

Governance, sentiment analysis and IPO underpricing

Abstract

Research Question/Issue: What is the relationship between governance, tone in language and underpricing of initial public offerings (IPOs) in Latin America?

Research Findings/Insights: We find a positive (negative) and statistically significant relationship between board size (board independence) and IPO underpricing at the time firms go public. But more importantly, when interacting with corporate governance variables at the firm level, uncertainty in tone makes the effect stronger (board size) or weaker (board independence), which suggests that tone in communications matters more for underpricing than governance provisions at the firm level.

Theoretical/Academic Implications: Bigger boards seem to lead to greater underpricing, while more independent boards mitigate it. This finding stresses the relevance of functional convergence in regions such as Latin America with weak institutions. Our results also suggest that tone in communications matter more than governance for underpricing. We argue that this could be due to the minimum corporate governance provisions that firms need to meet before going public, a fact that could boost the relevance of tone in the IPO prospectus signal mechanism.

Practitioner/Policy Implications: Our results suggest that tone in firms' communications is relevant for market valuation. In the context of family firms in an under-researched context such as Latin America, we show that reputation effect is priced by the market valuation of the IPO.

Keywords: Governance, sentiment analysis, IPO underpricing, family firms, Latin America

Introduction

Going public can be a unique undertaking in a firm's life. The reasons to go public differ. Some are explicit, such as obtaining capital to strengthen an investment policy, mainly for capital expenditures and acquisitions (Celikyurt et al., 2010; Kim & Weisbach, 2008) or to change the capital structure. Other reasons could include gaining market liquidity (Brau & Fawcett, 2006), grabbing market share from private competitors (Chemmanur & He, 2011) or shareholder diversification (Bodnaruk et al., 2006) to permit idiosyncratic risk by tolerating higher profit variability and hence allowing riskier and more aggressive output market strategies (Chod & Lyandres, 2011).

Regardless of the reason to go public, the level of information asymmetry between the issuing firm and potential investors is high. This fact clearly implies an adverse selection problem affecting share liquidity. A direct effect of lower liquidity is a higher cost of capital for new firms in the market. Therefore, the decision to go public implies that issuing firms must leave money on the table since investors will undervalue their stocks as compensation for the risks of information asymmetry.¹ Issuing firms know this ex ante and will try to reduce the information asymmetry by sending credible signals to the market (Healy & Palepu, 2001). This process is supported by a legal environment that facilitates information production, particularly important in developing economies.²

In this paper, we approach the relationship between governance, sentiment analysis and IPO performance using a database of Latin American IPOs. In a region like Latin America, characterized by low investor protection, higher cost of capital and poor information disclosure, studying the IPO process is a major concern. De la Torre & Schmukler (2007) analyze the evolution of capital markets in Latin America after reforms. The authors find the region running behind other emerging markets,

¹ Other circumstances explain underpricing from the supply side. For example, Liu and Ritter (2011) modeled the IPO underwriter market where a small number of underwriter firms with oligopolistic power seek research coverage from influential analysts, which results in more underpricing.

² Deb and Marisetty (2010) study the effect of governance rules on IPO underpricing for the Indian market. Similar papers are presented by Ekkayokkaya and Pengniti (2012) for Thailand, Hearn (2011) for the West African market and Chong and López-de-Silanes (2007) in Latin America.

mainly Asian, in terms of capital market development. Despite intense reforms undertaken during the nineties (including privatizations and pension reforms), and efforts to stabilize the macroeconomic environment, capital markets in Latin America are still illiquid, small and highly concentrated.

In our setting, a potential investor is collecting information to decide on investing in an IPO. Most of the available information is in the IPO prospectus the issuing firm has prepared with the help of the underwriter. The prospectus describes the firm's current situation and future expectations. We argue that the tone used impacts investors' assessment of the offer, and the market reads the prospectus as a credible signal regarding a firm's *ex ante* uncertainty, a signal even more relevant than the highly tested corporate governance arrangements at the firm level. A higher level of *ex ante* uncertainty reduces the value of the issue and increases the level of underpricing (Beatty and Ritter, 1986; Loughran & McDonald, 2013).

Using a database of Latin American IPOs spanning the period 2000–2014, we observe several results that arise from the regression analysis. First, as shown in previous studies (e.g., Baker & Gompers, 2003; Li & Naughton, 2007), we find a positive (negative) and statistically significant relationship between board size (board independence) and IPO underpricing at the time of going public. But more importantly, when interacting with corporate governance variables at the firm level, uncertainty in tone makes the effect stronger (board size) or weaker (board independence), which suggests that tone in communications matters more for underpricing than governance provisions at the firm level. Tone could convey more information than good governance practices because certain standards are already mandated at the moment of going public; thus, the additional relevance of tone as a signal mechanism could be boosted.

We also find empirical evidence for a link between uncertainty in tone in the IPO prospectus and the level of IPO underpricing, which supports the Loughran & McDonald (2013) findings regarding tone as a proxy for *ex ante* uncertainty. In addition, we do not find empirical evidence that

governance provisions at the country level explain IPO underpricing. Finally, we explore the role of family firms in Latin American IPOs. We find that the average underpricing for family firms is lower than for non-family firms. This supports the idea that entrepreneurial families in Latin America care about their reputation as controlling shareholders and treat minority shareholders fairly (Gomes, 2000).

This study differs from previous ones regarding IPO underpricing (e.g., Chahine & Filatotchev, 2008; Hanley & Hoberg, 2010; Loughran & McDonald, 2013; and Ferris et al., 2013, among others) by analyzing the interaction of governance mechanisms at the firm level with tone uncertainty in the IPO prospectus. In addition, to the best of our knowledge, our study is the first to measure meaning in information disclosures in a language other than English, using the financial word lists proposed by Loughran & McDonald (2011). Finally, our study uses a sample in a specific and under-researched context, that of Latin America.

Large information asymmetries represent a challenge for Latin American countries, and market participants value good practices leading to transparency at the firm level. Garay et al. (2013) present empirical evidence regarding the effect that information disclosure has on firm valuation in Latin America. They build an Internet-based corporate disclosure index and find a positive relation between the information disclosed, Tobin's Q and firms' ROA. In addition, previous research in Latin America shows a positive effect of corporate governance practices on firm value (Leal & Carvalhal-da-Silva, 2007, for Brazil and Chile; Chong & López-de-Silanes, 2007, for Mexico; Lefort & Walker, 2007, for Chile, and Garay & González, 2008, for Venezuela).

The rest of this paper is organized as follows. In the next section, we briefly review the literature on information asymmetry and IPO underpricing, focusing on the role of language in mitigating information asymmetries and developing our hypotheses. Next, we present the data and research methodology. We then develop the results section, which is divided into three subsections.

The first explores the role of language in IPO underpricing. This is followed by an empirical analysis of governance and IPO underpricing in Latin America and then a section dedicated to information disclosure and family firms. Finally, we conclude.

Theoretical framework and hypotheses development

In an IPO process different investors analyze the prospectus prepared by the firm to decide whether or not to participate. As a description of the firm's current and future situation, as seen by the firm's management and advisors, the tone used could affect investors' assessment of the offer. We argue that the market reads the prospectus as a credible signal about firms' ex ante uncertainty. Moreover, we posit that this signal is even more relevant than the highly tested corporate governance arrangements at the firm level.

To measure the tone of the prospectuses in our sample we use the dictionaries proposed by Loughran & McDonald (2011). These have been used widely to study the relation between media reports and firm performance. Some of these studies present evidence about the role of news sentiment in predicting stock and market returns (Chen & De, 2014; Dougal & Engelberg 2012; Garcia, 2013). Mayew & Venkatachalam (2012) use the dictionaries to look at conference calls and future performance, while Solomon (2012) and Bajo & Raimondo (2017) consider media coverage and stock prices. Liu & McConnell (2013) study media attention to proposed acquisitions and the probability of abandoning a deal. Ahern & Sosyura (2014) analyze press releases and merger stock prices. The advantages of these dictionaries are discussed in Loughran & McDonald (2015) and an extended review about this kind of study can be found in Loughran & McDonald (2016).

We use these dictionaries to analyze the link in Latin America between uncertainty in tone in the IPO prospectus and the level of IPO underpricing. The difference between offering price and market price during an IPO has been widely studied by academics. In a seminal paper, Ibbotson (1975) asserts that positive initial performance along with after-market efficiency indicates that new

issue offerings are underpriced. In an attempt to understand this issue, one branch of literature is based on asymmetric information models.³ In a typical lemons problem, Akerlof (1979) and Rock (1986) model a situation in which one investor is more informed than another and so an IPO must be underpriced in order to assure the participation of both informed and uninformed investors.

