

## **FIRM VALUATION IN BRAZIL: evidence of overvaluation in the valuation reports**

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## **Abstract**

Under the Agency theoretical framework, information asymmetry is crucial in stakeholders' conflicts. This problem may be present in the process of firm valuation. This work aims to analyze the determinants of the added value of firm financial experts' valuations, i.e., the difference between disclosed firm value in the valuation report and firm market value. The study assesses the effect of ownership concentration, firm size, the costs of preparing the valuation report, and stock liquidity estimating a set of econometric models. The sample is composed of all firm valuation reports undertaken in Brazil between 2002 and 2012 with data hand collected from CVM (The Brazilian SEC) website. The results indicate that ownership concentration is directly related to the added value of financial experts' valuations, indicating a possible problem of information asymmetry that benefits controlling shareholders who may be interested in higher firm valuation. The findings also indicate that firm size, higher cost of the firm valuation process, and firm market liquidity are associated with firm value overestimation. The paper contributes to the literature on firm valuation by using an important database with hand collected data from all firm valuation processes recorded at the CVM. Studies on firm valuation in Brazil are still scarce so that the finding that ownership concentration matters for firm valuation is important by showing that such process may be a source of agency conflicts.

**Keywords:** Firm valuation, Financial experts, Added value.

## **1. Introduction**

The constant drive for firm value maximization and generation of sustainable competitive advantage makes firm strategy an ongoing process of defining the objectives and guidelines. This ceaseless search to gain and sustain a competitive advantage induces publicly traded companies to make public offers in order to raise new levels of profitability. In Brazil, the growing popularization of using tools for corporate valuation, as recently observed, has occurred along with economic growth and the development of a capital market. The valuation process generally meets specific targets such as mergers and acquisitions, going public and/or private, the development of partnerships and joint-ventures, judicial liquidation, privatization, and public-private partnerships. Firm valuation is a complex process, involving the use of different techniques. The market dynamism imposes additional complexity on the valuation process, associated with fluctuations in the financial market, which do not present immediate relationship with a firm's fundamentals, but occasionally affects its market value. A crucial aspect of the valuation process is the inevitable margin of subjectivity involved. Although valuation and market regulation techniques are oriented towards the neutrality of the evaluation process, the large amount of data that needs to be handled means that a margin of subjectivity is inevitable when it comes to establishing a firm's value (ELNATHAN; GAVIOUS; HAUSER, 2009; IMAM; CHAN; SHAH, 2013).

The appraisal process of firms requires deep specialized and technical knowledge, as well as ethical performance. In different countries, there are rules of conduct in this type of

process. In Brazil, the Securities and Exchange Commission (CVM) is an autarchic entity, under a special regime, linked to the Ministry of Finance, for the purpose of disciplining, supervising and developing the securities market. The CVM issued Instruction 361/2002, which provides the procedure applicable to stock public offers of publicly listed companies and regulates the use of certain methodologies for evaluating companies that must be included in the valuation reports used for this purpose. The performance of financial experts must be guided by technical and ethical criteria so that they can arbitrate a fair value for the firm. Technical rigor should be high to minimize subjectivity in the valuation process. On the other hand, active capital markets are true valuation tools. The presence of a firm in stock markets allows constant pricing, but it is subject to interference from factors unrelated to the firm's fundamentals. Thus, there is usually a divergence between the technical valuation based on the firm's fundamentals and firm market valuation. Literature began to focus on this issue by studying the factors that contribute to the value difference (ELNATHAN; GAVIOUS; HAUSER, 2009; CUNHA; MARTINS; ASSAF NETO, 2012).

Firm management and controlling shareholders have privileged information that may be favorable to their interests in decision-making related to various firm policies, such as the form of financing and the dividend distribution, as proposed by the Market timing, Signaling and Pecking Order theories (ROSS, 1977; BAKER; WURGLER, 2002; BAKER; STEIN; WURGLER, 2003). This informational asymmetry must also be considered in the valuation process, since firm management possibly holds relevant information to be used in the process. Could shareholders or firm executives influence firm valuation according to their interests, characterizing the occurrence of moral hazard, and use of insider information? The specific literature suggests that this is a concrete possibility, with initial results related to ownership structure (DEANGELO, 1990; ELNATHAN; GAVIOUS; HAUSER, 2009; PARK; BORAH; KOTHA, 2016).

