FGV EAESP

INSTITUTO DE FINANÇAS

Ownership concentration and corporate decisions: A clinical study of JBS and BRF companies

(August 2021)

Pierre Oberson de Souza

Fundacao Getulio Vargas Sao Paulo School of Business Administration

Paulo Renato Soares Terra

Fundacao Getulio Vargas Sao Paulo School of Business Administration

ARTIGO CLÍNICO Nº. 6

Ownership concentration and corporate decisions: A clinical study of JBS and BRF companies

Pierre Oberson de Souza[1]
Fundacao Getulio Vargas
Sao Paulo School of Business Administration
pierre.souza@fgv.br

Paulo Renato Soares Terra
Fundacao Getulio Vargas
Sao Paulo School of Business Administration
paulo.terra@fgv.br

Preliminary draft. Please do not quote or cite without the authors' permission.

Abstract: *We analyze the two major companies of the Brazilian food processing industry: JBS and BRF. These companies have very different ownership structures, but very similar operations. However, JBS made over twelve times more acquisitions than BRF, which did not increase operational margins nor were positively valued by shareholders. Our results suggest that the main reason for such a different acquisition policy relates to the personal preferences of JBS controlling shareholders since the company's concentrated ownership structure did not hinder their influence over corporate decisions. The results shed light on the necessity of deeper studies regarding the relationship between ownership concentration and the level of risk companies accept to take.*

Keywords: Ownership concentration; Mergers and acquisitions; Risk-taking; Clinical studies.

JEL codes: G32, G34.

[1] FGV-EAESP, Fundação Getulio Vargas – School of Business Administration of São Paulo, Rua Itapeva, 474 – 8º floor – São Paulo SP – 01332-000, Tel.: +55(11)3799-7899.

1. Introduction

How much the power held by a few controlling shareholders influences the risk-taking behavior of a company? How does ownership structure impact corporate decisions? In this exploratory study, we investigate how the concentration of ownership may affect the risk-shifting behavior of a firm. To do so, we compare two Brazilian companies that are major global players in the food processing industry, exploring their distinct ownership structures to shed light on the impact of controlling shareholders on corporate decisions.

The major objective of corporate finance studies is to understand how firms decide on ways to fund, invest, and distribute capital. Each one of these aspects relates to several particularities, but a feature that is inherent to all of them is that several agents – stakeholders – are interested in those decisions. In this group are managers, shareholders, creditors, employees, suppliers, and many others.

Each stakeholder of a firm has different objectives and is differently affected by the firm's decisions. Several authors have tried to understand how the interplay of different interests affects the firm and its decisions. The divergence of interests among stakeholders gives rise to agency conflicts in which each stakeholder tries to find mechanisms that enforce management's behavior according to his or her interests. The identification and interaction of different agency conflicts remain an important and interesting research field since the decision-making process strongly impacts the wealth of firms, shareholders, creditors, managers, and employees. It also affects the real economy, especially in developing countries, in which agency conflicts tend to be more severe (Dharwadkar et al., 2000; Dyck and Zingales, 2004).

Several questions regarding agency conflicts have been studied in the past decades, in such a way that the evolution in the literature regarding conflicts between different stakeholders is constant. In the late '70s, starting with Jensen and Meckling (1976) and Galai and Masulis (1976), the governance conflicts that received more attention were the ones between owners (principal) and managers (agent), such as the one between creditors (principal) and shareholders (agent) – which are called the principal-agent conflicts. Since then, scholars published several studies regarding this kind of conflicts, such as Cain and McKeon (2016) in which the authors analyze the influence of personal risk-taking characteristics of CEOs in corporate policies, and Gilje (2016) who argues that creditors can protect themselves from shareholders' misbehavior in times of financial distress.

Regarding the conflict between shareholders and creditors, as shown by Galai and Masulis (1976) and Jensen and Meckling (1976), this struggle could bring the well-known behavior called risk-shifting. The authors predict that when firms are financially distressed and chances of bankruptcy are substantial, shareholders tend to encourage managers to engage in riskier projects. The idea behind this prediction is that when firms are facing financial distress, the chances of bankruptcy or a takeover by creditors are larger and, in this case, shareholders might end up empty-handed. Facing the chances of losing it all, shareholders prefer to engage in riskier projects, gambling that if the project is successful, they maintain the company running and in their hands. Otherwise, they would lose it all anyway. The main problem of this behavior is that risk is increased at the expense of creditors, who also end up with nothing if all resources are consumed by doomed projects.

A large part of the literature in corporate governance is based on a developed country setting (such as the United States and the United Kingdom), in which the ownership structure tends to be very dispersed. In developing economies, the concentrated ownership model is prevalent, which brings on different agency conflicts (Dharwadkar et al., 2000; Dyck and Zingales, 2004). More recently, a large part of the discussion about agency problems has moved to the conflict between controlling shareholders and minority shareholders (the principal-principal conflict, Young et al., 2008). This is related not only to ownership structure but also to the shortcomings of external governance mechanisms, which is a common scenario in developing economies.

As mentioned above, risk-shifting is a value decreasing behavior, with the power to affect several stakeholders, not only shareholders and creditors. Although theory predicts risk-shifting, empirical studies regarding the matter have mixed results. Eisdorfer (2008) and Becker and Stromberg (2012) find results in line with theoretical predictions. On the other hand, Gilje (2016) and Andrade and Kaplan (1998) find evidence against the risk-shifting prediction. Those conflicting results show the importance to look at the problem from a different perspective, trying to find other aspects that could relate to the propensity that a firm has to take on risk.

Adams et al. (2005) find evidence that companies with powerful CEOs tend to implement personal choices more easily, leading to a larger dispersion in firm performance. Even though their study is not directly related to risk-shifting, it suggests that one possibility to understand more deeply the risk-shifting behavior is to analyze in greater depth if and to which extent corporate decisions regarding risk are related to ownership structure. It is predictable that a firm that has more concentrated ownership possibly also has a CEO with more power and therefore tends to be more prone to engaging value decreasing behaviors such as risk-shifting.

The objective of this clinical study is not to infer causality between ownership concentration and risk shifting, but to raise the discussion that ownership has a relevant role regarding the corporation's propensity to take on risk. In Brazil, several companies have a concentrated ownership structure, but few have a dispersed one, so the idea of the present study is to compare corporate decisions of two major companies that compete in the same industry, but with very different ownership structures (JBS and BRF).

JBS and BRF are the two major players in the Brazilian market of processed food. Although those two firms are very similar in their operations, JBS is a company created by a single family that still holds control over corporate decisions. BRF, in turn, is a result of the merger of two major companies (Perdigão and Sadia), resulting in a more dispersed ownership structure, with few shareholders with significant stakes.

The presence of two similar companies in the same industry, but with different ownership structures, brings the opportunity of comparing their corporate decisions, especially regarding risk. To investigate such a problem, we follow the method suggested by Jensen, Fama, Long, Ruback, Schwert, Smith, and Warner (1989).

The next session presents and discusses the ownership structure of JBS and BRF in detail, followed by an analysis of the acquisitions that both firms realized during the past few years. After that, we present an analysis of the public information available regarding the presence of BNDES as creditor and shareholder of both companies. Next, we present the main financial indicators, revealing the outcomes of the different corporate decisions. The last section concludes and highlights the main findings of the study.

2. Ownership structures of JBS and BRF

The ownership structure of public trading companies is not always easy to identify. We frequently observe that each company has multiple corporations as owners. Hence, it is necessary to analyze the ownership structure of those companies to single out who are the final owners (beneficial owners). As already mentioned, BRF resulted from the merger of two other major companies in 2009, which is the reason that the period of analysis covers from 2010 to 2018 (last detailed record of ownership available at CVM[2]).

BRF and JBS have not only different ownership structures regarding concentration but also regarding complexity. Based on public information, we verify the pyramidal ownership structure of both companies in 2010 and 2018. As shown in the following figures, JBS had an ownership structure with 21.9% held by investors with less than 5% of the total shares outstanding. It is also possible to verify that two different families had significant stakes in the total holdings: the Batista family (controlling shareholders) and the Bertin family, which became a shareholder of JBS after a merger in 2009. We present the detailed ownership structure of JBS in 2010 in Figure 1.

Figure 1 shows that the participation of the Bertin family was held through 48.5% of FB Participações shares, which owned 54.54% of total JBS shares. As a result, Bertin FIP had a total of 26.45% shares of JBS. Bertin FIP's shares were held by two companies (Blessed Holdings, which did not disclose its final shareholders at the time, and Bercol Holdings, entirely owned by the Bertin family). Therefore, the Bertin family had, at least, 9.05% of JBS's shares in 2010.