Investing in an IPO involves a high level of uncertainty about a firm's future cash flows. A central point is the positive relation between ex ante uncertainty and underpricing (Beatty & Ritter, 1986). Company characteristics, offering characteristics, after market variables and prospectus disclosure have been used as proxies of ex ante uncertainty (Eckbo, 2008). The last characteristic, the prospectus, is the only reliable source of information which is prepared and presented by the issuing firm with the help of the underwriter. For example, Hanley & Hoberg (2010) find a negative relationship between the amount of information that could be extracted from the prospectus and the IPO underpricing in the U.S. market. Boone et al. (2016) show similar results and argue that firms face a tradeoff between disclosure practices (lower underpricing) and the protection of sensible information that could be used against them by competitors (higher underpricing).

Loughran and McDonald (2013) analyze not only the information content but also the tone of the information delivered to the market during IPOs. Specifically, these authors study the tone used by issuers in the S-1 form during an initial public offering. They find a positive relationship between the levels of uncertainty expressed in the S-1 form and underpricing. Ferris et al. (2013) report similar results for the U.S. market using a “conservatism” (meaning) variable as the ratio of negative words over total words. In a similar vein, Brau et al. (2016) show a statistically significant relationship between the strategic tone in the IPO prospectus, IPO underpricing and the stock's long-run return.

³ Other theories used to understand price variation during an IPO are institutional ownership and control and behavioral. For a detailed literature review of these theories, see Eckbo (2008, Chapter 7).

We know little about the effect of uncertainty in tone on IPO underpricing in Latin America. We extend previous analyses to the peculiarities of the Latin American market. In particular, we use textual analysis to measure meaning in information disclosure in the IPO prospectus. Following the rule-based approach and the dictionaries proposed by Loughran & McDonald (2011) to measure tone in two specific sections, the IPO summary and risk factors,⁴ we posit the following hypothesis:

***Hypothesis 1:** There is a positive relationship between uncertainty in tone in the IPO prospectus and the level of IPO underpricing in Latin America.*

A strong institutional and legal framework should foster capital markets development. Cumming, Johan & Li (2011) examine the effect of trading rules on market liquidity at the country level. They analyze stock exchange trading rules for market manipulation, insider trading, and broker-agency conflict in 42 different countries and over time, finding that this set of rules has a significant effect on market liquidity.

In the same vein, institutional rules that mitigate information asymmetries should also mitigate IPO underpricing. Due to information asymmetries between a firm's insiders and market participants, investors may lack relevant information related to the firm's future performance, and uncertainty could affect IPO underpricing. According to Beatty & Ritter (1986), information asymmetry is a significant determinant of IPO underpricing. For example, it could encourage issuers to underprice their shares to increase investor demand (Rock, 1986).

Johnston & Madura (2009) analyze the effect of the Sarbanes-Oxley Act (SOX) on the pricing of IPOs. They argue that SOX affects the transparency not only of public firms but also of those preparing to go public, and hence should reduce IPO underpricing. Their results suggest that the valuations of newly public firms at the time of the IPO are subject to less uncertainty and smaller

⁴ Previous works have used other dictionaries such as the one proposed by Henry (2008), or Harvard's General Inquirer. Loughran & McDonald (2011) present empirical evidence of the inconvenience of using these dictionaries in the financial field and propose a more appropriate set of word lists.

after-market corrections. In the same vein, Akyol et al. (2014) find that IPO underpricing declined in European Union countries that adopted corporate governance codes containing SOX-like provisions.

However, the effectiveness of legal reforms in reducing IPO underpricing seems to be affected by different factors. For example, Ekkayokkaya & Pengniti (2012) analyze a major governance reform in Thailand, an economy with weak legal institutions (La Porta et al., 1998) and find that, although IPOs are now less underpriced, the reform had limited efficacy in improving investor protection. Specifically, they find that insiders disclose less information while retaining absolute control despite the reform.

For the Latin American case, firms seem to follow a pecking order in financing, with the IPO as the last source (Céspedes et al., 2010; Maquieira et al., 2012). In the nineties, the region was characterized by high information asymmetries, high transaction costs and high ownership concentration. The majority of stocks traded in the capital markets were illiquid, and shareholders had very little legal protection (La Porta et al., 1998, 1999). Aiming to strengthen the regional capital markets, countries in Latin America have carried out a variety of governance reforms (Chong & López-de-silanes, 2007). This background led us to the following hypothesis:

***Hypothesis 2:** There is a negative relationship between governance practices at the country level in Latin America and IPO underpricing.*

The relevance of corporate governance practices at the firm level in environments with low investor protection has been highlighted in the financial economic literature. Klapper & Love (2004) analyze corporate governance rankings at the firm level in fourteen emerging markets and find that the average firm-level governance is lower and matters more in countries with weaker legal institutions. These authors also find that improvements in governance provisions at the firm level relative to the country average are more important for financial performance than the level of the corporate governance index for each firm. In the same vein, Doidge et al. (2004) argue that good governance mechanisms at the firm level implies that controlling shareholders limit their private

benefits of control in low investor protection countries, which will have a positive impact on firm market valuation.

Corporate governance provisions at the firm level have also been studied as a signal mechanism to mitigate information asymmetries when firms go public. For example, Hartzell et al. (2008) study the impact of firm-level corporate governance provisions on IPO performance. These authors argue that firms with more shareholder-oriented governance structures experience less IPO underpricing. They also find evidence that firms with stronger governance structures have higher PO valuations. In addition, Bédard et al. (2008) analyze 246 IPOs issued in the Canadian province of Québec and find that the creation of audit committees with independent and expert members in financial matters at the time of the IPO decreases the level of underpricing significantly.

Certo (2003) argues that firms undertaking IPOs are relatively unknown to investors; thus, investor perceptions of board prestige can signal a firm's legitimacy to the market and should have an impact on IPO underpricing. In addition, Certo et al. (2001) find empirical evidence regarding the relationship between some characteristics of the board and IPO underpricing, suggesting that boards convey information, send a signal to future investors, and so reduce uncertainty.

Independence is a relevant characteristic of boards and hence could have an impact on IPO underpricing. Filatotchev & Bishop (2002) use a sample of 251 IPOs in the United Kingdom and find that a higher proportion of non-executive directors on the board reduces IPO underpricing. Non-executive directors are more independent and could signal a higher level of board efficiency when valuing a firm. Chahine and Filatotchev (2008) study the combined effects of information disclosure and board characteristics. They find that board independence has a positive effect on the offer price, while information disclosure presents a nonlinear relationship since disclosure can initially be seen as a way to reduce information asymmetries; however, too much disclosure may be seen as losing advantage to competitors.

Due to the relevance of governance provisions at the firm level in environments with low investor protection, along with the relevance of corporate arrangement at the time of the IPO as a signal mechanism, we posit the following hypothesis:

Hypothesis 3: There is a negative relationship between governance practices at firm level in Latin America and IPO underpricing.

We have argued for the existence of a relationship between uncertainty in tone in the IPO prospectus and IPO underpricing, and for a link between firm-level governance practices in Latin America and IPO underpricing. Both uncertainty in tone and governance practices are signaling mechanisms that markets could use to get credible information about new issuers.

The signal is the observable attribute upon which the buyer makes judgments and takes decisions in the market. A strong signal should have different characteristics to be “good” and to lead to a separating equilibrium. According to Spence (1973, 1974), Ross (1977), Leland & Pyle (1977) and Myers & Majluf (1984), among others, good signals should be costly, credible, difficult to acquire or imitate, and should convey credible information. We argue that governance practices at the firm level, although relevant, are weaker signals for market participants compared to uncertainty in tone in the IPO prospectus. According to Coffee (1999), firms can adopt more rigorous governance systems, disclosure practices and accounting rules than required or prevailing in their jurisdiction of incorporation. In this sense, corporate governance practices help to differentiate firms in the market. However, the minimum standards of corporate governance that all listed firms should have may offset the effectiveness of standards as a signaling mechanism.

Karmel (2001) discusses the transition from listing criteria that emphasize market size and financial aspects to qualitative listing requirements that focus on shareholder protection and corporate governance standards. This change was led mainly by the 2002 Sarbanes-Oxley Act (SOX) and the Securities and Exchange Commission (SEC) in the United States. Nowadays, all stock exchanges around the world impose some corporate governance arrangements in their listing requirements.

According to Johan (2010) higher exchange listing standards screen out firms that are less prepared to go public. Analyzing requirements in Argentina, Brazil, Chile, Colombia, Mexico, and Peru shows that all these stock exchanges have some governance requirements, such as reports on adoption of country code recommendations, firms' disclosure policies, insiders' ownership stakes, boards and audit committees' issues, firms' corporate ethics policy and governance code, among other listing requirements.