This paper aims to evaluate the possible firm attributes and the valuation process that influence the difference between the firm value exhibited in the valuation report and firm market value in the Brazilian market. Specifically, ownership concentration, firm size, and the cost of the valuation report are considered as possible factors. The results indicate that the ownership concentration contributes to the positive difference between the firm's valuation report value and its market value, which suggests that the controlling shareholders would be interested in higher appraisals of the firms they control. Additionally, there is an indication that firm size and the cost of the valuation report also positively influence the difference between the firm value on the valuation report and its market value.

This paper is organized as follows. Section 2 presents a few notes about the Brazilian Stock market, attempting to highlight the relevance of public offerings. Section 3 discusses the available literature and presents hypothesis development. Section 4 presents the sample and methodology. Section 5 contains an empirical analysis and discussion of results. Finally, Section 6 concludes the paper by summarizing results identifying its contributions, as well as avenues for future research.

## **2 Notes on the Brazilian Stock Market**

Since the 1990s, the Brazilian financial system has faced relevant structural changes that were undertaken in an attempt to improve the efficiency of the financial system and to foster firm investment and increase access to external funding (STUDART, 2000; BAER; COES, 2001). New investors were attracted with the external liberalization and privatization

process, especially through the Brazilian stock market. Actions undertaken by market institutions, namely the Brazilian Stock Exchange (BM&FBOVESPA), IBGC (Brazilian Corporate Governance Institute), and CVM (Brazilian SEC) were also important to the advancement of the Brazilian capital market. IBGC and CVM drafted specific documents with recommendations for good corporate governance practices. In 2001, the Brazilian Stock Exchange launched the “distinguished segments” which publicized firms that adopted a set of good corporate governance practices. Since then, there was an increase in firm capitalization through stock issues, which has experienced a reduction since the recent financial crisis (CVM, 2017).

Since the international financial crisis, due to uncertainty in international economy, internal and external investments have caused the IBOVESPA (BOVESPA index) to decrease 59.46%, falling from 73,500 points in May 2008 to 29,800 in September 2008. Brazilian stock market capitalization reached 93.6% (% of GNP) in the period 2000-2008, but fell to 32.2% in 2009-2015 (CVM, 2017). The crisis inhibited internal and foreign investment in Brazil. In 2015 and 2016 there were almost zero IPOs, and a huge number of public firms went private.

At present, the Brazilian stock market has a low number of listed firms compared to developed economies. Furthermore, market capitalization and stock exchange are concentrated among a few firms. In 2017, for example, the ten most capitalized and exchanged firms represented 57% of Brazilian market capitalization (WFE, 2017). Another typical aspect of Brazilian firms is the very high ownership concentration, which causes the presence of powerful controlling blockholders prone to using private benefits of control (LA PORTA; LOPEZ-DE-SILANES; SHLEIFER, 1999; DYCK; ZINGALES, 2004). Table 1 contains numbers that show a contrast between the Brazilian market and American and Canadian markets, highlighting the reduced number of listed firms that fell to only 343 in 2017. Table 1 also shows the high market capitalization among the 10 most capitalized and traded firms in Brazil.

**Table 1 – Listed firms and market capitalization concentration in Brazilian, American and Canadian Stock Exchanges**

	2017	2016		2015	
	Number of listed firms	Number of listed firms	Concentration of market cap. in top 10 most capitalized and traded domestic firms	Number of listed firms	Concentration of market cap. in top 10 most capitalized and traded domestic firms
BM&FBOVESPA (Brazil)	343	349	43.6%	359	51.5%
NYSE Group (USA)	2,286	2,307	14.8%	2,424	14.6%
Nasdaq (USA)	2,949	2,897	32.0%	2,859	39.1%
TMX Group (Toronto/Canada)	3,328	3,419	31.5%	3,559	28.1%

Source: WFE (2017)

The concentrated market capitalization and stock trading among a few firms demonstrate that only a few firms and investors actually play a role in the Brazilian stock market. In this scenario, the high concentrated ownership is relevant since controlling shareholders are very powerful and heavily influence firm management and policies. This

situation reveals the importance of studying public offerings and ownership concentration in Brazil.