The Batista family also had its participation in JBS through FB Participações, holding 51.48% of its shares (total stake of FB Participações held by J&F Participações and ZMF FIP, both 100% held by members of the Batista family). As a result of this structure, the Batista family had, in 2010, at least 28.07% of the total shares outstanding of JBS. Other than the Batista family, the Bertin family, and Blessed Holdings, BNDES had 20.62% and minority shareholders held 21.93% of total shares outstanding. Even though holding only 28.07% of total shares, the Batista family was the controlling

[2] CVM, Comissão de Valores Mobiliários, is the Brazilian Securities and Exchange Commission (SEC), responsible to collect and disclose all information regarding public companies.

shareholder of JBS, enforcing this control by FB Participações position, which was the majority shareholder, with 54.52% of JBS shares.

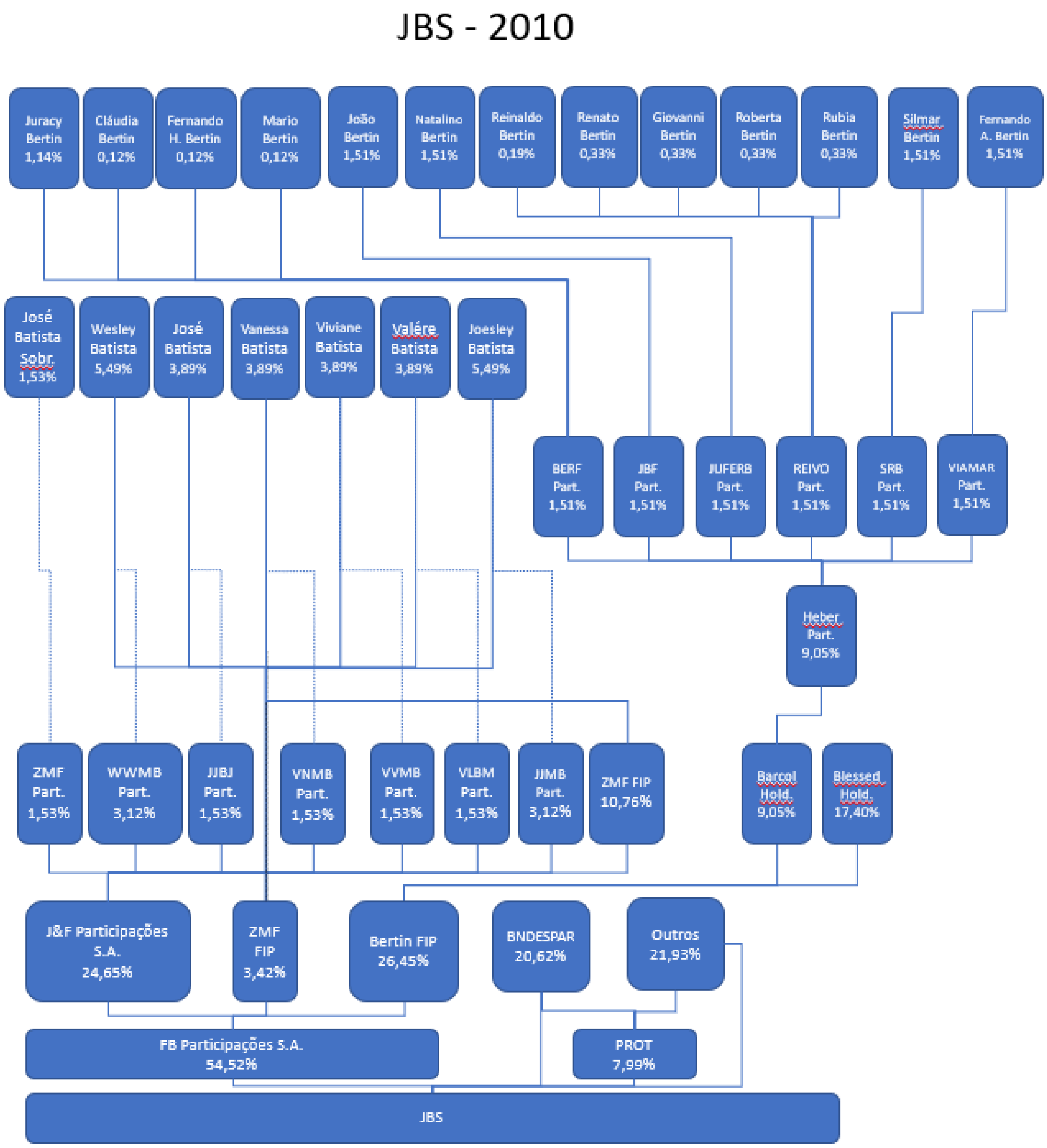

Figure 1: Ownership Structure of JBS in 2010, showing the total shares of JBS owned by each firm, fund, or individual. In the cases where an individual holds JBS's participation through more than one channel, the total percentage of participation of that individual is presented.

Between 2010 and 2018 the ownership structure of JBS significantly changed. The Bertin family sold their shares, and the Batista family increased its position over JBS' total shares. Furthermore, the shares that were once dispersed among different Batista's family members were concentrated among the founder (José Batista Sobrinho) and his three children (Joesley, Wesley, and José Batista Filho). As a result of changes in ownership structure, the Batista family became the beneficial owner of 41.93% of JBS shares, with a significant stake owned by brothers Joesley and Wesley (20.6% each). The detailed ownership structure in 2018 is detailed in Figure 2.

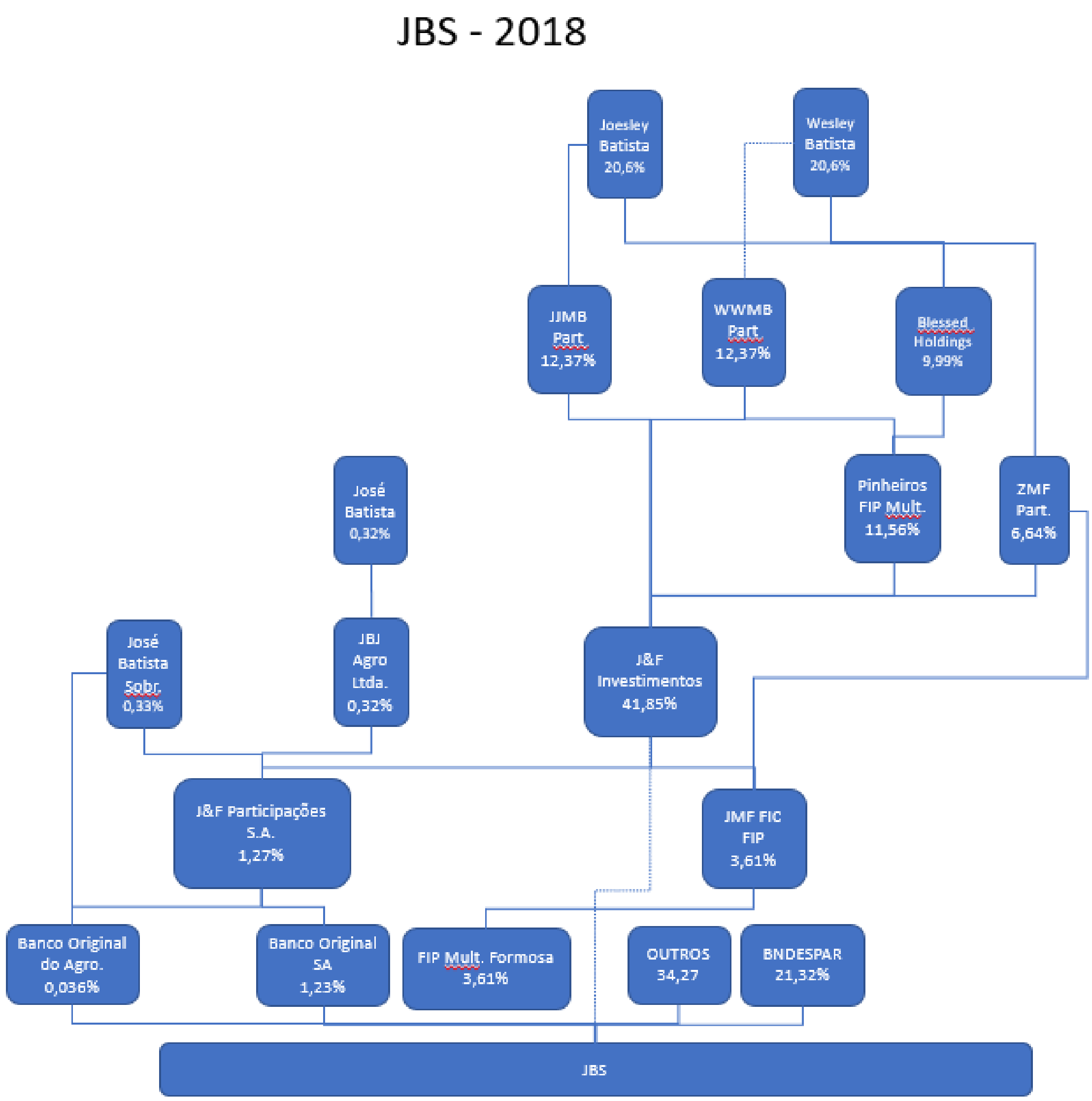

Figure 2: Ownership Structure of JBS in 2018, showing the total shares of JBS owned by each firm, fund, or individual. In the cases where an individual holds JBS's participation through more than one channel, the total percentage of participation of that individual is presented.

