

Corporate responsibility: a performance analysis of agribusiness companies

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Abstract

The analysis object of this article consists of Brazilian companies linked to agribusiness, belonging to the segments of processed food, wood, pulp, and paper, listed on the ISE portfolio of B3. It aims to analyze the investment performance and return concerning the economic and financial dimensions of the companies listed on this index. In addition, ISE B3, founded in December 2005, completed its 15th anniversary in 2020, a period selected for the horizon of analysis of this study. With the purpose to evaluate the companies' performance, data of the enterprises' financial indicators, referring to the period they were part of the index, were collected. The results found indicated a reduction in the profitability of the enterprises analyzed. According to the evaluation, only one of the companies did not incur an annual loss. The fluctuations observed in the enterprises' economic performance were attributed to external factors.

Keywords: Agribusiness. Corporate Social Responsibility. Indicators

1. Introduction

Beginning in 1960, three waves of public pressure shaped the way how sustainability is seen and approached by governments and companies. Initially, the theme related to environmental matters started incorporating economic and social interests (ELKINGTON, 2013). Sustainability is related to well-being and its preservation for future generations (KUHLMAN; FARRINGTON, 2010). Popularly, the idea of sustainability is strongly

associated with the environment. However, the literature approaches sustainability based on three different spheres: social, economic, and environmental.

In the 1980s, the term sustainability migrated from the academic sphere to the agencies' operational planning (KIDD, 1992). Therefore, companies from different sectors incorporated expressions such as Corporate Social Responsibility (CSR) and Triple Bottom Line (TBL) into their agenda. Even though there is no defined concept, CSR is commonly associated with a phenomenon integrated by corporative actions that impact the society. The idea of Corporate Social Responsibility focuses on the impacts in the social, economic, and environmental spheres, frequently called, in the literature, Triple Bottom Line. Implementing CSR considering all of its aspects is fundamental since poor performance can compromise the relationship between society and the stakeholders of a company (MASUD *et al.*, 2019).

It is widely disseminated, in the literature, that industrialized economies present an expressive use of fossil fuels. The correlation between CO₂ emissions and income is significant in the long run, implying that the higher the income level, the higher the amount of CO₂ a country emits (RIDZUAN *et al.*, 2020). In Brazil, topics such as environmental management, sustainable development, and residue management are the most searched when referring to sustainable production. In contrast, themes like renewable energy and environmental responsibility need more attention (NETO, G. C. O.; SHIBAO; FILHO, 2016). The relevance of these themes must be highlighted, for the negative impact on the environment does not come only from the industry but also from other sectors. The agricultural segment is responsible for about 18% of the global emissions of greenhouse gases contributing to climate change (GARSKE; EKARDT, 2021).

It is already possible to observe the applicability of sustainable strategies in Brazilian companies linked to agribusiness. In 2020, products like cattle meat, cellulose, poultry, and its derivatives occupied, respectively, the 5th, 6th, and 9th places in the total exports ranking, (COMEXSTAT, 2020), which shows the agribusiness contribution to the Brazilian GDP. In the sector, in particular, the initiatives involving the implementation of CSR are mainly seen in specific products and the production chain (POETZ; HAAS; BALZAROVA, 2013). The sustainable use of land, the animals' health, and the food nutritional quality can be considered aspects of CSR in agricultural production (LUHMANN; THEUVSEN, 2016).

Given the importance of this sector and sustainability, this article aims to analyze the agribusiness companies' performance linked to the segment of processed food, cellulose, wood, and paper listed on the *Índice de Sustentabilidade Empresarial* [Index of Entrepreneurial Sustainability] (ISE) of B3. The objective is to analyze the investments and

returns performance referring to the economic-financial dimension of the companies listed on *Índice de Sustentabilidade Empresarial* [Index of Entrepreneurial Sustainability] (ISE). Furthermore, the ISE B3, founded in December 2005, completed its 15th anniversary in 2020, the analysis period of this study.

The present article contributes to the literature and research on the companies' performance operating within the agribusiness context listed on ISE B3. Similar studies addressed the performance of enterprises that integrate the index portfolio (ALVES; ARAÚJO; SANTO, 2019; NETO, R. *et al.*, 2020; SANTIS; ALBUQUERQUE; LIZARELLI, 2016; SOUSA; FARIA, 2019). However, this article focuses on the agribusiness sector and the impact of the adoption of sustainable methods of production and governance on the economic performance of the corresponding companies. The diffusion of the idea that corporative actions, based on the three sustainability dimensions, improve economic performance is widespread in the literature. Therefore, this article seeks to verify the applicability of this concept for the sector in consideration. Additionally, the study presents a long-term analysis since the chosen period comprises the 15 years of existence of the ISE B3, one of the differentials by this research regarding the mentioned works.

2. Theoretical Framework

2.1. Corporate social responsibility

CSR implementation happens differently in each country. Campbell (2007) argued that not only the institutions but also the economic conditions influence the CSR execution by firms. Factors like the size of the directing board of a company and the existence of the Reference Shareholder are considered instruments of corporate governance that intermediate the institutional impact on CSR reports. Consequently, the institutional environment influences corporate governance mechanisms that, in certain societies, companies present a higher complexity in CSR reports (RODRÍGUEZ; PÉREZ, 2016).

This contrast can be observed, between emerging and developed countries, due to the application of CSR in developing countries receiving significant ideological influence rather than deriving out of legal forms such as regulation, similar to what happens in developed nations (DIAB; METWALLY, 2020). The cultural aspects, the characteristics of economic agents, and community engagement affect CSR performance in emerging countries (HANDIWIBOWO *et al.*, 2020). In developed nations, it is possible to emphasize the

functioning of value chains and their influence on sustainable practices (WOLFF; GONDTRAN; BRODHAG, 2018).

Nonetheless, the CSR implementation is essential for companies. Sustainable measures generate positive effects on consumers, especially in the food sector. The CSR application makes consumers associate these companies with terms such as quality, and food safety, resulting in satisfaction and, consequently, customer loyalty (MERCADÉ-MELÉ; FANDOS-HERRERA; VELASCO-GÓMEZ, 2021). Methods like the conservation of natural resources, reduction in the use of pesticides, (LAURETT; PAÇO; MAINARDES, 2021) and the production of organic food are attempts to ensure food quality and reduce environmental damage (POETZ; HAAS; BALZAROVA, 2013). The implementation of efficient public policies aligned with technological innovation plays an essential role in the carrying out of sustainable production methods (ZANIN *et al.*, 2020). An effective strategy that incorporates the economic, social, and environmental spheres has the potential to increase production, reduce poverty and the emission of greenhouse gases (ROSANO-PEÑA *et al.*, 2014).

