Ownership concentration and corporate performance of Brazilian firms before and after initial public offerings

ABSTRACT

Objective: To evaluate the influence of ownership concentration on variation in corporate performance before and after initial public offerings (IPO) in firms launched on B3.

Methods: Economic and financial information was obtained from the reference forms of 55 firms. Variation in performance was proxied by ROA and ROE two years before vs. two years after IPO. Ownership concentration was proxied by the proportion of shares with voting rights belonging to the single-largest, two largest, three largest, four largest or five largest shareholders.

Originality/relevance: In addition to contributing to the literature, this is the first Brazilian study on the topic to analyze variation in performance before and after IPO, in light of the potential impact of IPO on firms.

Results: Our results suggest that performance proxied by mean ROA and ROE tends to decrease in the post-IPO period. However, in our sample, ownership concentration did not significantly influence variation in corporate performance before and after IPO.

Theoretical/methodological contribution: Based on our sample and the control variables used in the proposed econometric model, the presence of large controlling shareholders at the time IPO does not seem to influence the level of corporate performance following IPO, suggesting other factors are responsible for the observed behavior.

Keywords: Initial public offering; Corporate performance; Ownership concentration.

How to Cite (APA)
1 INTRODUCTION

Competitiveness and the need for corporate growth lead many firms to procure external funding, a significant part of which from the capital market. The latter plays a crucial role in economic growth and development, especially in developing countries like Brazil (Brito & Gartner, 2015; Steffen & Zanini, 2012). Under such circumstances, going public becomes a highly strategic move for an organization. Public firms can use capital market services unavailable to private companies and can use their own actions as a currency when taking over other firms (PWC, 2016). The advantages of undertaking an initial public offering (IPO) include access to new credit markets, greater liquidity and bargaining power with banks and a more diversified corporate portfolio (Biral, 2010).

Several authors have evaluated the impact of floating on corporate ownership structure, especially with regard to post-IPO capital concentration (Bruton, Filatotchev, Chahine & Wright, 2010; Foley & Greenwood, 2010; Helwege, Pirinsky & Stulz, 2007), while others have looked into the association between ownership concentration and corporate performance. Research efforts have been inspired by the observed impacts of agency costs on corporate performance in scenarios of concentrated vs. dispersed ownership, but it remains a matter of dispute whether ownership concentration has a positive or negative effect on corporate performance (Okimura, Silveira & Rocha, 2007). This appears to depend on the economic institutional structure of the country (developed vs. developing) and on how this structure affects adherence to corporate governance practices in the eyes of potential investors (Bruton et al., 2010).

Considering the above, and in view of investors’ expectations of future earnings in floating firms (Kurtaran & Er, 2008), the question of how ownership concentration affects corporate performance immediately before and after IPO is a pertinent one. In fact, informed by Agency Theory (Berle & Means, 1932; Jensen & Meckling, 1976), several empirical studies have pointed to a correlation between ownership concentration at the time of the initial offering and post-IPO corporate performance (Kim, Kitsabunnarat & Nofsinger, 2004; Kutsuna, Okamura & Cowling, 2002; Mikkelson, Partch & Shah., 1997; Wang, 2005).

In this descriptive and quantitative study we propose to answer the following question: How does ownership concentration in the IPO year affect variation in corporate performance before and after IPO? To do so, we compared corporate performance immediately before and after IPO in a sample of firms traded on B3 (Bolsa, Brasil, Balcão). We also analyzed pre- and post-IPO corporate performance according to sector.

Our sample consisted of 55 firms listed on B3 which went public in the period 2004-2015. The collected data were submitted to descriptive statistics and parametric and nonparametric testing of differences between median values. The results were then fitted in an econometric model adapted from Wang (2005), using two dependent variables (ROA and ROE) as proxies for variation in corporate performance before and after IPO. The proportion of majority shareholder votes was used as independent variable, whereas company size and leverage served as control variables.

The present investigation contributes significantly to the literature on ownership concentration and corporate performance in Brazilian firms by making a comparison between pre- and post-IPO performance to better understand the dynamics of going public in Brazil. Our findings are also relevant to a range of market players, especially investors looking to estimate the future performance of floating firms.
2 THEORETICAL FRAMEWORK

2.1 Ownership concentration and corporate performance before and after IPO

The effect of ownership concentration on corporate policy and performance is a hotly debated topic in academic circles worldwide. More specifically, several empirical studies have detected a significant association between ownership concentration and corporate performance, some in Brazil (Caixé & Krauter, 2013; Campos, 2006; Okimura et al., 2007), others in the US (Demsetz & Villalonga, 2001; Fahlenbrach & Stulz, 2009; Gugler, Mueller & Yurtoglu, 2008; Fahlenbrach & Stulz, 2009), Spain (Azofra & Santamaría, 2011; García-Meca & Sánchez-Ballesta, 2011) and other European countries (Claessens, Djankov, Fan & Lang, 2002).

