although some researches have already analyzed the determinants of cash levels in Brazil, none of them, however, explore the market value of cash. In this sense, our article is the first to explore the market value of cash in Brazil. Second, exploring the impact of the creation of the premium listing on investors' valuation of cash represents an opportunity to expand the debate in the cash holdings and corporate governance literature in Brazil. Third, we also contribute to the empirical literature by analyzing whether a firm's choice of a domestic premium listing targeted by the Brazilian Stock Exchange increased the market value of cash.

To the test our hypothesis we adapted the model used by Pinkowitz, Stulz and Williamson (2006) and initially developed by Fama and French (1998). For that, we used a

sample of 197 Brazilian public firms (2,293 firm-year observations) with annual data available from 2000 to 2018. Our results indicate, *ceteris paribus*, that an extra dollar of cash has a marginal value of $0.291 to shareholders, indicating that $1.00 of cash worth less than one dollar in Brazil. In addition, we verified that cash is worth more in firms listed on the premium listing ($0.427).

These results supports our hypothesis and the agency costs of free cash flow theory of Jensen's (1986), since that, shareholders place a higher value on cash reserves in well-governed companies. Built on these facts, our results provide important policy implications by demonstrating that the creation of the three high-governance listings, as a set of corporate governance mechanisms, prevent managers from destroying shareholder value. Therefore, we also contribute to the agency costs of free cash flow theory of Jensen's (1986) by identifying that investor discount the value of cash of firms from the traditional non-premium list and that the market value of cash in Brazil is less than one dollar.

Finally, the analysis also reveals that the marginal value of one dollar of cash on balance sheet is higher in firms from New Market ($0.547) where companies, in addition to meeting all the requirements for Levels 1 and 2, must follow the "one share, one vote" principle. Hence, we also contributed to the literature, especially for emerging countries where the usage of non-voting share is common, by verifying that the "one share, one vote" principle, *ceteris paribus*, increases the value that investors place on an extra dollar of cash.

We conduct some robustness checks, as explained latter, and our main results and inferences are unchanged. The rest of this article is organized as follows. Section 2 is dedicated to the development of the research hypothesis. In Section 3 we describe the data and explain our empirical methodology. In Section 4 we report our empirical results, including some robustness checks. Finally, Section 5 is dedicated to conclusions.

2. HYPOTHESIS DEVELOPMENT

If firms could finance all their investments opportunities using external capital, cash holdings would not add value to them (MODIGLIANI; MILLER, 1958). However, in a context of capital market imperfections, companies that have valuables growth opportunities invest less than the first-best optimum, which leads to underinvestment problems and reduced firm value (DENIS; SIBILKOV, 2010). Hence, considering that firms operate in a capital market that is far from perfect and that external finance cannot be considered as an ideal substitute for internal capital (MYERS, 1977; MYERS; MAJLUF, 1984), liquidity can take on a strategic role (HARFORD, 1999; DENIS; SIBILKOV, 2010; DROBETZ; GRÜNINGER; HIRSCHVOGL, 2010; DUCHIN, 2010), including contributing to the increase of firm value (MASULIS; WANG; XIE, 2009).

Cash reserves allow companies to take advantage of their valuable investment opportunities that would otherwise be forgone (KEYNES, 1936; MYERS; MAJLUF, 1984; OPLER *et al*., 1999; DENIS; SIBILKOV, 2010; MARTÍNEZ-SOLA; GARCÍA-TERUEL; MARTÍNEZ-SOLANO, 2013), especially when current cash flows are insufficient (OZKAN; OZKAN, 2004; DROBETZ; GRÜNINGER; HIRSCHVOGL, 2010) and for firms that face greater financing constraints (FAULKENDER; WANG, 2006; DENIS; SIBILKOV, 2010). Additionally, liquid assets enable companies to invest without raising external finance at high transaction costs (KIM; MAUER; SHERMAN, 1999; MARTÍNEZ-SOLA; GARCÍA-TERUEL; MARTÍNEZ-SOLANO, 2013) and liquidate assets to make payments (OPLER *et al*., 1999). More broadly, cash balances also reduces underinvestment problems and the likelihood of incurring financial distress (HARFORD, 1999; FAULKENDER; WANG, 2006;

MASULIS; WANG; XIE, 2009; FRÉSARD; SALVA, 2010; MARTÍNEZ-SOLA; GARCÍA-TERUEL; MARTÍNEZ-SOLANO, 2013).

