Resumo

The idiosyncratic risk was estimated through three-factor and five-factor models, to be empirically tested for its relationship to the majority shareholder identity, the corporate governance mechanism. Thus, the present article aims to evaluate the relationship of idiosyncratic risk with the ownership structure. The research sample corresponds to 559 companies, of which 78 were Brazilian and 481 American. The data were processed by regression of panel data, the models being varied with the two estimates of the idiosyncratic risk and the dummies referring to the belonging to the majority shareholder group. The results indicate that the majority shareholder identity influences the idiosyncratic risk of US companies whereas in the Brazilian sample the result is inconclusive. Also, the literature confirms that different managers have different strategies that impact in different ways companies, increasing or reducing their specific risk. Companies with family ownership group and high indebtedness have higher levels of idiosyncratic risk, the opposite happens with companies with lower indebtedness and ownership through some of the other groups of owners. In the US scenario, family and non-financial companies with low indebtedness are those with lower idiosyncratic risk, and financially owned companies have higher values for the same risk.
IDIOSYNCRATIC RISK AND THE MAJORITY SHAREHOLDER IDENTITY

ABSTRACT
The idiosyncratic risk was estimated through three-factor and five-factor models, to be empirically tested for its relationship to the majority shareholder identity, the corporate governance mechanism. Thus, the present article aims to evaluate the relationship of idiosyncratic risk with the ownership structure. The research sample corresponds to 559 companies, of which 78 were Brazilian and 481 American. The data were processed by regression of panel data, the models being varied with the two estimates of the idiosyncratic risk and the dummies referring to the belonging to the majority shareholder group. The results indicate that the majority shareholder identity influences the idiosyncratic risk of US companies whereas in the Brazilian sample the result is inconclusive. Also, the literature confirms that different managers have different strategies that impact in different ways companies, increasing or reducing their specific risk. Companies with family ownership group and high indebtedness have higher levels of idiosyncratic risk, the opposite happens with companies with lower indebtedness and ownership through some of the other groups of owners. In the US scenario, family and non-financial companies with low indebtedness are those with lower idiosyncratic risk, and financially owned companies have higher values for the same risk.

Keywords: Idiosyncratic Risk; Corporate Governance; Ownership Structure; Identity of the Majority Shareholder.

1 INTRODUCTION
Corporate governance can be considered as a cluster of rules, techniques, practices, and routines that describe how managers lead the company to their best interests, taking into account those involved (Leal & Saito, 2003). For Jensen and Chew (1995), governance is an important concern for shareholders since their investments are influenced in part by the objectives of the company's strategy team. This group also has, as one of its goals, a high level of transparency in its disclosures, whether economic or financial results, which help reduce risk in decision making (Monte et al., 2010). Thus Lameira and Ness Jr. (2011) affirm that better levels of governance are interconnected with better performance and lower risks.

Good corporate governance with adequate structure and quality, in accordance with the interests of the company, should result in a better evaluation of the actions through the market, succinctly demonstrating that the level and practices of governance exercised by companies impact on their market value and stock price. Ferreira and Laux (2007) point out that this influence of governance in stock prices and in the distribution of returns is an area of relevant importance in corporate finance. Gompers, Ishii, and Metrick (2003) and Cremers and Nair (2005) believe that governance can directly influence stock prices.

The relation of when there is a greater return of shares will be incumbent on greater risk (Walker, 1964) leads to the reflection that if governance influences the value of stock prices, it will also influence the implicit risk of this. Lameira and Ness Jr. (2011) and Lameira (2012) present results that better governance reduces company risk. More specifically, Cazzari, Fávero, and Takamatsu (2015) discuss the relationship between corporate governance and idiosyncratic risk, specific company risk. Rogers, Ribeiro, and Souza (2007) and Matucheski, Clemente and Sandrini (2009) also find that corporate governance is able to reduce share price volatility.

As mechanisms of governance, Silveira and Barros (2008) cite the board of directors, the structure of ownership and control, remuneration policy, competition in the product market, publication of regular reports, among others. Saito and Silveira (2008) emphasize the ownership structure as an aspect of corporate governance since they claim that it has always been the target
of governance research. Berle and Means (1932), seminal work in the accounting area, already discussed the ownership structure, performance, and value of companies.

The discussion of this aspect of governance has an impact since it is relevant to investigate the concentration and identity of the majority shareholder since they are making decisions and managing the company's resources directly (Coutinho, Amaral & Bertucci, 2006). Thomsen and Pedersen (2000) and Pivovarsky (2003) argue that the identity of the majority shareholder has implications for the performance of the company in general, and thus on its market value and on the price/return of its shares.

The study of ownership structure becomes important as it becomes curious to investigate the decision making by different groups of commanders, who are at the head of the institutions, because it is the result of the analysis of these managers or of a certain group before the risk (Coutinho et al., 2006). Another direct impact of company-specific decisions and their peculiarities is the idiosyncratic risk. This risk is that of each individual company, not explained by the market risk and intrinsic to the stock return.

Ferreira and Laux (2007) and Nguyen (2011) investigated the connection between aspects of corporate governance and idiosyncratic risk, all of them have established a connection between the studied elements, which becomes coherent once those governance practices are internal mechanisms adopted and practiced by each company according to its necessity and precision. And the idiosyncratic risk, which is the risk not explained by the market, is also a risk coming from phenomena and events occurring in the particularity of each company. Thus, different governance, leadership, and strategy styles should result in different company-specific risks.

The relation between the shareholder and the management in the companies is an agency relation, that has intrinsic to itself the asymmetry of information, occasioned by the different management styles. This asymmetry is caused indifferent to the investing group, but its impact on the organization is different since according to Coutinho et al. (2006) it is a simple idea to understand that all the different shareholders have the same behavior on the maximization of profits and the same interests.

In this way, Malagon, Moreno, and Rodrigues (2015) affirm that these different managerial aspects impact on the idiosyncratic risk, and this, is affected by particular events to these, as the different management styles. The idiosyncratic risk can be measured in a number of ways, but the asset pricing models proposed by Fama and French (1993, 2015), which have a strong foundation and theoretical proof for their use, stand out because of the lack of studies that use the two models for the purpose proposed in the present work.

