# Can a stock exchange improve the value that investors attribute to cash? Evidence from the creation of a high-governance listings of voluntary adoption

**AVINER AUGUSTO SILVA MANOEL**
*Universidade de São Paulo*
**MARCELO BOTELHO DA COSTA MORAES**
*Universidade de São Paulo*

## Abstract

The market value of cash is determined by how investors expect liquidity to be used. This article is the first to analyze if the initiative of a domestic stock exchange that designed three high-governance listings of voluntary adoption, in addition to maintaining its traditional listing, can mitigate managers' ability to expropriate cash and, consequently, if this implies in investors attributing a higher value to cash in those firms that voluntarily migrate to the premium listing. Reforms of corporate law designed to protect investors face serious political opposition in Brazil. The creation of the special listing, as a private contractual arrangement, offers a unique setting to analyze if these mechanisms increase the value that shareholders place on a dollar of cash. We demonstrate, after a series of robustness check and endogeneity control, that the decision to migrate to a non-mandatory premium listing of corporate governance ($0.427) increases the value that investors place on liquidity in comparison the other companies ($0.291). Therefore, our findings suggest that this initiative of a private stock exchange that permitted its listed companies to voluntarily commit to a premium listing with stricter governance standards provides credible mechanisms that mitigates the value destruction associated with cash. Our findings also reveals that the market value of cash is higher in firms from the segment with the highest standards ($0.547), where companies follow the "one share, one vote" principle. Hence, we also contributed to the literature by identifying a discount for cash holdings at dual-class companies.

**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, Pinkowitz, Stulz, & Williamson, 1999; Harford, Mansi, & Maxwell, 2008; Masulis, Wang, & Xie, 2009). 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 (Harford, Wang, & Zhang, 2017; De Simone et al. 2018; Faulkender, Hankins, & Petersen, 2019).

In a world of perfect financial markets, an additional dollar of cash should increase the market value of a firm by one dollar. 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 (Martínez-Sola, García-Teruel, & Martínez-Solano, 2013; Faulkender et al., 2019), then one dollar of cash may not be worth one dollar by investors.

Prior studies indicate that the value destruction associated with cash management can be mitigated by good governance (Pinkowitz, Stulz, & Williamson, 2006; Dittmar & Mahrt-Smith, 2007; Drobetz, Grüninger, & Hirschvogl, 2010). While there is some papers that analyze whether a U.S. cross-listing constrains the private benefits embodied in cash holdings (Frésard & Salva, 2010; Huang, Elkinawy, & Jain, 2013), this article is the first to analyze if the initiative of a domestic stock exchange that designed three high-governance listings of voluntary adoption, in addition to maintaining its traditional listing, can mitigate managers' ability to expropriate cash resources. According to De Carvalho and Pennacchi (2012), a less recognize alternative bonding mechanism may be available to a firm if its domestic stock exchange create separate levels of corporate governance to protect minority shareholders that exceed those already required by its country's laws.

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 (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 U.S. stock exchanges in the late 1990s, in 2000, São Paulo Stock Exchange (Bovespa), now called "Brasil, Bolsa, Balcão" or B3, launched three high-governance listings (Black et al., 2012; Bortolon & Leal, 2014; Manoel et al., 2018). The three new premium listings (Level I, Level II and New Market) are of voluntary adoption and firms that undertake to these levels are subject to "good corporate governance practices" and disclosure requirements which go beyond the legal minimums 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

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stricter governance standards than the regular listing (Black, De Carvalho, & Gorga, 2010; Black et al., 2012; De Carvalho & Pennacchi, 2012).

Furthermore, Brazil is one of the largest emerging market and is an interesting case to analyze because this country was characterized by weak standards of corporate governance in the early 2000 and also because Brazilian firms do not show an upward trend in cash reserves in recent years. Manoel and Moraes (2018), for example, 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 stock market with the creation of the premium listing, little is known if the creation of a voluntary premium listing with stricter governance standards can mitigate managers' ability to convert cash into private benefits and, consequently, if investors attribute a higher value to cash of firms that choose the improved standards. Our article fills this gap in the empirical literature by providing a detailed analysis on the interplay between agency theory and cash, and their combined effect on firm value.

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 shrinks 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.