The existence of the benefits should make cash reserves valuable to shareholders (MARTÍNEZ-SOLA; GARCÍA-TERUEL; MARTÍNEZ-SOLANO, 2013). However, cash reserves come at cost since that there is a tradeoff between the low return of cash and the benefit of minimizing the high costs of external financing (KIM; MAUER; SHERMAN, 1999). Furthermore, incompletely controlled managers can spend free cash flows on wasteful projects (JENSEN, 1986), given that the access to cash resources is with little scrutiny and its use is discretionary, which makes corporate liquidity the most vulnerable asset to opportunistic actions of managers (MYERS; RAJAN, 1998; DITTMAR; MAHRT-SMITH, 2007).

In an agency theoretic framework, a policy of higher cash levels can result in a reduction in firm value (CHANG; BENSON; FAFF, 2017). Agency theory predicts that managers have strong incentive to hold more cash to gain discretionary power over the company's investment decisions, which in turn, can destroy shareholders value (JENSEN; MECKLING, 1976; DITTMAR; MAHRT-SMITH, 2007; FRÉSARD; SALVA, 2010; AMESS; BANERJI; LAMPOUSIS, 2015). The results of Harford (1999) corroborates with this argument, given that, the author found that cash-rich firms engage in value-decreasing behavior. Further, Dittmar and Mahrt-Smith (2007) state that shareholders assign a lower value to an additional dollar of cash when agency conflicts are greater. In other words, an extra dollar in cash may not be worth a dollar to outside shareholders if managers use this resource inefficiently (DITTMAR; MAHRT-SMITH, 2007; MASULIS; WANG; XIE, 2009).

The term ‘‘market value of cash’’ is used to describe the contribution of cash holdings to firm value (WEIDEMANN, 2017). Cash reserves are often viewed by managers as at worst "value neutral" or, in other words, zero net present value (NPV) investments. But this is not the reality, given that in an imperfect capital market an additional $1.00 of cash on the corporate balance sheet do not necessarily increase the market value of the company exactly by one dollar (PINKOWITZ; WILLIAMSON, 2007; BATES; CHANG; CHI, 2018).

In the presence of weak corporate governance, entrenched managers are able to use part of cash to pursue their own private objectives rather than maximize shareholders' wealth (JENSEN; MECKLING, 1976; AMESS; BANERJI; LAMPOUSIS, 2015; WEIDEMANN, 2017), resulting in faster dissipation of cash (DITTMAR; MAHRT-SMITH, 2007). Hence, corporate liquidity can generate more agency problems when the set of governance mechanism fail to align the agent's interests with those of the principal (HARFORD; MANSI; MAXWELL, 2008). Consequently, in the presence of agency costs of free cash flow, shareholders can limit managers’ access to free cash flow (JENSEN, 1986; DITTMAR; MAHRT-SMITH; SERVAES, 2003; PINKOWITZ; STULZ; WILLIAMSON, 2006; MARTÍNEZ-SOLA; GARCÍA-TERUEL; MARTÍNEZ-SOLANO, 2013) and the market value of cash is discounted given that part of these resource are spent to increase the welfare of agent instead to maximize the utility function of principal (PINKOWITZ; STULZ; WILLIAMSON, 2006).

The market value of cash holdings, on the other hand, increases with the quality of the mechanisms of corporate governance (PINKOWITZ; WILLIAMSON, 2006; DITTMAR; MAHRT-SMITH, 2007; DROBETZ; GRUNINGER, 2007; HARFORD; MANSI; MAXWELL, 2008; AMESS; BANERJI; LAMPOUSIS, 2015). Researches such as Dittmar and Mahrt-Smith (2007), Harford, Mansi and Maxwell (2008) and Manoel *et al*. (2018) point out that a robust set of corporate governance mechanisms can reduce the misuse of cash. Governance mechanisms can mitigate managers' ability to convert cash reserves into private benefits at the expense of shareholders (JENSEN; MECKLING, 1976; AMESS; BANERJI; LAMPOUSIS, 2015; WEIDEMANN, 2017).