BRF had a very different ownership structure, with a great part of its shares owned by minority shareholders (64.9%) and the remaining shares owned by pension or investment funds. The shareholder with the most significant stake was PREVI, a pension fund held by Banco do Brasil's employees. Also, other pension and investment funds held substantial stakes in the company. The ownership structure of BRF in 2010 is detailed in Figure 3.

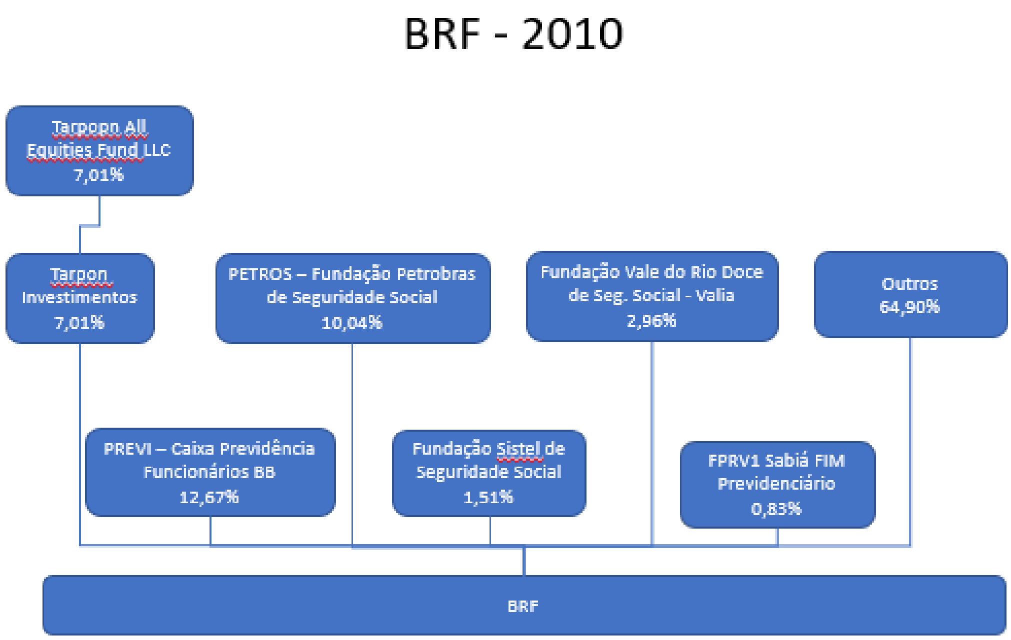

Figure 3: Ownership Structure of BRF in 2010, showing the total shares of BRF owned by each firm, fund, or individual. In the cases where an individual holds JBS's participation through more than one channel, the total percentage of participation of that individual is presented.

Between 2010 and 2018 the ownership of BRF shares also changed, increasing the minority shareholders' stake (to a total of 72.79%) and the remaining shares being held by two pension funds from state-owned enterprises (PREVI and PETROS) and one international investment company (BlackRock Inc.). The detailed ownership structure of BRF in 2018 is detailed in Figure 4.

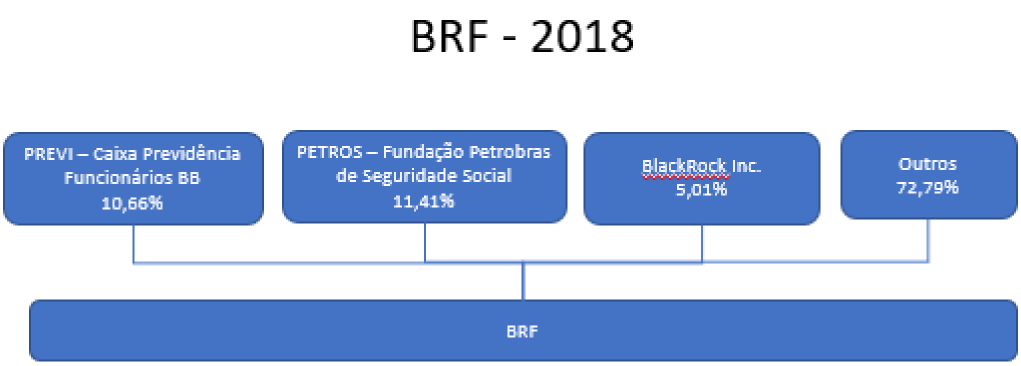

Figure 4: Ownership Structure of BRF in 2018, showing the total shares of BRF owned by each firm, fund, or individual. In the cases where an individual holds JBS's participation through more than one channel, the total percentage of participation of that individual is presented.

Inspecting the shareholdings of JBS and BRF clarifies that the two companies have very different ownership structures, even though being very similar in their operations. While control power at JBS was concentrated in only two individuals (the

Batista brothers, 41.28%), in BRF ownership was dispersed among the general public, pension and investment funds, none of which held more than 12% of capital. Therefore, we may realistically assume that the controlling shareholders of JBS were more powerful to enforce their personal preferences over the company's management than the controlling shareholders of BRF. Therefore, we find this setting ideal to understand the effect of ownership structure on the corporate decisions of these two companies. To further demonstrate the difference of shareholders holdings in both companies, Figure 5 presents the total stakes held by final shareholders in each company.

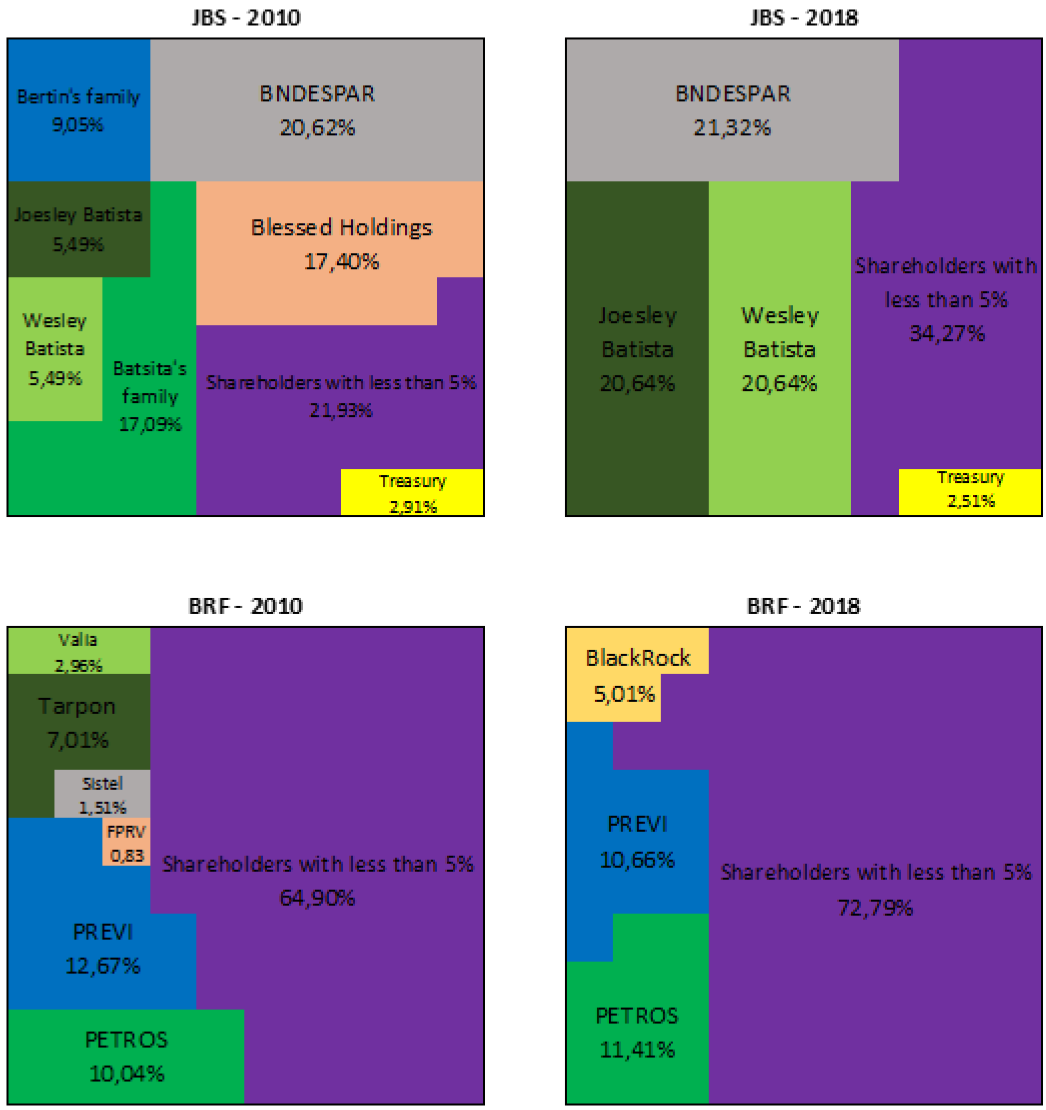

Figure 5: Last level shareholders of JBS and BRF in 2010 and 2018

As shown in Figure 5, both companies had a decrease in the total number of shareholders and an increase in the proportion of minority shareholders. The shareholder with the most shares in BRF in 2010 had 12.67% of total shares and this proportion was reduced in 2018 when an 11.41% stake was held by the largest shareholder. In its turn, The Batista family increased its position as majority shareholder within the same period (from 28.07% to 41.93%).