Following Loughran & McDonald (2013), tone in the IPO prospectus provides a direct proxy for ex ante uncertainty surrounding the IPO's valuation. For these authors, tone could be a stronger signal than other ex ante proxies such as firm age, sales and IPO gross proceeds, which could be measuring many other aspects of the offering. In line with Benson et al. (2015), the importance of tone over corporate governance characteristics is evident. This study shows that firms that use complex language in governance documents, what these authors called camouflage, generate less underpricing in their IPOs. Moreover, they find that firms that are less friendly to investors and employ more obscure language avoid a higher IPO underpricing. Hence, this result makes apparent the importance of tone over governance practice. For our sample of Latin American firms we expect tone to be a stronger signaling mechanism than corporate governance requirements due to the standardization of some corporate governance arrangements as listing requirements, and hence we posit the following hypothesis:

Hypothesis 4: Tone in the IPO prospectus matters more than governance practices at firm level in explaining IPO underpricing.

A high level of ownership concentration and involvement in firm operations is usual with family ownership. Empirical evidence about their motivations can be found in Andres (2008), Caprio & Croci (2008), and Maury & Pajuste (2005). Family ownership concentration can generate both benefits and costs for the family and for the external shareholders. On the one hand, family

ownership enhances expropriation risk through the consumption of private benefits; on the other, it enhances monitoring intensity (Villalonga et al. 2015). Private benefits of control come at a cost. For example, there are challenges in the acquisition and retention of managerial talent, given the small pool of managers in the family circle (Bertrand & Schoar, 2006). Terms of capital for growth may also be constrained.

The decision for a family firm to go public should balance the costs and benefits for the family. An IPO could reduce the socioemotional wealth of the family (Gómez-Mejía, et al. 2011); for example, by losing control of the firm operations (Chua et al., 1999), losing managerial positions and the possibility of using firm-specific skills and knowledge in the job market (Maug, 1996). There could also be lawsuits involving the IPO process (Lowry & Shu, 2002) or unsuccessful offers (Ritter & Welch, 2002) that damage the family reputation. Possible benefits include enhanced financial wealth of the family firm, diversified family risk, increased family reputation, and better access to capital. The decision for a family firm to go public deals with the tradeoff between socioemotional and financial wealth (Kotlar, et al. 2017). Leitterstorf and Rau (2014) show that for a sample of 153 German IPOs (2004-2011) family firms tended to underprice their IPO. This result could be understood as a sacrifice of financial wealth (lower firm valuation) that the family is willing to accept to preserve socioemotional wealth associated with reputation, for example.

However, in a context of low investor protection characteristic of Latin American countries (La Porta et al. 1998), the IPO may involve reduced access to capital and could send a strong signal of families' willingness not to expropriate minority shareholders (Gomes, 2000). If a family keeps concentrated ownership of the firm and decides to extract a high level of private benefits, then other shareholders will trade the firm's shares at a discount, reducing firm value, and the family will suffer the most, given their high ownership concentration. The value of an IPO as a positive signal increases family firm valuation and therefore reduces IPO underpricing. Following this idea, we posit the following hypothesis:

Hypothesis 5: Family ownership is negatively associated with IPO underpricing in Latin America.

Data and research methodology

The formal procedure for a firm to go public begins with its registration as a public company with listing on the stock exchange. The company also requests authorization for an IPO and begins the preparation of documents required by the process, including the offering prospectus.

In Table 1, Panel A, we present our sample after applying various filters. We first collect and process the prospectuses used during an IPO in six Latin American countries: Brazil, Chile, Colombia, Mexico, Peru and Argentina. The selection of these countries is based on their market size, measured by market capitalization. The full sample based on the information collected from the Bloomberg and Thomson Reuters databases for the period 1990-2014 is composed of 396 prospectuses: Argentina (27), Brazil (219), Chile (31), Colombia (15), Mexico (91), and Peru (13).⁵

The prospectuses are hand-collected from available databases like Bloomberg and Thomson Reuters. We also search through the information available in country exchanges. Analyzing preliminary data, we observe a huge concentration of IPOs for the period 2000-2014, with 334 prospectuses compared to 62 for the period 1990-1999. This result might be explained by the series of regulatory reforms undertaken in Latin America during the first decade of the twenty-first century to enhance the financial market in the region Chong & López-de-Silanes, 2007).

We decide to work with IPOs for the period 2000–2014 since (1) these are representative of the full sample, (2) the more homogeneous structure of the prospectuses facilitates further analysis, and (3) access to the prospectus files in databases and stock exchanges is more reliable for this period. Of the 334 IPOs for the period 2000–2014, Bloomberg reports 242 as trading, 77 as withdrawn, 13 as pending, and 2 as postponed. In this study we concentrate on those currently

⁵ This distribution reflects the dynamics and development of capital markets in the region.

trading. Unable to find 49 prospectuses, we finally collected and processed 193 prospectuses from the most important markets.⁶

[INSERT TABLE 1 HERE]

There are two important facts to consider in the analysis. First, there is a natural bias in the sample regarding Brazilian IPOs since this market was the most active in terms of new offers. Table 1, Panel B, shows the number of IPOs per country. Later we will consider a country effect in the analysis to see if there is a significant difference between Brazilian and non-Brazilian IPOs. The second fact is a time effect in the analysis. Table 1, Panel C, shows the evolution of IPOs for the period under study. The IPO wave before 2007 is explained by the boom experienced in Brazil (Santos et al., 2009; Schiozer et al., 2005).

The common pricing mechanism for an IPO in Latin America is book-building. The underwriter and the issuer determine and disseminate a price range, after which selected potential investors make bids indicating their desired number of shares and the price they are willing to pay. This process can last from eight months up to three years when financial statements have not been previously audited. Table 2 shows some IPO characteristics: 69 percent of firms issuing IPOs come from the consumer and financial sector; 84 percent of the stocks offered are common. Although a minority among stocks offered, there are also preference stocks, units, and Brazilian depositary receipts. Units count as ten and refer to offers that combine common and preferred stocks.

We define family firm as one in which the founder or a family member by blood or marriage is an officer, director, or blockholder. Families could also control firms through pyramidal ownership (Faccio & Lang, 2002), but this is not trackable using information in the prospectus. We construct this variable using only the information given in the prospectus. Therefore, our identification of a family firm will mimic the approach of an outside investor who uses the prospectus as the primary source of

⁶ These include 138 from Brazil, 16 from Chile, 8 from Colombia, 29 from Mexico and 2 from Peru. This is 80% of the total population.

information regarding the issuer. Families have different channels for exerting control and participating in firms' decisions. Family involvement can occur through management, direct ownership, or control-enhancing mechanisms such as board representation (Villalonga & Amit, 2006; González et al., 2015).

Along with these different ways to be involved, family members often have a wide range of goals and functions, such as preserving the family's legacy and reputation; protecting the family name (which may be the same as the firm's), and, overall, maximizing what Gómez-Mejía et al. (2007) call socioemotional wealth (Villalonga et al., 2015). Such goals are especially relevant when family firms decide to go public. Family firms represent 56 percent of the sample under study.

Finally, the prospectuses for 46 percent of the issuing firms state that proceeds will be used to strengthen the investment policy, usually capital expenditures (CAPEX), acquisitions or a combination of both. Only three firms declared an intention to combine long-term investments in CAPEX and acquisitions with investments in working capital. Only 3 percent of the firms issuing an IPO use the proceeds to change their capital structure, and 36 percent combine investment and financing purposes.⁷ Only one prospectus does not report the funds' uses.

[INSERT TABLE 2 HERE]

To analyze the relation between first-day return and tone in the IPO prospectus, we use first-day return as the dependent variable, defined as the difference between offer price and first-day after-market closing price. We use the weak-modal, negative and uncertain word lists proposed by Loughran & McDonald (2011) to measure tone in the summary section of the prospectus.⁸ We first create a document corpus and remove irrelevant characters like punctuations, dates, numbers, and

⁷ In this paper we classify use of funds as either investment policy or financing. In investment policy, firms declare CAPEX, acquisitions, working capital or the combination of these. Financing usually refers to refinancing.

⁸ The prospectus becomes the central piece in marketing the offer. Its main task is to convey the information needed in the investment decision process. The summary is usually considered the most important part of the prospectus and presents a brief description of the company and the offering (Ferris et al., 2013; Hanley & Hoberg, 2010).

stop words. We also transform text to lowercase and remove white space, as is common in this type of process. We then create a document term matrix and remove terms that appear only in at most 10 percent of the data⁹. Finally we use the word lists as parameters to score each prospectus on the basis of term frequency - inverse document frequency.