Jensen and Meckling (1976) pioneered research on these variables from the perspective of Agency Theory, which they considered an adequate approach to understand principal-agent conflicts. To Carpes and Cunha (2018), principal-agent conflicts arise from owners’ need to supervise managers’ behavior, making sure the firm’s market value and shareholders’ returns are maximized (Freitas, Silva, Oliveira, Cabral & Santos, 2018). Measures implemented to manage principal-agent conflicts can be costly (‘agency cost’) and directly affect corporate performance (Jensen & Meckling, 1976). One way of mitigating these effects is by changing the ownership composition.

Firms with highly concentrated ownership convey to the market an image of efficient corporate governance, based on the assumption that majority shareholders are more demanding in this regard and have more control over administrative decisions (Hitt, Ireland & Hoskisson, 2008). And, indeed, some empirical studies have found positive associations between ownership concentration and corporate performance (Gugler et al., 2008; Helwege et al., 2007; Jain & Kini, 1994).

But others, such as Sonza and Kloekner (2013), based on negative associations observed between ownership concentration and corporate performance, have reached the opposite conclusion. This discrepancy may be explained by economic and/or institutional differences between developed and emerging economies with regard to the study variables. In fact, La Porta, Lopez-de-Silanes, Shleifer and Vishny (2000) concluded that agency conflicts tend to be between managers and shareholders in developed (common law) countries, but between majority and minority shareholders in code law countries.

According to La Porta et al. (2000), emerging economies subject to code law offer little legal protection to minority shareholders, favoring the emergence of agency conflicts between majority and minority shareholders. Controlling shareholders can expropriate the firm’s cash flow in many ways, such as by endorsement of outlandish remunerations, self-appointments (or the appointment of relatives) to privileged executive positions or the board of directors, cheap-stock tunneling, or insider trading. They can also pledge the firm’s assets as collateral in personal transactions and borrow corporate funds at attractive terms (Okimura et al., 2007).

In other words, ownership concentration can affect corporate performance positively, by attenuating conflicts between the principal and the agent, or negatively, by promoting conflicts between majority and minority shareholders. The two phenomena have been referred to as ‘alignment’ and ‘entrenchment’, respectively (Andrade & Rossetti, 2012).

Alignment occurs when ownership concentration enhances corporate performance by reducing agency costs. Seen from this perspective, greater ownership concentration tends to increase a firm’s market value by signaling to investors the existence of a positive solution to agency conflicts through the alignment of the interests of managers and shareholders (Andrade & Rossetti, 2012).
Conversely, entrenchment occurs when high ownership concentration is used by controlling shareholders to expropriate the wealth of minority shareholders through predatory strategies, such as excessive remuneration/benefits and opposition to measures protecting the interests of non-controlling parties. Seen from this perspective, above a certain level of ownership concentration, agency costs tend to increase in detriment to market value (Andrade & Rossetti, 2012).

As shown by Bruton et al. (2010), agency conflicts may erupt during an IPO. For example, the lack of reliable information on the operating history of floating firms can compromise assessments of their economic/financial health, encouraging executives to engage in earnings management in order to inflate expectations of the actual market value. In view of the complexity of IPO processes, a number of factors should be considered: i) the ability of the firm to meet legal requirements, ii) the ownership structure, iii) the internal team conducting the IPO process, iv) the situation of the market, and v) the costs involved (PWC, 2016).

These processes and their implications have been the object of several Brazilian and international studies on IPO, each with a different approach (Al-Shammari, O’Brien, & Albusaidi, 2013; Boonchuaymetta & Chuanrommanee, 2013; Hanafi & Setiawan, 2018; Kalil & Benedicto, 2018; Kutsuna et al., 2002; Otero & Iturriaga, 2018; Silva, Lucena & Paulo 2017; Wang, Cao, Liu, Tang & Tian, 2015).

The association between internationalization and corporate performance before and after IPO was investigated by Al-Shammari et al. (2013) based on a sample of 298 firms launched on US stock markets in 1997, 1998, 2001 and 2002. The firms did indeed display a positive association between internationalization and IPO underpricing in the sampled years. Moreover, the authors identified ownership concentration as a powerful explanatory factor of performance.

Kutsuna et al. (2002) used a sample of 137 firms launched on the Tokyo stock market in the period 1996-1997 to investigate the effect of ownership concentration on corporate performance before and after IPO. The authors concluded that the smaller the ownership concentration in the IPO year, the smaller the post-IPO performance.

Likewise, Wang et al. (2015) evaluated the association between ownership concentration and return on stock in non-governmental Chinese firms launched on the stock markets of Shanghai and Shenzhen between 2002 and 2010. The results show that, due to the phenomenon of entrenchment, conflicts between majority and minority shareholders represented the most important agency problem, with negative impacts on post-IPO return on stock.