To the test our hypothesis we adapted the model used by Pinkowitz et al. (2006) and Dittmar and Mahrt-Smith (2007), which was initially developed by Fama and French (1998). We employ a comprehensive sample of 197 Brazilian public firms (2,293 firm-year observations) with annual data available from 2000 to 2018. Our findings show, *ceteris paribus*, that cash is worth more in firms listed on the premium listing ($0.427) and that investor discount the value of cash in firms from the traditional non-premium list. 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 a domestic stock exchange, by creating a premium listing of voluntary adoption with stricter governance standards, can provide mechanism that prevent managers from destroying part of shareholder value.

In addition, we also document that an extra dollar of cash for the whole sample of Brazilian firms has a marginal value of $0.291 to shareholders, indicating that $1.00 of cash worth less than one dollar in Brazil. Thus, we also contribute to the literature and extend the efforts of Pinkowitz et al. (2006), Kalcheva and Lins (2007) and Drobetz et al. (2010) by demonstrating that cash worth less than one dollar in Brazil, since investors do not expect to receive the full benefits of cash in a country with poor investor protection.

Therefore, our findings indicate that in an environment where minority shareholders are poorly protected, the initiative of a private stock exchange that permitted its listed companies to voluntarily commit to a premium listing with stricter governance standards than the regular one provides credible mechanisms that reduce agency costs associated with cash holdings. As

a result, investors attribute a higher value to cash in firms that voluntarily adhere the exchange's higher standards. Furthermore, we also contribute to the literature by documenting that shareholders can have greater confidence in investing their resources in firms from the special listing, since their money are less likely to be expropriated or used for non-value-maximizing corporate activities. These findings, in turn, may be interesting for other emerging markets where reforms of corporate law designed to protect shareholders face serious political opposition. Hence, emerging countries may also consider creating special listing like Brazil, as a private contractual arrangement, to increase the protection of minority shareholders.

Our analysis also reveals that the marginal value of one dollar of cash on balance sheet is higher in the segment of the premium listing with the highest standards of governance (New Market), where companies, among other things, must follow the "one share, one vote" principle. For these firms, an additional dollar of cash is worth \$0.547, significantly higher than the other Brazilian companies. Hence, we also contribute to the literature by showing that part of the valuation premium is due to the issuing of only shares with voting rights. In the same way, we provide valuable practical implications, 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.

Lastly, a final analyze also reveals that shareholders raise the value they place on cash if a Brazilian firms cross list its shares on U.S. Market (\$0.521). We mention, however, that investors discount less the cash holdings of firms from New Market than to cross-listed firms. Therefore, we also provide valuable insights by documenting that when a firm decide to migrate to the segment of the premium listing that has the highest standards of governance, where a firm can only issue shares with voting rights, it benefits from similar governance quality than those companies that cross list its shares on U.S. Market. As a result, the market place a higher value to cash in firms from this segment.

We conduct some robustness checks, especially addressing the potential endogeneity problems, 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 a series of robustness checks. Finally, Section 5 is dedicated to the concluding remarks, limitations and suggestions for future articles.

## 2. HYPOTHESIS DEVELOPMENT

### 2.1. Market Value of Cash

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 et al., 2010), including contributing to the increase of firm value (Dittmar & Mahrt-Smith, 2007; Masulis et al., 2009).

Cash reserves allow companies to take advantage of their valuable investment opportunities that would otherwise be forgone (Myers & Majluf, 1984; Opler et al., 1999;

Martínez-Sola et al., 2013), especially when current cash flows are not enough (Drobetz et al., 2010) and for firms that face greater financing constraints (Faulkender & Wang, 2006; Denis & Sibilkov, 2010; Manoel, Moraes, Santos, & Neves, 2017). Additionally, liquid assets enable companies to invest without raising external finance at high transaction costs (Martínez-Sola et al., 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 (Faulkender & Wang, 2006; Masulis et al., 2009; Frésard & Salva, 2010; Martínez-Sola et al., 2013).

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 (Huang et al., 2013; Martínez-Sola et al., 2013). 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, 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 (Myers & Rajan, 1998; Dittmar & Mahrt-Smith, 2007; Harford et al., 2008).

Therefore, 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, empire building, and excessive compensation or even by theft (Jensen & Meckling, 1976; Myers & Rajan, 1998; Pinkowitz et al., 2006; Harford et al., 2008; Frésard & Salva, 2010). Aware of the vulnerability of corporate liquidity, cash holdings should be valued by equity market based on whether these resources 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 (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 et al., 2006). In other words, shareholders will allow a firm to keep more cash if they believe that these resources will generate a higher return than if the cash were returned to them (Pinkowitz & Williamson, 2007).