We also create a new list, named “unfavorable tone,” which combines the three lists since they all proxy the same attribute - uncertainty (Loughran & McDonald, 2013). In Table 3, we report descriptive statistics for offer, firm characteristics and tone measures. In our sample the average first-day return is 6.6%. The mean percentages of weak modal, negative and uncertain words in the summary section are 0.502, 1.024 and 1.262 percent, respectively. These results are similar to the ones reported by Loughran & McDonald (2013) for 1987 U.S. IPOs. The percentage of weak modal, negative and uncertain tone reported by them is 0.62, 1.41 and 1.28 percent, respectively. When the three lists are combined (unfavorable tone), the mean percentage is 2.347 percent. Although not reported, the mean percentage of negative, uncertain and weak modal words for the risk section is higher, as expected. The mean percentage of negative words is 2.7 percent, 3.0 percent for uncertain and 0.8 percent for weak modal. When combined, the mean percentage goes to 6.0 percent. The higher levels of uncertainty in the risk factor section might correspond to the nature of the section.

[INSERT TABLE 3 HERE]

Regarding firm-level governance measures, in our sample the mean board size is seven members, and the director influence (the ratio of independent directors over dependent directors) is 67.7 percent on average. This latter result implies an independence ratio of 40 percent. Both measures, board size and director influence, show descriptive statistics in line with previous studies in the region (González et al., 2012, 2013; Sáenz and García-Meca, 2014). The mean of ownership

⁹ A high dispersion in the distribution of terms is observed in natural language processing.

dilution; that is, the difference between the percentage of shares belonging to the first owner before and after going public, is 62 percent, with great dispersion that goes from 4 percent to 100 percent.

The country-level variables, regulatory quality, rule of law and voice and accountability, are worldwide governance indicators produced by Daniel Kaufmann and Aart Kraay for the World Bank (info.worldbank.org/governance). All these measures take values ranging from -2.5 to 2.5, depending on the quality of the legal environment. The average anti-self-dealing index, a measure of private enforcement proposed by Djankov et al. (2008) is 0.299, which is low in terms of the global figures. In addition, listing requirements is a self-constructed index calculated as the ratio of each country's requirements on a total of 52 listing requirements identified for the Latin American region (see Appendix A). Mexico is the country with the highest number of listing requirements (26), followed by Argentina (22), Brazil (20), Chile (17), Peru (16) and Colombia (13). Hence, this variable has a minimum of 25 percent and a maximum of 50 percent.

We also include in our model the different control variables commonly used in the literature¹⁰. Age is estimated as the difference between the IPO announcement year and founding year. The mean age of the Latin American firms in our sample undergoing IPO is 28 years. The oldest is 170 years. The firms also report the number of risk factors associated with the offering. These exist at the firm, offering, sector and country level. On average, the firms report 26 risks going up to 66. Some 44 percent of the sample IPOs are backed by venture capital or private equity; 26.1 percent of these has an underwriter with a good reputation according to an updated Carter & Manaster (1990) rank, and 32.8 percent change the price during the offer period (Up Revision). Dilution, that is, the ratio between IPO offer size and total assets as reported in the IPO prospectus, has an average of 55.6 percent in our sample. We also control by firm size, profitability and the global financial crisis of 2007. Appendix B shows a detailed definition for each of our variables.

¹⁰ See for example Ritter (1984), Beatty & Welch (1996), Ljungqvist & Jenkinson (2003), Park et al. (2017); Guldiken et al. (2017); Bajo & Raimondo (2017); Benson et al. (2015); Bertoni et al. (2014); Akyol et al. (2014); Loughran & McDonald (2013); Ferris et al. (2013); Ekkayokkaya & Pengniti (2012) and Liu & Ritter (2011), among others.

Results

IPO underpricing and sentiment analysis

Table 4 reports the OLS regression results when using first-day return as the dependent variable. In the first column, the combined list of uncertain, weak modal and negative word frequency is positive and significant in explaining first-day returns.¹¹ We present empirical evidence for the power of tone as a proxy for ex ante uncertainty in the Latin American market in the period 2000 – 2014.¹² One percentage change in unfavorable tone in the summary section increases, on average, the level of underpricing during the first day by 2.50 percent ($p < .1$). In columns 2, 3 and 4 we replicate Model 1 but test weak modal, uncertainty and negative word lists separately. We do not find statistical evidence of the relation between weak modal frequency and first-day return. One possible explanation for the non-significance of weak modals is the fact that regulation on how the prospectus is written demands concrete everyday language. Words like “apparently,” “could,” “perhaps,” and “somewhat” are examples of weak modals that are not very common in the prospectus.

The uncertainty frequency in the prospectus is positive but nonsignificant in explaining first-day returns. An explanation for this effect can be found in the nature of the list. Loughran & McDonald (2011:45) built their list “with emphasis on the general notion of imprecision rather than exclusively focusing on risk.” Similar to Model 1, column 4 presents empirical evidence about how language affects the value of an IPO. The coefficient of negative tone is higher than that obtained when the three word lists (unfavorable tone) are combined. Taken in isolation, an increase of 1 percent in negative tone, increases, on average, the level of underpricing during the first day by 4.69 percent ($p < .05$). These findings support our first hypothesis. Language clearly affects the market’s

11 Higher first-day returns imply more underpricing for the initial offer.

12 Studying the Latin American market for the period 1980-1990, Aggarwal et al. (1993) found initial one-day returns of 78.5%, 16.7%, and 2.8% for Brazil, Chile, and Mexico, respectively.

reception of IPOs, and sometimes firms must leave money on the table to allay investors' uncertainty and perceptions of risk.

Other proxies of uncertainty are not significantly related to IPO underpricing. This result highlights the power of tone over other variables to predict IPO underpricing (Loughran & McDonald, 2013). For example, firm age and size, underwriter reputation, the number of risk factors, up revision and listing requirements are not significant in this model. The tone used in the prospectus affects investors' assessment of the offer, and the market takes it as a more credible signal about firms' ex ante uncertainty than other proxies.

Other control variables such Vc/pe dummy, dilution, Roa, Ros dummy, and crisis are statistically significant in explaining IPO underpricing. As expected, an offer backed by venture capital or private equity (Vc/pe dummy) experiences less underpricing (Guldiken et al., 2017). In addition, dilution (the ratio between IPO offer size and total assets) positively affect the IPO underpricing (Liu & Ritter, 2011). Roa and Ros dummies, which represent profitability measures of the issuing firm, are positive and significantly linked to first-day return in all models. We interpret this as a signal of IPO cost for firms jumping the pecking order. Firms with internal funds are underpriced more by potential investors who doubt the quality of future projects. Considering that this is a pooled cross-section, we use the dummy variable "crisis" to capture the time effect before and after the 2007 financial crisis (Wooldridge, 2010). As shown in Table 1, there was an IPO wave in Latin America before this period. The variable is negative and significant, which indicates a lower average underpricing before the financial crisis.

[INSERT TABLE 4 HERE]

IPO underpricing and governance

In this section we study the effect of governance on the level of underpricing in Latin America. We begin at a country level. Many authors have analyzed how institutional reforms affect the level of

underpricing in emerging economies.¹³ The studies for developed and developing markets generally report a reduction in IPO underpricing when institutions and country-level governance mechanisms are improved. We test this hypothesis for Latin America using the worldwide governance indicators produced by Daniel Kaufmann and Aart Kraay. These are: control of corruption, government effectiveness, political stability, regulatory quality, rule of law, and voice and accountability.¹⁴

We do not expect all these indicators to be related to first-day return. We find voice accountability, rule of law and regulatory quality more relevant to ex ante uncertainty and future performance of an IPO because these variables are more closely related to property rights and private sector investments. We also use the anti-self-dealing index proposed by Djankov et al. (2008) as a measure of the legal protection of minority shareholders against expropriation by corporate insiders.

Table 5 reports the OLS regression results with first-day return as the dependent variable and using a set of explanatory variables, including the four country-level governance indicators. We do not find empirical evidence for Hypothesis 2 that the quality of institutions at the country level mitigates the level of underpricing. We also use Cumming et al. (2011) indexes and obtain similar results (not reported but available upon request). Unfortunately, we have only a few countries in our dataset, and hence the lack of significance was somewhat expected. The restricted number of countries reflects the low level of IPO activity in Latin America. A bigger (currently nonexistent) dataset that includes more countries is necessary to test the relevance of country-level legal

13E.g., Deb and Marisetty (2010) for the Indian market, Ekkayokkaya and Pengniti (2012) in Thailand, Hearn (2011) in West Africa.

14 Control of corruption is defined as perceptions of the extent to which public power is exercised for private gain, including both petty and grand forms of corruption, as well as “capture” of the state by elites and private interests. Government effectiveness is the perceived quality of public and civil services and their degree of perceived independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government’s commitment to such policies. Political stability measures the perceived likelihood of political instability and/or politically motivated violence, including terrorism. Regulatory quality captures perceptions of the ability of the government to formulate and implement sound policies and regulations that permit and promote private sector development. Rule of law captures perceptions of the extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence. Voice and accountability captures perceptions of the extent to which a country’s citizens are able to participate in selecting their government, as well as freedom of expression, freedom of association, and a free media. For more on the way these indicators are constructed, see info.worldbank.org/governance.

provisions on IPO underpricing in Latin America, such as those found in previous studies for other regions (e.g., Akyol et al., 2014, for European Union countries). Control variables show results similar to those found in Table 4.