Additionally, stakeholders have been presenting a growing interest in approaches that include social and environmental aspects and are not unidimensional, focusing only on economic performance (DOČEKALOVÁ; KOCMANOVÁ, 2016). Sustainability, as the focal point of the companies' performance, can be measured by the conduct in the three dimensions. By seeking the intersection of these spheres in their planning, companies obtain economic benefits in the long run and a competitive advantage in the market (CARTER; ROGERS, 2008).

2.2. Corporate sustainability index

The Brazilian Stock Exchange (B3) presents several indexes, including broad indexes, like Ibovespa, governance, and sustainability indexes. B3 has two sustainability indexes: Carbon Efficient Index (Índice Carbono Eficiente - ICO2 B3) and the Brazilian Corporate Sustainability Index (Índice de Sustentabilidade Empresarial - ISE B3) (B3, 2021).

The Brazilian Corporate Sustainability Index was created in 2005 and financed by the International Finance Corporation (IFC) in partnership with World Bank. By being the 4th sustainability index created in the world, its purpose consists of stimulating the corporations' ethical responsibility as well as answering the demand for sustainable investments in the stock market (B3, 2021). The ISE B3 is a tool for comparative analysis that operates under the

corporate sustainability framework. The evaluation process comprehends the aspects of economic efficiency, environmental equilibrium, social justice, and corporate governance.

Historically, there was a high concentration in ISE of sectors like electric energy, financial, biofuel, and others. However, the index portfolio has been diversifying since 2009 (CUNHA; SAMANEZ, 2014). In 2006, ISE had 28 companies trading 34 stocks. These numbers increased over the years, and in 2021, the index portfolio presented 39 companies and 46 financial assets. The participation of sectors also changed over time. In 2020, when completed 15 years of existence, the index comprised companies of segments like processed food, civil construction, commerce, financial intermediates, paper, chemicals, healthcare, and others (ISE B3, 2020). The announcement of the portfolio happens in the previous year to its implementation. Therefore, in 2020, ISE B3 announced its 16th portfolio.

Participation in ISE can fall into two different categories. The *Simulado* category is open to all companies listed on B3, and besides having its conditions, the companies belonging to this category do not integrate the annual portfolio announced by ISE. The *Elegível* category requires that companies take a questionnaire and present evidence that corroborates their answers. This rank contemplates the issuers of the 200 most liquid stocks. The organization of the questionnaire applied by ISE B3 takes the form of seven dimensions: general, product nature, corporate governance, economic-financial, social, environmental, and climate change (ISE B3, 2021). Table 1 presents the objectives of each of the seven dimensions.

Table 1: Dimensions and objectives of Índice de Sustentabilidade Empresarial

Dimensions	Objectives
General	To identify the degree to which sustainability incorporates into the business structure and future company perspectives.
Product Nature	To observe how the company seeks to decrease the risks of its dependency on inputs that negatively impact the environment.
Corporate Governance	To identify how much effort the company dedicates to obtaining better chances of assuring the creation and preservation of economic value for the long run.
Economic - Financial	To analyze the economic-financial impact on society and the performance presented in the accounting reports.
Social	To identify to which extent the company can keep positive relationships with social segments creating and sharing value.
Environmental	To comprehend the structure of environmental management and how it aligns with the best corporate practices.

Climate Change	To identify to which extent the company incorporates mitigation and adaptation to climate change considering the transition to a resilient low-carbon economy.
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Source: Produced by the authors based on ISE B3 data

In the context of its 15th anniversary, the index is reviewing the methodology, structure, and content of the questionnaire. Based on this, ISE intends to release a new version in 2021, aiming to improve and reach a higher level of applicability for the index. The adjustments will allow ISE to support companies and also other agents of society (ISE B3, 2021).

2.3. Related studies

Other articles also have the analysis of companies listed on ISE B3 as their central focus. Neto *et al* (2020), evaluated the firms listed on ISE and Ibovespa from 2014 to 2018. In the study, the analysis of the companies' performance happens through the use of the ROA, ROE, and ROIC annual indicators. The authors did not intend to evaluate the firms of a specific segment, and on account of that, the only one not considered was the financial sector. The findings indicated a neutral relationship between sustainable development and financial performance. Additionally, Santis, Albuquerque and Lizzarelli (2016) made an analysis similar to the one mentioned previously but with the period from 2009 to 2013. In the evaluation, they calculated the profitability and liquidity of the companies and ran statistical tests like cluster and non-parametrical. Likewise, they did not find data supporting the existence of significant differences between the profitability of companies listed on ISE, Ibovespa, or both indexes.

The literature surrounding this theme is abundant and has more specific studies. Alves, Araújo and Santo (2019), analyzed 37 companies with stocks negotiated in B3 from 2012 to 2016. The selected enterprises belonged to sectors with high polluting potential but emitted sustainability reports voluntarily. The authors did not consider specific indexes in the analysis, yet rejected the hypothesis that the emission of sustainability reports has a positive relationship with the companies' financial performance. Furthermore, Sousa and Faria (2019) considered in their study 60 corporations, 30 belonging to ISE and 30 not listed on the index. While evaluating the Debit Valuation Adjustment (DVA), the authors concluded that integrating or not the ISE B3 portfolio did not impact the DVA of the companies in a significant way.

Given that most of the articles mentioned focused on comparing the profitability of the companies listed on ISE B3 to the ones listed on Ibovespa, this study adopted a more specific approach. Besides considering particular segments in agribusiness, the present article seeks to characterize the factors that impact the financial performance of the companies associated with the processed food, wood, cellulose, and paper sectors. It is important to emphasize that the period of the analysis of this article exceeds the period adopted in the cited studies given the fact that comprise the first 15 years that ISE B3 has been active.

3. Methodology

This study analyzes the annual profitability indicators ROA, ROE, and ROIC, particularly average ROIC and ROE. The Return on Assets (ROA) expresses the profitability of a company based on its total assets. The Return on Equity (ROE) measures the profitability generated based on the equities of the firm. Finally, the Return on Invested Capital (ROIC) indicates the return on the total invested capital considering the company's equity and third-party capital (EXPERT XP, 2020). Table 2 presents the calculation method for the mentioned indicators used by the database Economática (2021).

Table 2: Calculation method of the indicators

ROA	$\frac{\text{Net profit} + \text{Participation of minority shareholder}}{\text{Total assets} * 100}$
Average ROE	$\frac{\text{Net profit} + \text{Participation of minority shareholder}}{(\text{Initial net worth} + \text{Initial Partic. minor. sharehol.} + \text{net woth} + \text{Partic.minor. sharehol.}) / 2 * 100}$
Average ROIC	$\frac{1 - \text{Income tax} / 100) * \text{EBIT}}{\text{Total Average Invested Capital} * 100}$

Source: Produced by the authors based on Economática data

The present article focuses on companies linked to the agribusiness sector. The population considered in this study consists of five companies, one associated with the processed food segment and four belonging to the wood, cellulose, and paper segments. The sectors and corresponding companies are in Table 3.