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; Jensen, 1986; Dittmar & Mahrt-Smith, 2007; Frésard & Salva, 2010). 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. Hence, an additional dollar of cash may not be worth a dollar to outside shareholders if managers use this resource inefficiently (Dittmar & Mahrt-Smith, 2007; Masulis et al., 2009).

The term ''market value of cash'' is used to describe the contribution of cash holdings to firm value. Cash reserves are often viewed by managers as at worst "value neutral" or zero net present value (NPV) investments. However, 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 a company exactly by one dollar (Pinkowitz & Williamson, 2007).

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), resulting in faster dissipation of cash (Dittmar & Mahrt-Smith, 2007). Therefore, 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 et al., 2008). Consequently, in the presence of agency costs of free cash flow, shareholders can limit managers' access to free cash flow (Jensen, 1986; Pinkowitz et al., 2006; Martínez-Sola et al., 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 et al., 2006).

The market value of cash holdings, on the other hand, increases with the quality of the corporate governance mechanisms (Pinkowitz et al., 2006; Dittmar & Mahrt-Smith, 2007; Drobetz et al., 2010). Researches such as Dittmar and Mahrt-Smith (2007), Harford et al. (2008) and Manoel et al. (2018) provide empirical evidence that a robust set of governance mechanisms can reduce the risk of cash improper diversion.

Dittmar and Mahrt-Smith (2007) findings suggest 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 et al. (2008) corroborate with those of Dittmar and Mahrt-Smith (2007), since they show 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 more recent study, Drobetz et al. (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.

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).

## 2.2. The Brazilian Market

The Brazilian market is a good place to analyze changes in corporate governance (Black et al., 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 et al., 2014; Bortolon & Leal, 2014). As in many countries, reforms of corporate law designed to protect investors face serious political opposition in Brazil (Chavez & Silva, 2009; 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 launched a three high-governance listings (New

Market, Level I and Level II) in addition to allowing existing companies to retain the regular traditional listing in the early 2000s (Black et al., 2010; De Carvalho & Pennacchi, 2012). By voluntarily adhering one of the three high-governance levels, a company can pledge to better protect its shareholders. The premium listing can me chosen by a firm seeking a first-time following its Initial Public Offering (IPO) or by a company that want to migrate from the Bovespa's traditional listing (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 (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 (Manoel et al., 2018). For example, Brazilian public firms are not require to disclosure quarterly consolidated financial statements. Hence, a firm that wants to migrate to Level 1 or higher must disclosure quarterly consolidated financial statements (Black et al., 2010).

Prior to the creation of the special listing, most Brazilian public companies were dual-class companies, with controlling shareholders holding voting common shares and outside retaining non-voting preferred shares that have economic rights similar to common shares (Black et al., 2010). A dual-class ownership creates a wedge between cash flow (ownership) and voting (control) rights. Moreover, the Brazilian market is noted by a concentrated ownership structure, in which the most part of control is concentrated in the hands of a family or in a small group of shareholders. 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. This, in turn, results in a small group of people influencing in the most relevant decisions of a company in detriment of a large number of non-voting shareholders (De Carvalho & Pennacchi, 2012; Bortolon & Leal, 2014; Manoel et al., 2018).

Managers have incentives to extract private benefits of control when their proportion of voting shares is greater than their proportion of non-voting shares (Lins, 2003; Masulis et al., 2009; Bortolon & Leal, 2014), since that they are more likely to take decisions that would not be taken if they had a large fraction of the equity (Masulis et al., 2009). 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 et al., 2009). In this sense, the results of Masulis et al. (2009) indicate that managers with excess control rights at dual-class firms take actions that somehow bring them 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

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more inefficient empire-building activities. Given that dual-class ownership structure 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:

***Ceteris paribus*, 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 standards.**

## 3. RESEARCH METHODOLOGY

### 3.1. The 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 special governance segments, 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. Based on information from June 2019, 140 companies were listed on New Market, 27 on Level 1 and 19 on Level 2.

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 delete 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; Manoel et al., 2017). Our final sample 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 et al. (2006) and Dittmar and Mahrt-Smith (2007), which was initially developed by Fama and French (1998) to study the impact of debt and dividends on firm value. The model used by Pinkowitz et al. (2006) and Dittmar and Mahrt-Smith (2007) to estimate the marginal value of cash can be observed as follows:

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

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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; $E$ is earnings before interest and extraordinary items (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 are scaled by total assets to control for heteroscedasticity (Pinkowitz et al., 2006).