[INSERT TABLE 5 HERE]

The apparent lack of relevance of country-level governance provisions could be countered by firm-level governance decisions. Klapper and Love (2004) provide evidence that firm-level corporate governance provisions matter more in countries with weak legal environments. They argue that investors in countries with weak legal systems value even small improvements in governance relative to other firms, and hence good governance practices at the firm level matter more. Certo and Daily (2003) and Certo et al. (2001) state that corporate boards send a signal to future investors and thus reduce uncertainty and underpricing. Chahine and Filatotchev (2008) find that board independence has a positive effect on the offer price. To Ding and Pukthuanthong (2013), the presence of independent directors and post-IPO share retention make monitoring more effective and so also reduce underpricing.¹⁵ Li and Naughton (2007) study the relationship between board characteristics and short- and long-term return of IPOs in China. They find a significant link between board size and IPO returns.

Table 6 regresses first-day return on board size, the square of board size, and the interaction of board size with unfavorable tone. In Model 1 we test the power of all governance variables in predicting IPO underpricing. For the sample studied we find a positive and significant effect of board size on the level of underpricing ($\beta = 1.124, p < .05$). That is, one additional member on the board increases, on average, the level of underpricing during the first day by 1.124 percent. The coefficient of the square of board size is also statistically significant but negative ($\beta = -0.104, p < .05$), implying a non-monotonic relationship. When evaluating the model at the mean level of board size (seven

¹⁵ Other board characteristics such as presence of venture capitalists (Baker & Gompers, 2003), non-executive directors, (Filatotchev & Bishop, 2002), and members of the top management team (Kroll et al., 2007) have been studied as determinants of IPO performance.

members), we find a positive effect of board size on IPO underpricing in our sample ($7*(1.124)+7^2*(-0.104) = 2.77$). Our non-monotonic results suggest that smaller boards are perceived as less efficient by the market and lead to underpricing when firms go public. The literature suggests that board size should be related to firms' complexity (Boone et al., 2007).

The variable for director influence is negative and significantly related to IPO underpricing ($\beta = -2.357, p < .05$). That is, a board with the same proportion of dependent and independent directors reduces the level of underpricing during the first day by 2.357 percent. This result describes an important aspect of board composition. Black & Kim (2012) provide evidence regarding the relevance of board independence for firm value in an emerging economy. Dahya et al. (2008) empirically demonstrate that board independence is relevant for firm value when there is a dominant shareholder, especially in countries with weak legal protections for investors. In the IPO process, the presence of independent directors is seen positively by the market and reduces IPO underpricing.

In this study we do not find empirical evidence for the effect of ownership dilution in Latin American IPOs. Perhaps it is relevant to analyze not only ownership dilution but also the type of majority shareholder. According to Isakov & Weisskopf (2014), in analyzing the balance between shared and private benefits of control, it is necessary to consider the identity of the controlling shareholder and especially the distinction between family and non-family blockholders to determine which prevails. These authors assert that only family shareholders have a real incentive to reduce agency costs, whereas non-family blockholders are similar to those in widely held companies. Hence, in the following subsection we analyze the effect of family involvement on IPO underpricing. Overall, results regarding board size and board independence support our Hypothesis 3; that is, good governance practices at the firm level impact IPO underpricing when firms go public.

Looking at the three governance variables interacting with the unfavorable tone measure, we see that corporate governance variables at the firm level display stronger (board size) or weaker

(board influence) marginal effects. In Model 1, the interaction of board size with unfavorable tone is positive and significantly related to IPO underpricing ($\beta = 1.465$, $p < .1$). Hence, the effect of board size on IPO underpricing is greater when interacting board size with unfavorable tone.¹⁶ In Model 2, director influence ($\beta = -2.357$, $p < .05$), unfavorable tone ($\beta = 4.551$, $p < .01$) and the interaction of both ($\beta = 4.633$, $p < .05$) are statistically significant in explaining IPO underpricing. However, coefficients suggest that uncertainty in tone matters more than board independence.¹⁷ The variable ownership dilution tested in Model 4 is not significant. However, unfavorable tone ($\beta = 1.961$, $p < .1$) and the interaction of both ($\beta = 8.328$, $p < .05$) are statistically significant in explaining IPO underpricing. It seems that a high dilution experienced by the first owner along with a higher proportion of uncertainty in tone in the corpus of the prospectus lead market participants to underprice the offer. According to Leland & Pyle (1977), the entrepreneur's willingness to invest in his own project can serve as a signal of project quality. Hence, a high dilution with ex ante uncertainty captured by tone in the prospectus could signal bad news to the market regarding the future of the firm.

¹⁶ The overall change of IPO Underpricing due to board size (BS), taking into consideration the interaction between board size and unfavorable tone (BS:UT), is equal to

$$\partial \text{Board} \frac{\partial \beta_{BS}}{\partial i} \beta_{BS} * BS + \beta_{BS^2} * BS^2 + \beta_{BS:UT} * BS * UT$$

$$\frac{\partial \text{First Day Return}}{\partial i}$$

When evaluating this equation at the minimum (mean) values for these variables in descriptive statistics in Table 3, the overall effect is 5.13 (28.33), showing the amplifying effect of unfavorable tone.

¹⁷ The overall change in IPO underpricing due to director influence (DI), taking into consideration the interaction between director influence and unfavorable tone (DI:UT), is equal to

$$\frac{\partial \text{First Day Return}}{\partial \text{Director Influence}} = \beta_{DI} * DI + \beta_{DI:UT} * DI * UT$$

When evaluating this equation at the minimum (mean) values for these variables in descriptive statistics in Table 3, the overall effect is 0.04 (5.77), showing the offsetting effect of unfavorable tone.

Overall, these results support Hypothesis 4. We argue that meaning in tone can be a more relevant signal of IPO quality to investors than some governance variables, considering that certain governance standards are a precondition to market entry. Take as an example the Brazilian market in which firms choose their corporate governance segment (level one, level two, Novo Mercado, Bovespa Mais or Bovespa Mais level two). Depending on the selected segment, firms are required to adjust their legal and governance structure such as board size and number of independent directors.

[INSERT TABLE 6 HERE]

We recognize the potential omitted variable problem as a source of endogeneity, and hence a limitation of our results. There might be latent factors that can determine both the governance structure and the level of underpricing. The search for a proper instrument to tackle this problem is always difficult and subject to theoretical and empirical criticism. Nevertheless, with the aim of reducing uncertainty about the robustness of our results as much as possible, we follow the two-stage least squares estimations approach to instrument our board independence variable using the anti-self dealing index (Djankov et al., 2008). After running these estimations, the sign and statistical significance of the regression coefficients of both “director influence” and its interaction with the variable “unfavorable tone” remain basically unchanged (not shown but available upon request).

IPO underpricing and family firms

In this final section we explore the role family firms play in IPO underpricing of Latin American firms. Ownership concentration alleviates some agency conflicts (shareholders versus managers, shareholders versus creditors) at the expense of aggravating others (controlling versus noncontrolling shareholders). See Villalonga et al. (2015). A controlling shareholder can monitor management and mitigate possible losses attributable to misbehavior, generating what is known as shared benefits of control. However, issuing new shares implies the separation of ownership and control, even though controlling shareholders continue to maximize their utility while assuming just a fraction of the costs associated with private pecuniary benefits of control (Jensen & Meckling, 1976). Hence, the balance

between shared and private benefits of control determines the cost that minority shareholders have to assume.

In emerging markets, the presence of a family firm can be viewed positively by the market. Isakov and Weisskopf (2014) argue that families' goals make them a special type of controlling shareholder and that the shared benefits of control are higher under their influence, which creates value for minority shareholders. As controlling shareholders, families concerned with their reputation could be motivated to treat minority shareholders favorably. According to Gomes (2000), this is plausible because market participants discount the stock price when firm insiders misbehave, causing the controlling shareholder's remaining shares to lose value. In addition, Anderson et al. (2003) assert that families have a special interest in the long-term survival of the firm and a special concern for the firm's and family's reputation.

Table 6, Model 4, reports the OLS regression results with first-day return as the dependent variable and the family firm dummy as an explanatory variable. For the sample under study, we find a negative and significant effect of family involvement on IPO underpricing ($\beta = 3.930, p < .05$). The result supports our Hypothesis 5 and indicates that family firms in Latin America face lower levels of underpricing than non-family firms. We interpret this as a reputation effect of family on market valuation. As far as we know, this is the first time the effect of family firms is studied as a factor in IPO performance in Latin American markets.