Table 3: Segment and companies

Processed Food	BRF
Wood	Duratex

Cellulose and Paper	Klabin Suzano Fibria
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The research did not include enterprises not associated with the mentioned categories. The financial indicators, accounting statements, reports, and explanatory notes of the companies listed on ISE B3 are from the database Económica. The analysis considered the permanence of each company in the index, including the entrance and exit dates. The period of the research comprises the years from 2005 to 2020.

4. Data Analysis

4.1. Segment of processed food

In this segment, Perdigão has participated in ISE since its first portfolio. The participation in the index comprised the period of time between December 2005 to November 2009. The company Sadia joined ISE in its third portfolio in December 2007 and remained until December 2008. Even though this research includes the 15 years of existence of the index, data prior to 2009 were not found. The financial indicators analyzed in the following section belong to BRF, a result of the merger in 2009 of the companies Sadia and Perdigão, one of the greatest agribusiness complexes in the world. The data regarding Perdigão before the consolidation was not available.

4.1.1. BRF

Sadia presented an expressive reduction in profitability during the two years that integrated the ISE portfolio, 2007 and 2008. The company ended its participation with a ROA of -18,3 % and an average ROE of -146,3%. The average ROIC, even decreasing, remained above zero.

The data regarding BRF comprises both periods in which the company participated in the index, between December 2009 and December 2017, along with the return in 2020. In the first period, the Return on Asset (ROA) showed an ascending trajectory starting with 0.5% in 2009 and reaching 7.8% in 2015. In 2016 the indicator dropped and remained below zero in the subsequent year. It is worth noticing that in 2015 a steep devaluation of the real stimulated an increase in chicken production and corn grain. However, the average price of corn spiked in the local market due to climate factors (EMBRAPA, 2016). The anticipated exportation

agreement, the increase in the demand for grain in response to a higher quantity of chicken production, and the reduction in production volume because of climate change are considered the primary causes of the decrease in profitability. The climate alterations also affected the price of soy bran. Considering that both are inputs in the feed of chickens, the price elevation pressured the costs of the companies operating in this segment. In BRF, it was possible to observe an escalation in the cost of sold products of around R\$ 4 billion from 2015 to 2016, leading to a loss of R\$ 372.383 million in this period. It is worth mentioning that this increase was a Brazilian occurrence not connected to the international pricing level. Consequently, there was a decline in the competitiveness of the costs in the national market concerning other countries, pressuring further the production margin of Brazilian producers.

In 2017, with a more optimistic scenario for grain costs, the low profitability of the Brazilian chicken producer given by the ratio "chicken price/feed cost" remained showing signs of recovery after the second trimester. It is necessary to consider the impact of the discount concerning the expiration date (FIFO) in Brazil, which was above the historical average this year. Therefore, the costs of sold products remained at the R \$26 billion seen in 2016. Also, there was an expressive increase in the account "other operational liabilities" from R \$497.802 million in 2016 to R \$ 1,253 billion in 2017. This escalation happened overall due to operational losses resulting from the Weak Flesh Operation, such as media and communication expenditures, law firms, returns, shipping, additional storage, and an adjustment in storage value, among others. Not least, the financial result of BRF in 2016 and 2017 corresponded to around - R \$2 billion. Most of this value relates to the exchange variation of the period, specifically in 2017, the derivative instrument Total Return Swap impacted the company negatively in - R \$121 million. Consequently, the enterprise lost - R \$1,125 billion, displaying a negative ROA in 2017.

The average ROE presented a significant increase in the first period reaching 21,2% in 2015. During the next two years, the indicator was negative and decreased -9.2% in 2017. The motives that led to a reduction in ROE can be associated with the factors mentioned since they impact the net profit. The average ROIC was the only indicator among the evaluated ones that presented positive values throughout the first period. Similar to ROA and the average ROE, its best result was in 2015 at 11,6%. Although displaying a reduction in 2016 and 2017, the indicator remained positive with values of 4,6% and 1,7%, respectively. Figure 1 shows the annual percentage indicators of BRF.

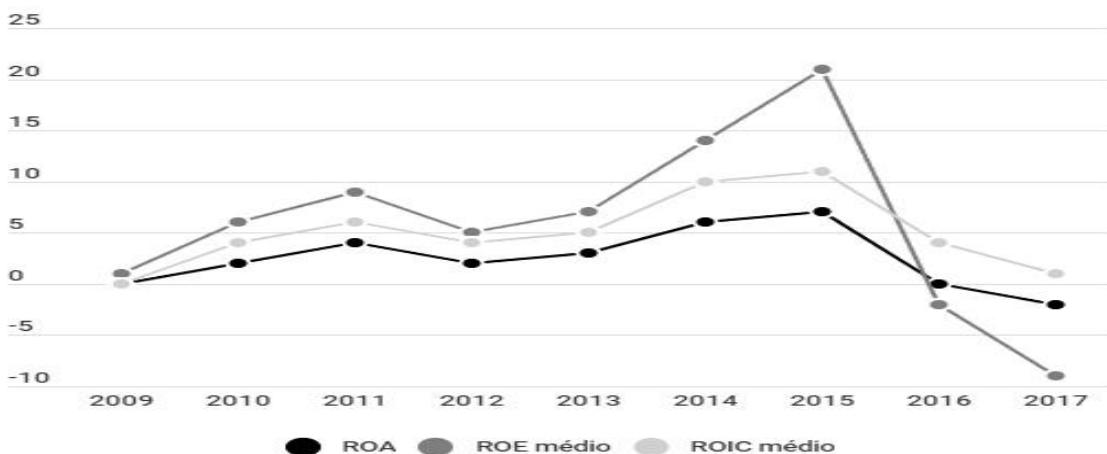


Figure 1: Annual percentage indicators of BRF

Source: Produced by the authors based on *Económica* data

The second period of BRF participation in ISE B3 corresponds to the return of the company to the index in 2020, thus, from 2018 to 2020, the company was not included in this evaluation. In the reported year, all the indicators considered were positive. As a highlight, the average ROE exhibited 16.4%, the highest value among them, with the lowest of 2.8% presented by the Return on Asset (ROA).

In summary, the company experienced profitability growth during the periods that integrated the ISE portfolios, overall in 2015, when displayed the best performance indicators. The exception applies to the years 2016 and 2017, marked by the impact of climate change, exchange rate variations, and operational losses. The decline in profitability did count on internal and external factors to the company and must be analyzed considering the context it inserts itself.