In this regression, the coefficient on the change in cash balances ($\beta_{16}$) is the most important and measures 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 control variables include in this regression are those that are likely to affect investors' expectations of future cash flows which, in turn, determine the value of a company. The next period variable $dX_{t+1}$ were included to absorb changes in expectation (Fama & French, 1998).

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. Furthermore, firms that have valuable growth opportunities are more likely to migrate to the Brazilian's premium listing as a bonding mechanism that reduce their cost of funding (De Carvalho & Pennacchi, 2012). Hence, if we did not include a variable to control the effects of growth options on firm value, our estimates of the market value of cash could convey information about investments opportunities that are specific to firms from the premium listing. Thus, we opt to use the yearly growth rate of a firm's sales as an alternative proxy for investment opportunities.

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 et al. (2006). The test of our hypothesis is that the coefficient ($\beta_{14}$) is larger for firms that voluntarily commit to the premium listing, especially for those listed in the New Market. This coefficient is an estimate of the market value of an additional dollar of cash. 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 et al., 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).

## 3.3. Descriptive statistics

In sequence, Table 1 presents the descriptive statistics for the variables used in our article.

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This table reveals a wide variation in cash balances, with a mean ratio of cash to total assets of 9.64% and a median of 6.19%, with a standard deviation of 0.108 for the whole sample used. The average firm value is 1.006 and the average yearly change in cash holdings is -0.001. Moreover, unreported results also show that firms from Level 2 maintain the higher cash levels with a mean of 11.50%, while companies from New Market (9.40%) keep the lowest cash levels. Finally, the mean of cash and cash equivalents to total assets is similar in firms from the special governance segments (9.77%) in comparison to those that did not choose the improved standards (9.49%).

## 4. RESULTS

### 4.1. Main Results

Table 2 reports the results of estimating Equation 2 with Fixed Effects which test our hypothesis. Despite the theory reasons for the use of the Fixed Effect model, unreported results of the Breusch-Pagan, Hausman and Welch tests also indicated that Fixed Effects regressions is the most appropriate for our data. Table 2 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) we first present the results for the whole sample of Brazilian companies. Then, in the other columns we demonstrate the results by dividing the sample according to each level.

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The estimated coefficient ($\beta_{14}$) of column 1 is statistically significant at the level of 1% and can be interpreted as the market value of cash. We observe in this column that $1.00 of cash is valued at only $0.291 cents. This result indicate that the market value of an extra dollar of cash in Brazil is, on average, below one. The comparable coefficient in Drobetz et al. (2010) is 0.661 for a large international sample. Complementary to this observation, Pinkowitz and Williamson (2007), point out that the market value of the marginal dollar of cash is approximately one dollar ($1.04) for a U.S. sample. In sum, this initial results is consistent with the findings of Pinkowitz et al. (2006), who show that cash worth less in countries with a low level of financial development due to the poor investor protection.

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 ($\beta_{14}$) of column 2, is associated with an increase in the market value of $0.427 in firms with stronger corporate governance, while the coefficient ($\beta_{14}$) of column 3 is $0.174, although not statistically significant. Consistent with our findings, Dittmar and Mahrt-Smith (2007) show that shareholders assigns a higher value to cash for a well-governed firm (between

$1.27 and $1.62) than for a poorly-governed company (between $0.42 and $0.88) in a sample of U.S. public firms.

Investors tend to discount the market value of cash when insiders are expected to expropriate this resource at the expense of minority shareholders. In line with agency theory, we find that the marginal value of cash is higher in firms that voluntarily migrate to the premium listing. At poorly governed firms, managers are better able to extract private benefits and aware of the possible misuse of cash reserves in these firms, the market discount their value. Investors seems to associate companies that chose to migrate to one of Bovespa's premium listings as a commitment that shrinks the risk of cash improper diversion. As a consequence, the stock market discount less their liquid assets. These findings support our hypothesis and the evidences of Dittmar and Mahrt-Smith (2007) and Drobetz et al. (2010) that shareholders place a higher value on cash in well-governed companies.

Our findings also complement the study of Chavez and Silva (2009). The author's empirical research suggest that the special governance segments in Brazil provide concrete, standardized measures of commitment to higher governance practices. Consistent with their results, we show that the stock market value cash more highly in firms that voluntary adhere to the premium listing, where cash are less likely to be misappropriated.