Dittmar and Mahrt-Smith (2007) obtained evidence that well-governed companies has its cash better “fenced in”, in a manner that, shareholders assigns a higher value to an additional

dollar of cash for a well-governed firm (between $1.27 and $1.62) in comparison to a poorly-governed company (between $0.42 and $0.88). The authors also provide evidence that corporate governance improve the use of corporate liquidity by improving the returns from normal operations. The findings of Harford, Mansi and Maxwell (2008) corroborate with those of Dittmar and Mahrt-Smith (2007), since they obtained evidence that companies with weaker corporate governance, *proxied* by anti-takeover provisions, spend cash more quickly on inefficient acquisitions and capital expenditures than firms with strong governance.

In a recent study, Drobetz, Grüninger and Hirschvogl (2010) verified that the value of cash holdings is higher if governance and investor protection are better. Finally, Frésard and Salva (2010) find that shareholders place a higher value on excess cash of foreign firms cross-listed on U.S. exchanges ($1.61) than their domestic counterparts ($0.58). The authors attribute this result to the fact that a U.S. listing constrains managers' misallocation of cash, since that a U.S. cross-listing enhances corporate governance. Hence, their evidence also provides support to the hypothesis that shareholders places a higher value on an extra dollar of cash reserves in well-governed firms, although they were not able to identify the exact nature of this reduction in the market value of cash in poorly-governed company.

Taken together, the above evidence indicates that corporate governance is a tool that firms can use to mitigate part of the agency problems resulting from the misalignment of interest between agent and principal in cash management. However, it is important to mention that corporate governance has a relatively minor impact on how companies accumulate cash holdings, but a major impact on how firms spend their corporate liquidity. In other words, governance impacts more in operating and investments decisions than in financing decisions (DITTMAR; MAHRT-SMITH, 2007).

Complementary to this observation, Pinkowitz and Williamson (2007), in turn, point out that the market value of the marginal dollar of cash is approximately one dollar. The authors also provide evidence that the market value of cash holdings vary with differences in firm characteristics and industries, ranging from -$1.06 in the coal industry to $1.61 for computer software firms. Their evidence also indicate that software and pharmaceutical firms have the highest market value of cash, while firms in commodity and manufacturing industries have the lowest market values. In summary, the evidence of Pinkowitz and Williamson (2007) is consistent with the hypotheses that the value of cash should be positively related to the amount and the quality of the firm's investment opportunities and positively related to the uncertainty of a firm's investment program.

The Brazilian market is a good place to analyze changes in corporate governance (BLACK; DE CARVALHO; SAMPAIO, 2014). The debate on governance structures in Brazil was intensified only in the 1990s, when the entrance of new investors, especially international and institutional ones, stimulated new efforts to improve the governance structure of the Brazilian Market (BLACK; DE CARVALHO; SAMPAIO, 2014; BORTOLON; LEAL). As in many countries, reforms of corporate law designed to protect investors face serious political opposition in Brazil (DE CARVALHO; PENNACCHI, 2012).

In a context of low investor protection and in an attempt to increase credibility and attract investors, the Brazilian Stock Market create a three high-governance listings (New Market, Level I and Level II) in addition to maintaining its traditional listing in the early 2000s (DE CARVALHO; PENNACCHI, 2012). By voluntarily adhering one of the three high-governance levels, a company can pledge to better protect its shareholders (DE CARVALHO; PENNACCHI, 2012).

The creation of the three high-governance listings, as a private contractual arrangement, offers a credible governance mechanism that companies can use to reduce their cost of funding growth opportunities (DE CARVALHO; PENNACCHI, 2012). New Market it the level of the premium listing that has the highest standards. Firms that list on it must keep a minimum free

float of 25% of their capital, financial statements prepared following U.S. GAAP (U.S. Generally Accepted Accounting Principles) or IFRS (International Financial Reporting Standards), adhere to the Market Arbitration Panel for conflict resolution and they cannot have Board of Directors elected for terms that exceed two years (BRAGA-ALVES; SHASTRI, 2011; DE CARVALHO; PENNACCHI, 2012).