Once it is clear the major differences of ownership structures between the two companies, our next session presents an analysis of a major corporate decision in the sector, which is the acquisition of other companies worldwide.

3. Acquisitions made by JBS and BRF

Food processing has the potential of generating substantial cash flows, especially for companies with significant market shares, such as BRF and JBS. Besides the generation of cash flow, BRF and JBS usually had no difficulties in accessing credit or attracting outside investors. These characteristics are favorable for those companies expanding their operations through acquisitions of other companies in the same industry.

Although BRF and JBS had no difficulties in accessing credit, the decision to expand operations by acquisitions implies risks. Depending on the business profile of the acquired company and, especially, on the price paid by the target company shares, an acquisition can easily turn into a negative NPV investment to shareholders of the acquirer company.

As we present in detail in this session, JBS's and BRF's decisions regarding acquisitions were very different during the last decade, since JBS had a much more aggressive acquisition policy. The main hypothesis suggested in this paper is that, in line with the findings of Adams et al. (2005), controlling shareholders of JBS would face less resistance to implement their personal choices over corporate decisions than major shareholders of BRF. We expect that, as majority controlling shareholders, if the Batista family had the goal of making any acquisition, other shareholders would have less to no power to convince them that this decision could be hurtful to the company.

The prominence of acquisitions made by JBS, in contrast to the policy observed by its major competitor may be due to the different ownership structures of JBS and BRF. To analyze and compare the corporate policies regarding acquisitions, we resorted to three different databases: Capital IQ, Dealscan from EIKON, and material facts ("*Fato*

Relevante") disclosed by the companies. Despite thoroughly searching these three sources of data, not all acquisitions had their value disclosed.

We focused on the period from 2007 to 2019 for JBS because the company started its acquisition expansion policy in 2007. We could not study the same period for BRF because that company, as mentioned before, only started its operation after the merger of Perdigão and Sadia in 2009. We did not anticipate any problems by analyzing different periods, since the whole purpose of this research is to analyze the acquisition policy and its effects.

As presented in Table 1, BRF completed 36 acquisitions while JBS completed 64. In these periods, BRF made on average 3.27 acquisitions per year while JBS made 4.92.

Table 1: Number of acquisitions analyzed: from 2007 to 2019 for JBS and from 2009 to 2019 for BRF

Total acquisitions analyzed		
	BRF	**JBS**
With deal value informed	26	47
Without deal value informed	10	17

Even more important than the number of acquisitions is the value involved in those deals. As indicated in Table 1, several transactions did not have their value disclosed. Therefore, the values presented in Figure 6 are underestimated.

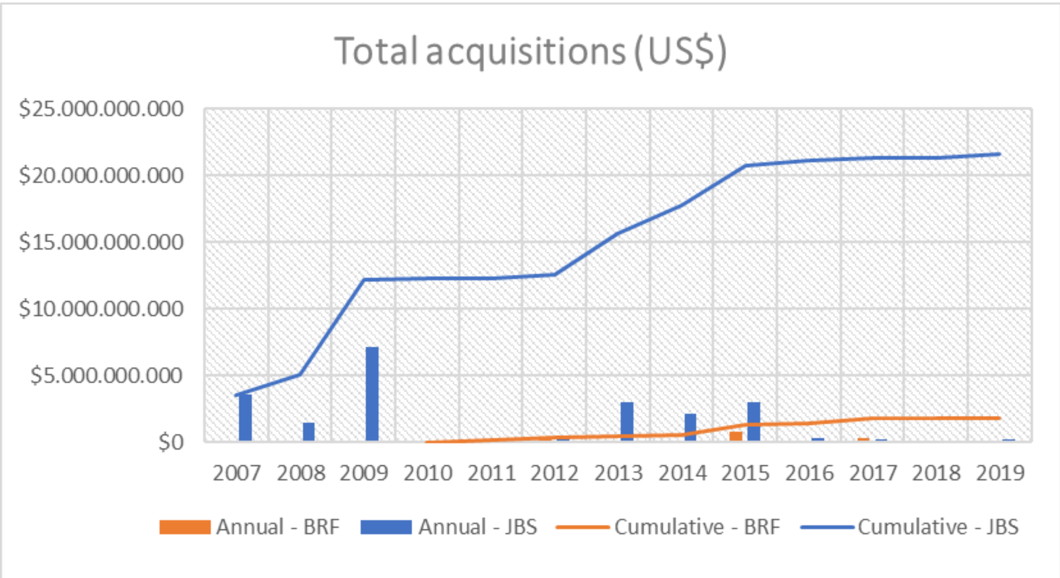

Figure 6: Deal values of acquisitions made by JBS and BRF, when information is available. *Sources*: Capital IQ, Dealscan from EIKON, and material facts ("Fato Relevante") disclosed by the companies.

JBS had a much more aggressive policy than BRF regarding acquisitions, with more than 20 billion dollars in total value negotiated in 13 years (2007-2019). BRF, on the other hand, made acquisitions of less than 2 billion dollars in total value during the 11 years (2009-2019) analyzed.

The results presented in Figure 6 demonstrate that JBS made 10 times more acquisitions than BRF (in total available deal value). Such a large difference between two companies with very similar operations may be due to market opportunities, access to capital, strategy, and/or risk-taking preferences of their controlling shareholders.

Another interesting aspect is the profile of the acquisitions made by BRF and JBS. Based on the acquisitions with disclosed deal value, we can verify the geographic regions of the target companies. At this point, it is relevant to mention that the acquisitions analyzed were not only performed directly by JBS and BRF but also by their subsidiaries, including the ones operating in other countries.

Figure 7 presents the geographic region and importance (total acquisitions value) of the target companies acquired by BRF and its subsidiaries from 2009 to 2019. As shown in Figure 7, BRF acquisitions were concentrated in South America and Asia. A significant part of its acquisitions was related to the company named “Golden Foods Siam Ltd.” from Thailand and with a total value of 360 million dollars in 2015. The other significant acquisitions took place in Argentina and Paraguay, places with great tradition in meat production.

JBS had a different approach in its acquisitions, not only in volume, as shown in Figure 6, but also in its geographic distribution, with acquisitions in Oceania, Europe, Central and North America. JBS did the larger portion of acquisitions in Brazil, acquiring competitors and companies in different scopes of the food processing industry. The total acquisition deal value made by JBS in Brazil was almost 12 billion dollars, more than six times the total value of acquisitions made by BRF worldwide. We present in Figure 8 the map showing the location of target companies acquired by JBS from 2007 to 2019

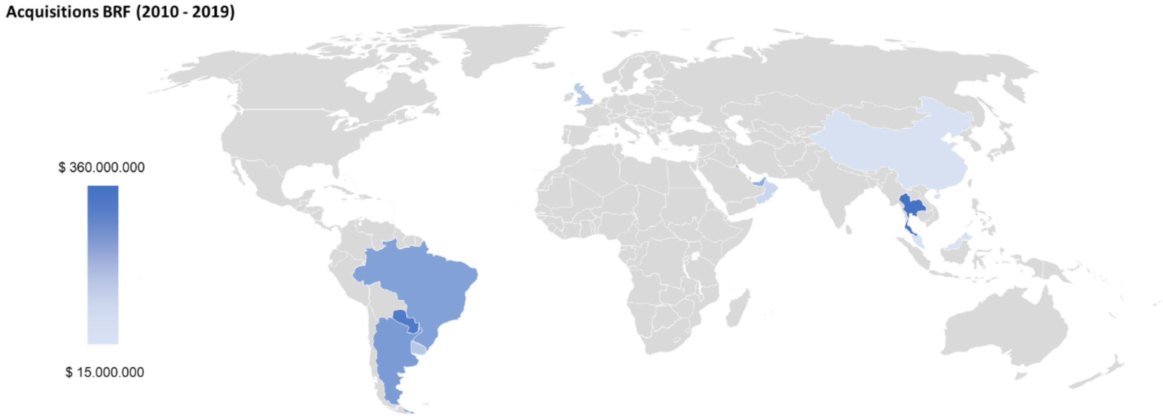

Figure 7: Heat map of acquisitions made by BRF and its subsidiaries from 2009 to 2019.