### **3. Literature Review and Hypotheses**

#### *Firm Valuation by Experts*

The process of firm valuation is complex, dynamic and subjective, considering the diversity of techniques that can be applied and, the motivations, and social economic contexts (HOW; LAM; YEO, 2007; IMAM; BARKER; CLUBB, 2008; IMAM; CHAN; SHAH, 2013; SPIEGEL; TOOKES, 2013). It is important to distinguish between two types of business valuation: one related to routine valuations of firm whose shares are traded in the market, conducted by sell-side analysts, usually employed by investment banks as part of their services to clients, and another type, which includes financial expert assessments commissioned by the interested parties (buyers or sellers). Sell-side analysts focus on a future target price, while financial expert valuations are necessarily used in a dense report with some valuation methods and the recommendation of a fair price for the firm's stock.

Recent related studies have emphasized the importance of using robust valuation models since they play an important role in determining target price accuracy and are therefore crucial tools in this process (GLEASON; JOHNSON; LI, 2013; LIMA; ALMEIDA, 2015). (GAVIOUS; PARMET, 2010) conducted a pioneering study, presenting an important comparison between the process of public and private valuation. The former is based on public information immediately available to financial experts and routinely disclosed by investment houses. On the other hand, the latter process is carried out by means of a specific contract for a well-defined purpose to meet the needs of transactions outside the stock exchange, thus counting on privileged information. Gavius and Parmet's (2010) work indicates that private valuations have advantages such as time, human resources, and better access to non-public information. The authors also point out that private valuation does not provide more accurate results than those obtained in public valuations.

The methods used to evaluate publicly traded companies include discounted cash flow (DCF), net asset value, multiples of market price to accounting information, and market value based on comparable transactions (ELNATHAN; GAVIOUS; HAUSER, 2009). Of these, the two most widely used methods are Discounted Cash Flow (DCF) and Earning Multiples (KAPLAN; RUBACK, 1995; IMAM; CHAN; SHAH, 2013). DCF model is more frequently used than Earning Multiples to evaluate small, high-risk, and loss-making firms, and also firms with limited industry peers. Analysts are more likely to use the multiples model in bull markets and DCF in bear markets (DEMIRAKOS; STRONG; WALKER, 2010). The ease of using multiples model favors its use for comparable firms with information availability, and its simplicity compared with other valuation methods (HOW; LAM; YEO, 2007; MARTINS, 2013).

Regardless of the valuation methodology, the firm value obtained in the valuation process is calculated based on the firm's expected return, such as a financial rate and yield, causing market participants to react to target price information. This requires accountability and accuracy in the valuation process to avoid bias related to the subjectivity of analysts with adverse consequences for market (BRAV; LEHAVY, 2003; BRADSHAW; BROWN; HUANG, 2013). Some studies point out that share prices do indeed react strongly to analysts' recommendations (MICHAELY; WOMACK, 1999; JEGADEESH et al., 2004;

MOSHIRIAN; NG; WU, 2009; KECSKÉS; MICHAELY; WOMACK, 2017). There is evidence that firms with high informational asymmetry and low liquidity are more likely to have share prices manipulated (COMERTON-FORDE; PUTNIŃŠ, 2014).

Due to the complexity of the valuation process and possible subjectivity involved, some studies have assessed the accuracy degree of the valuation and possible factors, firm attributes or of the entity responsible for the firm valuation, that interfere in the process (ELNATHAN; GAVIOUS; HAUSER, 2009; CUNHA; MARTINS; ASSAF NETO, 2012; ROOSENBOOM, 2012). For example, firm age and the reputation of the entity responsible for valuation were found to be directly related to the accuracy of the valuation report (ROOSENBOOM, 2012).

#### *Ownership Concentration and Firm Valuation*

The specific literature records that conflicts of interest between the firm's main stakeholders (owners, senior management and creditors), articulated under the Agency Theory framework (JENSEN; MECKLING, 1976) seem to be influenced by the ownership structure. This interference would be related to prevailing powerful shareholders' interests and the way in which ownership is distributed between control and cash flow rights (SHLEIFER; VISHNY, 1997). Factors related to the private benefits of control, inside ownership, reputation and corporate image have been listed as the cause of this influence (DYCK; ZINGALES, 2004). A negative effect of ownership concentration on the level of adoption of good corporate governance practices has already been documented in Brazil and other countries (BOZEC; BOZEC, 2007; BRUNO; CLAESSENS, 2010; BRANDÃO; CRISÓSTOMO, 2015). There is also evidence that characteristics of the ownership structure are capable of influencing firms' investment and capital structure policies (SCHIANTARELLI; SEMBENELLI, 2000; GOERGEN; RENNEBOOG, 2001).