Finally, taking into consideration the concentration of our sample in Brazilian IPOs, we include a dummy "country" that takes the value of 1 when the issuer of the IPO is a Brazilian company, and zero otherwise. Overall, our results remain unchanged (not shown but available upon request). In addition, the variable "country" is negative and significant, which suggests that average underpricing for non-Brazilian firms is higher than for Brazilian firms. This can be explained by the higher level of market development Brazil.

Conclusions

In this paper we study the relationship between corporate governance, uncertainty in tone and performance for IPOs in Latin America during the period 2000-2014. We set up a situation in which a potential investor is collecting information about an IPO. Most of the available information is in the IPO prospectus prepared by the issuing firm. The prospectus presents the current situation and future expectations of the firm according to the issuing firm and the underwriter. After performing a regression analysis, we find that board size and the relation between independent and dependent directors at the moment of going public have a statistically significant effect on IPO underpricing. But more importantly, we find that the effect of these variables is enhanced (or mitigated) by the language used in the IPO prospectus. This empirical result sheds light on how these factors can affect IPO valuation and suggests more explanatory power for uncertainty in tone.

We also found empirical evidence of the link between uncertainty in tone in the IPO prospectus and the level of IPO underpricing. This evidence for Latin American IPOs supports the findings of Loughran & McDonald (2013) for the U.S. market in terms of using tone as a proxy for ex ante uncertainty. In addition, we did not find empirical evidence for the relevance of governance provisions at the country level in explaining the level of underpricing perhaps due to the small number of countries in the dataset.

Finally, we explore the role of family firms in Latin American IPOs. For the sample studied, we find empirical evidence of the positive effect that family firms have on the level of underpricing. Family firms in Latin America face lower levels of underpricing than non-family firms. We interpret this as a reputation effect of family on market valuation.

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Table 1. IPO sample creation. This table reports the impact of various data filters on initial IPO sample size

Panel A - Sample prospectuses

Source/Filter	Observations Removed	Sample Size
Total IPOs according to countries' stock exchanges and Bloomberg database for the period 1990-2014		396
Minus IPOs during the period 1990-1999	62	334
Minus withdrawn IPOs	77	257
Minus pending IPOs	13	244
Minus postponed IPOs	2	242
Minus not found prospectuses	49	193

Panel B - Sample prospectuses by country

Country	Prospectuses
Brazil	138
Mexico	29
Chile	16
Colombia	8
Peru	2

Panel C - Sample prospectuses by year

Year	Prospectuses
2000	1
2004	9
2005	13
2006	25
2007	66
2008	8
2009	9
2010	17
2011	13
2012	13
2013	16
2014	3

Table 2. This table reports basic characteristics of firms going public in Latin America during the period 2000-2014. Data collected from IPO prospectuses.

Variable	Levels	n	%	$\Sigma\%$
Industry sector	Consumer	79	40.933	40.933
	Financial	55	28.497	69.430
	Energy	10	5.181	74.611
	Industrial	22	11.399	86.010
	Technology	7	3.627	89.637
	Utilities	7	3.627	93.264
	Communications	7	3.627	96.891
	Basic Materials	5	2.591	99.482
	Diversified	1	0.518	100.000
all		193	100.000	
Security type	Common	162	83.938	83.938
	Preference	15	7.772	91.710
	Units	10	5.181	96.891
	BDR	6	3.109	100.000
all		193	100.000	
Family firm	No	85	44.041	44.041
	Yes	108	55.959	100.000
	all	193	100.000	
Use of funds	Investment policy	88	45.833	45.833
	Financial policy	5	2.604	48.438
	Both	70	36.458	84.896
	Other	29	15.104	100.000
all		192	100.000	

Table 3. Summary statistics for IPO sample, 2000-2014.

Variable	Obs.	Mean	Std. Dev.	Min	Max
<u><i>Underpricing measure</i></u>					
First day return	193	0,066	0,348	-1,550	4,170
<u><i>Tone measures</i></u>					
% Unfavorable Tone	171	2,347	0,948	0,614	5,968
% Weak Modal	171	0,502	0,387	0,000	1,965
% Uncertain Tone	171	1,262	0,633	0,000	3,635
% Negative Tone	171	1,024	0,743	0,190	7,283
<u><i>Governance variables</i></u>					
Board size	188	7,489	2,507	3,000	21,000
Director influence	150	0,677	0,906	0,091	7,993
Ownership dilution	192	0,620	0,271	0,040	1,000
<u><i>Country level variables</i></u>					
Regulatory quality	193	0,207	0,410	-0,073	1,536
Rule of law	193	-0,234	0,491	-0,765	1,367
Voice and accountability	193	0,437	0,265	-0,180	1,244
Anti-self-dealing index	193	0,299	0,125	0,170	0,630
Listing requirements	193	0,391	0,055	0,250	0,500
<u><i>Control variables</i></u>					
Age	193	28,466	26,866	1,000	170,000
Risk factors	191	26,325	11,148	3,000	66,000
Vc/pe dummy	193	0,440	0,498	0,000	1,000
Underwriter reputation	188	0,261	0,440	0,000	1,000
Up Revision	174	0,328	0,471	0,000	1,000
Dilution	179	0,556	0,888	0,021	11,755
Firm Size	187	13,018	4,878	0,470	29,152
Roa	181	0,114	2,700	-25,090	25,960
Ros Dummy	193	0,585	0,494	0,000	1,000
Crisis	193	0,409	0,493	0,000	1,000

Table 4. Impact of tone measures on first-day return.

This table reports the results of regressions with first-day return as the dependent variable with tone measures and a set of control variables. The dependent variable, First-day return, is the percentage change between offer price and first-day closing price. Unfavorable, weak modal, uncertain and negative tone are calculated following a rule-based approach in which each prospectus is scored based on a term frequency - inverse document frequency matrix. The score of prospectus i is given by the sum, over the dictionary terms, of the number of times each term occurs in document i . Age is the natural log of $(1 + \text{firm age})$ where firm age is the difference between founding year and IPO announcement date. Vc/pe dummy is set to one if IPO is backed by venture capital or private equity, else zero. Firm size is the natural log of total assets for the year previous to going public as reported in the IPO prospectus. Underwriter reputation is a dummy variable set to one if the lead underwriter of the IPO has an updated Carter and Manaster (1990) rank of eight or more, else zero. Dilution is calculated as the ratio between IPO offer size and total assets as reported in the IPO prospectus. Up revision is a dummy variable set to one if there is a difference between the offer price and the offer price adjusted as reported in Bloomberg database, else zero. Risk factors variable is the natural log of the number of risk factors reported in the IPO prospectus. Roa is the return on assets for the year previous to going public as reported in the IPO prospectus. Ros dummy is set to one if the trailing return on sales is positive at the time of the IPO, else zero. Crisis is set to one for IPOs announced before 2007, else zero. Listing requirements is an index calculated as the ratio of each country requirements on a total of 52 listing requirements identified for Latin American region. Heteroscedasticity-robust standard errors are reported in brackets. ***, **, and * indicate significance levels below 1%, 5% and 10%, respectively.

VARIABLES	model 1	model 2	model 3	model 4
Unfavorable Tone	2.499*			
	(-1.44)			
Weak Modal Tone		-4.223		
		(-4.825)		
Uncertain Tone			1.805	
			(-2.416)	
Negative Tone				4.690**
				(-2.323)
Age	1.288	0.887	1.011	1.452
	(-1.399)	(-1.381)	(-1.387)	(-1.53)
Vc/pe dummy	-4.451	-4.208*	-4.931*	-4.716*
	(-2.81)	(-2.489)	(-2.791)	(-2.732)
Firm Size	0.321	0.372	0.378	0.29
	(-0.282)	(-0.258)	(-0.286)	(-0.246)
Underwriter Reputation	1.607	1.215	1.763	1.327
	(-2.513)	(-2.785)	(-2.597)	(-2.614)
Dilution	4.238	6.829**	5.861**	3.709
	(-2.573)	(-2.791)	(-2.625)	(-3.163)
Up Revision	-0.57	0.313	-0.587	-0.154
	(-3.394)	(-3.624)	(-3.616)	(-3.295)
Risk Factors	-9.016	-8.98	-8.558	-8.054
	(-7.216)	(-7.197)	(-7.298)	(-6.775)

Table 4 - continued. Impact of tone measures on first-day return.

VARIABLES	model 1	model 2	model 3	model 4
Roa	0.379** (-0.159)	0.405*** (-0.152)	0.379*** (-0.135)	0.429** (-0.177)
Ros Dummy	6.384** (-2.474)	5.952** (-2.711)	5.963** (-2.398)	6.291** (-2.672)
Crisis	-10.95*** (-3.275)	-10.28** (-4.071)	-9.788*** (-3.477)	-11.26*** (-3.887)
Listing Requirements	4.837 (-14.2)	3.112 (-15.97)	0.88 (-16.79)	8.812 (-15.75)
Constant	6.403 (-37.09)	18.24 (-43.3)	19.67 (-41.19)	-6.991 (-39.14)
Observations	141	141	141	141
R-squared	0.218	0.206	0.201	0.225

Table 5. Impact of governance provisions at a country level on first-day return.