In addition, New Market firms must follow the "one share, one vote" policy. However, almost 90% of the companies listed on the Brazilian stock exchange had non-voting shares at the time. Recognizing that New Market's standards may be very stringent for many Brazilian companies, B3 also created two additional segments, Level 1 and Level 2 (DE CARVALHO; PENNACCHI, 2012). For those firms that do not commit to the "one share, one vote policy", Level 2 was created with all New Market's requirements, except that Level 2 allows non-voting shares. Level 1, in turn, governance practices are less demanding than Level 2, with a focus on improving disclosure (BRAGA-ALVES; SHASTRI, 2011; MANOEL *et al*., 2018). Based on information from June 2019, 140 companies were listed on New Market, 27 on Level 1 and 19 on Level 2.

Prior to the creation of the special listing, most Brazilian public firms were dual-class companies, as well as in most emerging markets. Thus, it was common that the largest shareholders of Brazilian firms to own a proportion of the non-voting shares larger than their voting shares percentage holding (BORTOLON; LEAL, 2014). Managers have incentives to extract private benefits when their proportion of voting shares is greater than their proportion of non-voting shares (LINS, 2003; BORTOLON; LEAL, 2014). This divergence, what we call deviations from the "one share-one vote" principle, at dual class companies exacerbates the managerial agency problems between managers and investors (LINS, 2003; MASULIS; WANG; XIE, 2009).

Managers will extract more private benefits at firms where the opportunities to do so are greater (MASULIS; WANG; XIE, 2009). In this sense, the results of Masulis, Wang, and Xie (2009) indicate that managers with excess control rights at dual class firms extract more private benefits at the expense of shareholders. The authors' evidence also indicates that as the insider control rights-cash flow rights divergence becomes larger an extra dollar of cash worth less and corporate managers engage in more inefficient empire-building activities.

Given that non-voting share are more susceptible to expropriation, we expect the market value of cash to be higher in firms from New Market where firms, in addition to meeting all the requirements for Levels 1 and 2, can only issue shares with voting rights. In companies not listed on New Market, on the other hand, we expect the market value of cash to be lower, given that part of this cash is more likely to be expropriated by manager at the expense of principal. Based on these arguments, our hypothesis is:

A dollar of cash is more valuable for shareholders in companies listed on the premium listing in the Brazilian Market, especially for those listed in the New Market, than for those that did not migrate to the exchange's higher governance standards.

3. RESEARCH METHODOLOGY

3.1. Sample

We initiated our period of analysis in 2000 because this was when the Brazilian Stock Market introduced the Premium Listing. We obtain our financial annual data from the Economática© database, the main database for Latin American countries. All variables were

translated into U.S. dollars using historical exchange rates obtained from the Economática© for comparative purposes. In addition, the information about the premium listing, mentioning, from a possible entry, exit or change of firms between the levels (Level 1, Level 2 and New Market), from its creation until 2018 was provided by the Brazilian Stock Market.

We exclude financial companies because liquidity is hard to assess in these firms and because their business involves inventories of marketable securities that are included in cash reserves (OPLER *et al*. 1999). In the same way, we also exclude utilities companies because liquidity and governance might be driven by regulatory factors and statutory capital requirements (OPLER *et al*. 1999). We also eliminate firm-years (252 observations) that presented negative equity to avoid the effects that may be related to financial distress (LINS, 2003; DENIS; SIBILKOV, 2010). Our final sample, consequently, consist of an unbalanced panel comprising 197 Brazilian public firms (2,293 firm-year observations) with annual data available from 2000 to 2018.

3.2. The Model

To estimate the contribution of a firm's cash reserves to its market value we adapted the model used by Pinkowitz, Stulz and Williamson (2006) and initially developed by Fama and French (1998). The model used by the authors can be observed as follows:

$$V_{i,t} = \alpha_i + \beta_1 E_{i,t} + \beta_2 dE_{i,t} + \beta_3 dE_{i,t+1} + \beta_4 dNa_{i,t} + \beta_5 dNa_{i,t+1} + \beta_6 RD_{i,t} + \beta_7 dRD_{i,t} + \beta_8 dRD_{i,t+1} + \beta_9 I_{i,t} + \beta_{10} dI_{i,t} + \beta_{11} dI_{i,t+1} + \beta_{12} D_{i,t} + \beta_{13} dD_{i,t} + \beta_{14} dD_{i,t+1} + \beta_{15} dV_{i,t+1} + \beta_{16} dCash_{i,t} + \beta_{17} dCash_{i,t+1} + \epsilon_{i,t} \quad (1)$$