Concerning firm valuation, there is evidence with regard to factors that might influence it. This is the case of the institutional environment, given that markets with better protection for minority shareholders have better firm valuation (LA PORTA et al., 2002). Ownership structure has also been shown to influence firm value. This is the case of ownership in the hands of board members, which has a positive or negative effect according to its proportion (MORCK; SHLEIFER; VISHNY, 1988). Strategic alliances combined with block ownership are also capable of creating firm value (ALLEN; PHILLIPS, 2000).

In countries characterized by low firm ownership concentration, agency conflicts between ownership and management are more pronounced. This leads to more powerful managers than in markets with high ownership concentration, in which conflicts between major and minority shareholders become more prominent with a greater role of controlling shareholders (SHLEIFER; VISHNY, 1997; CUERVO, 2002; YOUNG et al., 2008). A stakeholder with excess power and privilege, holding information, can result in moral hazard when this situation is used for his/her own benefit. Could this type of situation occur in a firm valuation process for a particular purpose? Could controlling shareholders have interests associated with the firm valuation? Elnathan, et al. (2009) expanded DeAngelo's (1990) study and detected evidence that a conflict of interest related to privileged shareholders may be present in the firm's valuation process. Ownership concentrated in the hands of board members also seems to influence the firm value attributed by the valuation report. In the same vein, Roosenboom (2012) noted that valuation processes are more biased when firms plan to

sell a large number of stocks, with the dilution of ownership being a key factor of bias in the initial public offering (IPO).

High ownership concentration tends to contribute to the alignment of interests and mitigation of conflicts between ownership and management (HU; IZUMIDA, 2008). However, high ownership concentration is also associated with excess power in the hands of large shareholders who can hold firm control and make use of inside information and private benefits of control. This scenario may lead to the expropriation of minority shareholders and the possibility of a negative effect on firm value (DYCK; ZINGALES, 2004; GARCÍA-MECA; SÁNCHEZ-BALLESTA, 2011; CAIXE; KRAUTER, 2013). The influence of ownership concentration on firm policies as well as on its value, caused by the interests of large shareholders, may also have serious effects on the firm valuation process, as the specific literature suggests, due to the excess power that such shareholders hold (ELNATHAN; GAVIOUS; HAUSER, 2009; 2010). In the Israeli market, for example, research findings have shown that firm values in valuation reports are 29% above market values and that this overvaluation is influenced by inside ownership by board members (ELNATHAN; GAVIOUS; HAUSER, 2009). Thus, the reality of the Brazilian market, which presents high ownership concentration in the hands of a few controlling shareholders motivates the suggestion of the hypothesis that high ownership concentration may interfere in the cost of the firm valuation report to satisfy the interests of such shareholders.

*Hypothesis 1: Ownership concentration is directly associated with the difference between the firm's valuation report and its market value.*

#### *Other Factors*

Research has shown that the forecasts of financial analysts are more accurate for larger firms (LANG; LUNDHOLM, 1996; HOPE, 2003), suggesting the importance of the firm size factor in the valuation of firms. Under the valuation process approach, firm size is associated with higher organizational complexity and asset value. Specifically, the process of evaluating larger firms tends to be more complex because the number of assets and liabilities involved are larger, the relationships between the firm and its stakeholders are more complex and the risk is higher. Firm size tends to interfere in determining firm market value, especially when mergers and acquisitions are involved (WILCOX; CHANG; GROVER, 2001). This argument, associated with the fact that the larger firm size is associated with greater complexity in the firm valuation process, may lead to greater subjectivity. For this reason, in an attempt to avoid undervaluation, financial experts would tend to value larger firms with higher values. This argument suggests the occurrence of a more pronounced dispersion between the firm value by the valuation report and its market value, giving rise to the following hypothesis.

*Hypothesis 2: Firm size positively interferes in the difference between the firm value in valuation report and its market value*

To the best of our knowledge, the cost of the valuation report has not been suggested as a determining factor for the estimated firm value given in the valuation report. The complexity of valuing larger firms may affect the cost of preparing the valuation report, which requires more time and technical knowledge. Under the agency approach, there is a

possibility of moral hazard for appraisers if the drafting of the valuation report reveals any bias that could somehow provide a benefit for the controlling shareholders of the firm. This agency problem adds to the fact that the firm value in the valuation report may be directly associated with the firm size and the higher complexity of the valuation process, motivating the assumption that it could contribute to the difference between the firm value in the valuation report and the firm market value.