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 ($0.547). Among firms from Level 1 and Level 2, we observed that none of the coefficient ($\beta_{14}$) was statistically significant. The main reason for the lack of statistical significance in the estimated coefficients for the firms from these levels are probably the small number of firm-year observations of them.

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). In dual-class companies, controlling shareholders can take central decisions that are not always consistent with the interests of non-controlling shareholders (Masulis et al., 2009). Therefore, controlling shareholders can take advantage of their privileged situation to take decisions that somehow maximize his or her private wealth at the expense of non-controlling shareholders (Manoel et al., 2018).

Consistent with this argument, we find that the market value of an additional dollar in cash is higher in firms from New Market, the segment that has the highest standards of corporate governance, in comparison to the others Brazilian nonfinancial firms. These results supports our research hypothesis that cash is more valuable in firms that only issue shares with voting rights. Investors seems to perceive the "one share, one vote" principle as a way to control the opportunistic behavior of agent in cash management. 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. In summary, the increase in the value that the market attaches to a firm's cash holdings in this country depends on the degree of improvement in investor protection.

Our empirical evidence is in line with the theoretical arguments and complements the findings of Masulis et al. (2009) that an additional $1.00 of cash is less valuable at dual-class companies. In dual-class companies, controlling shareholders are able to escape the consequences of their decisions, while they benefits of the decision rights due to divergence between voting and cash flow rights. Hence, investors 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. Our article also complement the literature, see for example Lins (2003), that state that the stock market discount firm value at dual-class companies in comparison to single-class ones.

Regarding the control variables, the results of them are generally in line with the evidences found in Pinkowitz et al. (2006). In particular, we mentioned that the proxy for investment opportunities construct used showed a positive and significant sign in most specifications. This implies that firms with higher investment opportunities, on average, present a higher value on the market. Moreover, we find a significantly positive coefficient between total dividends ($\beta_{10}$) and market value in all specifications. As previously pointed out by Pinkowitz et al. (2006), no private benefits can be consumed from a dollar paid out. Therefore, in a context of poor investor protection, shareholders value dividends at a premium in Brazil

In sum, our results show that regardless of the listing, whether premium or traditional one, the market value of cash in Brazil is less than one dollar. As mentioned earlier, the market value of cash is determined by how shareholders expect liquidity to be used in an agency theory framework. Therefore, despite all the efforts to create the premium listing, investors attributes a lower value to an additional dollar of cash in Brazil, since they expect cash to be wasted on low-return projects or on pet projects (empire building).

These results support the findings of Pinkowitz et al. (2006), Kalcheva and Lins (2007) and Drobetz et al. (2010) that cash is worth less in countries with weak investor protection. A source of loss in cash resources, according to Pinkowitz et al. (2006), is that the market do not receive the full benefits of cash owned by firms located in these countries. As a result, investors discount the value of cash when agency costs are significant because of the ability of controlling shareholders to extract private benefits embodied in cash reserves.

## 4.2. 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 (Kalcheva & Lins, 2007; Martínez-Sola et al., 2013). Unreported results indicate that the main results are robust to the use of an alternative proxy for firm value.

As in many countries, Brazilian companies do not report R&D in their financial statements. Thus, we adapted the model used by Pinkowitz et al. (2006) by including the yearly growth rate of a firm's sales as an alternative proxy for investment opportunities to capture the effects of growth options on firm value. Thus, in a second robustness test, we rerun our initial model without including a proxy for this construct in our valuation regression. Consistent with our earlier findings, untabulated results show that our evidences remain unaffected without the inclusion of a proxy for investment opportunities. This implies that our results are not affected by uncaptured growth options.

Furthermore, cross-listing on U.S. exchange is also another way for a firm to signal its commitment to higher corporate governance practices. Frésard and Salva (2010) document that investors place a higher value on excess cash of foreign firms cross-listed on U.S. ($1.61) than their domestic peers ($0.58). Additionally, Huang et al. (2013) show that ADR (American Depository Receipt) firms maintain higher cash levels relative to their non-cross-listed counterparts. Both studies attribute these findings to the fact that a U.S. cross-listing enhances corporate governance and disclosure requirements, and also reduces agency costs. These occur

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because firms that cross list its shares on U.S. are subjected to U.S. Securities and Exchange Commission (SEC) requirements. These facts, taken together, also suggest that a firm can adopt higher standards of governance to limit expropriation via cross-listing its shares on U.S. exchange.