Where X_t is the level of variable X in year t scaled by total assets in year t; dX_t is the change in the level of X from year $t-1$ to year t scaled by total assets in year t, that is, ((X_t - X_{t-1})/ $Total\ Assets_t$); dX_{t+1} is the change in the level of X from year $t+1$ to year t scaled by assets in year t, that is, ((X_{t+1} - X_t)/ $Total\ Assets_t$); V is the market value of firm (Market-to-Book), which is calculated at fiscal year-end as the sum of the market value of equity and the book values of short-term and long-term debt divided by the book value of assets; E is earnings before extraordinary (after depreciation and taxes); NA is net assets, that is, total assets minus cash and cash equivalents; $Cash$ is the sum of cash and cash equivalents; RD is research and development (R&D) expenditure; I is interest expense; D is total dividends paid. All variables used were scaled by total assets to control for heteroscedasticity (PINKOWITZ, STULZ; WILLIAMSON, 2006).

In this regression, the coefficient on the change in cash balances (β_{16}) is the most important and measures, according to Pinkowitz, Stulz and Williamson (2006) and Pinkowitz and Williamson (2007), the sensitivity of firm value to a one-dollar increase in cash holdings. In other words, this coefficient is an estimate of the market value of a marginal dollar of cash balances.

The option to adapt the model occurred because the authors used Research and Development (R&D) expenditure as a proxy for the construct investment opportunities. However, Brazilian companies do not provide information about R&D expenditure before 2007. In this sense, we use the yearly growth rate of a firm's sales as a proxy for investment opportunities. Despite this minor adjustment, sales growth is a proxy of investment opportunity

widely used in the literature see, for example, the articles of Pinkowitz and Williamson (2007), Harford, Wang and Zhang (2017) and Manoel and Moraes (2018).

In this sense, to test our hypothesis we estimate the regression model given by Equation 2:

$$V_{i,t} = \alpha_i + \beta_1 E_{i,t} + \beta_2 dE_{i,t} + \beta_3 dE_{i,t+1} + \beta_4 dNa_{i,t} + \beta_5 dNa_{i,t+1} + \beta_6 Growth\ Opportunities_{i,t} + \beta_7 I_{i,t} + \beta_8 dI_{i,t} + \beta_9 dI_{i,t+1} + \beta_{10} D_{i,t} + \beta_{11} dD_{i,t} + \beta_{12} dD_{i,t+1} + \beta_{13} dV_{i,t+1} + \beta_{14} dCash_{i,t} + \beta_{15} dCash_{i,t+1} + \epsilon_{i,t} \quad (2)$$

All variables in this equation, except Growth Opportunities, are scaled by total assets and follows the operational definition used by Pinkowitz, Stulz and Williamson (2006). The test of our hypothesis is that the coefficient (β_{14}) is larger for firms that voluntarily commit to the premium listing, especially for those listed in the New Market. We used the Fixed Effects Model to mitigate part of the potential problems of correlated omitted variables and to focus on the within-dimension of the data (DROBETZ; GRÜNINGER; HIRSCHVOGL, 2010). Finally, to ensure that the extreme values are not driving our results, we winsorized all the continuous variables at the 1% tails (DITTMAR; MAHRT-SMITH, 2007).

4. RESULTS

4.1. Descriptive statistics

Table 1 presents descriptive statistics for the variables used in our article. All variables are in U.S. dollars. This table reveals a wide variation in cash balances, with a mean of 9.64% and a median of 6.19%, with a standard deviation of 0.108.

Table 1. Descriptive Statistics

Variables	Mean	Median	Std. Dev.	Minimum	Maximum
Cash/Total Assets	0.0964	0.0619	0.1084	0.0000	0.7896
$V_{i,t}$	1.006	0.791	0.726	0.110	4.182
$E_{i,t}$	0.073	0.071	0.090	-0.470	0.372
$dE_{i,t}$	0.003	0.005	0.086	-0.481	0.532
$dE_{i,t+1}$	0.006	0.004	0.089	-0.397	0.620
$dNa_{i,t}$	0.016	0.037	0.269	-1.181	0.609
$dNa_{i,t+1}$	0.075	0.017	0.317	-0.560	1.685
$Growth\ Opportunities_{i,t}$	0.104	0.058	0.370	-0.789	1.758
$I_{i,t}$	0.061	0.046	0.058	0.000	0.442
$dI_{i,t}$	0.001	0.001	0.040	-0.221	0.182
$dI_{i,t+1}$	0.001	0.001	0.040	-0.211	0.154
$D_{i,t}$	0.024	0.013	0.034	0.000	0.184
$dD_{i,t}$	0.001	0.000	0.023	-0.088	0.096