*Hypothesis 3: The cost of the valuation report positively interferes in the difference between the firm value in the valuation report and the firm market value.*

High liquidity of the firm's stock has been identified as beneficial for the company. Better liquidity of the firm in the market has been suggested as capable of improving the cost of conducting transactions in the capital market as well as facilitating access to it (LIU, 2006). In the same vein, it has been suggested that the firm's market liquidity has a positive effect on its value and on the quality of its corporate governance (CHEUNG; CHUNG; FUNG, 2015). In this context, under the agency approach, the market, through investors, would act in the external monitoring of the firm in order to obtain a return on its investment. This external control, signaled by the firm's market liquidity, can lead to improvements in performance and in the corporate governance system (BAKER; STEIN, 2004; FANG; NOE; TICE, 2009). This argument suggests the importance of liquidity and the possibility of financial experts being influenced by greater liquidity to provide a better firm valuation.

*Hypothesis 4: The liquidity of the firm in the market positively interferes in the difference between the firm value in the valuation report and the firm market value.*

#### **4. Sample and Methodology**

##### *Sample*

We identified the valuation reports of all Brazilian publicly traded firms that held a public offer between 2002 and 2012. Since 2002, Brazilian firms interested in conducting public offers must submit a report to the CVM (Brazilian Securities and Exchange Commission) containing at least three valuation references. The following valuation criteria may be used jointly or separately: shareholders' equity, shareholders' equity valued at market prices, discounted cash flow, multiples comparison, and share prices in the market, all established by Brazilian Corporate Law. Another method may be used, as long as it is accepted by the CVM. Further firm information, such as market value, firm size and stock liquidity, is obtained from the Economatica system.

The act of publicly offering firm shares, regulated by the CVM, is a process in which interested buyers declare their commitment to purchase a specific amount of shares at a definite price and date. The public offering of shares is intended to offer all stockholders, under equal rights, the possibility of selling their own shares given the possibility of changes in firm ownership structure.

During the period in question, a total of 194 public offers for shares were filed with the Brazilian Securities and Exchange Commission. Of these, only 160 presented the valuation report of the firm (CVM Instruction 361/2002). The final sample is composed of



127 firm valuation reports, corresponding to firms with complete data in the valuation report and financial information. Table 2 presents all valuation reports by year and purpose for the entire period under study. As can be seen, public offerings for cancellation of registration (63.8%) and change in firm control (28.4%) are the most frequent in Brazil.

**Table 2 – Purpose of the Public Offering**

Purpose of the valuation report							
Year	Cancellation of registration	Increase ownership of controlling shareholder	Change in firm control	Voluntary	Total	%	
2002	8	1	3	0	12	9.5	
2003	10	0	2	0	12	9.5	
2004	11	0	1	1	13	10.2	
2005	10	0	2	0	12	9.5	
2006	5	0	7	1	13	10.2	
2007	6	0	5	0	11	8.7	
2008	9	2	6	1	18	14.2	
2009	4	0	4	0	8	6.3	
2010	2	0	4	0	6	4.7	
2011	7	0	2	1	10	7.9	
2012	9	2	0	1	12	9.5	
TOTAL	81	5	36	5	127	100	
%	63.8	3.9	28.4	3.9	100		

Public offerings for cancellation of registration may occur when firms shares are very cheap and the controlling shareholder decides he can afford all of them (returning firm to private), or for strategic reason to make controlling shareholders more powerful. During the process of returning back to private there may a conflict of interest between controlling and minority shareholders. Controlling blockholders intend to acquire shares with minimum investment, while minority shareholders expect to receive a fair value for their stocks.

Public offerings for a change in firm control are marked by the fact that the new controlling blockholder is compelled to make a public offer to acquire stocks from minority voting shareholders. This obligation is set up by Brazilian law through the tag-along right that forces the acquiring blockholder to pay at least 80% of voting share market value. This kind of public offering, typified by change in firm control with a certain protection for minority shareholders, accounts for 28.4% of the cases in the Brazilian market.