Based on the above, it is understood the difficulty of measuring, estimating and explaining the idiosyncratic risk and how this is generated, as it is known that several agency conflicts are incumbent on companies, on account of the main agent relationships, but mainly, between shareholder and management, we have that different properties deal with different ways of reducing information asymmetry and reducing agency problems. What we intend to investigate in order to better understand and explain the idiosyncratic risk and consequently to improve the estimation of future stock returns is whether these different approaches that reduce or increase the asymmetry of information and management of the company also influence the degree of risk idiosyncratic of organizations.

Since idiosyncratic risk still lacks explanation, knowledge of its determinants, and taking into account the explanatory aspect exposed by the literature as corporate governance, this relationship is proposed in this study. According to the context and based on this, the following research question was formulated: What is the relation of idiosyncratic risk to the ownership structure in Brazilian and American capital markets? Consequently, the objective is to evaluate the relationship between idiosyncratic risk and ownership structure.
It is also worth noting the antagonistic scenario considered in the study, the Brazilian and American capital market, since the characteristics of both, as far as ownership, are extreme. As the culture, legislation, regulatory system, internal structure, and market institutions affect the governance of a given country (Sirqueira, 2007), there are disparate and highly relevant results when analyzing different contexts. The study of different scenarios is interesting, since there is a possible perception of the sensitivity of the results regarding the change of country, in this case, the comparison between an emerging and developed country, the possibility of visualizing the impact of different regulations, investments, idiosyncratic risk, and ownership structure.

It is expected to find with the investigation carried out that the identity of the majority shareholder adds an explanation to the idiosyncratic risk, along with the other variables found in the literature to do so. And in finding the proposed relationship, it will be possible to estimate more accurately the idiosyncratic risk and consequently the return of the actions. It is also hoped to analyze the differences in the investment profile of the different shareholders according to the two sample countries and to consider their options and characteristics related to the investment.

2 LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

According to the pertinent literature, one way to explain the specific risk of companies is corporate governance, that is to say, the mechanism is internal to each organization as well as this risk that comes from idiosyncrasies. Given the basis of the link between information asymmetry and idiosyncratic risk, this risk is explored through the ownership structure, since this governance mechanism deals directly with information from the organization and agency conflicts.

The shortcoming of corporate governance as related to idiosyncratic risk is supported by a wide literature (Ferreira & Laux, 2007; Rogers et al., 2007; Nguyen, 2011; Cazzari et al., 2015), and Short (1964) affirms the lack of research that investigates the influence of ownership structure on the assets of companies, since different manager’s express different behaviors before the risk.

For Malagon et al. (2015) the specific risk is influenced by management decisions, which is directly related to the concentration of ownership and the type of majority shareholder that holds the conjunction of actions. Thus, the ownership structure, investigated as to the identity of the majority shareholder, has implications on the goals and behavior of power over the organization's strategy regarding profits, dividends, capital structure, growth, risk and overall performance (Thomsen & Pedersen, 2000). Prior researchers believe that not only the concentration of ownership has relevance but also the shareholder group that takes the major role in the organization, being a key performance point (Kang & Sorensen, 1999; Pivovarsky, 2003; Thomsen & Pedersen, 2000; Pedersen & Thomsen, 2003).

Pivovarsky (2003) corroborates that the concentration has an influence on the company's results and that this influence depends on the identity of the majority shareholder. Thomsen and Pedersen (2000) point out that different groups of owners have different goals, which impact on performance. The authors also state that each category of investor (family, financial, institutional, governmental and non-financial) has different ownership costs and benefits, finding in their study that different results are obtained from each owner's preferences.

The identity of the shareholder impacts the idiosyncratic risk since according to the literature each investor group has different behavior regarding profit maximization and influence on organizational goals and strategies (Coutinho et al., 2006). These different behaviors influence managerial decision making, which according to Malagon et al. (2015) has a direct impact on idiosyncratic risk. The research hypothesis developed from the literature is sub-described:
The identity of the majority shareholder as a family group is one of the most studied identities in the accounting literature. Anderson and Reeb (2003), Villalonga and Amit (2006) and Saito (2008) find better operating performances and higher valuations by companies that the majority shareholder belongs to a family group.

For Nguyen (2011), family ownership has a positive effect on the organization, since it has attractive incentive to monitor the financial condition, and with the large shareholding, the members of such family are present in the decisions of the company, which promotes a greater alignment of interests between management and shareholders. Besides the fact that these companies have in short strategies for the long term, since it is usually intended to pass to the next generation of the family (Nguyen, 2011).

Campos (2006) affirms that family companies make a great investment in human capital, thus gaining an advantage in terms of specialization and administrative training, thus reducing agency costs, which would reduce idiosyncratic risk. Corroborating Coutinho et al. (2006) find that family organizations have less volatile portfolios and reduced risks, including company specific.

On the other hand, Anderson and Reeb (2003) found that because these companies are less diversified, they are riskier than the others. Going to meet this Nguyen (2011) finds in his study that the idiosyncratic risk is greater for family-owned businesses. Thus the following research hypothesis was formulated:

**H1.1**: The identity of the majority shareholder as a family group influences the idiosyncratic risk.

The identity of the shareholder as a governmental ownership group of the company, in turn, is taken to direct greater attention to the political goals, the prices of exits, jobs, and profitability, referring to economic performance (Laffont & Tirole 1993; Shleifer & Vishny, 1996). The behavior of these companies, in relation to the non-priority of profit maximization but to the provision of services, is seen to fill market gaps and act differently from other organizations (Thomsen & Pedersen, 2000).

The authors point out that the government group tends to present different performance results, this in a negative way, as for market value and profitability. Government is perceived to emphasize social goals at a higher level than shareholder value, and business owners emphasize overall profitability rather than maximizing the organization's profit (Thomsen & Pedersen, 2000).

According to the authors, government groups have a great chance of going against the will of shareholders and suffering bias by public opinion. Therefore, since the alignment of interests between government ownership and shareholders does not occur constantly, such a relationship is seen to contain a high level of asymmetry of information which would raise the idiosyncratic risk. Thus we have the hypothesis of research:

**H1.2**: The identity of the majority shareholder as a government group influences the idiosyncratic risk.

The identity of the majority shareholder as a banking group is thus in order to have greater credit and to be less risk-averse, which gives it greater access to resources and investment projects. However, this group does not have as many managerial skills as the family
group, which incurs an increase in agency costs (Campos, 2006), which increases asymmetry and thus idiosyncratic risk.