Figure 8: Heat map of acquisitions made by JBS and its subsidiaries from 2007 to 2019.

Over the past two decades, the Brazilian government implemented a policy of "national champions", launched during President Luíz Inácio Lula da Silva's first term. This policy aimed to replicate state-led industrial development largely employed by southeast Asian countries in the 1980s and 1990s (Mungioli, 2019). The Brazilian bank of development (BNDES) was responsible for implementing part of this policy by financing Brazilian companies that were willing to expand their operations. This factor cannot be overlooked, since we need to understand the role of BNDES in JBS's expansion. As mentioned previously, maybe the difference in JBS and BRF acquisitions policies may be due to favorable access to capital. Thus, we dedicate the next session to understand BNDES financing policies to JBS and BRF.

4. BNDES financing policies regarding JBS and BRF

BNDES was a major player for Brazilian companies as a source of financing, especially after 2000. Obtaining funds from the government treasury and a variety of state funds,[3] BNDES is a development bank that usually offers companies loans with attractive rates, according to government guidelines.

As a creditor, BNDES uses three major facilities:

a) Automatic operations (*Automáticas*): credit issued by BNDES through commercial banks, without the necessity of pre-analysis from BNDES. The commercial bank that has a relationship with the borrower makes the risk assessment. Those operations are limited to R$ 150 million.[4]
b) Non-automatic operations (*Não Automáticas*): BNDES is responsible for credit analysis, with each project being individually assessed, with a minimum value of R$ 10 million.
c) Pre-Boarding (*Pré-embarque*): credit available to Brazilian companies willing to export goods, to finance production destined to foreign countries.

Recently, BNDES made available a database[5] with detailed data regarding its operations classified by company. Both companies, JBS and BRF made significant credit operations with BNDES, as presented next.

Figure 9 shows that JBS borrowed almost 3 billion reais from January 2000 to December 2019. JBS borrowed resources under the three types of facilities, beginning its relationship with BNDES in 2002, in line with the prediction that government guidelines influenced BNDES loans. Even though the borrowing was of relevant amounts, it is important to observe that the amount spent in acquisitions was substantially superior, indicating that JBS had to fund those acquisitions with resources other than the BNDES loans.

---

[3] For a detailed description, see https://www.bndes.gov.br/wps/portal/site/home/relacoes-com-investidores/fontes-de-recursos

[4] Information available at BNDES website: https://www.bndes.gov.br/wps/portal/site/home/financiamento/guia/formas-de-apoio/

[5] Database with detailed data regarding investments made by BNDES available at the website: https://www.bndes.gov.br/wps/portal/site/home/transparencia/consulta-operacoes-bndes/consulta-a-operacoes-bndes/

Figure 10, presents the loans from BNDES awarded to BRF after 2009 (the data between 2000 and 2009 was not considered because BRF changed dramatically its structure after the merge of Sadia and Perdigão).

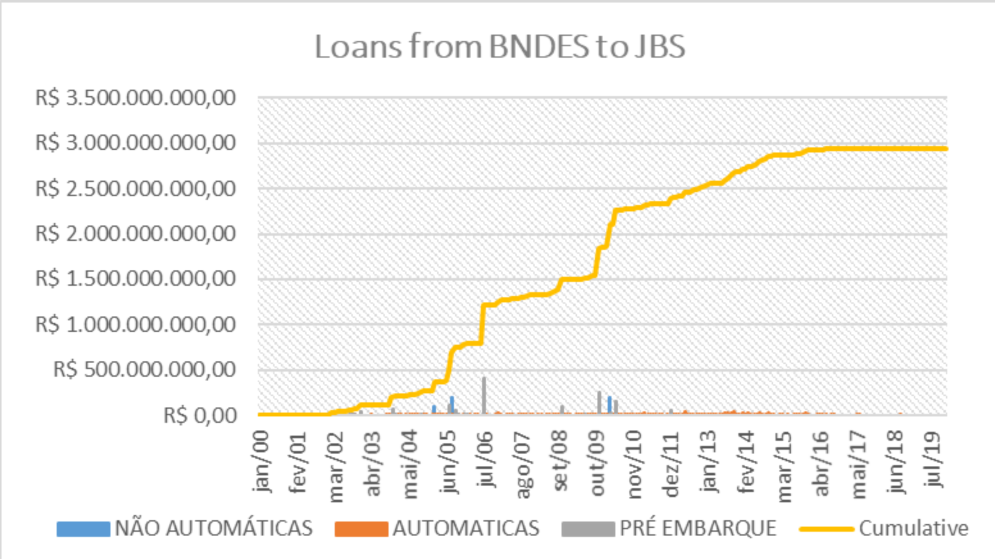

Figure 9: Total loans made by BNDES to JBS from January 2000 to December 2019, representing all available data of credit operation between BNDES and JBS.

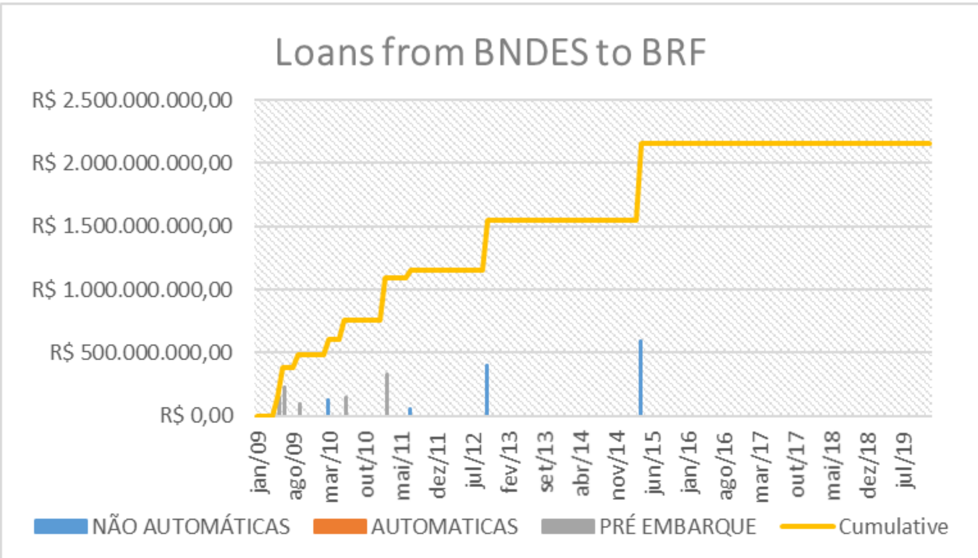

Figure 10: Total loans made by BNDES to BRF from January 2009 to December 2019.

BRF borrowed more than R$ 2 billion from 2009 to 2019, so on average by year, BRF received more financing from BNDES than JBS. This assessment rules out the possibility that the lack of loans from BNDES limited BRF's possibility to make acquisitions at a similar level to JBS.

The relationship of JBS and BRF with BNDES as a lender does not seem sufficiently different to justify the difference in acquisition policies between the companies. Nonetheless, there remains the possibility that BNDES could have played a significant role as a shareholder. As observed in Figure 5, BNDESPAR held around 20% of JBS shares between 2010 and 2018.

BNDES also invests in companies as a shareholder through its subsidiary BNDESPAR, thus instead of interest and repayment of principal, BNDES expects its return on investment through dividends and eventual capital gains on divestment. Usually, BNDES makes this kind of investment to improve the capital ratios of the companies, signal confidence in the companies' prospects, and help them invest in real assets, which could explain JBS's aggressive policy regarding acquisitions. Figure 11 presents investments made by BNDESPAR acquiring JBS shares.