Boonchuaymetta and Chuanrommanee (2013) examined the association between ownership concentration and corporate performance before and after IPO based on a sample of 153 IPOs on the stock exchange of Thailand, covering the period 2001-2011. Even in cases with high post-IPO ownership concentration, no tendency for IPO underpricing was observed, possibly because most shares were controlled by family companies, preventing free competition on the Thai market.

In a study evaluating the influence of ownership structure on IPO pricing in 72 firms on the Spanish capital market between 1998 and 2013, Otero and Iturriaga (2018) concluded that high ownership concentration increased the likelihood of IPO underpricing.

Another study (Hanafi & Setiawan, 2018) looked at the effect of ownership concentration and institutional ownership on IPO underpricing in 182 firms on the Indonesia, from 2006 to 2015, reaching the conclusion that IPO underpricing was worst in firms with low levels of institutional ownership.
In Brazil, Silva, Lucena and Paulo (2017) evaluated the post-IPO economic/financial performance of firms floating between 2004 and 2012. The abnormal return on IPO was found to be positively associated with performance in the sampled firms. Also, Kalil and Benedicto (2018) discussed the impact of IPO on economic/financial performance of Brazilian firms traded on B3. Their sample included 28 firms floating in the period 2008-2013. IPO had a positive impact on net sales revenues, but the impact on performance (proxied by ROA and ROE) was negative.

2.2 Study hypothesis

Wang (2005) provided empirical evidence that ownership concentration in IPO years is a determinant of variation in corporate performance before and after the offering. Bruton et al. (2010) believe that in Brazil the tendency of ownership concentration to promote majority vs. minority shareholder conflicts is a common concern among investors at the time of IPO. In contrast, in developed countries, investors see ownership concentration as capable of attenuating agency conflicts between managers and shareholders.

The negative association between corporate performance and ownership concentration in Brazilian firms observed by Campos (2006) is compatible with the empirical results published by Okimura et al. (2007). Put simply, the more concentrated the ownership, the greater the agency conflicts and, in the case of Brazilian firms, the poorer the performance.

Prefiguring the results of Campos (2006) and Okimura et al. (2007), an empirical study by Kim et al. (2004) found a negative association between corporate performance and ownership concentration in Thailand—a country with little legal protection of minority shareholders—and concluded that firms with high ownership concentration in IPO years tend to experience a reduction in performance after the offering. Likewise, using a sample of 371 firms from the Fortune 500 ranking, Morck, Shleifer and Vishny (1988) found empirical evidence of a negative association between ownership concentration and corporate performance.

These results contradict the conclusions of Gugler et al. (2008), Helwege et al. (2007) and Jain and Kini (1994) who evaluated US firms and found a positive correlation between ownership concentration at the time of floating and post-IPO performance. Similar results were reported for UK firms by Leech and Leahy (1991), and others.

Based on the above, it is reasonable to assume that investors and market players would expect floating Brazilian firms with low ownership concentration to experience fewer agency conflicts and capture more resources—an auspicious sign of future performance. This was summed up by Andrade and Rossetti (2012) in affirming that, in the Brazilian setting, agency costs are smaller and post-IPO performance tends to be better in firms with low levels of ownership concentration.

Bearing this in mind, the following study hypothesis was formulated:

“In Brazilian firms, ownership concentration has an influence on variation in corporate performance before and after IPO”.

3 METHODS

This was a descriptive and quantitative desk study with the purpose of evaluating corporate performance before and after IPO and testing possible correlations between variation in performance and ownership concentration at the time of floating (Gray, 2012). The analysis used secondary quantitative data retrieved from the Economática® database,
standardized financial reports and the official websites of B3 and CVM (Comissão de Valores Mobiliários).

To test the study hypothesis, we used ROA (Return on Asset) and ROE (Return on Equity) as dependent variables and, as independent variable, ownership concentration at the time of IPO (t-1, the year immediately preceding the offering). Control variables of the IPO year were added for greater robustness: company size (SIZ), leverage (LEV), profitability (PFT), total volume traded (TVT) and financial crisis (CRS), in addition to the respective fixed sector effects.

The study population consisted of 134 firms undertaking IPO between 2004 and 2015. Firms with incomplete information on the study variables in the Economatica® database and in reference forms (the main sources of the study) were excluded from the analysis. In many cases, the quality of the economic-financial information was lower before than after the offering, making it difficult to calculate variation in performance. Thus, the final sample included 55 firms for which complete information was available for the two years preceding IPO and the two years following IPO.

Figure 1 provides definitions of the study variables, references to publications justifying their use as proxies, fixed sector effects and corporate data sources.