However, in contrast, Nguyen (2011) has found an association in which bank-owned firms have a lower idiosyncratic risk. Control by the banking group is considered to have a lower idiosyncratic risk because of its relatively weak performance (Weinstein & Yafeh, 1998; Kang & Shivdasani, 1999). Pinkowitz and Williamson (2001) argue that banks, by pressuring affiliates to insure their cash surpluses, reduce their risk but, in a way, reduce their financial performance, also impacted by their higher return investments fixed and minor risks. In view of such context, the research hypothesis is:

H₁₃: The identity of the majority shareholder as a banking group influences the idiosyncratic risk.

The identity of the majority shareholder, now as an institutional investor who is characterized as institutions (insurers, foundations, pension funds, investment banks, among others) that have high availability of resources, maintained with stability, for risk reserve purposes or and which invest a fraction of these in the capital market. For Thomsen and Pedersen (2000), this investor has characteristics of low-risk aversion in the long term, being that the group found to have the best performance since they are considered experts as owner. According to the authors, the description of the objective of this group also comes from shareholder value and liquidity.

Chaganti and Damanpour (1991) and Campos (2006) argue that institutional investors have greater access to resources and little risk aversion, which makes organizations that drive larger assets and sales. McConnel and Servaes (1990) found that institutional ownership improves the value of the firm. When relating the goal as the value of the shareholder, it is assumed that the management will work and direct the organization in order to meet the objectives of the organization, this happening there will be a reduction in the asymmetry of information and with such a reaction you will get a lower risk idiosyncratic. The hypothesis of research based on this literature is as follows:

H₁₄: The identity of the majority shareholder as an institutional investor influences the idiosyncratic risk.

The majority shareholder identity as a nonfinancial group is the least explored in the literature and comprises the companies owned by the other organization that is part of its value chain (Thomsen & Pedersen, 2000). This group of owners has as particularity the bonds between the companies, which can result in greater alignment of interest since the owner aims to use the services of the proprietary company.

According to Thomsen and Pedersen (2000) the bonds that exist between companies, in this characteristic, propitiate a greater transfer of knowledge between them and allow a greater alignment of interests between the managers and shareholders. The authors find in their study that companies owned by non-financial groups, thus tend to generate shareholder value, thus reducing information asymmetry and, consequently, idiosyncratic risk.

The literature of findings found to be inverse to those presented, however (Kester, 1992) found that this ownership has the advantage of the association of business groups, but they generate a cost, which can impair flexibility and vigilance, which would increase information asymmetry and linearly the idiosyncratic risk. The following hypothesis was elaborated:

H₁₅: The identity of the majority shareholder as a non-financial group influences the idiosyncratic risk.
According to the different contexts, Brazilian and American capital markets, the hypotheses are tested in this research in order to respond to the objective of the study. In addition, it is expected that the results will suppress or ameliorate the research gap found that supports the proposed relationship.

3 METHOD

In order to evaluate the relationship between idiosyncratic risk and ownership structure through the identity of the majority shareholder in companies in the Brazilian and American capital markets, this article is characterized as descriptive, documentary and quantitative. The IBRXL 100 and S&P 500 indices are the indexes with the highest marketability in their respective markets, therefore, they comprise the study population, with the data referring to the period between 2012 and 2016.

The countries that comprise the study sample were chosen in an intentional way, that is, Brazil is characterized as an emerging country with high governmental activism, many family control companies and high ownership concentration (Leal et al., 2002; Coutinho et al., 2006). The US capital market companies, in turn, understand the research as a developed market, with a high ownership dispersion, little governmental interference on the market, and reference as a standard economy in finance matters (Okimura, Silveira & Rocha, 2007). These issues related to ownership are relevant since, according to Sirqueira (2007), culture, regulatory system, legislation, market institutions, and internal structure influence each country’s governance individually. The literature further states that such convictions suggest a lower idiosyncratic risk for American firms (Campbell et al., 2001).

The possibility of having companies listed in the two markets studied simultaneously was analyzed, however, as the intention is the analysis of the different investment profiles these companies were maintained, analyzing the attractiveness of investments in each capital market. Because they did not have all the necessary information, 41 companies were excluded, resulting in a general sample of 559 companies, of which 78 are Brazilian and 481 are American.

The idiosyncratic risk, dependent variable on the study, was measured using the Fama and French model of three and five factors (1993, 2015), according to Rogers and Securato (2008), Ganz (2017) and Ganz, Rodrigues Jr. and Nakamura (2018), these for the formation of factors and risks. Since the equations representing the models are Equations 1 and 2, respectively.

Briefly, stock returns were collected on a monthly basis, starting in December 2011 through December 2016. The Ibovespa was used as a proxy for a Brazilian market portfolio and the return of the S & P 500 portfolio as a proxy for the same portfolio American. The proxy for the risk-free rate were SELIC and Fed Funds for Brazil and the US respectively. The SELIC rate used as a risk-free rate, even though it is subject to criticism, is a choice of the study and is supported by the literature (Fonseca et al., 2007; Assaf Neto, Lima & Araújo, 2008) ideal as the definition is no less satisfactory than any other proxy that could be used. According to Ganz and Rodrigues Jr. (2017), the asset pricing models do not suffer large losses of information considering the different risk free rates, which makes the SELIC choice as risk free not invalidate the results obtained. Both rates were collected on Thomson® for daily data, comprising 1280 and 1283 data respectively.

\[
R_{it} - R_{ft} = \beta_0 + \beta_1(R_{mt} - R_{ft}) + \beta_2(SMB_t) + \beta_3(HML_t) + \varepsilon
\]

\[
R_{it} - R_{ft} = \beta_0 + \beta_1(R_{mt} - R_{ft}) + \beta_2(SMB_t) + \beta_3(HML_t) + \beta_4(RMW_t) + \beta_5(CMA_t) + \varepsilon
\]
The idiosyncratic risk being the variance of the regression errors were calculated by the sum of the stored residues divided by 11 (twelve months’ minus one, degrees of freedom), resulting from the square root, for each year and each company. Calculated the idiosyncratic risk, a dependent variable on the study was done a regression of panel data to verify the relationship of ownership structure with this risk, is through the software STATA. The study variables are explained in Table 1.