In a context of low investor protection, several Brazilian companies started to issue ADR (American Depository Receipt) with much more demanding requirements than the Brazilian traditional listing in the late 1990s (Bortolon & Leal, 2014). Cross-listing on U.S. exchange may substitute or complement the benefits associated with migrating to the premium listing as a bonding mechanism (De Carvalho & Pennacchi, 2012). Therefore, our initial results could be affected if a company had previously cross-listed its shares on U.S. market before migrating to the premium level. U.S. Thus, as an additional check, we re-run our initial model after excluding Brazilian companies that cross-list its shares on U.S. (265 observations). We obtain the data about ADR from the J.P. Morgan website. Again, untabulated results provides support for our research hypothesis.

Lastly, we used a subsample of Brazilian companies that cross list its shares on U.S. exchanges with data available to verify whether cash are valued more for them. Given the aforementioned evidences about the effects of bonding on mitigating part of the agency problems in cash management, especially for firms from emerging markets (Frésard & Salva, 2010; Huang et al., 2013), we expect cash to be more valued in Brazilian firms that cross list its shares on U.S. exchanges at any level.

Unreported results suggests that the reduction of agency costs and the improvement in investor protection associated with cross-listing on U.S. market result in a higher valuation of cash. Thus, consistent with Frésard and Salva (2010), we also find that the value investors attribute to cash is higher in companies that cross list its shares on U.S. exchanges ($0.521) than to the other Brazilian public companies, indicating that U.S. cross-listings shrinks the potential private benefits related to cash management.

These new findings, however, indicate that investors attribute a slightly higher value to an extra dollar of cash for firms listed on New Market ($0.547) than to those Brazilian companies that cross list its shares on U.S. exchanges. Furthermore, it is relevant to mention that there is no incremental costs when a company migrates to the premium listing from the traditional one, while there are direct costs of establishing a cross-listing on U.S. exchanges. In this sense, our article provide mild evidence that shareholders believe that the segment of the premium listing with the highest standards of governance offers, at least, similar degree of investor protection against cash misappropriation as cross-listing in U.S. market. Firms from this segment, in addition to meeting all the requirements Levels 1 and 2, can only issue shares with voting rights. Therefore, we attribute part of the valuation premium to firms from New Market to the "one share, one vote" principle, in a manner that, investors do raise the value they place on an additional dollar of cash in firms that migrate to this segment.

We used in this article a sample of Brazilian public firms with data available. In this sense, our focus in firms from the premium listing potentially introduces a sample bias in our analyses, given that the sample used is not randomly selected from the population of Brazilian companies. Moreover, De Carvalho and Pennacchu (2012) point that companies with valuable growth opportunities are more likely to migrate to voluntarily commit to the exchange's higher standards as a bonding mechanisms for limiting expropriation (De Carvalho & Pennacchi, 2012). Therefore, the sample of firms from the premium listing cannot be random. In this sense, our results may lead to inconsistent estimates if we do not control for potential self-selection.

In an attempt to be more careful and rigorous with our results, we also apply Heckman's (1979) two-stage procedure with corrected standard errors in a final robustness check to mitigate part of the self-selection biases. We follow the articles of Frésard and Salva (2010) and De Carvalho and Pennacchi (2012) and include size (log of net assets), growth opportunities (yearly growth rate of a firm's sales), leverage (ratio of total debt to total assets) and Return on Assets (ROA) as instruments. We include these variables as instruments because the literature suggest that they could affect the decision for choosing the premium listing and to cross-list on a foreign exchange.

The choice variable in the first stage (selection equation) equals one if a company is from the premium listing and from each of the three high-governance listings. The second stage, in turn, the market value of cash is estimated by OLS (Ordinary Least Squares) with the inverse Mills ratio included as an additional explanatory variable. Our self-selection model can be observed as follow:

$$\text{Probit Regression: } Premium\ Listing =_{i,t} \alpha_i + \alpha_2 Size_{i,t} + \alpha_3 Growth\ Opportunities_{i,t} + \alpha_4 Leverage_{i,t} + \alpha_5 ROA_{i,t} + u_{i,t} \quad (3)$$

$$\text{OLS Regression: } V_{i,t} = \beta_{j1} + \beta_{j2}E_{i,t} + \beta_{j3}dE_{i,t} + \beta_{j4}dE_{i,t+1} + \beta_{j5}dNa_{i,t} + \beta_{j6}dNa_{i,t+1} + \beta_{j7}Growth\ Opportunities_{i,t} + \beta_{j8}I_{i,t} + \beta_{j9}dI_{i,t} + \beta_{j10}dI_{i,t+1} + \beta_{j11}D_{i,t} + \beta_{j12}dD_{i,t} + \beta_{j13}dD_{i,t+1} + \beta_{j14}dV_{i,t+1} + \beta_{j15}dCash_{i,t} + \beta_{j16}dCash_{i,t+1} + \beta_{\lambda j}\lambda_{j,i} + \epsilon_{i,t} \quad (4)$$