<table>
<thead>
<tr>
<th>Type of variable</th>
<th>Metric</th>
<th>Definition</th>
<th>Reference</th>
<th>Data source</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Profitability (PFT)</td>
<td>Net earnings on assets</td>
<td>Martinez &amp; Martins (2016)</td>
<td>Economatica®</td>
</tr>
<tr>
<td></td>
<td>Crisis (CRS)</td>
<td>Dummy variable in which 1 represents the years 2008 and 2009, and 0 otherwise</td>
<td>Oreiro (2017) Paula &amp; Pires (2017)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sector (SCT)</td>
<td>Sector dummies</td>
<td></td>
<td>B3 website</td>
</tr>
</tbody>
</table>

Figure 1. Dependent, independent and control variables: proxies, references and data sources.
Initially, the variables (dependent, independent and control) were submitted to descriptive statistics. The influence of ownership concentration on corporate performance before and after IPO was then evaluated with a multiple regression model using the ordinary least squares method, adapted from Wang (2005), as shown in Equation 1 below.

\[ \Delta \text{PER}_i = \beta_0 + \beta_1 \text{OWC}_{1-5} + \beta_2 \text{SIZ}_i + \beta_3 \text{LEV}_i + \beta_4 \text{PFT}_i + \beta_5 \text{TVT}_i + \beta_6 \text{CRS} + \epsilon_i \]  

(Equation 1)

where \( \Delta \text{PER} \) is variation in ROA (\( \Delta \text{ROA} \)) and ROE (\( \Delta \text{ROE} \)) two years before and two years after IPO; OWC\(_{1-5} \) is the proportion of shares with voting rights belonging to the single-largest, two largest, three largest, four largest or five largest shareholders at \( t_i \) in relation to IPO; TAM is company size; LEV is leverage; PFT is profitability of assets; TVT is the total volume of resources captured at the IPO; CRS is the international subprime mortgage crisis; \( \beta \) represents the coefficients of the model; \( \epsilon \) represents the error term; and \( i \) represents the firm.

Special attention was given to the basic assumptions of normality of data distribution, absence of multicollinearity, and absence of heteroscedasticity. Normality was established based on the central limit theorem, in view of the large number of observations (Gujarati & Porter, 2011). Multicollinearity was ruled out by testing the correlation between the variables and by calculating the variance inflation factor (VIF) of each variable, using VIF >10 as cutoff for the exclusion of variables. Finally, the heteroscedasticity of the residuals was estimated with the test of Breusch and Pagan (1979). Models with heteroscedasticity were adjusted with White’s correction (1980).

All statistical analyses were performed with the software Stata, v. 12.0.

4 RESULTS

Table 1 presents the results of the descriptive statistics of the variables (dependent, independent and control) used in the study.

**Table 1**

Descriptive statistics of dependent, independent and control variables.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Number of firms</th>
<th>Mean</th>
<th>Maximum</th>
<th>Minimum</th>
<th>Standard deviation</th>
<th>Variation coefficient</th>
</tr>
</thead>
<tbody>
<tr>
<td>( \Delta \text{PER} ) (ROA)</td>
<td>55</td>
<td>-0.0227</td>
<td>0.1115</td>
<td>-0.1815</td>
<td>0.0649</td>
<td>-2.8547</td>
</tr>
<tr>
<td>( \Delta \text{PER} ) (ROE)</td>
<td>55</td>
<td>-0.0581</td>
<td>1.1565</td>
<td>-0.7874</td>
<td>0.2468</td>
<td>-4.2450</td>
</tr>
<tr>
<td>OWC(_1)</td>
<td>55</td>
<td>43.8808</td>
<td>100.00</td>
<td>3.2900</td>
<td>24.1402</td>
<td>0.5501</td>
</tr>
<tr>
<td>OWC(_2)</td>
<td>55</td>
<td>58.1738</td>
<td>100.00</td>
<td>18.350</td>
<td>22.8699</td>
<td>0.3931</td>
</tr>
<tr>
<td>OWC(_3)</td>
<td>55</td>
<td>64.8470</td>
<td>100.00</td>
<td>26.530</td>
<td>20.4481</td>
<td>0.3153</td>
</tr>
<tr>
<td>OWC(_4)</td>
<td>55</td>
<td>69.2670</td>
<td>100.00</td>
<td>26.530</td>
<td>19.6260</td>
<td>0.2833</td>
</tr>
<tr>
<td>OWC(_5)</td>
<td>55</td>
<td>72.1432</td>
<td>100.00</td>
<td>26.530</td>
<td>19.1747</td>
<td>0.2658</td>
</tr>
<tr>
<td>SIZ</td>
<td>55</td>
<td>1.1359</td>
<td>1.2933</td>
<td>1.0181</td>
<td>0.0473</td>
<td>0.0417</td>
</tr>
<tr>
<td>LEV</td>
<td>55</td>
<td>0.6550</td>
<td>0.9472</td>
<td>0.0464</td>
<td>0.1998</td>
<td>0.3050</td>
</tr>
<tr>
<td>PFT</td>
<td>55</td>
<td>-0.4498</td>
<td>0.4941</td>
<td>-26.4759</td>
<td>3.7553</td>
<td>-7.9501</td>
</tr>
<tr>
<td>TVT</td>
<td>55</td>
<td>20.1572</td>
<td>23.3021</td>
<td>17.8666</td>
<td>0.72540</td>
<td>0.0359</td>
</tr>
</tbody>
</table>
The fact that the dependent variables (ΔROA and ΔROE) displayed negative mean values (Table 1) shows that in general the sampled firms experienced a decrease in performance after IPO. Likewise, the negative mean value of the control variable PFT indicates that the firms tended to have negative results in the IPO year.