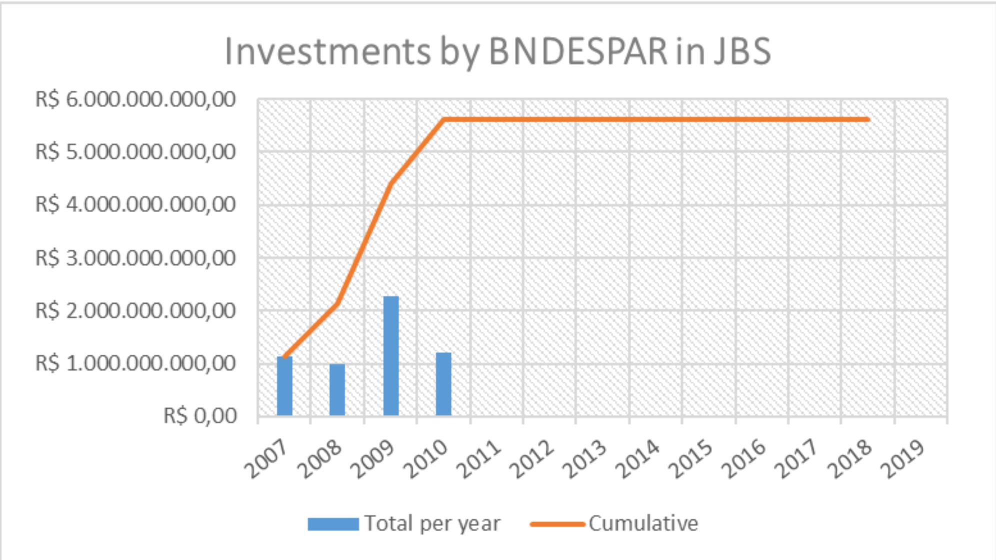

Figure 11: Total participation investments made by BNDESPAR to JBS from January 2000 to December 2019, representing all available data of participation operations between BNDES and JBS.

From 2007 to 2019, BNDESPAR invested R$ 5.6 billion in JBS. These investments relate directly to acquisitions made by JBS, according to the description of the investments available in the database analyzed. Once again, despite the relevance of its investments, BNDES cannot be solely responsible for JBS acquisitions, which had a total value of more than U$$ 20 billion. If added up, the total investment made by BNDES (including loans and stock ownership), represents less than 10% of the total acquisitions made in the same period.

As with the loans, the comparison of BNDESPAR investments in BRF and JBS is important to assess whether they could possibly explain the difference observed in acquisitions. Figure 12 shows investments made by BNDESPAR in BRF after 2009.

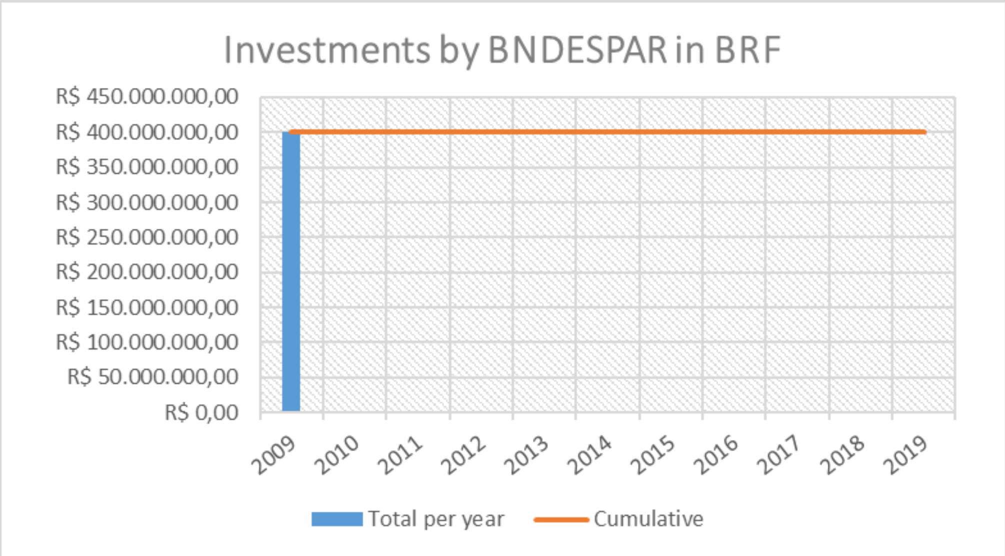

Figure 12: Total participation investments made by BNDESPAR to BRF from January 2009 to December 2019.

BNDESPAR also acquired stakes in BRF in 2009. However, the amount invested was significantly smaller than the one invested in JBS. The relevant aspect in this analysis is not the value per se, but the observation that BNDESPAR made the same kind of investment in BRF and JBS. Thus, we interpret this as an indication that had BRF the intention to make international acquisitions, BNDESPAR could provide capital to facilitate those deals.

As observed, BNDES was an important lender to both BRF and JBS. The interest rate practiced by BNDES in its credit facilities is usually more attractive than the market rate offered by commercial and investment banks. Then, why would these companies resort to BNDESPAR as a shareholder since it did not represent the same advantage as a creditor?

Following Myers and Majluf's (1984) pecking order theory, outside equity is the most expensive source of capital, thus shareholders are the last investors to be tapped when internal cash and credit are limited. In line with this theory, JBS should only source BNDESPAR capital to make acquisitions if its controlling shareholders believed that expected firm value after those transactions would be overvalued, either by overvalued expected cash flows or by an undervalued risk-adjusted discount rate. In other words, such deals were so risky that was not worthwhile for controlling shareholders to risk their own money.

In summary, this section shows that:

1) BRF and JBS had similar access to credit from BNDES, revealing that BNDES loans were not capable to explain the difference in acquisition policies between the two companies.

2) JBS received R$ 5.2 billion more than BRF as equity investment related to acquisition operations, suggesting that JBS controlling shareholders assessed those deals as risky investments.

3) The amount received by JBS from BNDES represents less than 10% of the total deal value of acquisitions, weakening the hypothesis that BNDES relationship with JBS was the main responsible for JBS's acquisition policy; and

4) If BRF had a corporate policy of massive acquisitions, it probably would not have had problems funding those deals.

5. Financial indicators of BRF and JBS

Prior sections showed that JBS and BRF had very different ownership structures and acquisitions policies. We also showed that both companies had access to BNDES resources, even if JBS received more funds through BNDESPAR. In this section, the objective is to analyze the impact that those decisions had on JBS and BRF financial performance.

By analyzing the financial performance (obtained from Capital IQ's database) it is possible to verify whether JBS's acquisition policy resulted in gains to its shareholders by the optimization of operations and increase in profitability. The first financial indicator analyzed is the capital structure, represented by the debt over equity ratio, presented in Figure 13.

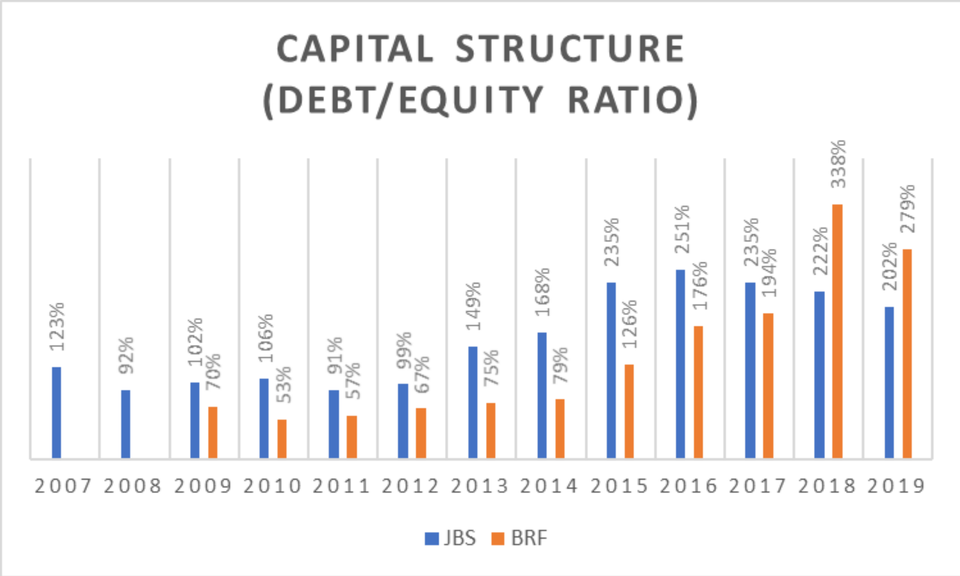

Figure 13: Capital structure of JBS and BRF.

JBS had a significantly more levered capital structure than BRF until 2017, which might be explained by the necessity to fund acquisitions. Another relevant aspect is that BRF probably had debt capacity to obtain more credit, in case it pursued the same acquisition policy as JBS.