### Table 1 – Research Construct, Panel Data Regression

<table>
<thead>
<tr>
<th>Variables</th>
<th>Description</th>
<th>Measurement</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>RI₃</td>
<td>Variance of the random error obtained by the model (1)</td>
<td>$\text{Var}(\varepsilon)_t$ estimated by equation (1)</td>
<td>Ferreira and Laux (2007); Nguyen (2011)</td>
</tr>
<tr>
<td>RI₅</td>
<td>Variance of the random error obtained by the model (2)</td>
<td>$\text{Var}(\varepsilon)_t$ estimated by equation (2)</td>
<td>Fama and French (2015); Nguyen, Ulku, and Zhang (2015)</td>
</tr>
<tr>
<td>LIQ</td>
<td>General Liquidity</td>
<td>$\text{LIQ} = \frac{\text{CA} + n\text{CA}}{\text{TL}}$</td>
<td>Futema, Basso, and Kayo (2009)</td>
</tr>
<tr>
<td>IND</td>
<td>Indebtedness</td>
<td>$\text{IND} = \frac{\text{TL}}{\text{TA}}$</td>
<td>Bastos, Nakamura, and Basso (2009)</td>
</tr>
<tr>
<td>SR</td>
<td>Systemic Risk</td>
<td>Angular coefficient associated with the market return</td>
<td>-</td>
</tr>
<tr>
<td>TAM</td>
<td>Size</td>
<td>$\text{SIZE} = \ln(\text{TA})$</td>
<td>Nguyen (2011); Demonier, Almeida and Bortolon (2015)</td>
</tr>
<tr>
<td>PDIV</td>
<td>Payment of Dividends</td>
<td>Dividends distributed in the period by the company</td>
<td>Futema, Basso, and Kayo (2009)</td>
</tr>
<tr>
<td>FAM</td>
<td>Identity of the Majority Shareholder as a family group</td>
<td>1 if the largest shareholder is from a family group; 0 in all other cases.</td>
<td>Campos (2006); Coutinho et al. (2006); Nguyen (2011)</td>
</tr>
<tr>
<td>GOV</td>
<td>Identity of the Majority Shareholder as a government group</td>
<td>1 if the largest shareholder is from a government group; 0 in all other cases.</td>
<td>Thomsen and Pedersen (2000); Campos (2006)</td>
</tr>
<tr>
<td>FIN</td>
<td>Identity of the Majority Shareholder as a financial group</td>
<td>1 if the largest shareholder is from a financial group; 0 in all other cases.</td>
<td>Pinkowitz and Williamson (2001); Campos (2006); Nguyen (2011)</td>
</tr>
<tr>
<td>INST</td>
<td>Identity of the Majority Shareholder as Institutional Investor</td>
<td>1 if the largest shareholder is from an Institutional Investor; 0 in all other cases.</td>
<td>McConnel and Servaes (1990); Thomsen and Pedersen (2000); Campos (2006)</td>
</tr>
<tr>
<td>NFIN</td>
<td>Identity of the Majority Shareholder as a Non-Financial group</td>
<td>1 if the largest shareholder is from a Non-Financial group; 0 in all other cases.</td>
<td>Kester (1992); Thomsen and Pedersen (2000)</td>
</tr>
</tbody>
</table>

Subtitle: CA: Current assets; NCA: Non-current assets; TL: Total Liabilities; TA: Total Assets.
Source: Research Data

A The scope of all data required for the survey was obtained from the Thomson® database, with liquidity, indebtedness, dividend payments and yearly size, and the systemic risk saved from the three- and five-factor models used for estimate the idiosyncratic risk. Of the control variables, Adrian and Rosenberg (2008) still affirm that idiosyncratic risk is related to size and liquidity. The literature also states that idiosyncratic risk is burdened by companies that have low liquidity, as they try to reward shareholders and retain the premium for investment.

In their study, Kayo, Teh, and Basso (2006) find a positive relationship between indebtedness and idiosyncratic risk, and since high-debt companies tend to also have a higher risk of default and non-compliance with their obligations, debt is also used as control variable. Systemic risk, in turn, was considered as a factor related to idiosyncratic risk, since it is also priced in return for action (Sharpe, 1964; Lintner, 1965; Mossin, 1966). So the two risks have
some relation to each other. It should be emphasized, however, that even the two risks being complementary and not always the same will be the reverse, because in diversified portfolios the specific risk becomes smaller (Campos, 2006; Fu, 2009). Thus, systemic risk was used as a control variable for idiosyncratic risk.

$$R_{I3,5} = \beta_0 + \beta_1 LIQ + \beta_2 IND + \beta_3 SR + \beta_4 SIZE + \beta_5 PDIV + \beta_6 FAM + \beta_6 GOV + \beta_7 FIN + \beta_8 INST + \beta_9 NFIN + \epsilon$$  \hspace{1cm} (3)$$

Several studies (Vozlyubleniia, 2011; Nguyen, 2011; Rahman et al, 2012) support the use of size as a control variable, all of which exposed a significant relationship of this variable with the risk under study. The payment of dividends was expected to have a positive relationship with the idiosyncratic risk, since the greater the payment of dividends, it is necessary to have a greater transfer of information to the invested and thus lower idiosyncratic risk. Pastor and Veronesi (2003) argue that the relation between the payment of dividends and the specific risk arises from the fact that the non-transfer of dividends increases the asymmetry of information and consequently increases the idiosyncratic risk, while reciprocity is true.

The test variables, that identity of the majority shareholder, were collected by accessing the web page of each of the 559 companies in the sample, from which the property history was collected. The identity of the largest shareholder was considered as reported by the same base, and when collected the percentages for each investor of each company came with a complement of information of "type of investor", the types of investor determined by the database the separation was done as used by Ganz (2017).

The identity of the majority shareholder was obtained by consulting the composition of the board of directors. In order to classify a company as a family member, the following criteria were found in the literature: a number of family members (two or more) who participate in business management (Anderson & Reeb, 2003; Laffranchini & Braun, 2014). In this way, dummies were made for each identity of the majority shareholder, in which 1 represents the identity of the largest shareholder and 0 in the other categories.