4.2. Segments of wood, paper, and cellulose

The companies VCP and Aracruz have joined the ISE portfolio since its first edition, released in 2006. However, in September 2009, they consolidated and created Fibria, listed on the index between 2010 and 2019. Data belonging to VCP from before the consolidation are not available.

In this section, we will analyze the companies linked to the sectors of wood, paper, and cellulose: Suzano, Klabin, Fibria, and Duratex. It is important to highlight that, in 2018, the enterprises Fibria and Suzano merged. The data following this process concerning Fibria are available and presented in the sequence.

4.2.1. Duratex

Duratex participated in ISE B3 in the period between 2008 and 2020. The company initiated on the index in the 4th portfolio and remained until the 15th portfolio, which was in force from January 06th, 2020 to January 01st, 2021. The indicator ROA, as the other evaluated, was positive during the period the enterprise integrated the ISE portfolios. Its highest value corresponded to 7.6% in 2010 and the lowest to 0.3% in 2016. Figure 2 displays the percentages concerning the annual indicators of Duratex.

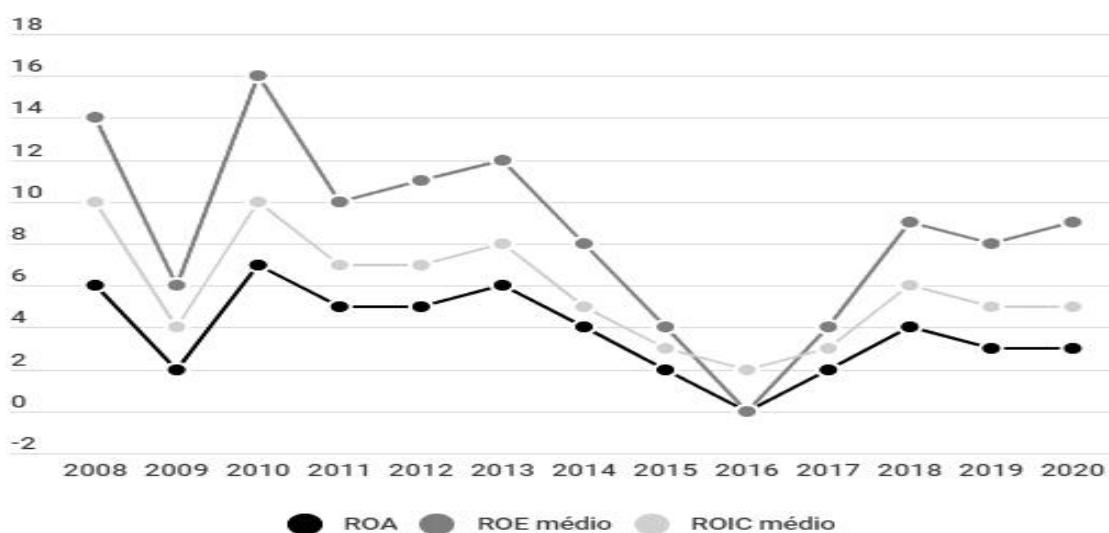


Figure 2: Annual percentage indicators of Duratex

Source: Produced by the authors based on Economática data

In 2016 there was a context of uncertainty and strong instabilities in the Brazilian economy. In the accounting statements, it was possible to observe a drop in the net revenue, an increase in the cost of sold products, and a worsening in the firm's financial result (Figure 2). Despite Duratex closing the year with a profit of R \$25.646 million, the company incurred losses in the first and second trimesters. In the first trimester, the net revenue was 12.8 % below the same period in 2015, contributing to a loss of - R \$31,122 million. In the second trimester, the net income improved significantly by 17.9% regarding the previous trimester, mainly due to the acquisition of the company Corona. However, the firm had a loss of - R \$177 thousand. It is worth mentioning that, in both trimesters, there was a significant impact from the account financial result that exhibited negative values of - R\$68.66 million and - R \$79,165 million, respectively. From the second trimester on, the company earned profits,

which allowed it to have positive annual financial indicators in 2016. To minimize the negative impacts of the period, the firm dedicated itself to projects seeking cost reduction and improvement in operational efficiency. In this scenario, there was a change in the board of directors aiming not just at the mentioned aspects but also for improvement in cash flow generation.

Concerning the average ROE, it is possible to notice significantly high rates for most of the period, except in 2016, when the indicator was at 0.6%. The reasoning behind this reduction can be associated with the factors previously mentioned. During the span considered in the analysis, the average ROE was the indicator with the best performance being superior to the average ROIC in the evaluated years, except for the one already cited. This pattern can indicate a low indebtedness of the company in the period. Compared to 2008, the average ROIC decreased over time. As well as the other indicators, its lowest value, 2.8%, was observed in 2016. In the recovery seen in the next stage, the average ROE was the indicator that displayed expressive improvement.

In sum, internal and external factors to the company influenced its financial performance. On the negative aspect, it is possible to observe that all the indicators decreased most of the period, even with some recovery. The highest level of profitability, shown in 2010, was not reached again, and between 2013 and 2016 dropped constantly. However, the search for improvement in efficiency and management contributed to the upturns seen in the period. It is worth mentioning that Duratex is the only company analyzed in this study that provided positive annual returns to its shareholders throughout the time it participated in the index.

4.2.2. Fibria

The company Aracruz integrated the portfolios in force from 2006 to 2008. In this period, profitability decreased in all the indicators. In 2008, the average ROE and ROIC were negative, with the average ROIC at -132.9 %. The next year, the enterprises VCP and Aracruz consolidated, forming Fibria. The company Fibria participated in ISE B3 between December 2009 and December 2018. Concerning ROA, it declined between 2009 and 2013, with the years 2011, 2012, and 2013 exhibiting negative values.

In 2011, a crisis in Europe and the United States impacted the global demand for commodities contributing to a reduction in the price of cellulose. The uncertainty surrounding the economy resulted in the appreciation of the U.S. dollar against the real, mainly observed

in September. A rising dollar tends to benefit the company's net revenue because most of its sales derive from exportations. However, this trend negatively affects the financial result since most of its debt issuance is in foreign currency. This influence is noticeable in the account financial result from 2010 to 2011 when presented values of - R \$364,218 million and - R \$1,868 billion, respectively. In 2012, despite the instability of the global macroeconomic scenario, the market remained consistent due to a higher demand for cellulose primarily coming from China (BNDES, 2013). The loss in 2012 is majorly associated with the negative financial result of - R \$1,696 billion. In 2013, Fibria incurred a loss of R \$706,422 million, justified by the exchange rate variation of the period and the result of the income tax and social contribution due to the expense from the adhesion to REFIS. Figure 3 displays the annual percentage indicators of Fibria.

