



Performance and sustainability assessment of listed companies

A comparative study between Portugal and Brazil

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Abstract

This dissertation seeks to carry out a comprehensive review of the bibliography on the concepts and main indicators of business performance and financial sustainability, as well as to apply the content obtained in a comparative case study between public listed companies of Portugal and Brazil, with a focus on the Construction, Communication and Pulp & Paper sectors.

It was found that, although very different situations could be observed between companies inside same countries (and therefore same economic, political, cultural, social contexts) and sectors of activity, related to their internal situation, the macroeconomic environment exerts very relevant influences on the economic and financial performance of companies, as well as the nature of their activities (sector), have significant impacts on their capital and financial structures.

In relation to the Construction sector, the major difference between Brazil and Portugal's situation was brought by a sector-specific crisis in the first country, caused by a bribery scandal inside one major corporation of this sector, in 2016, that placed Brazilian Construction companies in a more difficult situation for the period analyzed. As for the Pulp & Paper sector, a significant deterioration of the Brazilian sample could also be observed between 2017 and 2020, related to the political and economic turmoil of the country during this period, with higher impacts felt by the industrial sector. Finally, in relation to the Communications sector, which depicts the situation of a service-oriented segment, a common decline in both countries' metrics was witnessed in 2019 and 2020. However, a more favorable circumstance for the Brazilian sample was observed in almost all dimensions, through the 10 fiscal years analyzed.

Keywords: Performance, sustainability, going concern, financial, companies, bankruptcy

1 Introduction

The global financial crisis of 2007-2008 resulted from a long period of generous and permissive credit policies and where the guarantees given and the real capacity to settle the debt with creditors were evaluated with little rigor, marked the beginning of a period where credit is not only very expensive but also scarce (Peres, 2014).

Subsequently, a series of financial sector bailouts in 2008 sparked a full-blown sovereign debt crisis in Europe, and sovereign credit risk, which was virtually non-existent in developed economies prior to 2007, became a major concern (Kräussl, Lehnert and Stefanova, 2016).

The European sovereign debt crisis brought several lasting implications for the financial market in the euro area. First, it led to a major setback in the financial integration goal of the Eurozone. The intra-euro flight of private capital out of stressed countries left deeply fragmented equity and corporate bond markets. Second, the sovereign debt crisis had a deep impact on the value of the common currency, contributing significantly to the euro crash risk and challenging the stability of the monetary union (Kräussl, Lehnert and Stefanova, 2016).

Currently, the world faces another global economic crisis that started in 2020, due to the pandemic of Coronavirus (Covid-19), threatening the activities of several companies around the world and generating uncertainty regarding the healthy continuity of the markets (Aifuwa, Saidu & Aifuwa, 2020; Musa & Aifuwa, 2020).

In this context, the going concern, or more specifically, the bankruptcy has become a vital

issue in corporate finance, constituting a legal mechanism that allows creditors to take control when a company default (Brealey, 2020).

Therefore, the importance of deepening the study and making analysis of a company's performance and financial continuity becomes evident, aiming at measuring corporate operational and financial risks, and verifying the sustainability of companies.

This work aims to study those themes and apply the content obtained, through financial indicators and predictive models, evaluating a group of public listed companies in Portugal (Euronext Lisbon) and Brazil (B3).

2 Problem definition and objectives

This dissertation seeks to carry out a comprehensive review of the bibliography on the concepts and main indicators of business performance and financial sustainability, as well as to apply the content obtained in a comparative case study between public listed companies of Portugal and Brazil, with a focus on the Construction, Communications and Pulp and Paper sectors.

It seeks to answer the following main questions:

- I. What does performance and sustainability mean inside a business context, and what main concepts are related to these subjects?
- II. Which are the most relevant indicators and methods to evaluate the performance and the sustainability of the public listed companies in question?
- III. What is the current situation of the companies analyzed compared to their own past and to their competitors?

IV. Are there any significant differences between similar companies or business sectors in Portugal and Brazil?

3 Literature review

3.1 Accounting

Accounting is a social-factual science, and its social nature is reflected in the concern with understanding the way in which individuals create, modify, and interpret accounting phenomena, about which they inform their users (Schmidt, 1998). In this way, Accounting is influenced by the environment in which it operates, and the different cultures, values, histories, economic and political structures influence the accounting practices of each country.

In Brazil, a landmark in the country's accounting history occurred in 1946, when Decree-Law No. 9,295 was enacted, which determined the creation of the Federal Accounting Council (CFC) and the Regional Accounting Councils (CRCs), intended to supervise the practice of the professions of accountant (Bachelor of Accounting) and bookkeeper (accounting technician). (Hermes, 1986).