Figure 14 presents total assets and total liabilities for both companies. JBS significantly increased its assets between 2007 and 2015, as a consequence of its expansion through acquisitions. These results show that the acquisitions effectively made

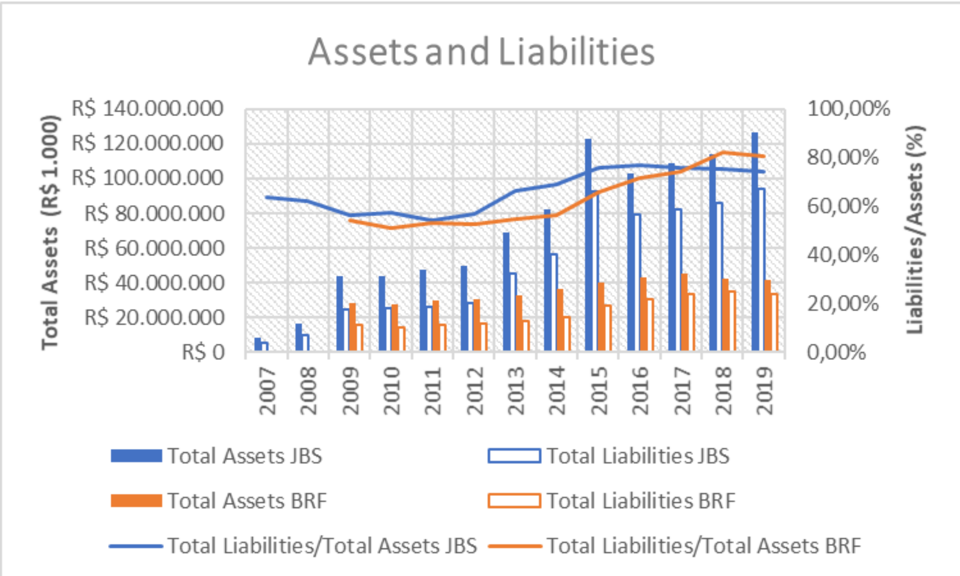

Figure 14: Total assets and liabilities of JBS and BRF.

JBS a bigger company, but also with more liabilities. BRF, on the other hand, displayed a much more stable and subtle growth in its assets and liabilities, but with a smaller ratio of liabilities over total assets until 2017.

Besides assets and liabilities, Figure 15 represents the total revenues of JBS and BRF, which, in line with the results presented before, shows that JBS had greatly increased its revenues, something highly expected due to the acquisitions made during this period. JBS's total revenue increased from approximately R$15 billion in 2007 to more than R$ 200 billion in 2019.

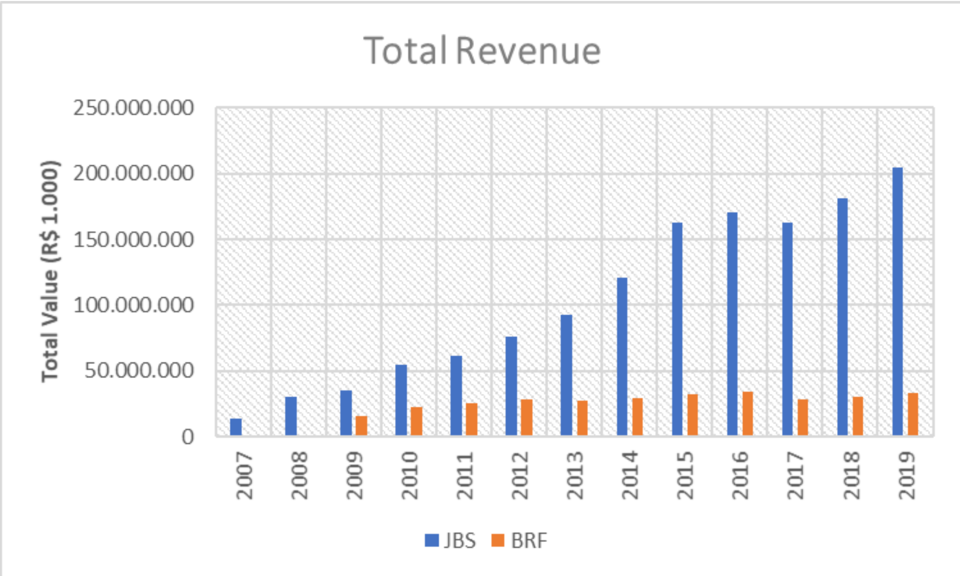

Figure 15: Total revenue of JBS and BRF.

Figure 16 presents the capital expenditures (CapEx) by JBS and BRF. JBS's total CapEx from 2009 to 2019 was larger than R$ 30 billion and almost twice BRF's CapEx for the same period. This also suggests that BNDES's investments in both companies during this period were less relevant than it seems at first glance. These financial aspects are in line with previous findings: JBS and BRF were very similar from 2008/2009, however, the paths chosen since then were completely different, essentially due to acquisitions made by JBS.

The question that remains is whether acquisitions created value to JBS shareholders. One way to check that is by comparing the companies' profitability. Figure 17 presents the evolution of gross profit and gross profit margin for JBS and BRF.

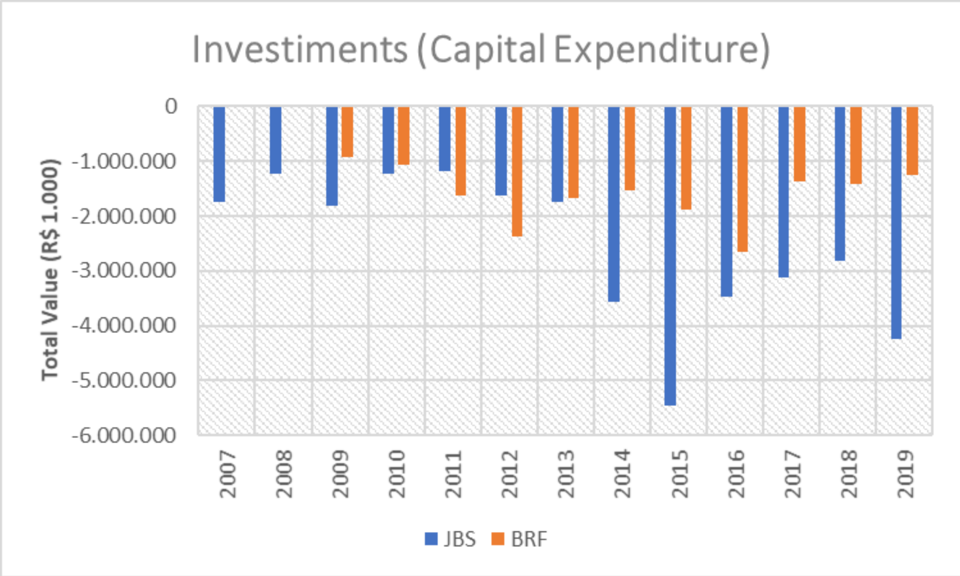

Figure 16: Capital Expenditures (CapEx) of JBS and BRF

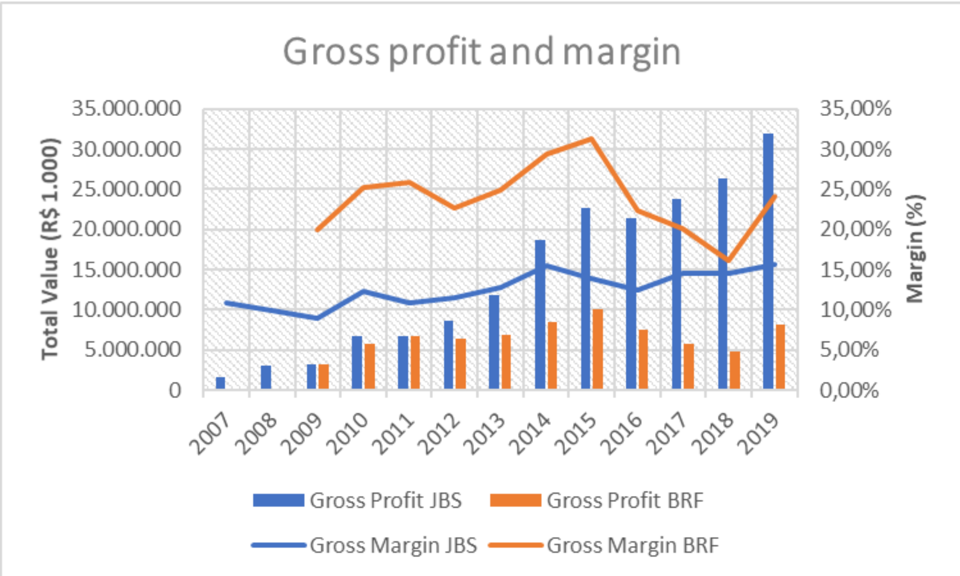

Figure 17: Gross profit and gross profit margin of JBS and BRF

JBS increased its total gross profit year to year, possibly as a consequence of its acquisitions. However, BRF's margin was almost twice JBS's margin during the same period, meaning that JBS's acquisitions apparently did not make the company more profitable. When compared to BRF, JBS's profitability was only similar to BRF's in 2018, the worst year for BRF during the series. Another profitability measure is the EBITDA, presented in Figure 18.