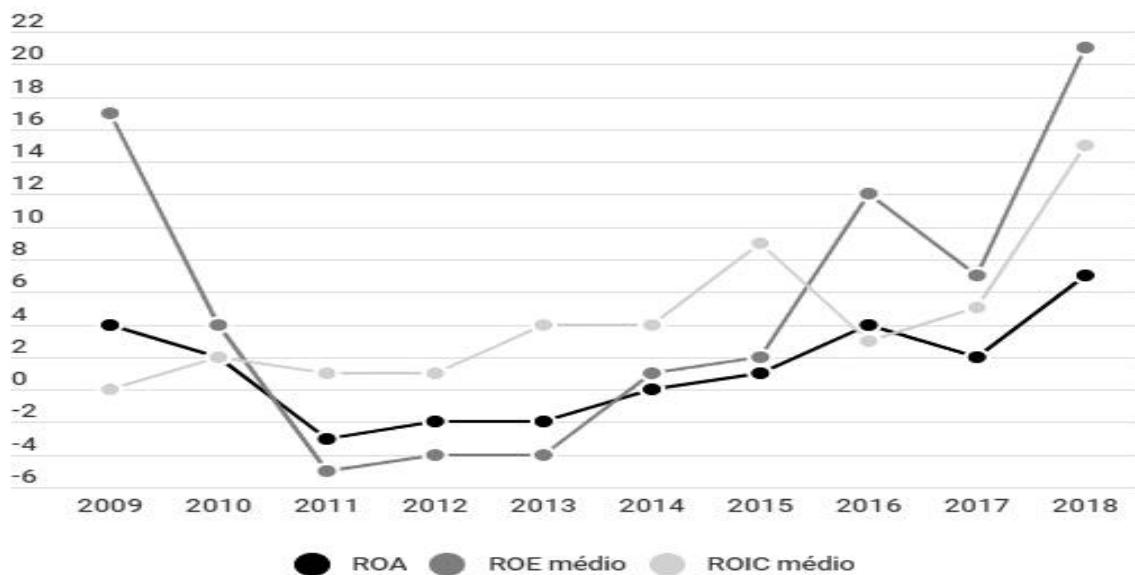


Figure 3: Annual percentage indicators of Fibria

Source: Produced by the authors based on Economática data

The company's profitability trajectory points out the existence of a pattern among the indicators. It is observable in Figure 3 that the average ROE presented similar behavior to ROA, declining between 2009 and 2013. During the following years, the indicator exhibited a steady recovery reaching 21.2% in 2018, the highest rate observed along the participation of the enterprise in the index. The negative values between 2011 and 2013 can be related to the elements previously cited since, in these years, the company presented a negative net profit. The average ROIC was the only indicator displaying positive values throughout the analysis, the highest between 2011 and 2015. Such an outcome is expected, given that the decline in

net profit possibly led the company to further indebtedness in this period. In the subsequent years, the average ROIC reduced significantly, remaining below the average ROE until 2018.

In summary, the company Fibria exhibited a volatile performance throughout the analysis. As the highlight, the years 2011, 2012, and 2013 presented a poor performance on account of economic uncertainties from external sources that affected the global demand for cellulose, one of the main products offered by the company. Additionally, the exchange rate variation negatively impacted the result of the mentioned period. In the next stage, it was possible to notice a growing improvement in the firm's indicators that started to provide positive returns to the shareholders.

In 2018, the last year of the enterprise in the index, all the profitability indicators displayed expressive growth. It is worth mentioning that this was the year the companies Fibria and Suzano merged. With all the conditions for the business combination and shareholding basis met, Fibria and Suzano proceeded with the measures to close the operation after September 29th, 2018. The shareholding reorganization concluded on January 14th, 2019.

4.2.3. Klabin

The company Klabin started in ISE B3 in the 10th portfolio, effective between January 05th, 2015, and January 02nd, 2016. Its permanence in the index extended until 2020, the last year considered in the analysis. Based on the data, it is noticeable that ROA and the average ROE presented an expressive decrease in the first year of participation in the index. In the year in reference, the enterprise had a net loss of R \$1.77 billion. It is important to consider that 2015 counted with a worsening in the Brazilian economic indicators, a slowdown in domestic consumption, and the impact of inflation on the production costs of the companies operating in the country (FGV, 2020). On the other hand, the strong real devaluation and the favorable economic conditions in the international markets stimulated exportation. There was an increase of 16% in the net revenue of the firm in comparison with 2014, going from R \$4,893 billion to R \$5,687 billion.

However, due to the acceleration in the disbursement of projects, the appreciation of the dollar negatively affected the financial result of the period. The outlay, overall, is aimed at the Puma project, which consists of building a new industrial cellulose plant in the city of Ortigueira (PR). The impact was significant because around 61% of the debt issuance is in

dollars. The company did not count on the exchange rate factor in the next year and exhibited a net profit of R \$2,481 billion.

In 2016, the highest values for ROA and the average ROE were displayed, with the average ROE reaching 39.9%. Both indicators declined after 2016, with 2020 exhibiting the lowest rates of the period, as seen in Figure 4. In 2020, there was an elevation in the number of Coronavirus cases worldwide, which resulted in considerable uncertainty regarding the potential social-economic impacts. Figure 4 displays the annual percentage indicators of Klabin.