### *Models and Variables*

The model in Equation (1) estimates the effect of firm ownership concentration (OWC), firm size (SIZE), and firm liquidity (LIQUIDITY) on the difference between firm value in the valuation report and firm market value (DIFF).

$$DIFF = \beta_0 + \beta_1 OWC + \beta_2 SIZE + \beta_3 LIQUIDITY + \varepsilon \quad (1)$$

The dependent variable, DIFF is measured by the natural logarithm of the ratio between the firm value in the valuation report and its market value (Ln (firm value in valuation report / firm market value)), in keeping with an important previous work (ELNATHAN; GAVIOUS; HAUSER, 2009). This variable indicates the magnitude of the relationship between the two values. A value of DIFF close to 1 indicates a very close

relationship between firm value in valuation report and firm market value. A value greater than 1 indicates an overvaluation of the firm in the valuation report compared to its market value, and a value lower than 1 signals undervaluation. The firm value in the valuation report is the value considered fair and arbitrated by the financial expert responsible for the valuation report, while the market value is collected from the Economatica database on the date of disclosure of the firm valuation report, or the closest data available.

The model in Equation (2) is an alternative to Model (1) in which the firm size (SIZE) is replaced by the cost of the valuation report (COST).

$$DIFF = \beta_0 + \beta_1 OWC + \beta_2 COST + \beta_3 LIQUIDITY + \varepsilon \quad (2)$$

Ownership concentration (OWC) corresponds to the proportion of voting shares held by the largest blockholder (OWC1), the two largest shareholders (OWC12), and the three largest shareholders (OWC123). The cost of the valuation report (COST) is the natural logarithm of the value that the company pays for the preparation of the valuation report that integrates the process of public offering for the acquisition of shares. Firm size (SIZE) is proxied by the natural logarithm of the total assets as is common in the literature. Firm liquidity (LIQUIDITY) is given by the natural logarithm of the average stock volume of the company traded on the stock exchange in the period of one month prior to the date of publication of the valuation report (CHORDIA; SUBRAHMANYAM; ANSHUMAN, 2001; KEENE; PETERSON, 2007).

The models are estimated by ordinary least squares with the correction for heteroskedasticity being performed using a standard robust estimation (HUBER, 1967; WHITE, 1980).

## 5. Analysis of the Results

### *Sample Descriptive Statistics*

Table 3 presents the descriptive analysis of the variables between the valuation report value and the market value of the company (DIFF). The coefficient of variation of 0.544 signals that there is not an excessive difference between these values, reaching a maximum value of 3.45, which indicates a situation of more than three times the firm value in the valuation report in relation to the firm market value. As mentioned, the ratio between firm value in the valuation report and firm market value is the proxy for the difference. This moderate difference is a very significant result, considering that the firm value conceived in the valuation report should be as close as possible to the firm market value given the expertise expected from the hired firm.

**Table 3. Descriptive statistics of variables in the models**

	DIFF	OWC1	OWC12	OWC123	SIZE	COST	LIQUIDITY
No. of observations	91	89	89	89	73	122	101
Mean	0.912	74.40	84.75	87.25	2,108.07	626,361.50	4,140.73
Median	0.875	78.53	90.46	91.31	353.80	150,000.00	21.00
Standard deviation	0.496	23.428	17.997	15.919	4,789.61	1,349,780.00	15,814.62
Coefficient of variation	0.544	0.315	0.212	0.182	2.27	2.16	3.82
Minimum	0.049	12.09	22.15	30.52	0.89	0.00 <sup>#</sup>	0.00
Maximum	3.450	100.00	100.00	100.00	28,897.60	8,720,000.00	129,557.00

Note: OWC1 = ownership concentration (percentage of shares with voting rights) held by the largest shareholder; OWC12 = ownership concentration owned by the two largest shareholders; OWC123 = ownership concentration held by the three largest shareholders; DIFF = firm value in the valuation report value/firm market value; SIZE = total assets (million R\$); COST = cost of preparing the valuation report (R\$); LIQUIDITY = average traded volume of shares one month before the disclosure of the valuation report. [#] There is a valuation report with zero cost. In this case, this is a particular case in which the valuation company McKinsey LTDA S/C provided consultancy services for twelve months to the firm that was evaluated (*Companhia Paraibuna de Metais*, process (RJ / 2002-03304)) and did not specifically charge for valuation report.

The results confirm the high ownership concentration of Brazilian companies. Previous studies for the Brazilian firms documented the proportion of voting stocks in the hands of the main shareholder at between 50% and 60% (CARVALHAL, 2012; CRISÓSTOMO; FREIRE, 2015). This high concentration is a reality among the firms that have undergone a valuation process. The ownership concentration held by the three largest shareholders is 87.25% (OWC123), and 74.4% of voting capital are in the hands of the major shareholder. The proportion of shares of these firms in the hands of the major shareholder is very high indeed. This high voting ownership concentration, coupled with low variability, as can be seen by the low coefficient of variation shows that firms undergoing a valuation process usually do indeed have high ownership concentration.