$dD_{i,t+1}$	0.002	0.000	0.024	-0.088	0.098
$dV_{i,t+1}$	0.000	0.000	0.000	0.000	0.000
$dCash_{i,t}$	-0.001	0.001	0.095	-0.843	0.725
$dCash_{i,t+1}$	0.006	0.000	0.089	-0.261	0.338

Our sample consist of 197 Brazilian public firms from 2000 to 2018. All the continuous variables were winsorized at the 1% in tails. The dependent variable (V) in all specifications is the market value of firm (Market-to-Book), which is calculated at fiscal year-end as the sum of the market value of equity and the book values of short-term and long-term debt divided by the book value of assets; ; E is earnings before extraordinary (after depreciation and taxes); NA is net assets, that is, total assets minus cash and cash equivalents; $Cash$ is the sum of cash and cash equivalents; $Growth\ Opportunities$ is the yearly growth rate of a firm's sales; I is interest expense; D is total dividends paid. dX_t is the change in the level of X from year $t-1$ to year t scaled by total assets in year t, that is, $((X_t - X_{t-1})/\ Total\ Assets_t)$; dX_{t+1} is the change in the level of X from year $t+1$ to year t scaled by assets in year t, that is, $((X_{t+1} - X_t)/\ Total\ Assets_t)$; All variables used, except Growth Opportunities, were scaled by total assets to control for heteroscedasticity.

4.2. Main Results

Table 2 reports the results of estimating Equation 2 with fixed effects which test our hypothesis. This table also presents the results of the Variance Inflation Factor (VIF) test. As observed, multicollinearity is not a concern is our study, since that the highest VIF found was 3.936 for the subsample of firms from Level 2.

In Column (1) of Table 2 we verified for the full sample of Brazilian firms that $1.00 of cash is valued at only $0.291 cents. The estimated coefficient is statistically significant at the level of 1%. This result, consequently, indicate that the market value of an extra dollar of cash in Brazil is below one. Considering the results of columns 2 and 3, we verified that cash contributes more to firm value in firms that voluntarily adhere to the special listing in comparison to those that did not migrate to the exchange's higher standards. A one-dollar increase in cash reserves, as observed in (β_{14}) of column 2, is associated with an increase in firm value of $0.427 in firms with stronger corporate governance, while the coefficient (β14) of column 3 were not statistically significant.

Our results suggest, on average, that agency costs of free cash flow are more exacerbate in firms not listed in the special levels of corporate governance. These findings support our hypothesis that, at poorly governed firms, managers are able to extract private benefits, which is in line with the evidence obtained by Pinkowitz, Stulz, and Williamson (2006) and Dittmar and Mahrt-Smith (2007). Therefore, we conclude that cash contributes more to firm value in firms that voluntarily commit to the special listing and that outside investors discount the value of cash held by firms that did not migrate to the premium listing.

In columns 4, 5 and 6 of Table 2, Equation 2 was estimated independently for each subsample of firms from the Premium Listing (Level 1, Level 2, and New Market), respectively. When we divide our sample according to each level, we see that cash is more valued in firms from New Market ($0.547). Among firms from Level 1 and Level 2, we observed that none of the coefficient (β14) was statistically significant.