The convergence towards international accounting standards had as a legal landmark the enactment of this legislation, that explicitly determined the adoption of international accounting standards in the Brazilian regulatory framework (Bugarim and Oliveira, 2014), or, in other words, through the gradual adoption of the standards issued by the International Accounting Standards Board (IASB), known as International Financial Reporting Standards (IFRS), which was already occurring in more than 100 countries, including all the nations of

the European Community (Braga and Almeida, 2008).

As in Brazil, the accounting standardization process in Portugal only started in the middle of the 20th century, and went through the following stages: (Guimarães, 2011):

I. Approval of the Industrial Contribution Code (CCI), in 1963;

II. Approval of the first Official Accounting Plan (POC), in 1977;

III. POC approval in its second version, adjusted in 1989;

IV. Approval of the Accounting Standardization System (SNC), in 2009.

V. Reformulation of the SNC through the publication of Decree-Law No. 98/2015, on June 2nd. (Saraiva, Alves and Gabriel, 2015).

In conclusion, it is possible to observe that, despite having different processes for the formation of accounting standards and practices, both Brazil and Portugal currently adopt an accountability process closely linked to the international standards of the IASB, especially when related to non-financial listed companies - a fact that facilitates the comparison between the financial reports of companies from these two countries.

3.2 Performance

The evaluation of performance, from a financial perspective, has traditionally been based on accounting information from Financial Statements, such as the Balance Sheet, the Income Statement, and the Cash Flow statement, endorsing the importance of the accounting concepts discussed previously. It is important to mention, however, that this

analysis has some limitations, especially when performed by an external analyst, as he does not have all the information elements, so his sensitivity is necessary to identify any inconsistencies in the financial statements. Some of these issues relate to the classification of items in the short and medium / long term, influencing the results of the analysis and the correct diagnosis of the company (Macedo, 2017). It can also be related to the so-called Creative Accounting, which, according to Naser (1993) "is the transformation of financial accounting figures from what they actually are to what preparer desires by taking advantage of the existing rules and/or ignoring some or all of them".

The performance evaluation provides a set of information allowing to characterize the company's activity, providing a global view of the results achieved, allowing to verify whether the decisions were made in accordance with the expected results, quantifying the deviations to later take the necessary corrective measures. Through this methodology, the company will be able to become more efficient and profitable, contributing to guarantee and solidify its continuity (Macedo, 2017).

In the current business context, characterized by innovation and global competitiveness, performance analysis in all its fullness and naturally with a particular focus on finance, as well as the creation of value, assumes increasing importance in the decision making of companies (Macedo, 2017).

3.3 Key Indicators

3.3.1 Financial Indicators

Through information from Financial Statements, such as the Balance Sheet, the Income

Statement, and the Cash Flow statement, it is possible to obtain information for calculating the financial indicators (Macedo, 2017).

According to Brealey, Myers and Allen (2020), shareholder value depends on two major types of decision: investment and financing. Brealey, Myers and Allen (2020) also propose a segregation of these ratios into four types of measurements: Performance, Efficiency, Leverage and Liquidity.

Inside performance measures, the main ratios included are: Return on Capital, Return on Equity, Return on Assets, Market-to-book ratio, Earnings per Share and Price-to-Earnings.

The main efficiency measures that can be pointed out are asset turnover, inventory turnover, days in inventory, receivables turnover, average collection period, net profit margin and the operating profit margin.

The main leverage measures include: the long-term debt ratio, the total debt ratio, the time-interest-earned indicator, the cash coverage ratio and the debt-to-equity ratio.

Finally, inside Liquidity ratios, there are four main indicators included: Net-Working-Capital-to-Total-Assets, Current, Quick, and Cash ratios. Before discussing these, however, it is necessary to understand other three measures closely related to liquidity: net working capital, net working capital requirements and net cash.

3.4 Sustainability

The concept of sustainability is accompanied by widely differing interpretations in a business context (Lankoski, 2016). For example, it has been defined as requiring "a permanent improvement of the business's performance in economic, ecological and social terms"; "the

progressive maintenance of the life-supporting capacities of the planet's ecosystems"; or that "corporate value is maximized and does not decline over time" (Hediger, 2010).

For this current project, the last definition will be the one worked with and explored: the ability of a company to provide long-term profitability, and it will also be addressed as financial sustainability. It can be equated to the definition of corporate sustainability (CS) brought by Hediger (2010): "Corporate sustainability (CS) requires that the corporate value is maximized and does not decline over time. This implies a non-declining total contribution of current corporate activities to immediate and future profits over time".