There is a relevant variability in firm size (SIZE) (coefficient of variation = 2.27) what is interesting for avoiding firm size bias. Similarly, there is a widespread heterogeneity in the cost of the valuation report (COST). Another important result is related to firm liquidity (LIQUIDITY), which also presents high variability (coefficient of variation = 3.82) and prevents liquidity bias.

#### *Empirical Estimates*

Table 4 presents a correlation analysis among model variables. The overvaluation of a firm in a valuation report relative to its market value (DIFF) is positively correlated to the cost of the firm valuation report (COST), firm size (SIZE) and firm liquidity in the stock exchange market (LIQUIDITY). Previous research in the Brazilian market also documented a positive correlation with firm liquidity (MACHADO; MEDEIROS, 2012). Larger firms tend to present higher market liquidity and a higher cost of valuation report. Moreover, firm ownership concentration is negative to firm liquidity in the market.

**Table 4 – Correlation analysis**

	DIFF	COST	SIZE	LIQUIDITY	OWC1	OWC12	OWC123
DIFF	1.0000						
COST	0.3232***	1.0000					
SIZE	0.5723***	0.8713***	1.0000				
LIQUIDITY	0.2513**	0.5882***	0.6486***	1.0000			
OWC1	0.0299	-0.3860***	-0.3843**	-0.4449***	1.0000		
OWC12	0.0447	-0.3444***	-0.2537	-0.3934***	0.8238***	1.0000	
OWC123	0.0618	-0.3160**	-0.1039	-0.3677***	0.7003***	0.9464***	1.0000

Note: DIFF is the natural logarithm of the ratio between the fair firm value suggested in the valuation report and its market value. COST is the natural logarithm of the amount paid by the firm for its valuation process. SIZE the natural logarithm of total assets in the end of the previous year of the valuation process. LIQUIDITY is the natural logarithm of the average volume of transactions with firm shares. OWN1 is the firm ownership concentration held by the first main voting shareholder. OWN12 accounts for firm ownership concentration in the hands of the two main voting shareholders. OWN123 is the proportion of voting shares held by the three main blockholders.

Model estimates are shown in Table 5. The set of estimates shown in Table 5 show the strong influence of ownership concentration on the difference between the firm value according to the valuation report and firm market value (DIFF). Ownership concentration in the hands of the major shareholder (OWC1), the two major shareholders (OWC12), and the three major shareholders (OWC123) have a significant positive effect on the value difference (DIFF). This result supports the proposition that high ownership concentration influences the valuation process, signaling a possible agency conflict between large controlling shareholders and external investors, as suggested by Hypothesis 1. This result confirms previous findings in the Israeli market regarding the effect of domestic ownership on the firm value disclosed in the valuation report prepared by financial experts (ELNATHAN; GAVIOUS; HAUSER, 2009). These authors found that financial expert valuations are, on average, 29% higher than market values in highly domestically owned firms, pointing to a possible agency conflict between insiders and outside investors.

Regarding firm size and its possible association with firm valuation by financial experts, firm size (SIZE) does have a positive effect on the difference between the value disclosed in the valuation report and firm market value (Table 5). This result means that there appears to be a trend that the firm value will be higher in the valuation report compared with the market value in larger firms as suggested in Hypothesis 2. This situation may be a result of the greater complexity in the valuation process of these firms, given the greater volume of assets, operating units and greater industry and geographical diversification. These characteristics may contribute to possible inaccuracies in the value given in the firm valuation report that might lead to differences compared with firm market valuation.