The results are presented in Table 3.

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**INSERT TABLE 3 HERE**
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Although the significance of the Mills ratio in deciding to migrate to the premium listing, which indicate the presence of selection bias, we still observe that the value shareholders assigns to an additional dollar of cash on balance sheet is greater for firms from the premium listing relative to those firms that did not migrate to the exchange's higher standards. These results, after controlling for self-selection, provide additional support for our hypothesis. Unreported results of the first-stage probit estimations indicate that size, leverage and profitability are positive and significantly related to the likelihood to migrate to the premium listing.

Overall, the results discussed in this subsection lends further support to our hypothesis that shareholders do raise the value they place on an additional dollar of cash reserves in firms that voluntarily adhere to these levels, especially for firm from New Market. Thus, our findings suggest that companies can cut back a substantial source of value loss by voluntarily migrating to the premium level.

## 5. CONCLUDING REMARKS

A substantial source of value loss related with weaker corporate governance mechanisms materializes through investors' markdown of cash (Frésard & Salva, 2010). The Brazilian market, as many countries, face serious political opposition to reform corporate laws to protect minority shareholders. The initiative of the São Paulo Stock Exchange that create three premium listing with higher governance standards in addition to maintaining its traditional

listing, as a private contractual arrangement, offers a unique opportunity to analyze if these mechanisms can reduce insiders' expropriation of cash. In this article, we hypothesize that an additional dollar of cash on balance sheet worth more in firms that voluntarily migrate to these levels, especially for those listed on the segment with the highest standards of governance, where firms can only issue shares with voting rights.

We find results consistent with our hypothesis that investors value cash at sizable discount in firms that did not choose the improved standards, where insiders are better able to use cash to finance their private benefits at the expense of minority shareholders. These numbers support the agency costs based on the free cash flow theory, since we document that the market value of cash is statistically and economically significantly greater in well-governed firms ($0.427). In this sense, the results we report show that investors do raise the value they place on cash when a firm migrate optionally to higher listing levels with stricter governance standards, indicating a more severe agency costs in firms that did not migrate to the premium listing.

Our analysis also reveals that the market value of an extra dollar of cash in Brazil is, on average, less than one dollar ($0.291). These findings imply that investors do not expect to receive the full benefits of cash and, consequently, they discount the value of cash in Brazil. Overall, our evidence are in line with the findings of Pinkowitz et al. (2006), Kalcheva and Lins (2007) and Drobetz et al. (2010), which posits that cash is less valuable in countries with poor investor protection. Hence, our article documents that the stock market discount the market value of cash because they expect agency problems to be significant in Brazil.

Moreover, we show that investors assign a higher value to a company's cash for firms listed on New Market ($0.547) where companies, in addition to meeting all the requirements for Levels 1 and 2, can only issue shares with voting rights. As mentioned earlier, investors expect cash to be partly consume as a private benefit of control in dual-class companies (Masulis et al., 2009). Consistent with this argument, we find that shareholders associated dual-class companies with discount regarding the market value of cash than in single-class firms.

In conclusion, our empirical research indicate that the initiative of the Brazilian stock exchange that permitted its listed companies to commit to a non-mandatory premium listing with stricter governance standards was successful to increase the value that the market attaches to a firm's cash holdings. Therefore, in firms that voluntarily adhere to these levels minority shareholders are less likely to have their resources expropriate from insiders. As a result, firms that voluntarily commit to these levels enjoy higher valuation of cash by the market.

Our results are robust to controlling for potential endogeneity problems, firm fixed effects and to several additional robustness checks. Despite all care in analyzing the results, our article also faces some limitations. Among these limitations, one concern is the limited number of observations of firms from Level 1 and Level 2 which, in turn, is probably the main reason for the lack of statistical significance in the estimated coefficients. In addition, the question of endogeneity is a relevant issue to be considered in studies on cash management and governance. Despite our best efforts, however, we cannot say that we completely solved the endogeneity problems in this article, especially related to selection bias.