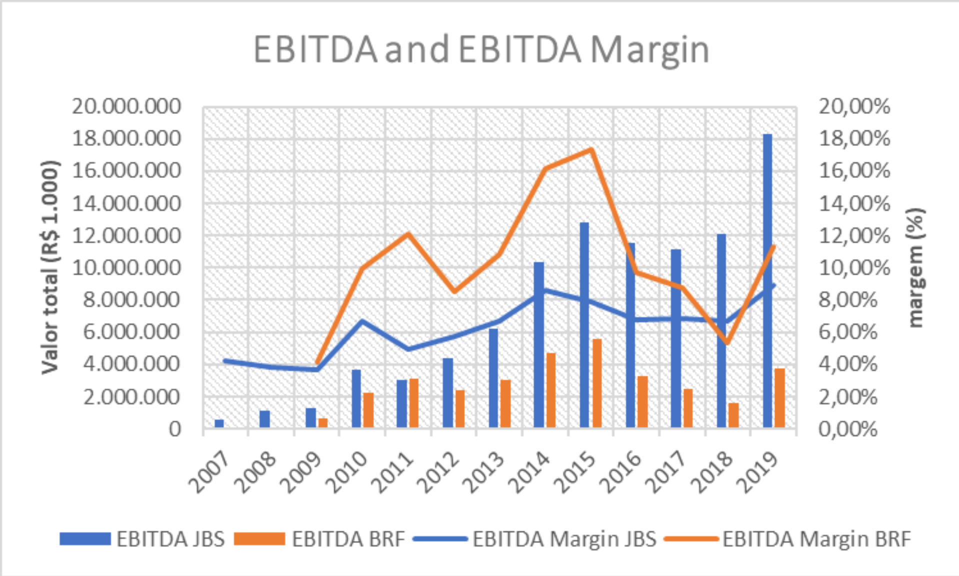

Figure 18: EBITDA and EBITDA Margin of JBS and BRF.

The analysis of EBITDA and its margin reveals that in 2009 the margins of JBS and BRF were very similar. However, during the following years, BRF increased its margins more than JBS, revealing that the acquisitions policy of JBS was less successful than BRF policies. We could expect that with an increase in market share obtained through acquisitions, JBS would increase its bargain power, which should be reflected in its profitability measures. Yet this is not observed in the data.

The last indicator selected in this analysis is the Price-to-Book ratio, which represents how investors price the company shares. A high Price-to-Book ratio suggests that investors see growth opportunities that are not present in current book value but will be probably realized in the future. This ratio is a measure of how optimistic about any company's prospects the investors are.

The results presented in Figure 19 suggest that investors were not very optimistic about JBS's prospects during most of the period. In fact, the Price-to-Book ratio was lower than 1 in 2010, 2012, and 2013 and approximately half of the same ratio was observed for BRF until 2017. These results strongly suggest that JBS's corporate policies were less valued for investors than the ones from BRF.

This analysis suggests that JBS's controlling shareholders (the Batista's brothers) might have faced severe resistance to implementing the acquisition policy had they not a controlling stake. The acquisitions allowed the company to grow fast but did not increase its profitability or created value for shareholders.

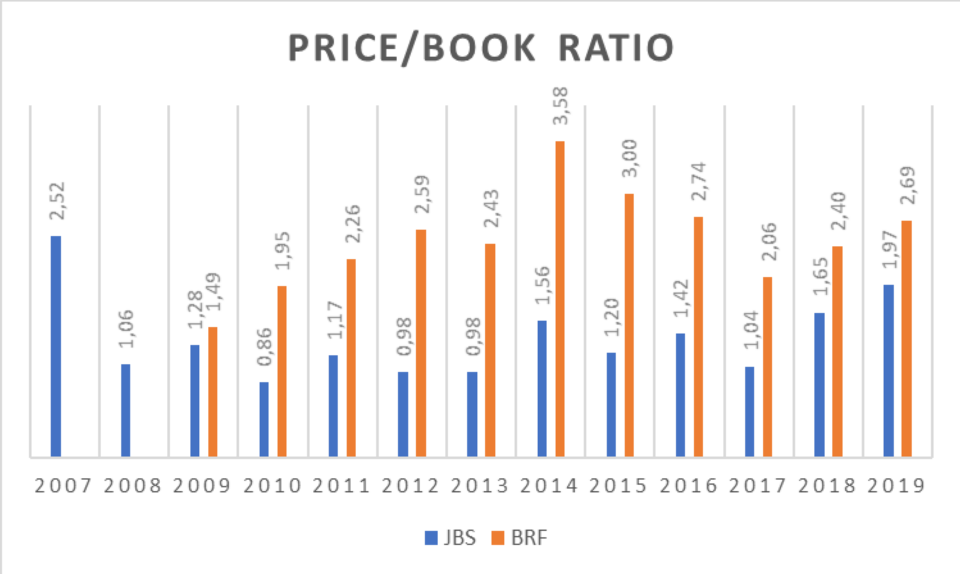

Figure 19: Price-to-Book ratio of JBS and BRF.

6. Final remarks

The objective of this study was to analyze corporate decisions of two very similar companies in their operations, but very different in their ownership structure. Although any causality cannot be inferred by the analysis of the two companies, this study sheds light on the possible relationship between the substantial power that JBS's controlling shareholders had and the acquisition policy put in place by the company from 2007 to 2015.

Our main hypothesis is that were Batista's brothers not the controlling shareholders, the aggressive acquisition policy of the company might not have been pursued. We reached such a conclusion through the analysis of financial reports from JBS and BRF, showing that the acquisitions did not increase JBS' profitability and create value for its shareholders relative to BRF.

The analysis of BNDES loans and investments in both JBS and BRF suggests that government policies enabled through BNDES are unlikely to explain JBS' acquisition policy, reinforcing the hypothesis that the significant amount spent in acquisitions is possibly related to the personal preferences of JBS's controlling shareholders.

The findings of this study indicate the need for more in-depth research regarding the relationship between ownership structure and corporate policies, especially regarding the level of risk that companies with concentrated ownership tend to embrace compared to similar companies with dispersed ownership. The results obtained by comparing JBS's and BRF's decisions suggest that concentrated ownership could induce a higher level of corporate risk-taking.

7. References

Adams, R. B., Almeida, H., & Ferreira, D. (2005). Powerful CEOs and their impact on corporate performance. *The Review of Financial Studies*, 18(4), 1403-1432.

Becker, B., & Strömberg, P. (2012). Fiduciary duties and equity-debtholder conflicts. *The Review of Financial Studies*, 25(6), 1931-1969.

Cain, M. D., & McKeon, S. B. (2016). CEO personal risk-taking and corporate policies. *Journal of Financial and Quantitative Analysis*, 51(1), 139-164.

Dharwadkar, B., George, G., & Brandes, P. (2000). Privatization in emerging economies: An agency theory perspective. *Academy of Management Review*, 25(3), 650-669.

Dyck, A., & Zingales, L. (2004). Private benefits of control: An international comparison. *The Journal of Finance*, 59(2), 537-600.

Eisdorfer, A. (2008). Empirical evidence of risk shifting in financially distressed firms. *The Journal of Finance*, 63(2), 609-637.

Galai, D., & Masulis, R. W. (1976). The option pricing model and the risk factor of stock. *Journal of Financial Economics*, 3(1-2), 53-81.

Gilje, E. P. (2016). Do firms engage in risk-shifting? Empirical evidence. *The Review of Financial Studies*, 29(11), 2925-2954.

Jensen, M., Fama, E., Long, J., Ruback, R., Schwert, G. W., Smith, C., Warner, J. (1989). Clinical papers and their role in the development of financial economics. *Journal of Financial Economics*, 24(1), 3-6. https://doi.org/10.1016/0304-405X(89)90069-X

Jensen, M. C., & Meckling, W. H. (1976). Theory of the firm: Managerial behavior, agency costs and ownership structure. *Journal of Financial Economics*, 3(4), 305-360.

Mungioli, R. P. (2019). *O desenvolvimentismo possível? política de campeões nacionais e inserção internacional do Brasil em inícios do século XXI*. Dissertação (Mestrado), Universidade Federal do Rio de Janeiro, Rio de Janeiro,139 p. http://web.bndes.gov.br/bib/jspui/handle/1408/17400

Myers, Stewart C.; Majluf, Nicholas S. (1984). Corporate financing and investment decisions when firms have information that investors do not have. *Journal of Financial Economics*. 13(2): 187–221.

Young, M. N., Peng, M. W., Ahlstrom, D., Bruton, G. D., & Jiang, Y. (2008). Corporate governance in emerging economies: A review of the principal–principal perspective. *Journal of management studies*, 45(1), 196-220.