This table reports the results of regressions with first-day return as the dependent variable with governance traits at a country level and a set of control variables. The dependent variable, First-day return, is the percentage change between offer price and first-day closing price. Regulatory quality, rule of law and voice and accountability are worldwide governance indicators produced by Daniel Kaufmann and Aart Kraay (info.worldbank.org/governance). Regulatory quality captures perceptions of the ability of the government to formulate and implement sound policies and regulations that permit and promote private sector development. Rule of Law captures perceptions of the extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence. Voice and Accountability captures perceptions of the extent to which a country's citizens are able to participate in selecting their government, as well as freedom of expression, freedom of association, and a free media. Anti-self dealing index is the average of ex-ante and ex-post private control of self-dealing as proposed by (Djankov, et al 2008). Age is the natural log of $(1 + \text{firm age})$ where firm age is the difference between founding year and IPO announcement date. Vc/pe dummy is set to one if IPO is backed by venture capital or private equity, else zero. Firm size is the natural log of total assets for the year previous to going public as reported in the IPO prospectus. Underwriter reputation is a dummy variable set to one if the lead underwriter of the IPO has an updated Carter and Manaster (1990) rank of eight or more, else zero. Dilution is calculated as the ratio between IPO offer size and total assets as reported in the IPO prospectus. Up revision is a dummy variable set to one if there is a difference between the offer price and the offer price adjusted as reported in Bloomberg database, else zero. Risk factors is the natural log of the number of risk factors reported in the IPO prospectus. Roa is the return on assets for the year previous to going public as reported in the IPO prospectus. Ros dummy is set to one if the trailing return on sales is positive at the time of the IPO, else zero. Crisis is set to one for IPOs announced before 2007, else zero. Listing requirements is an index calculated as the ratio of each country requirements on a total of 52 listing requirements identified for Latin American region. Heteroskedasticity-robust standard errors are reported in brackets. ***, **, and * indicate significance levels below 1%, 5% and 10%, respectively.

VARIABLES	model 1	model 2	model 3	model 4
Regulatory quality	6.253 (-3.965)			
Rule of law		4.266 (-3.705)		
Voice and accountability			-3.567 (-6.375)	
Anti-self dealing index				13.63 (-10.29)
Age	0.298 (-1.182)	0.585 (-1.244)	0.753 (-1.3)	0.498 (-1.226)
vc/pe dummy	-3.781* (-2.145)	-4.940** (-2.369)	-4.676* (-2.501)	-4.680** (-2.312)
Firm size	0.281 (-0.248)	0.27 (-0.251)	0.305 (-0.26)	0.278 (-0.252)
Underwriter reputation	2.149 (-2.49)	1.927 (-2.546)	1.742 (-2.592)	1.849 (-2.547)
Dilution	7.419*** (-2.364)	6.596*** (-2.38)	6.518** (-2.569)	6.854*** (-2.335)

Table 5 - continued. Impact of governance provisions at a country level on first-day return.

VARIABLES	model 1	model 2	model 3	model 4
Up revision	-1.298 (-2.799)	-1.127 (-2.81)	-0.554 (-2.843)	-1.172 (-2.814)
Risk Factors	-3.384 (-3.631)	-3.3 (-3.259)	-6.911 (-4.356)	-3.544 (-3.454)
Roa	0.418*** (-0.13)	0.406*** (-0.127)	0.388*** (-0.129)	0.428*** (-0.13)
Ros dummy	7.125** (-2.752)	7.105** (-2.819)	6.864** (-2.783)	7.151** (-2.82)
Crisis	-10.08*** (-3.483)	-9.472*** (-3.47)	-9.001*** (-3.069)	-8.843*** (-3.11)
Listing requirements	-9.17 (-10.24)	-7.472 (-11.07)	-8.492 (-9.707)	15.81 (-24.07)
Constant	35.69 (-28.69)	32.93 (-31.87)	46.67 (-30.67)	-20.17 (-56.67)
Observations	156	156	156	156
R-squared	0.225	0.204	0.197	0.207

Table 6. Impact of governance provisions at a firm level on first-day return.

This table reports the results of regressions with first-day return as the dependent variable with firm and governance traits and a set of control variables. The dependent variable, First-day return, is the percentage change between offer price and first-day closing price. Board size is the number of board directors reported in the IPO prospectus at the moment of going public. Board size (Sqr) is calculated as the square of the variable board size. Director influence is the number of independent directors over the number of dependent directors. Ownership dilution is measured as the difference between the percentage of shares belonging to the first owner before and after going public, as reported in the IPO prospectus. Family firm is a dummy variable set to one if the firm is categorized as family firm, zero otherwise. We define family firm as those in which the founder or a member of his or her family by either blood or marriage is an officer, director, or blockholder, either individually or as a group. Unfavorable tone is calculated following a rule-based approach in which each prospectus is scored based on a term frequency - inverse document frequency matrix. The score of prospectus i is given by the sum, over the dictionary terms, of the number of times each term occurs in document i . Age is the natural log of $(1 + \text{firm age})$ where firm age is the difference between founding year and IPO announcement date. VcPe Dummy is set to one if IPO is backed by venture capital or private equity, else zero. Firm size is the natural log of total assets for the year previous to going public as reported in the IPO prospectus. Underwriter reputation is a dummy variable set to one if the lead underwriter of the IPO has an updated Carter and Manaster (1990) rank of eight or more, else zero. Dilution is calculated as the ratio between IPO offer size and total assets as reported in the IPO prospectus. Up revision is a dummy variable set to one if there is a difference between the offer price and the offer price adjusted as reported in Bloomberg database, else zero. Risk factors is the natural log of the number of risk factors reported in the IPO prospectus. Roa is the return on assets for the year previous to going public as reported in the IPO prospectus. Ros dummy is set to one if the trailing return on sales is positive at the time of the IPO, else zero. Crisis is set to one for IPOs announced before 2007, else zero. Listing requirements is an index calculated as the ratio of each country requirements on a total of 52 listing requirements identified for Latin American region. Heteroskedasticity-robust standard errors are reported in brackets. ***, **, and * indicate significance levels below 1%, 5% and 10%, respectively.

VARIABLES	model 1	model 2	model 3	model 4
Board Size	1.124** (-0.552)			
Board Size (Sqr)	-0.104** (-0.0499)			
Director Influence		-2.357** (-0.979)		
Ownership Dilution			5.23 (-5.54)	
Board Size:Unfavorable Tone	1.465* (-0.845)			
Director Influence:Unfavorable Tone		4.633** (-2.277)		
Ownership Dilution:Unfavorable Tone			8.328** (-3.79)	
Family Firm				-3.930** (-1.785)
Unfavorable Tone	2.109 (-1.422)	4.551*** (-1.342)	1.961* (-1.03)	

Table 6 - continued. Impact of governance provisions at a firm level on first-day return.

VARIABLES	model 1	model 2	model 3	model 4
Age	1.634 (-1.531)	-0.288 (-1.264)	-0.081 (-1.023)	1.061 (-1.264)
Vc/pe dummy	-3.533 (-2.642)	-2.63 (-2.364)	-0.593 (-1.987)	-5.078** (-2.372)
Firm Size	0.174 (-0.27)	-0.148 (-0.244)	0.0595 (-0.178)	0.193 (-0.269)
Underwriter Reputation	1.628 (-2.551)	1.176 (-2.576)	1.167 (-2.206)	1.47 (-2.491)
Dilution	0.738 (-3.034)	1.259 (-3.086)	4.661** (-2.21)	4.936* (-2.501)
Up Revision	-1.373 (-3.104)	-4.869* (-2.483)	-2.189 (-2.185)	-0.748 (-2.904)
Risk Factors	-10.17 (-7.249)	-0.0496 (-3.125)	-1.874 (-3.069)	-5.982 (-4.563)
Roa	0.332** (-0.146)	0.519*** (-0.127)	0.449*** (-0.119)	0.419*** (-0.158)
Ros Dummy	6.523*** (-2.416)	3.941* (-2.014)	4.040** (-1.708)	6.589** (-2.78)
Crisis	-10.83*** (-3.262)	-8.368*** (-2.745)	-7.539*** (-2.4)	-9.258*** (-3.046)
Listing Requirements	-1.372 (-11.85)	-0.204 (-13.38)	11.68 (-14.01)	-7.287 (-9.647)
Constant	37.28 (-33.98)	10.63 (-37.12)	-26.65 (-37.54)	42.77 (-27.77)
Observations	138	115	131	156
R-squared	0.266	0.274	0.26	0.213

Appendix A. Listing requirements index.