Equation 3 represents the regression model of panel data used to answer the research objective, and the model is estimated twice for the two variations of the dependent variable, idiosyncratic risk, calculated by the three- and five-factor model. The test variables also occur in separate models; each being analyzed in a different model. Resulting in the end, in five models varying in two estimates of the risk, in a total of ten models for the sample of each country.

4 ANALYSIS AND DISCUSSION OF RESULTS

4.1 Relationship between idiosyncratic risk and majority shareholder identity - Brazil

Table 2 shows the relationship between the idiosyncratic risk measured by the three-factor model of Fama and French (1993) and the identity of the majority shareholder for Brazilian companies belonging to the IBrX 100. The variables size, systemic risk, and indebtedness became significant in some of the five models, different from the other variables tested.

<table>
<thead>
<tr>
<th>Variables</th>
<th>$R_{I3}$ Coef.</th>
<th>$p$-value</th>
<th>$R_{I3}$ Coef.</th>
<th>$p$-value</th>
<th>$R_{I3}$ Coef.</th>
<th>$p$-value</th>
<th>$R_{I3}$ Coef.</th>
<th>$p$-value</th>
<th>$R_{I3}$ Coef.</th>
<th>$p$-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>$\beta_1 - SIZE$</td>
<td>0,0135</td>
<td>0,070</td>
<td>-0,0951</td>
<td>0,000</td>
<td>-0,0945</td>
<td>0,000</td>
<td>-0,0951</td>
<td>0,000</td>
<td>-0,0952</td>
<td>0,000</td>
</tr>
<tr>
<td>$\beta_2 - SR$</td>
<td>-0,1608</td>
<td>0,000</td>
<td>-0,1569</td>
<td>0,000</td>
<td>-0,1569</td>
<td>0,000</td>
<td>-0,1569</td>
<td>0,000</td>
<td>-0,1569</td>
<td>0,000</td>
</tr>
<tr>
<td>$\beta_3 - LIQ$</td>
<td>0,0022</td>
<td>0,892</td>
<td>-0,0029</td>
<td>0,906</td>
<td>-0,0027</td>
<td>0,914</td>
<td>-0,0019</td>
<td>0,938</td>
<td>-0,0021</td>
<td>0,933</td>
</tr>
<tr>
<td>$\beta_4 - IND$</td>
<td>0,0153</td>
<td>0,855</td>
<td>0,2610</td>
<td>0,092</td>
<td>0,2597</td>
<td>0,094</td>
<td>0,2637</td>
<td>0,090</td>
<td>0,2654</td>
<td>0,088</td>
</tr>
<tr>
<td>$\beta_5 - PDIV$</td>
<td>-0,0000</td>
<td>0,245</td>
<td>-0,0000</td>
<td>0,460</td>
<td>-0,0000</td>
<td>0,356</td>
<td>-0,0000</td>
<td>0,361</td>
<td>-0,0000</td>
<td>0,387</td>
</tr>
</tbody>
</table>

Table 2 - Linear regression idiosyncratic risk of 3-Factors and Identity of Majority Shareholder Brazil
Indebtedness is significant in four of the five models tested, and their relation to the whole is in line with the findings of Coutinho et al. (2006) who find that in Brazilian companies the risk is related to indebtedness. The systemic risk was significant in the five models tested, always having an inverse relation with the idiosyncratic risk. An inverse relationship indicates that the higher the idiosyncratic risk, the systemic risk is lower by around 15%, that is, the more related to the ownership concentration the lower the idiosyncratic risk of a given company, and the reciprocal risk is valid.

The majority shareholder identity variables did not become significant in any of the test models, which is in line with the findings of Coutinho et al. (2006) who find that family-controlled organizations have lower risk as well as complementary literature which affirms a relationship between the various shareholders and the idiosyncratic risk.

As the literature presented is not conclusive as to the relationship between the identity of the majority shareholder and the idiosyncratic risk, and because the research sample comprises only one Brazilian index and not all the companies in the country, it is inferred that such results are not conclusive for all Brazilian companies, and further research should be carried out. Table 3 shows the relationship of the test variables to the idiosyncratic risk now measured by the five-factor model of Fama and French (2015). The systemic risk has the same inverse relation in all models tested, which confirms the previous results, and the indebtedness that before presented a significant relation in these models does not maintain the relation.

Table 3 - Linear regression idiosyncratic risk of 5-Factors and Identity of Majority Shareholder Brazil

<table>
<thead>
<tr>
<th>Variables</th>
<th>$R_{IC}$</th>
<th>$R_{IC}$</th>
<th>$R_{IR}$</th>
<th>$R_{IR}$</th>
<th>$R_{IR}$</th>
</tr>
</thead>
<tbody>
<tr>
<td>$\beta_1$ - SIZE</td>
<td>0.0122</td>
<td>0.066</td>
<td>-0.0919</td>
<td>0.000</td>
<td>-0.0194</td>
</tr>
<tr>
<td>$\beta_2$ - SR</td>
<td>-0.1718</td>
<td>0.000</td>
<td>-0.1677</td>
<td>0.000</td>
<td>-0.1678</td>
</tr>
<tr>
<td>$\beta_3$ - LIQ</td>
<td>-0.0004</td>
<td>0.978</td>
<td>-0.0150</td>
<td>0.504</td>
<td>-0.0149</td>
</tr>
<tr>
<td>$\beta_4$ - END</td>
<td>0.0065</td>
<td>0.930</td>
<td>0.2320</td>
<td>0.100</td>
<td>0.2313</td>
</tr>
</tbody>
</table>

Subtitle: The acronyms of the variables are in agreement with the research construct.

Source: Research Data.
Size has a positive relation in the models incorporated into the family and institutional ownership indicating that the larger the companies with the property in possession of one of these larger groups will be their idiosyncratic risks. Already for the other identities, the inverse relationship persists, in this case, the greater the smaller the idiosyncratic risk. The identity variables of the majority shareholder also do not become significant with the measurement of idiosyncratic risk by the five-factor model.