The high mean OWC1 value (43.8808; Table 1) shows ownership (the proportion of shares with voting rights) to be very concentrated in Brazilian firms. This is supported by the high mean values observed for the variables OWC2-5 and matches findings from other Brazilian investigations (Crisóstomo & Pinheiro, 2016).

For the sake of comparison, a study by Gonzalez, Molina, Pablo and Rosso (2017) on the mean ownership concentration of firms in Latin American countries (Argentina, Brazil, Chile, Colombia, Mexico and Peru) between 2007 and 2014 found that majority shareholders owned 44% of the corporate capital. This is more than in most developed markets: on average, blockholders in the US control 35% of shares (Holderness, 2006) while Canadian majority shareholders own 25.2% of the shares of firms traded on the stock exchange (Erickson, Park, Reising, & Shin, 2005).

The variation coefficients of the variables SIZ (0.0417), LEV (0.305) and TVT (0.0359) confirmed the homogeneity of the sample with regard to these attributes.

Table 2 provides a comparison of the profitability of the sampled firms two years before and two years after IPO. The data were segregated by economic sector, following the classification methodology adopted by B3.

<table>
<thead>
<tr>
<th>Number of firms</th>
<th>Sector 1</th>
<th>Sector 2</th>
<th>Sector 3</th>
<th>Sector 4</th>
<th>Sector 5</th>
<th>Sector 6</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Median, 2 years before IPO</td>
<td>0.0571</td>
<td>0.0776</td>
<td>0.0622</td>
<td>0.0225</td>
<td>0.0312</td>
<td>0.0109</td>
<td>0.0354</td>
</tr>
<tr>
<td>Median, 1 year before IPO</td>
<td>0.0250</td>
<td>0.1013</td>
<td>0.0352</td>
<td>0.0313</td>
<td>0.0841</td>
<td>0.0931</td>
<td>0.0385</td>
</tr>
<tr>
<td>Total median before IPO</td>
<td>0.0456</td>
<td>0.0965</td>
<td>0.0399</td>
<td>0.0243</td>
<td>0.0426</td>
<td>0.0336</td>
<td>0.0365</td>
</tr>
<tr>
<td>Median, 1 year after IPO</td>
<td>0.0526</td>
<td>0.0644</td>
<td>0.0159</td>
<td>0.0289</td>
<td>0.0055</td>
<td>0.0426</td>
<td>0.0308</td>
</tr>
<tr>
<td>Median, 2 years after IPO</td>
<td>0.0715</td>
<td>0.0737</td>
<td>0.0253</td>
<td>0.0344</td>
<td>-0.0332</td>
<td>0.0649</td>
<td>0.0480</td>
</tr>
<tr>
<td>Total median after IPO</td>
<td>0.0658</td>
<td>0.0690</td>
<td>0.0209</td>
<td>0.0318</td>
<td>0.0039</td>
<td>0.0586</td>
<td>0.0375</td>
</tr>
<tr>
<td>Diff. ROA</td>
<td>0.0202</td>
<td>-0.0275&quot;</td>
<td>-0.0190&quot;</td>
<td>0.0075</td>
<td>-0.0387&quot;</td>
<td>0.0250</td>
<td>0.0010</td>
</tr>
</tbody>
</table>

Note: Sector 1=construction and transportation; Sector 2=cyclical consumer goods; Sector 3=non-cyclical consumer goods; Sector 4=financials; Sector 5=basic materials; Sector 6=public utilities.
"=significant at the level of 10%; ""=significant at the level of 5%; """"=significant at the level of 1%.

As shown in Table 2, median performance was generally lower after than before IPO in three of the six economic sectors (2, 3 and 5). This difference in the distribution of pre-IPO and post-IPO values was significant in the test of comparison of medians. The other three sectors (1, 4 and 6) displayed an overall small increase in ROA in the post-IPO period, but the difference between the medians was non-significant in the Mann-Whitney U test. Thus, it is not possible to affirm that performance increased in these sectors.

Table 3 shows the profitability of the sampled firms two years before and two years after IPO expressed in median ROE values.
As observed for ROA (Table 2), median ROE values decreased overall in the post-IPO period at the 10% level of significance (Table 3). Only Sector 2 (cyclical consumer goods) differed at the 1% level of significance, but this was the sector with the smallest number of firms in our sample.