3.4.1 **Going concern**

Going concern is defined as the expected to continuity of a business or an activity for a long period of time. (Parkinson and Noble, 2006). When the bankruptcy of a company subject to statutory audit occurs, it is immediately sought to ascertain whether the Statutory Auditor had alerted in its audit reports to this eventuality, extremely damaging to all stakeholders (shareholders, workers, suppliers, customers, the etc.) and for society. (Carvalho, 2013)

The assessment of the company's going concern assumption requires great consideration and care, as it is a very sensitive matter. If the auditor does not alert you to the possibility of bankruptcy and it occurs (type I error), it is said that he has failed. If, on the contrary, he warns about the possibility of bankruptcy and it does not occur (type II error), the auditor is criticized for launching a false suspicion, seriously damaging the company's reputation and making it difficult to access bank credit and suppliers. The auditor's opinion can

even become a self-fulfilling prophecy and influence the company's going concern, bringing it to bankruptcy (Carvalho, 2013).

The Statutory Auditor must rely on tools that help him to issue opinions in a sustained manner, being the bankruptcy prediction models a main example. In addition to credit institutions, the auditor can also use bankruptcy forecasting methods to validate and comment on the companies' going concern, overseeing assessing whether the financial statements are in accordance with the assumption of continuity and whether there is material uncertainty regarding events or conditions that could jeopardize continuity (Macedo, 2017).

3.4.2 **Bankruptcy prediction models**

The first model of bankruptcy prediction emerged in the 1960s, by Beaver (Macedo, 2017). According to the studies conducted by Aziz and Dar (2004), Bellovary et al. (2007), Pereira, Basto, Gómez and Albuquerque (2010) and Peres (2014), statistical models are the most used for predicting bankruptcy, in addition to being frequently used as a basis for the development of other models and that they can be subdivided into Univariate and Multivariate Analysis, where inside the last one, the main methods used are Multiple Discriminant Analysis (MDA) and Logit analysis.

In this context, Altman (1968) indicates that the Multiple Discriminant Analysis technique not only has the potential to correctly reformulate the problem of bankruptcy forecasting, since it consists of a different approach to the traditional analysis of financial ratios, but also, given its characteristics and descriptive qualities presented, was selected as the most suitable for the study of business bankruptcy.

The MDA method covers Z-Score models such as Altman (1968), Matias (1982) and Carvalho das Neves e Silva (1998), and according to Santos (2000), it is a multivariate statistical method that seeks in a generic way to classify a variable based on the observation of a set of several independent variables.

4 Data and Methodology

4.1 Data sources and sample space

To meet the objectives of this dissertation, the study of both macroeconomic and microeconomic data was required. To obtain macroeconomic data for the Portuguese and Brazilian economies, the Bloomberg platform was used. To obtain the financial and economic data corresponding to the companies of Euronext Lisbon and B3 (“Brasil, Bolsa, Balcão”), the financial reports of each of the 18 corporations, for the years 2010 to 2020, were collected and analyzed. These 180 reports were read and interpreted and based on the data from the financial statements and their respective explanatory notes, a harmonized set of new financial statements, which could be more easily compared among themselves and consolidated according the IFRS standards, was constructed.

4.2 Methodology choice

Creswell (2018) suggests the segregation of research approaches in three different types: qualitative, quantitative, and mixed methods; highlighting that the first two should not be viewed as rigid, distinct categories, as instead, they represent different ends on a continuum.

Mixed methods research, in this context, is an approach to inquiry involving collecting both quantitative and qualitative data, integrating the

two forms of data, and using distinct designs that may involve philosophical assumptions and theoretical frameworks. The core assumption of this form of inquiry is that the integration of qualitative and quantitative data yields additional insight beyond the information provided by either the quantitative or qualitative data alone (Creswell, 2018).

This dissertation will use an exploratory sequential mixed method approach, based on a literature review and the analysis of financial and economic data from public listed companies in Portugal and Brazil, as this research design should provide a better basis to obtain and discuss the in the richest way the quantitative data collected.

4.3 Methodology steps

I. Qualitative research

A literature review will be conducted to identify the main concepts and indicators related to the themes of performance and financial sustainability. The prime platform of research to be used will be the B-ON (Online Knowledge Library), as it covers multiple databases such as: ERIC, Medline, and Web of Knowledge (ISI Web of Science).