4.2 Relationship of idiosyncratic risk and identity of majority shareholder - US

In a similar way to the analysis for the companies of the Brazilian index, this section presents the relation of the test variables with the idiosyncratic risk, but now for the American index, Table 4 explains these results. The size has an inverse relation only to the model with incorporation of family control, indicating that the larger the company that owns as a majority shareholder a smaller family group its idiosyncratic risk. It is noteworthy that this (familiar) variable was the only identity of a shareholder tested that was significant among the five models analyzed.

The results for firms with a family-owned concentration are in line with the findings of Kang and Shivdasani (1999), Anderson and Reeb (2003), Villalonga and Amit (2006) and Saito (2008) that family businesses are less risky, and going against the findings of Nguyen (2011) who finds a positive relationship between family ownership and idiosyncratic risk. For Leech and Leahy (1991) the identity of the shareholder may allow shareholder interference for specific results. This indicates that there is eventually a greater communion between management interests and investors, which would result in the reduction of idiosyncratic risk.

Table 4 - Linear regression idiosyncratic risk of 3-Factors and Identity of Majority Shareholder US

<table>
<thead>
<tr>
<th>Variables</th>
<th>( R_{13} )</th>
<th>( R_{12} )</th>
<th>( R_{11} )</th>
<th>( R_{13} )</th>
<th>( R_{12} )</th>
<th>( R_{11} )</th>
</tr>
</thead>
<tbody>
<tr>
<td>( \beta_1 - SIZE )</td>
<td>-0.0020</td>
<td>0.003</td>
<td>0.0062</td>
<td>0.012</td>
<td>0.0062</td>
<td>0.011</td>
</tr>
<tr>
<td>( \beta_2 - SR )</td>
<td>-0.0004</td>
<td>0.611</td>
<td>-0.0003</td>
<td>0.764</td>
<td>-0.0003</td>
<td>0.765</td>
</tr>
<tr>
<td>( \beta_3 - LIQ )</td>
<td>0.0003</td>
<td>0.524</td>
<td>-0.0008</td>
<td>0.362</td>
<td>-0.0009</td>
<td>0.352</td>
</tr>
<tr>
<td>( \beta_4 - END )</td>
<td>0.0032</td>
<td>0.087</td>
<td>0.0046</td>
<td>0.034</td>
<td>0.0046</td>
<td>0.033</td>
</tr>
<tr>
<td>( \beta_5 - PIDV )</td>
<td>-0.0000</td>
<td>0.144</td>
<td>-0.0000</td>
<td>0.973</td>
<td>0.0000</td>
<td>0.992</td>
</tr>
<tr>
<td>( \beta_6 - FAM )</td>
<td>-0.0069</td>
<td>0.004</td>
<td>- -</td>
<td>- -</td>
<td>- -</td>
<td>- -</td>
</tr>
<tr>
<td>( \beta_7 - GOV )</td>
<td>- -</td>
<td>- -</td>
<td>-0.0038</td>
<td>0.765</td>
<td>- -</td>
<td>- -</td>
</tr>
<tr>
<td>( \beta_8 - FIN )</td>
<td>- -</td>
<td>- -</td>
<td>- -</td>
<td>-0.0099</td>
<td>0.618</td>
<td>- -</td>
</tr>
<tr>
<td>( \beta_9 - INST )</td>
<td>- -</td>
<td>- -</td>
<td>- -</td>
<td>- -</td>
<td>0.0011</td>
<td>0.591</td>
</tr>
<tr>
<td>( \beta_9 - NFIN )</td>
<td>- -</td>
<td>- -</td>
<td>- -</td>
<td>- -</td>
<td>- -</td>
<td>- -</td>
</tr>
<tr>
<td>Const - CT</td>
<td>0.0708</td>
<td>0.000</td>
<td>0.0009</td>
<td>0.684</td>
<td>0.0102</td>
<td>0.676</td>
</tr>
<tr>
<td>R² Within</td>
<td>0.0001</td>
<td>0.0068</td>
<td>0.0069</td>
<td>0.0069</td>
<td>0.0069</td>
<td>0.0070</td>
</tr>
<tr>
<td>R² Between</td>
<td>0.0691</td>
<td>0.0561</td>
<td>0.0540</td>
<td>0.0536</td>
<td>0.0513</td>
<td></td>
</tr>
</tbody>
</table>
In this same model of family ownership, the positive relationship between indebtedness and idiosyncratic risk is evidenced, indicating that family-owned companies support the same relationship found previously, that the higher the indebtedness, the higher the idiosyncratic risk. The other models (governmental, financial, institutional and non-financial) have a positive relation of size to idiosyncratic risk, indicating that the higher the concentration of ownership by some of these groups, the greater the idiosyncratic risk. Indebtedness postpones the positive relationship with the idiosyncratic risk in the other models tested. The identity of the majority shareholders, in groups other than the family, did not become significant. Since the ownership by a non-financial group has a positive relationship with the idiosyncratic risk that corroborates with Kester (1992) that the management of this group increases the asymmetry of information, but this relation does not become significant.

Table 5 presents the same test variables now explaining the idiosyncratic risk estimated by the five-factor model of Fama and French (2015). The size relationship in the five models tested with idiosyncratic risk was inversely related to family control and positive with the others, which persists for the models tested with the idiosyncratic risk dependent variable of three factors.

Table 5 - Linear regression idiosyncratic risk of 5-Factors and Identity of Majority Shareholder US