Our findings are suggestive of earnings management in preparation for IPO. The improved market performance shortly before IPO, followed by a post-IPO drop in ROA and ROE, is also in agreement with the results published by Domingos (2014).

To capture the possible effects of the economic situation on corporate performance in the study period, we compared median ROA and ROE values for each IPO year (Table 4).

### Table 3
**Mann-Whitney U test: ROE of the sampled firms, according to sector.**

<table>
<thead>
<tr>
<th>Number of firms</th>
<th>Sector 1</th>
<th>Sector 2</th>
<th>Sector 3</th>
<th>Sector 4</th>
<th>Sector 5</th>
<th>Sector 6</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Median, 2 years before IPO</td>
<td>0.1000</td>
<td>0.0735</td>
<td>0.0846</td>
<td>0.0175</td>
<td>0.1841</td>
<td>0.0664</td>
<td>0.0776</td>
</tr>
<tr>
<td>Median, 1 year before IPO</td>
<td>0.1435</td>
<td>0.0132</td>
<td>0.1661</td>
<td>0.1559</td>
<td>0.0025</td>
<td>0.1857</td>
<td>0.1331</td>
</tr>
<tr>
<td>Total median before IPO</td>
<td>0.1056</td>
<td>0.0433</td>
<td>0.1169</td>
<td>0.0799</td>
<td>0.0931</td>
<td>0.0948</td>
<td>0.0917</td>
</tr>
<tr>
<td>Median, 1 year after IPO</td>
<td>0.0604</td>
<td>0.0004</td>
<td>0.0830</td>
<td>0.0638</td>
<td>0.0558</td>
<td>0.1049</td>
<td>0.0655</td>
</tr>
<tr>
<td>Median, 2 years after IPO</td>
<td>0.0623</td>
<td>-0.1297</td>
<td>0.1080</td>
<td>0.0790</td>
<td>0.0908</td>
<td>0.1500</td>
<td>0.0912</td>
</tr>
<tr>
<td>Total median after IPO</td>
<td>0.0614</td>
<td>-0.0060</td>
<td>0.0971</td>
<td>0.0711</td>
<td>0.0619</td>
<td>0.1263</td>
<td>0.0825</td>
</tr>
<tr>
<td>Diff. ROE</td>
<td>-0.0442</td>
<td>-0.0493***</td>
<td>-0.0198</td>
<td>-0.0088</td>
<td>-0.0312</td>
<td>0.0315</td>
<td>-0.0091***</td>
</tr>
<tr>
<td>Diff. ROE</td>
<td>-0.0442</td>
<td>-0.0493***</td>
<td>-0.0198</td>
<td>-0.0088</td>
<td>-0.0312</td>
<td>0.0315</td>
<td>-0.0091***</td>
</tr>
</tbody>
</table>

*Note:* Sector 1=construction and transportation; Sector 2=cyclical consumer goods; Sector 3=non-cyclical consumer goods; Sector 4=financials; Sector 5=public utilities.

"*=significant at the level of 10%; "**"=significant at the level of 5%; "***"=significant at the level of 1%.

As shown in Table 4, the Mann-Whitney U test revealed no significant differences between pre-IPO and post-IPO median ROA values, despite positive and negative variations from one year to another.

As for ROE, a negative variation at the 10% level of significance was observed for the
years 2007 and 2010, that is, immediately before and after the international subprime mortgage crisis of 2008-2009 (Oreiro, 2017).

The year 2008 witnessed the smallest number of IPOs (1 observation) within the study period. According to Paula and Pires (2017), in Brazil, as a consequence of the international crisis, the year 2008 was characterized by a withdrawal of foreign capital invested in the stock market and by a reduction in the supply of external credit to banks and firms.

Subsequently, our data was evaluated for multicollinearity between variables (Table 5).

Table 5 shows a positive correlation between performance (ΔROA and ΔROE) and ownership concentration (OWC1-5), but the correlation was non-significant at the 90% level of confidence and therefore remains inconclusive. However, performance and ownership concentration were significantly correlated in a study by Gaur, Bathula and Singh (2015) involving firms from New Zealand in the period 2004-2007, and in a study by Machek and Kubiček (2018) involving firms from the Czech Republic in the period 2007-2015.

Following the descriptive statistics and other analyses, we estimated the parameters of the proposed econometric model (Table 6).