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**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.

<div align="center">

**Table 2. Fixed Effects Regression**

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| Variables | Brazilian Public Firms | Premium Listing | Non-Premium Listing | New Market | Level 1 | Level 2 |
|---|---|---|---|---|---|---|
| | 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 R² | 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%.

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São Paulo, 29 a 31 de Julho de 2020

**Table 3. Heckman's (1979) two-stage procedure with corrected standard errors**

| Variábles | Premium Listing Coefficients (*p*-value) | New Market Coefficients (*p*-value) | Level 1 Coefficients (*p*-value) | Level 2 Coefficients (*p*-value) |
|---|---|---|---|---|
| Constant | 0.457 (0.000 ***) | 0.168 (0.280) | 0.510 (0.000 ***) | 1.616 (0.009 ***) |
| $E_{i,t}$ | 2.037 (0.000 ***) | 2.587 (0.000 ***) | 1.945 (0.000 ***) | 2.285 (0.035 **) |
| $dE_{i,t}$ | -0.309 (0.264) | -0.325 (0.341) | -0.281 (0.000 ***) | -1.147 (0.222) |
| $dE_{i,t+1}$ | 0.647 (0.009 ***) | 0.871 (0.005 ***) | 0.857 (0.008 ***) | 0.320 (0.684) |
| $dNa_{i,t}$ | 0.458 (0.000 ***) | 0.482 (0.000 ***) | 0.469 (0.000 ***) | -0.023 (0.918) |
| $dNa_{i,t+1}$ | -0.014 (0.809) | -0.066 (0.368) | 0.057 (0.483) | 0.132 (0.343) |
| $Growth\ Opportunities_{i,t}$ | 0.160 (0.006 ***) | 0.188 (0.008 ***) | -0.089 (0.385) | 0.372 (0.033 **) |
| $I_{i,t}$ | 0.446 (0.192) | 0.687 (0.106) | 0.296 (0.526) | -0.460 (0.714) |
| $dI_{i,t}$ | 0.000 (0.998) | -0.629 (0.324) | 0.233 (0.647) | 1.977 (0.208) |
| $dI_{i,t+1}$ | 0.688 (0.147) | 0.893 (0.152) | 0.005 (0.992) | 2.379 (0.084 *) |
| $D_{i,t}$ | 12.157 (0.000 ***) | 12.039 (0.000 ***) | 7.124 (0.000 ***) | 4.075 (0.091 *) |
| $dD_{i,t}$ | -3.523 (0.000 ***) | -3.950 (0.000 ***) | -1.556 (0.213) | 3.199 (0.144) |
| $dD_{i,t+1}$ | 4.096 (0.000 ***) | 3.800 (0.000 ***) | 2.533 (0.038 **) | 7.032 (0.007 ***) |
| $dV_{i,t+1}$ | -1023 (0.000 ***) | -84592.3 (0.000 ***) | -1627 (0.000 ***) | -3439 (0.000 ***) |
| $dCash_{i,t}$ | **0.616 (0.000 ***)** | **0.836 (0.000 ***)** | **0.759 (0.007 ***)** | **0.434 (0.348)** |
| $dCash_{i,t+1}$ | -0.195 (0.304) | -0.104 (0.676) | 0.290 (0.207) | 0.485 (0.346) |
| $\lambda_{j,i}$ | 0.311 (0.000 ***) | 0.537 (0.000 ***) | 0.031 (0.607) | -0.424 (0.147) |
| Adjusted R² | 53.21% | 57.21% | 48.21% | 41.59% |
| *P*-Value | 0.000 | 0.000 | 0.000 | 0.000 |
| Highest VIF | 2.306 | 3.220 | 3.512 | 3.984 |
| Observations | 1229 | 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, $((X_{t+1} - X_t)/Total\ Assets_t)$; $\lambda_{j,i}$(Lambda) refer to the inverse Mills ratios independently calculated from unreported probit estimations where the dependent variable are the choice to migrate to the Premium Listing, New Market, Level 1 and Level 2, respectively. All variables used, except Growth Opportunities, were scaled by total assets to control for heteroscedasticity. The *p-values* are in the parentheses. *, **, *** indicate the significance levels at 10%, 5% and 1% respectively.