<table>
<thead>
<tr>
<th>Variables</th>
<th>$R_1^2$</th>
<th>$R_2^2$</th>
<th>$R_3^2$</th>
<th>$R_4^2$</th>
<th>$R_5^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Coef.</td>
<td>p-value</td>
<td>Coef.</td>
<td>p-value</td>
<td>Coef.</td>
</tr>
<tr>
<td>$\beta_1$ - SIZE</td>
<td>-0.0020</td>
<td>0.000</td>
<td>0.0040</td>
<td>0.017</td>
<td>0.0037</td>
</tr>
<tr>
<td>$\beta_2$ - SR</td>
<td>0.0036</td>
<td>0.000</td>
<td>0.0033</td>
<td>0.000</td>
<td>0.0033</td>
</tr>
<tr>
<td>$\beta_3$ - LIQ</td>
<td>0.0002</td>
<td>0.576</td>
<td>-0.0007</td>
<td>0.234</td>
<td>-0.0007</td>
</tr>
<tr>
<td>$\beta_4$ - END</td>
<td>0.0031</td>
<td>0.001</td>
<td>0.0037</td>
<td>0.010</td>
<td>0.0037</td>
</tr>
<tr>
<td>$\beta_5$ - PDIV</td>
<td>-0.0000</td>
<td>0.374</td>
<td>-0.001</td>
<td>0.918</td>
<td>0.0006</td>
</tr>
<tr>
<td>$\beta_6$ - FAM</td>
<td>-0.0034</td>
<td>0.081</td>
<td>-</td>
<td></td>
<td>-</td>
</tr>
<tr>
<td>$\beta_7$ - GOV</td>
<td>-</td>
<td></td>
<td>-0.001</td>
<td>0.918</td>
<td>-</td>
</tr>
<tr>
<td>$\beta_8$ - FIN</td>
<td>-</td>
<td></td>
<td>-</td>
<td></td>
<td>0.0034</td>
</tr>
<tr>
<td>$\beta_9$ - INST</td>
<td>-</td>
<td></td>
<td>-</td>
<td></td>
<td>-</td>
</tr>
<tr>
<td>$\gamma_0$ - NFIN</td>
<td>-</td>
<td></td>
<td>-</td>
<td></td>
<td>-</td>
</tr>
</tbody>
</table>

| Const - CT | 0.0593 | 0.000 | 0.0007 | 0.968 | 0.0015 | 0.927 | 0.0037 | 0.823 | 0.0006 | 0.973 |

R² Overall | 0.0255 | 0.0166 | 0.0159 | 0.0158 | 0.0149 |
Model Sig. | 0.0000 | 0.0425 | 0.0400 | 0.0394 | 0.0371 |
Nº Obs. | 2384 | 2384 | 2384 | 2384 | 2384 |
Hausman | 0.0016 | 0.0001 | 0.0024 | 0.0026 | 0.0035 |

Subtitle: The acronyms of the variables are in agreement with the research construct.
Source: Research Data

The systemic risk presents a positive and significant relationship in the five test models, inferring that in US companies the greater the idiosyncratic risk its relation with the market increases by 1%, a relation that is not relevant in proportion, but significant, it is emphasized that some variable of the American market interferes so that both risks grow in the same direction, therefore greater studies must be factor in the intention to answer this relation.
Indebtedness also persists with the positive relationship in the five test models, and the higher the indebtedness, the higher the idiosyncratic risk.

The family control as before, for the model with risk estimation by the three-factor model, has proven its inverse relationship with the idiosyncratic risk. This confirms the idea that when control is taken by the family group, there is greater alignment of interests, and thus greater performance, as defended by Anderson and Reeb (2003) and Saito (2008) who find in their study that the family businesses perform better when compared to non-family businesses.

Financial and institutional ownerships also become significant in the present models, with the relation of the financial ownership being positive, and institutional ownership is the reverse. Thus, when the majority shareholder of a company is a financial group, its idiosyncratic risk will be higher, which is in line with the findings of Nguyen (2011) and Pinkowitz and Williamson (2001), who find an association in which inferior idiosyncratic risk.

For Weinstein and Yafeh (1998) this group is considered to perform poorly because it deals with money as an essential product, and so is risk-averse. Campos (2006) corroborates with the author’s statement in pointing out that financial institutions, distinguishing themselves by having timely access to credit, are intrinsic to higher amounts of risk. These facts are in line with the findings of this research.

When the majority investor is an institutional group, the idiosyncratic risk of these firms will be lower, which is corroborated by Thomsen and Pedersen (2000), who assert that the institutional investor is expected to have the best results in the firm’s ownership because they are charged with low aversion to risk and high level of influencing skills in the long run. The results also corroborate with Ferreira and Laux (2007) who find that the relationship between risk and governance is more pronounced for companies with institutional investors.

The findings of Nielsen (2008) indicate that the mechanisms of good governance allow institutional investors to enjoy the benefits of syndication and for this reason, they even reduce idiosyncratic risk. This by participation in syndication reduces information asymmetry. The author goes on to note that such investors are eventually followed by corporate governance improvements and tend to occur in high growth, research and development intensive companies. The identity of the majority shareholder as governmental and non-financial did not significantly influence the idiosyncratic risk. The following section discusses the results in a comparative way between Brazilian and American indices.

4.3 Discussion of Results

In this chapter, the research hypotheses based on the beginning of the work are answered and the results explained in a previous section are analyzed in a contemplative way. It should be noted that this closure is done according to each research sample, since they use divergent results, so the summary table of acceptance of the hypotheses is sub presented.

<table>
<thead>
<tr>
<th>Hypotheses</th>
<th>Signal</th>
<th>BRAZIL – IBR X 100</th>
<th>Signal</th>
<th>US – S&amp;P 500</th>
</tr>
</thead>
<tbody>
<tr>
<td>( H_1 ) The identity of the majority shareholder influences the idiosyncratic risk.</td>
<td>+</td>
<td>No-Accept</td>
<td>+</td>
<td>Accept</td>
</tr>
<tr>
<td>( H_{1.1} ) The identity of the majority shareholder as a family group influences the idiosyncratic risk.</td>
<td>–</td>
<td>No-Accept</td>
<td>–</td>
<td>Accept</td>
</tr>
<tr>
<td>( H_{1.2} ) The identity of the majority shareholder as a government group influences the idiosyncratic risk.</td>
<td>–</td>
<td>No-Accept</td>
<td>–</td>
<td>No-Accept</td>
</tr>
<tr>
<td>( H_{1.3} ) The identity of the majority shareholder as a banking group influences the idiosyncratic risk.</td>
<td>+</td>
<td>No-Accept</td>
<td>+</td>
<td>Accept</td>
</tr>
<tr>
<td>( H_{1.4} ) The identity of the majority shareholder as an institutional investor influences the idiosyncratic risk.</td>
<td>–</td>
<td>No-Accept</td>
<td>–</td>
<td>Accept</td>
</tr>
<tr>
<td>( H_{1.5} ) The identity of the majority shareholder as a non-financial group influences the idiosyncratic risk.</td>
<td>+</td>
<td>No-Accept</td>
<td>+</td>
<td>No-Accept</td>
</tr>
</tbody>
</table>
The hypothesis $H_1$ that relates the idiosyncratic risk to the identity of the majority shareholder was accepted for the American sample and rejected for the Brazilian sample, such findings, as to the intended relation, is confirmatory of the literature that states that not only the ownership concentration has relevance as well as the shareholder group that holds the control on the organization (Kang & Sorensen, 1999, Pivovarsky, 2003, Thomsen & Pedersen, 2000, Pedersen & Thomsen, 2003). for the American sample) in their explanation of the idiosyncratic risk.