### Table 6
**Effect of ownership concentration on pre-IPO and post-IPO performance (ΔROA)**

<table>
<thead>
<tr>
<th></th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
<th>(4)</th>
<th>(5)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cons</strong></td>
<td>0.0424</td>
<td>0.0026</td>
<td>-0.0095</td>
<td>-0.0152</td>
<td>-0.0178</td>
</tr>
<tr>
<td><strong>OWC1</strong></td>
<td>0.0005</td>
<td>0.0002</td>
<td>0.0002</td>
<td>0.0003</td>
<td>0.0003</td>
</tr>
<tr>
<td><strong>OWC2</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>OWC3</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>OWC4</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>OWC5</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>SIZ</strong></td>
<td>-0.0064</td>
<td>-0.0070</td>
<td>-0.0070</td>
<td>-0.0069</td>
<td>-0.0070</td>
</tr>
<tr>
<td><strong>LEV</strong></td>
<td>0.0154</td>
<td>0.0175</td>
<td>0.0184</td>
<td>0.0190</td>
<td>0.0197</td>
</tr>
<tr>
<td><strong>PFT</strong></td>
<td>0.0039***</td>
<td>0.0034***</td>
<td>0.0033***</td>
<td>0.0033***</td>
<td>0.0034***</td>
</tr>
<tr>
<td><strong>TVT</strong></td>
<td>0.0002</td>
<td>0.0030</td>
<td>0.0034</td>
<td>0.0035</td>
<td>0.0034</td>
</tr>
<tr>
<td><strong>CRS</strong></td>
<td>-0.0021</td>
<td>0.0039</td>
<td>0.0045</td>
<td>0.0041</td>
<td>0.0036</td>
</tr>
<tr>
<td><strong>Sector dummy</strong></td>
<td>Inserted</td>
<td>Inserted</td>
<td>Inserted</td>
<td>Inserted</td>
<td>Inserted</td>
</tr>
<tr>
<td><strong>N</strong></td>
<td>55</td>
<td>55</td>
<td>55</td>
<td>55</td>
<td>55</td>
</tr>
<tr>
<td><strong>F test</strong></td>
<td>6.71***</td>
<td>6.64***</td>
<td>6.54***</td>
<td>6.49***</td>
<td>6.53***</td>
</tr>
<tr>
<td><strong>R²</strong></td>
<td>0.2119</td>
<td>0.1945</td>
<td>0.1935</td>
<td>0.1946</td>
<td>0.1960</td>
</tr>
</tbody>
</table>

*=significant at the level of 10%; **=significant at the level of 5%; ***=significant at the level of 1%.

None of the OWC variables in Table 6 displayed enough statistical power to explain the observed variation in ROA values before and after IPO. In other words, contrasting with the empirical evidence of Wang (2005), our findings did not allow to confirm the proposed hypothesis, namely that ownership concentration has an influence on variation in corporate performance before and after IPO in Brazilian firms.
Table 5
Correlation matrix of the study variables.

<table>
<thead>
<tr>
<th></th>
<th>ΔROA</th>
<th>ΔROE</th>
<th>OWC1</th>
<th>OWC2</th>
<th>OWC3</th>
<th>OWC4</th>
<th>OWC5</th>
<th>SIZ</th>
<th>LEV</th>
<th>PFT</th>
<th>TVT</th>
</tr>
</thead>
<tbody>
<tr>
<td>ΔROA</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ΔROE</td>
<td>-0.0328</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OWC1</td>
<td>0.1453</td>
<td>0.1428</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OWC2</td>
<td>0.1412</td>
<td>0.0965</td>
<td>0.9165***</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OWC3</td>
<td>0.0942</td>
<td>0.0185</td>
<td>0.7477***</td>
<td>0.9179***</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OWC4</td>
<td>0.1000</td>
<td>0.0248</td>
<td>0.6702***</td>
<td>0.8541***</td>
<td>0.9707***</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OWC5</td>
<td>0.1109</td>
<td>0.0206</td>
<td>0.5847***</td>
<td>0.7737***</td>
<td>0.9215***</td>
<td>0.9794***</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SIZ</td>
<td>0.0519</td>
<td>0.1191</td>
<td>0.0162</td>
<td>0.1372</td>
<td>0.1536</td>
<td>0.1074</td>
<td>0.1006</td>
<td>1.000</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>LEV</td>
<td>0.0017</td>
<td>-0.1270</td>
<td>-0.0009</td>
<td>0.0170</td>
<td>-0.0402</td>
<td>-0.0656</td>
<td>-0.0743</td>
<td>0.4714***</td>
<td>10.000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PFT</td>
<td>0.2580*</td>
<td>-0.0409</td>
<td>0.2670**</td>
<td>0.2855**</td>
<td>0.1536</td>
<td>0.1297</td>
<td>0.1042</td>
<td>-0.0425</td>
<td>0.1820</td>
<td>10.000</td>
<td></td>
</tr>
<tr>
<td>TVT</td>
<td>-0.1143</td>
<td>-0.1249</td>
<td>0.0744</td>
<td>0.0774</td>
<td>0.0278</td>
<td>0.0316</td>
<td>0.0324</td>
<td>-0.1391</td>
<td>-0.0587</td>
<td>0.1098</td>
<td>10.000</td>
</tr>
</tbody>
</table>

* = significant at the level of 10%, ** = significant at the level of 5%, *** = significant at the level of 1%.
With a positive coefficient, PFT was the only significant control variable in the study (Table 6). Based on our sample, it would therefore seem that, in general, the greater the profitability in the IPO year, the greater the difference between pre-IPO and post-IPO corporate performance. Finally, all the proposed estimations yielded similar $R^2$ values.