Table 2. Fixed Effects Regression

	Brazilian Public Firms	**Premium Listing**	**Non-Premium Listing**	**New Market**	**Level 1**	**Level 2**
Variables	Coefficients (*p*-value)	Coefficients (*p*-value)	Coefficients (*p*-value)	Coefficients (*p*-value)	Coefficients (*p*-value)	Coefficients (*p*-value)
Constant	0.832 (0.000 ***)	0.930 (0.000 ***)	0.681 (0.000 ***)	0.997 (0.000 ***)	0.721 (0.000 ***)	0.858 (0.000 ***)
$E_{i,t}$	1.085 (0.001 ***)	1.549 (0.008 ***)	0.545 (0.144)	1.519 (0.037 **)	0.956 (0.059 *)	1.611 (0.085 *)
$dE_{i,t}$	-0.021 (0.897)	-0.164 (0.567)	0.048 (0.784)	-0.103 (0.752)	-0.120 (0.741)	-0.545 (0.413)
$dE_{i,t+1}$	0.295 (0.058 *)	0.591 (0.101)	0.050 (0.720)	0.583 (0.196)	0.417 (0.138)	0.749 (0.173)
$dNa_{i,t}$	0.217 (0.000 ***)	0.229 (0.001 ***)	0.186 (0.008 ***)	0.265 (0.005 ***)	0.238 (0.024 **)	0.119 (0.496)
$dNa_{i,t+1}$	0.061 (0.090 *)	0.014 (0.809)	0.081 (0.061 *)	-0.012 (0.877)	0.113 (0.120)	0.189 (0.075 *)
$Growth\ Opportunities_{i,t}$	0.113 (0.000 ***)	0.155 (0.004 ***)	0.048 (0.127)	0.202 (0.001 ***)	0.013 (0.872)	0.129 (0.281)
$I_{i,t}$	-1.153 (0.045 **)	-1.568 (0.034 **)	-0.302 (0.702)	-1.094 (0.254)	-0.486 (0.449)	-3.856 (0.008 ***)
$dI_{i,t}$	0.545 (0.034 **)	0.388 (0.253)	0.409 (0.174)	-0.140 (0.791)	0.455 (0.295)	1.939 (0.081 *)
$dI_{i,t+1}$	-0.168 (0.668)	-0.286 (0.553)	-0.062 (0.918)	0.089 (0.881)	-0.089 (0.861)	-0.801 (0.481)
$D_{i,t}$	6.194 (0.000 ***)	7.719 (0.000 ***)	4.400 (0.001 ***)	7.476 (0.000 ***)	5.742 (0.001 ***)	10.450 (0.004 ***)
$dD_{i,t}$	-1.977 (0.000 ***)	-1.798 (0.015 **)	-1.874 (0.016 **)	-1.928 (0.047 **)	-1.048 (0.351)	1.196 (0.467)
$dD_{i,t+1}$	1.585 (0.008 ***)	2.481 (0.001 ***)	0.955 (0.067 *)	2.294 (0.010 **)	2.066 (0.066 *)	7.196 (0.000 ***)
$dV_{i,t+1}$	-56540.2 (0.000 ***)	-1055 (0.001 ***)	-41191.2 (0.000 ***)	-93808.5 (0.004 ***	-1829 (0.000 ***)	-4097 (0.000 ***)
$dCash_{i,t}$	**0.291 (0.009 ***)**	**0.427 (0.009 ***)**	**0.174 (0.164)**	**0.547 (0.004 ***)**	**0.214 (0.364)**	**0.137 (0.672)**
$dCash_{i,t+1}$	-0.041 (0.722)	-0.126 (0.484)	0.059 (0.655)	-0.030 (0.884)	-0.041 (0.827)	0.178 (0.627)
Adjusted R^2	30.48%	42.89%	20.16%	41.95%	44.75%	74.86%
P-Value	0.000	0.000	0.000	0.000	0.000	0.000
Highest VIF	2.306	2.864	2.069	2.888	3.507	3.936
Robust Standard Errors	Yes	Yes	Yes	Yes	No	No
Observations	2293	1229	1064	849	268	112

Notes: The dependent variable (V) in all specifications is the market value of firm (Market-to-Book), which is calculated at fiscal year-end as the sum of the market value of equity and the book values of short-term and long-term debt divided by the book value of assets; ; E is earnings before extraordinary (after depreciation and taxes); NA is net assets, that is, total assets minus cash and cash equivalents; $Cash$ is the sum of cash and cash equivalents; $Growth\ Opportunities$ is the yearly growth rate of a firm's sales; I is interest expense; D is total dividends paid. dX_t is the change in the level of X from year $t-1$ to year t scaled by total assets in year t, that is, $((X_t - X_{t-1})/ Total\ Assets_t)$; dX_{t+1} is the change in the level of X from year $t+1$ to year t scaled by assets in year t, that is, $((X_{t+1} - X_t)/ Total\ Assets_t)$; All variables used, except Growth Opportunities, were scaled by total assets to control for heteroscedasticity. Figures in parentheses are the *p*-values. All the continuous variables were winsorized at the 1% in tails. * statistically significant at 10%; ** statistically significant at 5%; *** statistically significant at 1%.