This index establishes differences in listing requirements for Argentina, Brazil, Chile, Colombia, Mexico and Peru. We extracted the needed information from the following documents: Reglamento de listado MERVAL (Argentina), CVM Instruction N° 480 of December 7th, 2009 (Brazil), Manual de derechos y obligaciones de emisores de la Bolsa de Comercio de Santiago (Chile), Circular Única de la Bolsa de Valores de Colombia (Colombia), Circular Única de Emisores CNBV (Mexico), and Indicaciones para la Presentación de la Información para los trámites de inscripción y exclusión de valores de la Bolsa de Valores de Lima (Peru). This revision allowed us to construct a listing requirements index of 52 different regulatory items.

	Listing requirements	Argentina	Brazil	Chile	Colombia	Mexico	Peru
1	Application for registration	1	1	1	1	1	1
2	Proof of registration of the value or issuance program in the National Registry, or its equivalent	0	0	1	1	1	0
3	Certificate of existence and legal representation of the issuer, or its equivalent, issued by the respective competent authority, not later than three (3) months	0	0	1	1	0	0
4	Audited financial statements corresponding to the last two annual periods with their respective notes and the last quarterly financial report	1	1	1	1	1	0
5	Prospectus and its approval by the Financial Superintendence, or its equivalent	1	1	1	1	1	1
6	Web page in which the information of the issuer is available to the public	1	0	0	1	1	0
7	Letter of certification of compliance with the registration requirements for shares in accordance with the formats established by the Exchange. The letter must be signed by the legal representative and the tax auditor of the issuer	0	1	1	1	1	0
8	Detailed list of issuer's shareholders and their stakes, updated on the last day of the month immediately preceding the application for registration	0	0	1	1	1	0
9	Copy of the "Survey of best corporate practices", which is required by the Financial Superintendence, corresponding to the year in which the registration is requested, or a report from the stock exchange of its degree of adherence to the Code of Best Corporate Practices.	0	0	0	1	1	1
10	For foreign entities, a document signed by a legal representative, in which compliance with Corporate Governance practices is reported, in relation to the following aspects: (i) General Assembly of Shareholders, (ii) Board of Directors, (iii) Disclosure of Financial and Non-Financial Information, and (iv) Dispute Resolution	0	0	0	1	1	1
11	Operation history	0	0	0	0	1	0
12	Accounting capital	0	0	0	0	1	0
13	Average profit in the last three years	0	0	0	0	1	0
14	Securities subject to public offer	0	0	0	0	1	0
15	Minimum number of ordinary shares or certificates of participation to be publicly offered	0	0	0	0	1	0
16	Minimum price of each security to be offered	0	0	0	0	1	0
17	Percentage of the shares that must be placed among the investing public, which will be at least 15% of the total shares of the issuer	0	0	0	0	1	0
18	Power of the representative of the issuer and letter from the secretary of the council where power of attorney is informed	1	1	1	0	1	0
19	Company bylaws	1	1	1	0	1	1
20	Minutes of the Ordinary General Shareholders' Meeting in which the issuance is agreed upon	1	1	0	0	1	0
21	Certification of internal and external auditors' independence	0	0	0	0	1	0
22	Public offer announcement	1	1	1	0	1	1
23	Central securities deposit certification	0	0	1	0	1	0
24	Secretary of the Board certification regarding the subscribed capital	1	1	0	0	1	0
25	Minutes of the meeting of the board of directors or equivalent document where the investor relations director has been appointed	0	1	0	1	0	0
26	Proof of market regulator approval of the issuance	1	1	1	0	1	1
27	The minutes of all general shareholders' meetings held during the last 12 months or equivalent documents	0	1	0	0	0	0
28	Copy of the agreement of the shareholders, or of other social pacts filed at the issuer's headquarters	0	1	0	0	0	0

Appendix A. Listing requirements index – continued

	Listing requirements	Argentina	Brazil	Chile	Colombia	Mexico	Peru
29	Information disclosure policy	0	1	0	0	0	0
30	Stock trading policy, if it exists	1	1	0	0	1	0
31	Disclosure of ownership stakes of directors and top management team members	1	1	1	0	0	0
32	Document in which the legal representative accepts the designation and indicates the powers conferred on her/him, and the responsibilities imposed by law and regulations	0	1	0	0	0	0
33	Payroll of directors, audit committee members, the accountant, and other relevant positions.	1	1	0	0	0	0
34	Minutes of assembly with the appointment of directors	1	0	0	0	0	0
35	Minutes of assembly with the appointment of internal control environment organisms' members	1	0	0	0	0	0
36	Internal rules of the audit committee	1	0	0	0	0	0
37	Minutes of assembly with the appointment of the external auditor	1	0	0	0	0	0
38	Issuers' e-mail address	1	0	0	1	0	0
39	Explain the dividend policy that the company's board of directors plans to follow for the next few years. A statistic of the dividends paid per share in the last five (5) years must also be included	1	0	0	0	0	1
40	Accounting ratios	1	0	0	0	0	0
41	Financial ratios	1	0	0	0	0	0
42	Affidavit of Liability	0	0	0	0	0	1
43	Sworn statement of financial disclosure standards	0	0	0	0	0	1
44	Commitment to Implement IFRS	0	0	0	0	0	1
45	Annual report	0	1	1	0	0	1
46	Principles of Good Corporate Governance	0	0	0	1	1	1
47	Internal Rules of Conduct	0	0	0	0	0	1
48	Information about business group	0	0	0	0	0	1
49	Risk assessment reports	0	0	0	0	0	1
50	Historical financial statements and other relevant information	0	0	1	0	0	0
51	A detail of the firm's investment portfolio	1	1	1	0	0	0
52	Ticker symbol	0	0	1	0	0	0
		22	20	17	13	26	16

Appendix B. Variables Definition

Variable	Definition
<u>Underpricing measure</u>	
First day return	Percentage change between offering price and first-day closing price.
<u>Tone measures</u>	
% Unfavorable Tone	Unfavorable is calculated following a rule-based approach in which each prospectus is scored based on a term frequency - inverse document frequency matrix. The score of prospectus i is given by the sum, over the dictionary terms, of the number of times each term occurs in document i.
% Weak Modal	Calculated following a rule-based approach in which each prospectus is scored based on a term frequency - inverse document frequency matrix. We use the combined lists (uncertain, weak modal and negative) proposed by Loughran & McDonald (2011). The score is given by the sum, over the dictionary terms, of the number of times each term occurs in the document .
% Uncertain Tone	Calculated following a rule-based approach in which each prospectus is scored based on a term frequency - inverse document frequency matrix. We use the uncertain word list proposed by Loughran & McDonald (2011). The score is given by the sum, over the dictionary terms, of the number of times each term occurs in the document .
% Negative Tone	Calculated following a rule-based approach in which each prospectus is scored based on a term frequency - inverse document frequency matrix. We use the negative word list proposed by Loughran & McDonald (2011). The score is given by the sum, over the dictionary terms, of the number of times each term occurs in the document .
<u>Governance variables</u>	
Board size	Number of board directors reported in the IPO prospectus at the moment of going public.
Director influence	Number of independent directors over the number of dependent directors
Ownership dilution	Difference between the percentage of shares belonging to the first owner before and after going public, as reported in the IPO prospectus
<u>Country level variables</u>	
Regulatory quality	Perceptions of the ability of the government to formulate and implement sound policies and regulations that permit and promote private sector development.
Rule of law	Perceptions of the extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence.
Voice and accountability	Perceptions of the extent to which a country's citizens are able to participate in selecting their government, as well as freedom of expression, freedom of association, and a free media.
Anti-self-dealing index	Average of ex-ante and ex-post private control of self-dealing as proposed by (Djankov, et al 2008).
Listing requirements	Index calculated as the ratio of each country requirements on a total of 52 listing requirements identified for Latin American region.
<u>Control variables</u>	
Age	Natural log of (1 + firm age) where firm age is the difference between founding year and IPO announcement date.
Risk factors	Natural log of the number of risk factors reported in the IPO prospectus.
Vc/pe dummy	Dummy variable set to one if IPO is backed by venture capital or private equity, else zero.
Underwriter reputation	Dummy variable set to one if the lead underwriter of the IPO has an updated Carter and Manaster (1990) rank of eight or more, else zero.
Up Revision	Dummy variable set to one if there is a difference between the offer price and the offer price adjusted as reported in Bloomberg database, else zero.
Dilution	Ratio between IPO offer size and total assets as reported in the IPO prospectus.
Firm Size	Natural log of total assets for the year previous to going public as reported in the IPO prospectus.
Roa	Return on assets for the year previous to going public as reported in the IPO prospectus.
Ros Dummy	Dummy variable set to one if the trailing return on sales is positive at the time of the IPO, else zero.
Crisis	Dummy variable set to one for IPOs announced after 2007, else zero.