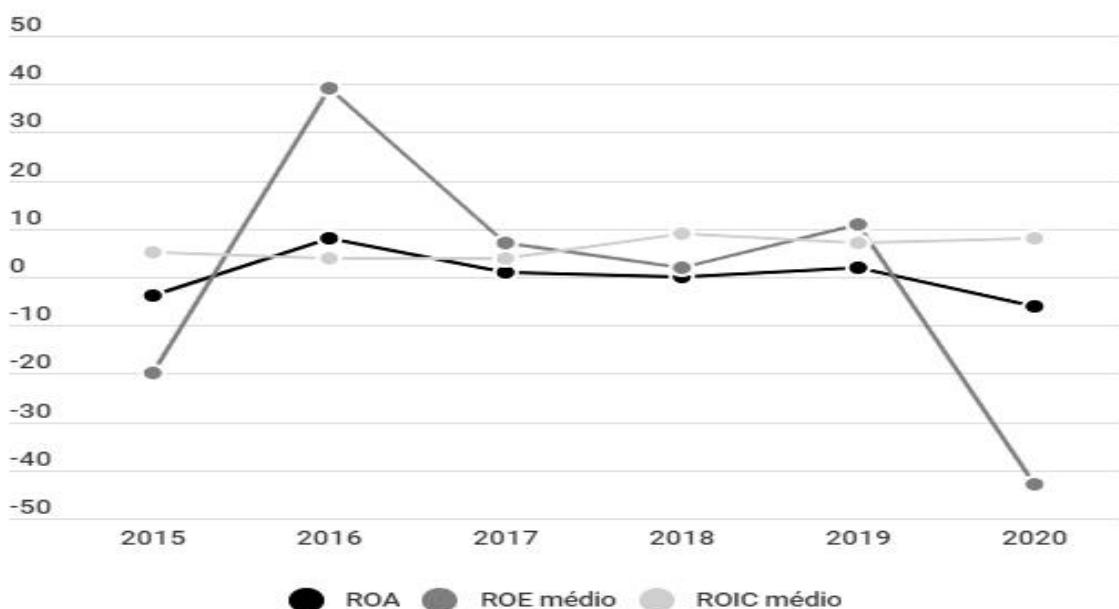


Figure 4: Annual percentage indicators of Klabin

Source: Produced by the authors based on Economática data

The last year considered in the analysis, an expressive growth in the consolidated net indebtedness of the firm totalized R \$19.782 billion. Similar to 2015, this elevation relates to the negative impact of the exchange rate variation on the debt issued in dollars, as the disbursement for the Puma II project, which consists of the capacity expansion in the paper packaging segment. In 2020, the progression of the Puma II project construction reached the mark of 78%, contributing to a negative financial result of R \$7. 029 billion and a loss of R \$2,487 billion. Concerning the average ROIC, the indicator was positive throughout the analysis, presenting its highest value in 2018 and its lowest in 2016. Except for 2015, 2018, and 2020, the average ROIC was inferior to the average ROE, increasing in the years the company incurred on net loss.

Succinctly, the enterprise did not present a volatile performance in the course of the analysis. The returns, for the most part, were low yet positive. The years of losses majorly relate to the impact of external factors, such as the worsening of Brazilian economic indicators and the exchange rate behavior. At the same time that the appreciation of the dollar against the real led to an increase in the operational net revenue, it also contributed to considerable negative financial results. The exchange rate effect on the indebtedness towards the capacity expansion projects of Klabin, in turn, caused the company to incur losses in 2015 and 2020.

4.2.4. Suzano

Suzano integrated the ISE B3 portfolio between December 2005 and January 2014. Concerning ROA, the indicator presented a decreasing trajectory except for a slight recovery in 2007 and a more expressive one in 2009 (Figure 5). Due to the change in the accounting method from the third trimester on, the database did not provide the explanatory notes from earlier periods. However, when analyzing the statements from 2008, with ROA and ROE being negative, it is possible to observe the impact of the financial result account of - R \$1,573 billion in the firm, which incurred a loss in the period. Following that, the company earned profits, and 2009, 2010, and 2011 displayed positive indicators. Figure 5 exhibits the annual percentage indicators of Suzano.

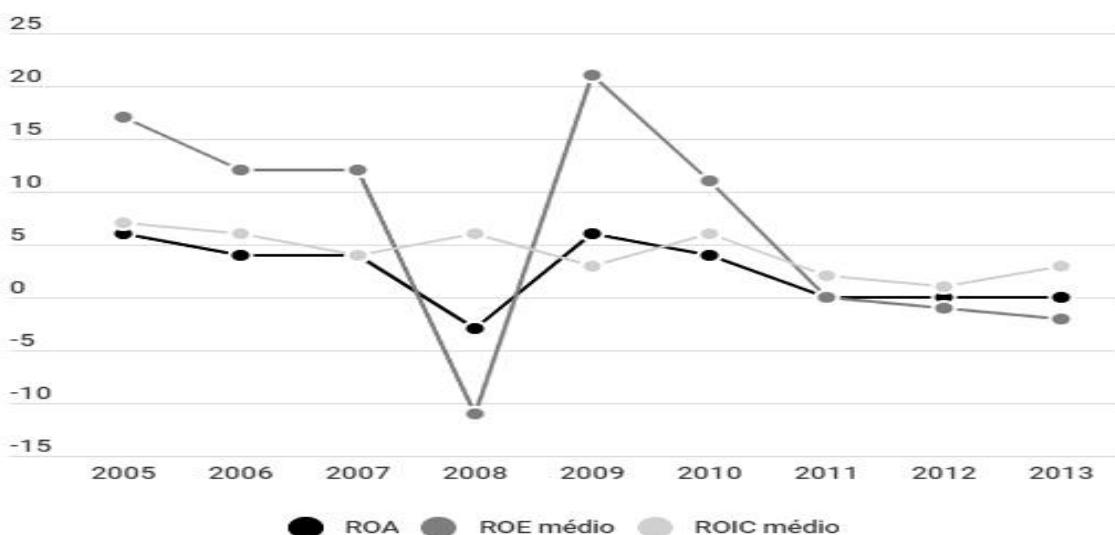


Figure 5: Annual percentage indicators of Suzano

Source: Produced by the authors based on Economática data

Between 2012 and 2013, Suzano, once again, started to present decreasing indicators. The revenue reserve seen in 2012 relates to the equity equivalent outcome of - R \$24,297 million, the value tallied in the investment held in the subsidiary Suzano Papel e Celulose, which incurred a loss in the period. In 2013, the main factors that contributed to the loss were the equity equivalent outcome, for the same reasons mentioned before, along with the reduction in the financial net result of the company that corresponded to - R \$1,223 billion. The losses in 2012 and 2013 were - R \$43,084 million and - R \$61,077 million, respectively, which entailed negative ROA and average ROE these years. Concerning the average ROIC, the indicator presented positive values throughout the analysis. Since ROA and the average ROE decreased even more in 2013, compared with 2012, the average ROIC exhibited a contrasting behavior, increasing in the last year. This result is associated with the recovery efforts of Suzano that, in order to boost this process, could have extended the participation of third-party capital in the company.

In sum, it is possible to observe that, affected by internal and external factors, the enterprise presented a decreasing profitability in the period of participation in the index. The domestic influence is directly related to the negative outcomes from equity equivalent. The impact of foreign sources can be associated with the exchange rate variation since, noticeably, it occurred a significant reduction in the company's financial net result. It is worth emphasizing that the period between 2011 and 2013 counted with fluctuations in the global demand for cellulose and the weakening of the real against the dollar, which impacted the firms operating in this segment.

The beginning of a new stage and the recovery process in a favorable scenario regarding the exchange rate and the industry allowed the enterprise to predict significant returns from a new plant. The company Suzano returned to the index in the 16th portfolio corresponding to the year 2021. The data from this period are not included in the research because they exceed the span proposed for this analysis.

5. Final Considerations

The present article sought to analyze the performance of investments and returns regarding the economic-financial dimension of the companies listed on the *Índice de Sustentabilidade Empresarial* [Index of Entrepreneurial Sustainability] (ISE B3) associated with the processed food, cellulose, wood, and paper segments. For the analysis, the indicators

considered were the Return on Assets (ROA), Return on Equity (ROE), and Return on Invested Capital (ROIC). Specifically, it examined the average ROE and ROIC.