**Table 5. Guiding factors of the difference between the valuation report value and the market value of the company**

	(1)	(2)	(3)	(4)	(5)	(6)
<b>OWC1</b>	0.6619* (0.3786)			0.8394** (0.4024)		
<b>OWC12</b>		1.2078** (0.4616)			0.7981** (0.3655)	
<b>OWC123</b>			1.3221** (0.4941)			1.0056*** (0.3620)
<b>SIZE</b>	0.1346*** (0.0478)	0.1253** (0.0466)	0.1186** (0.0462)			
<b>COST</b>				0.1288** (0.0498)	0.1272** (0.0500)	0.1247** (0.0494)
<b>LIQUIDITY</b>	0.0060 (0.0278)	0.0145 (0.0289)	0.0131 (0.0289)	0.0431 (0.0279)	0.0360 (0.0259)	0.0375 (0.0249)
Intercept	-3.4276*** (1.0735)	-3.8171*** (1.0300)	-3.7980*** (0.9913)	-2.6907*** (0.8497)	-2.6932*** (0.7458)	-2.8728*** (0.7424)
N. observ.	39	39	39	74	74	74
Prob. > F	0.0100	0.0017	0.0009	0.0126	0.0070	0.0028
R <sup>2</sup> adjusted	0.2666	0.2899	0.2957	0.2246	0.1910	0.1995

Dependent variable (DIFF) is the ratio between the firm valuation value disclosed in the valuation report and firm market value. The cost of the valuation report (COST) is the natural logarithm of the value that the firm pays to the specialized company to prepare the valuation report. The size of the firm (SIZE) is approximated by the natural logarithm of the total assets. The liquidity of the firm (LIQUIDITY) is the natural logarithm of the average volume of firm shares traded on the stock exchange in the period of one month prior to the date of publication of each valuation report. Coefficients and standard errors (in brackets) estimated with robustness to heteroskedasticity. \*, \*\* and \*\*\* indicate significance at 10%, 5% and 1%, respectively.

The cost of the valuation report has the peculiarity of being a contemporary variable for the public offer process, unlike firm attributes, such as its size, which are more static. As suggested, the cost of the valuation report has a positive effect on the magnitude of the difference between the value disclosed in the valuation report and the firm market value (Table 5, models 4, 5 and 6). This result indicates that the difference between the value disclosed in the valuation report and the firm market value may be influenced by the amount charged for the firm valuation report. This situation may be due to the more complex evaluation process of these firms with more costly reports, with this complexity leading to greater inaccuracy, both in valuation by financial experts and in firm market pricing. On the other hand, under the agency approach, there is also the possibility of moral hazard problems to which firm valuation financial experts are subject if the firm value disclosed in the valuation report shows any kind of bias resulting from the interests of firm controlling shareholders.

Unlike what was proposed, no positive effect of liquidity is observed on the difference between the value disclosed in the firm valuation report and firm market value. The higher liquidity of the firm's shares has been considered beneficial to the firm, given that liquidity is considered a form of external firm control. In this sense, greater market liquidity of the firm implies easier access to the capital market and better transaction costs. This lack of liquidity effect in studies may be associated with the fact that liquidity is seen as an external instrument

for firm control, capable of regulating market value without interfering with the firm valuation process when the valuation report is being prepared. The absence of the expected liquidity effect may also be because most public offerings are related to firms returning to private.

## 6. Conclusion

In any firm, highly concentrated ownership among dominant shareholders may contribute to the use of private benefits of control, i.e., shareholders with considerable control may consider their interests as more important than those of other shareholders. The growing number of studies on the ownership concentration, added to the importance of the firm valuation process to the market, motivated the present study, which analyses the impact of the ownership concentration on the difference between firm value disclosed in the valuation report and firm market value. The results signal that shareholders appear to interfere in firm valuation by financial experts, as disclosed in the valuation report, given that firm value in valuation reports seems to be overestimated in relation to its market value. The work also tested whether other firm attributes might interfere in the difference between firm value in valuation report and firm market value. The analysis shows that larger firms are more likely to have greater differences. The evidence also suggests that the cost of the valuation report interferes in the firm value disclosed in the valuation report.

The findings presented in this work may be of interest to academic researchers and market practitioners, since research on firm valuation in Brazil is scarce and requires additional efforts. The result that there is indeed a difference between firm value in the valuation report and firm market value may suggest doubts over the ability of financial experts with regard to the firm valuation process. On the other hand, such difference may also be consequence of the market mispricing the firm. The evidence provided by this paper shows that agency conflicts may be at play in firm valuation by financial experts. Dominant shareholders appear to be able to influence firm valuation processes according to their interests. This characterizes a relevant conflict between controlling shareholders and external investors. Furthermore, the difference in values is also proportional to the cost of the firm valuation report, which may enlarge the agency conflict, given that firm valuation report may contain bias due to moral hazard between the firm and financial experts. Future studies may investigate the investor's sentiment as the firm valuation report is released on the financial market.

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