It should be noted that the significance not found for such variables in the Brazilian sample may be due to country characteristics since the relationship was found in other samples. Therefore, the need for further research on the subject is evident, since the literature, together with the findings of the present study, is inconsistent with the proposed relationship.

Hypotheses $H_{1.1}$, $H_{1.3}$ and $H_{1.4}$ referring to the relation of the identities of a family group, a financial group and an institutional investor with idiosyncratic risk, respectively, were accepted for the American sample and rejected for the sample Brazilian The findings of such individual relationships were highlighted in a more discussed way, and corroborate with the statements and findings of Chaganti and Damanpour (1991), Thomsen and Pedersen (2000), Coutinho et al. (2006), Campos (2006 ) and Nguyen (2011).

Thus, the control of the company, even in the American market, owned by a family and institutional group, reduces the asymmetry of information, as these investors are somewhat closer to the investors and have a greater openness to negotiation. Analogously, control by a financial group occurs in greater information asymmetry and greater concern for the investor.

Hypotheses $H_{1.2}$ and $H_{1.5}$ concerning the identities of a governmental group and a non-financial investor related to idiosyncratic risk were rejected for the indices comprising the research sample. The government group because it has little ownership compared to the other shareholder identities may have its relation with the idiosyncratic risk impaired, however, since larger samples of such companies are eventually rare, it can be considered that the style of leadership and management of does not significantly impact the idiosyncratic risk.

It is important to note that, even though the accounting literature shows a behavior different from this type of investor, this one with greater attention to political goals, prices of exits, jobs, and profitability (Laffont & Tirole, 1993; Hart, Shleifer & Vishny, 1996). influences the company's specific risk in an unequal way, and this relationship is not significant.

The non-financial ownership, expected to have business ties that could bring together influences from shareholders or take advantage of those relationships (Thomsen & Pedersen, 2000; Kester, 1992), increasing or reducing information asymmetry, which would impact idiosyncratic risk, was not significant. This result indicates that even this group is considered to have a behavior that influences the information, this did not happen, not presenting characteristics of this type of investor that determined some relation with the idiosyncratic risk.

The disparate results found among the studied samples are highlighted, making the inference that these are caused by the decision-making autonomy of the organizational aspects intrinsic to each shareholder. The divergences between ownership structures are originated by rational thoughts according to available information, aiming at the achievement of goals (Campos, 2006), which causes different impacts for each sample and relation.

It should be noted that the simplistic idealization that all categories of shareholders have the same behavior on profit maximization (Coutinho et al., 2006) was rejected, once the different influences of these groups on the idiosyncratic risk of the companies were proven. Attention is also drawn to the liquidity and dividend payment variables that were not significant in any of the models tested.

It is inferred that even the liquidity being considered to have a positive relationship with the idiosyncratic risk, the findings are in agreement with this literature. This can be derived

Source: Research Data
from the fact that the samples studied are highly liquid companies in the stock market, or due to the fact that the liquidity, due to the performance of the company, has no direct relation with the idiosyncratic risk, which is worthy of further investigations.

The payment of dividends also showed no significance in the models indicating that Brazilian and American companies paying dividends are not, in short, covering up non-favorable information, as was expected. And then being that the dividends, in this case, cannot be considered an information transparency proxy. The main results of the research, as well as the acceptance and rejection of the hypotheses, have been made, the next chapter presents the conclusion of the study and the recommendations of future researches.

The explanatory power of the models still differs indescribably, with the model for Brazil accounting for approximately 69%, while for the US the explanation is around 1%. In this way, other variables must be explored for the American context, that increases the explanatory power of the same ones.

5 CONCLUSION

The objective of the article to evaluate the relationship between idiosyncratic risk and ownership structure in the form of majority shareholder identity was met. The identity of the shareholder was studied through five groups, family, financial, governmental, institutional and non-financial. The results of the results show a subtle improvement in the estimation of the five-factor model when compared to the three-factor model, and this model is indicated for future research on the pricing of financial assets.

Since idiosyncratic risk arises from the stochastic regression variance, the five-factor model by relating five significant weights that influence the return of the stock makes the error more specific than the three-factor model. In a simple way, in the three-factor model, the factors of investment and profitability because they are not variables are priced in the error, and thus in the idiosyncratic risk, which leads us to conclude that the three-factor model is more suitable for such a task.

The general values for the idiosyncratic risk presented greater for the Brazilian companies, consistently, since Brazil is an emerging country. It is concluded that the identity of the majority shareholder influences the idiosyncratic risk of US companies whereas in the Brazilian sample the result is inconclusive and further studies of this risk are encouraged in this emerging market. Also, the literature confirms that different managers have different strategies that impact in different ways in companies, increasing or reducing their specific risk.

Companies with family control group and high indebtedness have higher levels of idiosyncratic risk, the opposite happens with companies with lower indebtedness and ownership through some of the other groups of owners. In the US scenario, family and non-financial companies with low indebtedness are those with lower idiosyncratic risk, and financially owned companies have higher values for the same risk.

The theoretical contribution of the present study and its implications are highlighted since when relating unidentified factors in the explanation of the specific risk of the companies, the power of forecasting and pricing of capital market assets, and thus investors have tools to improve investment decision-making. The idiosyncratic risk, in turn, is a theme of few studies in emerging countries, highlighting the studied, which makes the research and research on the same be of high relevance.

The research has some choices, such as the governance mechanism used, the risk studied and the chosen indexes, and as such encourages research using such an idea with disparate choices. Thus, other indices that do not have high marketability in the capital market, as well as other countries are suggested in future research. Researches that explore other ways of measuring idiosyncratic risk are also relevant, as well as the analysis of different relationships
by other multivariate methods. Finally, we encourage research that explicitly analyzes the relationship between information asymmetry among the studied variables.

REFERENCES