In the processed food segment, the company BRF presented growth in its profitability indicators while participating in the ISE portfolio, except for 2016 and 2017. In the mentioned years, it was possible to observe losses due to the strengthening of the dollar, climate change, and in 2017, the so-called Weak Flesh Operation, which elevated the firm's operational expenditures. Concerning the cellulose, wood, and paper segments, the enterprise Duratex had a decrease in the financial indicators for most of the evaluated period, with some recovery. The main influences of this behavior were the political and macroeconomic uncertainties that took place at the time. Fibria, throughout its participation in the index, had losses between 2011 and 2013 caused by internal and external economic instabilities that negatively affected the exchange rate and the enterprise's sales. Except for 2015 and 2020, the company Klabin presented a somewhat unstable performance. In the cited years, the firm incurred losses due to the influence of the real devaluation in the financial result account. In turn, Suzano incurred losses in 2008, 2012, and 2013. This outcome relates to the dollar variations and its impact on the company's financial result account as well as the negative result of the equity equivalent tallied on the investment held in the subsidiary Suzano Papel e Celulose that presented a loss in 2012 and 2013.

Generally, the data show that, except for Duratex, the evaluated companies exhibited losses for at least two years throughout their participation in the index. For the most part, this outcome was due to external factors, such as the impact of climate change and the exchange rate variation on the enterprises' indebtedness. Since the losses determining variables are out of the control of the companies, the findings may indicate that not only sustainable companies but also traditional ones were exposed, meaning that, possibly, they all presented decreasing profitability in those periods. This interpretation meets conducted studies that argue that there is no significant difference in the economic performance between sustainable companies, listed on ISE B3, and non-sustainable ones (ALVES; ARAÚJO; SANTO, 2019; NETO, R. *et al.*, 2020; SANTIS; ALBUQUERQUE; LIZARELLI, 2016; SOUSA; FARIA, 2019). However, these analyses do not specifically refer to agribusiness enterprises and apply only to the short run.

This research has limitations. The data referring to VCP and Perdigão are unavailable and therefore are not exhibited in the analysis. Moreover, the fact that the study comprises the 15 years of existence of ISE implies that the evaluation begins in 2005 and ends in 2020. This period differs for each company since the objective was to analyze their performance while

participating in the index. Considering the alteration in the accounting method in 2010, statements from previous years did not present explanatory notes.

Concerning its contributions, the present article collaborates with the knowledge expansion regarding the thematic line of the performance of companies operating in the Brazilian agribusiness sector. Accordingly, it cooperates in evaluating the performance of enterprises that supply essential products for the domestic market and the country's exports. The evaluation of the economic aspect considers the corporative adhesion to sustainability and its potential benefits to the companies' performance. From this perspective, it also contributes to the knowledge of the influence of the adoption of sustainable methods of production and governance in the economic performance of enterprises linked to agribusiness.

6. References

ALVES, Marina Alves Rodrigues da Silveira; ARAÚJO, Risolene Alves de Macena; SANTO, Lívia Maria Da Silva. Análise da relação entre valor de mercado e divulgação do relatório de sustentabilidade: um estudo nas empresas de alto potencial poluidor listadas na B3. *Revista de Gestão e Secretariado*, [s. l.], v. 10, n. 2, p. 59–86, 2019. Disponível em: <https://doi.org/10.7769/gesec.v10i2.850>

BNDES (2013). *O renascimento de um mercado: o setor de celulose solúvel*. Disponível em: https://web.bnDES.gov.br/bib/jspui/bitstream/1408/2181/1/BS%2038_O%20renascimento%20de%20um%20mercado_P.pdf. Acesso em: 4 jan. 2021

B3 (2020). Recuperado de http://www.b3.com.br/pt_br/market-data-e-indices/indices-indices-de-sustentabilidade/indice-de-sustentabilidade-empresarial-ise.htm. Acesso em: 4 jan. 2021

CAMPBELL, John L. Why would corporations behave in socially responsible ways? An institutional theory of corporate social responsibility. *Academy of Management*, [s. l.], v. 32, n. 3, p. 946-967, 2007. Disponível em: <https://doi.org/10.5465/AMR.2007.25275684>

CARTER, Craig R.; ROGERS, Dale S. A framework of sustainable supply chain management: Moving toward new theory. *International Journal of Physical Distribution & Logistics Management*, [s. l.], v. 38, n. 5, p. 360–387, 2008. Disponível em:

<https://doi.org/10.1108/09600030810882816>

COMEXSTAT. Disponível em: [Comex Stat - ComexVis \(mdic.gov.br\)](https://ComexStat - ComexVis (mdic.gov.br)) Acesso em: 6 jan. 2021

CUNHA, Felipe Arias Fogliano de Souza; SAMANEZ, Carlos Patricio. Performance analysis of sustainable investments in the Brazilian stock market. *Production*, [s. l.], v. 24, n. 2, p. 420–434, 2014. Disponível em: <https://doi.org/10.1590/S0103-65132013005000054>

DIAB, Ahmed; METWALLY, Abdelmoneim Bahyeldin Mohamed. Institutional complexity and CSR practices: evidence from a developing country. *Journal of Accounting in Emerging Economies*, [s. l.], v. 10, n. 4, p. 655–680, 2020. Disponível em: <https://doi.org/10.1108/JAEE-11-2019-0214>

DOČEKALOVÁ, Marie Pavláková; KOCMANOVÁ, Alena. Composite indicator for measuring corporate sustainability. *Ecological Indicators*, [s. l.], v. 61, p. 612–623, 2016. Disponível em: <https://doi.org/10.1016/j.ecolind.2015.10.012>

Economática (2020). Disponível em <http://economatica.com/>. Acesso em: 10. jan. 2021

EMBRAPA (2016). *Um ano de extremos para a produção de milho*. Disponível em: <https://www.embrapa.br/busca-de-noticias/-/noticia/17979608/artigo---2016-um-ano-de-extremos-para-a-producao-de-milho>. Acesso em: 10 jan. 2021

EXPERT XP (2020). *ROE, ROI, ROIC, ROA e WACC: Conheça alguns dos principais fundamentos para analisar uma empresa*. Disponível em: <https://conteudos.xpi.com.br/aprenda-a-investir/relatorios/roe-roi-roic-roa-e-wacc-conheca-alguns-dos-principais-fundamentos-para-analisar-uma-empresa/>. Acesso em: 10. jan. 2021

FGV. (2020) Década cada vez mais perdida na economia brasileira e comparações internacionais. Disponível em: <https://portal.fgv.br/artigos/decada-cada-vez-mais-perdida-economia-brasileira-e-comparacoes-internacionais>. Acesso em: 6 maio 2021.