Having failed to detect a significant association between ownership concentration in the IPO year and variation in corporate performance, as illustrated by the results above, the study hypothesis was rejected.

5 DISCUSSION

The overall negative and significant variation in performance shown by the descriptive statistics ratifies the results of earlier studies. For example, the empirical findings of Biral (2010), Kutsuna et al. (2002) and Wang (2005) are compatible with our data. The most likely explanation for the observed variation in performance is that many executives engage in earnings management prior to IPO in order to drive up share prices (Bruton et al., 2010; Domingos, 2014).

Contradicting the expectations of earlier theoretical studies in the Brazilian setting (Campos, 2006; Okimura et al., 2007; Kim et al., 2004), our econometric analyses detected no significant association between ownership concentration and variation in performance before and after IPO in Brazilian firms. Thus, based on our sample and on the coefficients of the control variables, concentrated ownership was not explanatory of the behavior of corporate performance after IPO.

The inclusion of a set of control variables in our model made it possible to evaluate relationships other than those anticipated by Brazilian theoretical studies on the topic. The wider scope achieved in this manner may in part explain the divergence between our results and the literature.

6 CONCLUSION

The overall purpose of this study was to evaluate the influence of ownership concentration on variation in corporate performance in firms launched on B3. To do so, we conducted a quantitative investigation based on secondary data retrieved from Economatica®, standard financial reports and the official website of B3. The final sample consisted of 55 firms floating between 2004 and 2015, for which all the study variables were available.

Initially, the collected data showed that, in general, the mean ROA and ROE values of the sampled firms decreased in the post-IPO period.

The influence of ownership concentration on variation in corporate performance before and after IPO was evaluated by adopting performance (ROA or ROE) as dependent variable, and ownership concentration in the period immediately before IPO as independent variable. In addition, we included a set of control variables (company size, leverage, profitability, total volume traded, financial crisis) and fixed sector effects.

Matching the results of the descriptive statistics and the correlation coefficients, our regressions detected no significant effect of ownership concentration on variation in corporate performance before and after IPO, regardless of which metric was employed (ROA or ROE).

In other words, in our sample of Brazilian firms floating between 2004 and 2015, and based on the statistical model adopted, the presence of large controlling shareholders at the time IPO had no measurable influence on variation in corporate performance before and after
IPO, contradicting expectations in the literature. We therefore suspect the observed behavior is due to factors not assessed in the present study, such as macroeconomic variables and the institutional environment.

The results represent a relevant contribution to the still scarce Brazilian literature on IPO with regard to the aspects of ownership concentration and corporate performance before and after IPO.

Future investigations might include other performance metrics (e.g., market value, financial indicators) to evaluate the possible effect of ownership concentration. It would also be interesting to conduct cross-country studies (including Brazil) to gain a better understanding of the impact of the institutional environment and economic and cultural factors on ownership concentration and corporate performance.

REFERENCES


Ownership concentration and corporate performance of Brazilian firms before and after initial public offerings


RESUMO

**Objetivo:** investigar a relação entre a concentração de propriedade e a variação do desempenho antes e depois da Initial Public Offering (IPO) em empresas listadas na B3.

**Método:** foram utilizados dados do Formulário de Referência de 55 empresas. A variação do desempenho foi avaliada pela diferença entre as medianas do Retorno Sobre o Ativo (ROA) e do Retorno Sobre o Patrimônio Líquido (ROE) dos dois exercícios anteriores e posteriores à IPO. A concentração de propriedade considerou a proporção de ações com direito a voto pertencente ao principal acionista e aos dois principais, e assim por diante, até alcançar a soma dos cinco principais acionistas.

**Originalidade/relevância:** além da contribuição para a literatura, o estudo diferencia-se de pesquisas nacionais anteriores ao abordar a variação do desempenho antes e depois da IPO, dados os impactos que os processos de abertura de capital podem trazer para as empresas.

**Resultados:** os resultados sugerem que o desempenho da empresa diminui após a IPO, com base no valor médio do ROA e no valor médio do ROE. No entanto, nenhuma influência estatisticamente significante da concentração de propriedade foi detectada como determinante na variação de desempenho da empresa brasileira antes e após sua abertura de capital.

**Contribuições teóricas/metodológicas:** com base na amostra e na presença das variáveis inseridas nas estimações econômétricas propostas, observa-se que grandes acionistas controladores parecem não determinar de maneira direta a performance das empresas em períodos próximos a IPO, não alinhando-se às proposições teóricas de estudos anteriores, sugerindo que outros fatores possam interferir nesse comportamento.

**Palavras-chave:** Initial Public Offering; Desempenho; Concentração de propriedade.