The market value of cash is determined, at least in part, by how shareholders expect this asset to be used (DITTMAR; MAHRT-SMITH, 2007; KALCHEVA; LINS, 2007). Consistent with this argument, we find that the market value of an additional dollar in cash is higher in firms from New Market in comparison to the other Brazilian nonfinancial firms. These results, therefore, supports our research hypothesis that cash is more valuable in firms that only issue shares with voting rights. Thus, New Market represent an opportunity for firms to signal their commitment to higher governance practices, in a manner that, investor assigns a higher value to an extra dollar of cash for them.

Our empirical evidence is consistent with the findings of Masulis, Wang, and Xie (2009) that an additional $1.00 of cash is less valuable at dual-class companies. Hence, our results extend the findings of the authors that the market anticipate that cash are more likely to be misuse at dual-class firms and, consequently, place a lower value on each additional dollar of cash in these firms. Finally, the results of the other variables are in line with the evidences found in the previous literature.

4.3. Robustness tests

In this subsection, we undertake some robustness tests to provide additional evidence in support of our empirical results. As the first robustness test, we re-estimate our initial model, but changing the dependent variable (Market-to-Book) to Tobin's Q. Tobin's Q is a common proxy for firm value and was measured as the ratio of the firm's market value to total assets (MARTÍNEZ-SOLA; GARCÍA-TERUEL; MARTÍNEZ-SOLANO, 2013). Unreported results indicate that the main results are robust to the use of an alternative dependent variable.

In a final robustness test, we estimate the initial model using Ordinary Least Squares (OLS) rather than with Fixed Effects, as in Drobetz, Grüninger and Hirschvogl (2010). Again, untabulated results using OLS provides strong support for our research hypothesis. Overall, the results discussed in this subsection also confirm our hypothesis that the shareholders place a higher value on an additional dollar of cash reserves in firms that voluntarily adhere to these levels, especially for firm from New Market. Therefore, these new results also indicate that the market value of cash is greater for well-governed companies versus poorly governed ones.

5. CONCLUDING REMARKS

We hypothesize in our article that an additional dollar of cash on balance sheet worth more in firms from the three high-governance listings in Brazil, especially for those listed on New Market, where firms can issue only shares with voting rights. To accomplish this, we used a sample of 197 Brazilian firms with panel data from 2000 to 2018. Our analysis reveals that the market value of an extra dollar of cash in Brazil is, on average, less than one dollar ($0.291). Furthermore, we find results consistent with our hypothesis that investors discount the market value of cash in firms that did not migrate to the premium listing, where managers are better able to extract private benefits from the principal. Finally, the results of our analysis also show that investors assign a higher value to a company's cash for firms listed on New Market ($0.547).

These numbers support our hypothesis and the free cash flow theory, since that we find that the market value of cash is higher in well-governed firms. Therefore, we find evidence that the value of a dollar of cash is higher in well-governed firms, especially for those listed in New Market, indicating a more severe agency problem in firms that dig not migrate to the premium listing.

Besides all the robustness checks, our article also faces some limitations. Among these limitations, for example, the small number of firms from Level 1 and Level 2 which, in turn, may have affected the results for these firms. In addition, the question of endogeneity is a relevant issue to be considered in studies on cash management, which may also affect the results. Therefore, although the results are consistent with our hypothesis, we cannot exclude alternative explanations for our evidences.

Previous studies indicate that U.S. multinational companies hold a significant portion of their cash in foreign subsidiaries. The amounts of cash held overseas, on the other hand, can be subjected to higher agency costs. In addition, multinational firms may face greater financial constraints in the internal market and value-destroying foreign acquisitions. Thus, futures research can analyze the market value of cash held in foreign countries of Latin American firms, given that foreign cash can be less valuable to shareholders. In the same way, new studies can also analyze the effect of cash trapped abroad on Latin American corporations' investments, since that these investments can be less profitable than those of firms without trapped cash holdings.

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