ELKINGTON, John. Enter the triple bottom line. *The Triple Bottom Line: Does it All Add Up*, [s. l.], v. 1, n. 1986, p. 1–16, 2013. Disponível em: [Custos e @gronegócio on line](https://www.custoseagronegocioonline.com.br) - v. 19, n. 1, Jan/Mar - 2023. ISSN 1808-2882

<https://doi.org/10.4324/9781849773348>

GARSKE, Beatrice; EKARDT, Felix. Economic policy instruments for sustainable phosphorus management: taking into account climate and biodiversity targets. *Environmental Sciences Europe*, [s. l.], v. 33, n. 1, 2021. Disponível em: <https://doi.org/10.1186/s12302-021-00499-7>

HANDIWIBOWO, G. A. *et al.* Determining the local community indicators on corporate social responsibility activities (case study in Indonesia). In: , 2020. *IOP Conference Series: Earth and Environmental Science*. [S. l.]: Institute of Physics Publishing, 2020. Disponível em: <https://doi.org/10.1088/1755-1315/423/1/012017>

ISE B3 (2020). Disponível em: <http://iseb3.com.br/carteiras-e-questionarios>. Acesso em: 6 jan. 2021

KIDD, Charles V. The evolution of sustainability. *Journal of Agricultural and Environmental Ethics*, [s. l.], v. 5, n. 1, p. 1–26, 1992. Disponível em: <https://doi.org/10.1007/BF01965413>. Acesso em: 9 dez. 2020.

KUHLMAN, Tom; FARRINGTON, John. What is Sustainability? *Sustainability*, [s. l.], v. 2, n. 11, p. 3436–3448, 2010. Disponível em: <https://doi.org/10.3390/su2113436>. Acesso em: 9 dez. 2020.

LAURETT, Rozélia; PAÇO, Arminda; MAINARDES, Emerson Wagner. Sustainable Development in Agriculture and its Antecedents, Barriers and Consequences – An Exploratory Study. *Sustainable Production and Consumption*, [s. l.], v. 27, p. 298–311, 2021. Disponível em: <https://doi.org/10.1016/j.spc.2020.10.032>

LUHMANN, Henrike; THEUVSEN, Ludwig. *Corporate Social Responsibility in Agribusiness: Literature Review and Future Research Directions*. [S. l.]: Springer Netherlands, 2016. Disponível em: <https://doi.org/10.1007/s10806-016-9620-0>. Acesso em: 18 dez. 2020.

MASUD, Abdul Kaium *et al.* Organizational strategy and corporate social responsibility: The mediating effect of triple bottom line. *International Journal of Environmental Research and Custos e @gronegócio on line* - v. 19, n. 1, Jan/Mar - 2023. www.custoseagronegocioonline.com.br ISSN 1808-2882

Public Health, [s. l.], v. 16, n. 22, 2019. Disponível em:
<https://doi.org/10.3390/ijerph16224559>

MERCADÉ-MELÉ, Pere; FANDOS-HERRERA, Carmina; VELASCO-GÓMEZ, Sofía. How corporate social responsibility influences consumer behavior: An empirical analysis in the Spanish agrifood sector. *Agribusiness*, [s. l.], 2021. Disponível em: <https://doi.org/10.1002/agr.21693>

NETO, Geraldo Cardoso Oliveira; SHIBAO, Fábio Ytoshi; FILHO, Moacir Godinho. The state of research on cleaner production in Brazil. *RAE Revista de Administracao de Empresas*, [s. l.], v. 56, n. 5, p. 547–577, 2016. Disponível em: <https://doi.org/10.1590/S0034-759020160508>

NETO, Ruy *et al.* Sustainable development and corporate financial performance: A study based on the Brazilian Corporate Sustainability Index (ISE). *Sustainable Development*, [s. l.], v. 28, n. 4, p. 960–977, 2020. Disponível em: <https://doi.org/10.1002/sd.2049>. Acesso em: 14 set. 2020.

POETZ, Katharina; HAAS, Rainer; BALZAROVA, Michaela. CSR schemes in agribusiness: Opening the black box. *British Food Journal*, [s. l.], v. 115, n. 1, p. 47–74, 2013. Disponível em: <https://doi.org/10.1108/00070701311289876>

RIDZUAN, Nur Hilfa Awatif Mohamad *et al.* Effects of agriculture, renewable energy, and economic growth on carbon dioxide emissions: Evidence of the environmental Kuznets curve. *Resources, Conservation and Recycling*, [s. l.], v. 160, 2020. Disponível em: <https://doi.org/10.1016/j.resconrec.2020.104879>

RODRÍGUEZ, María del Mar Miras; PÉREZ, Bernabé Escobar. Does the institutional environment affect CSR disclosure? The role of governance. *RAE Revista de Administracao de Empresas*, [s. l.], v. 56, n. 6, p. 641–654, 2016. Disponível em: <https://doi.org/10.1590/S0034-759020160606>

ROSANO-PEÑA, Carlos *et al.* A measure of sustainability of Brazilian agribusiness using directional distance functions and data envelopment analysis. *International Journal of Sustainable Development & World Ecology*, [s. l.], v. 21, n. 3, p. 210–222, 2014. Disponível em: www.custoseagronegocioonline.com.br

em: <https://doi.org/10.1080/13504509.2014.901992>. Acesso em: 18 dez. 2020.

SANTIS, Paula; ALBUQUERQUE, Andrei; LIZARELLI, Fabiane. Do sustainable companies have a better financial performance? A study on Brazilian public companies. *Journal of Cleaner Production*, [s. l.], v. 133, p. 735–745, 2016. Disponível em: <https://doi.org/10.1016/j.jclepro.2016.05.180>

SOUZA, Thaís Santos de; FARIA, Juliano Almeida de. Demonstração do valor adicionado (DVA): uma análise da geração e distribuição de riquezas das empresas listadas no Índice de Sustentabilidade Empresarial (ISE)-B3. *Revista de Gestão, Finanças e Contabilidade*, [s. l.], v. 8, n. 2, p. 137–154, 2019. Disponível em: <https://doi.org/10.18028/rgfc.v8i2.7376>

WOLFF, Anastasia; GONDTRAN, Natacha; BRODHAG, Christian. Integrating corporate social responsibility into conservation policy. The example of business commitments to contribute to the French National Biodiversity Strategy. *Environmental Science and Policy*, [s. l.], v. 86, p. 106–114, 2018. Disponível em: <https://doi.org/10.1016/j.envsci.2018.05.007>

ZANIN, Antônio *et al.* Driving Sustainability in Dairy Farming from a TBL Perspective: Insights from a Case Study in the West Region of Santa Catarina, Brazil. *Sustainability*, [s. l.], v. 12, n. 15, p. 6038, 2020. Disponível em: <https://doi.org/10.3390/su12156038>. Acesso em: 18 dez. 2020.