II. Quantitative assortment

The second stage will involve the collection of accounting and extra-accounting information, from 2010 to 2020, from the public listed companies and market segments detailed below:

- (i) Brazilian listed companies inside the market segment of Communications (Media, Telecommunications and Fixed Telephony);
- (ii) Brazilian listed companies inside the market segment of Pulp and Paper production;

- (iii) Brazilian listed companies inside the market segment of Construction Industry;
- (iv) Portuguese listed companies inside the market segment of Communications (Media, Telecommunications and Fixed Telephony);
- (v) Portuguese listed companies inside the market segment of Pulp and Paper production;
- (vi) Portuguese listed companies inside the market segment of Construction Industry

III. Data refinement

The third stage will involve the refinement of both qualitative and quantitative data, based on a survey (collection) of the most used indicators in financial analysis, in Brazil and Portugal, (which will be used within the isolated analysis as well as within bankruptcy forecasting models), and based on the conception of a harmonized set of new financial statements.

IV. Data processing

The fourth step is constituted by the application of the selected financial indicators, and the bankruptcy forecasting models, to each company and market segment detailed in stage II. It is important to highlight that the bankruptcy model's application's main objective is to provide a guidance of potential continuity problems inside each company analyzed.

V. Results assessment

The fifth and last stage will involve consolidating the results obtained and carrying out a detailed analysis congregating both qualitative and quantitative information based on three concomitant perspectives:

- (i) Horizontal Analysis: comparative framework between the present and the past of the evaluated company itself.

- (ii) Vertical Analysis: comparative framework between the present of the analyzed company and its competitor(s).

- (iii) International Analysis: comparative framework between Portugal and Brazil for each economic activity sector analyzed.

It is important to mention, that during this stage, any collection of additional relevant quantitative and qualitative information, to support the analysis of results obtained, is also present.

5 Results - Key Questions Disclosure

This chapter aims at discriminating the answers obtained to the four key questions previously raised at the beginning of this dissertation.

- I. What does performance and sustainability mean inside a business context, and what main concepts are related to these subjects?

First, it was found that performance can be divided into four dimensions, including financial, economic, technical and market. Overall, it corresponds to the magnitude of profits a company is able to generate, how efficiently it is able to use its resources, how good it is able to manage the financial resources generated by its activities and how well it is inserted inside its marked segment and in relation to its main competitors. Secondly, it was observed that the concept of sustainability may include various definitions, being the scenario in which corporate value is maximized and does not decline over time, also referred as financial sustainability, the perspective used in this project. The concepts of going concern and bankruptcy prediction models were the main related subjects selected within this definition.

II. Which are the most relevant indicators and methods to evaluate the performance and the sustainability of the public listed companies in question?

In relation to the performance evaluation, approximately 20 main and most commonly used indicators were studied and selected, divided into four main dimensions: Performance, Efficiency, Leverage and Liquidity. It was found that the method of results assessment must be conducted through the analysis of aggregate results, as the information provided by the individual analysis of each ratio and each company, alone, have major limitations. Additionally, in relation to the sustainability evaluation, the bankruptcy prediction models were identified as the main method of analysis, where three different models were selected: Altman's, composed inside United States' context; Matias', based on Brazilian companies; and Carvalho das Neves', created focusing on the Portuguese market.

III. What is the current situation of the companies analyzed compared to their own past and to their competitors?

This dissertation was able to identify many differences between companies inside same sectoral and geographical dimensions, but also recognizing a major complexity for this analysis. Although each case is presented with broader details inside the results discussion section presented previously, for each sector and country, it is relevant to observe that the assessment of a company's situation requires the consideration of many different perspectives, that included, in summary, five dimensions: Performance, Efficiency, Leverage, Liquidity and Sustainability.

IV. Are there any significant differences between similar companies or business sectors in Portugal and Brazil?

Yes. This dissertation was able to identify various relevant differences between both countries' similar segments, as significantly distinct economic, cultural and political contexts exerted relevant impacts on each company and sector, being responsible for many of the geographical differences found in the timeframe analyzed. Although global macroeconomic factors were also able to exert visible similar impacts in both countries, as Covid-19's implications in 2020, episodes such as the Sovereign Crisis in Europe and the political turmoil brought by Dilma's impeachment in Brazil are examples of major factors that differentiated both countries' samples observed scenarios. Overall, a better situation was observed for Construction and Pulp & Paper companies in Portugal, while Communications corporations presented healthier circumstances in Brazil.

6 Conclusions

Financial analysis plays a crucial role at verifying the financial health and economic situation of a company, which requires an in-depth study of an extensive amount of data from its sources of financial information, being the Income Statement, the Balance Sheet, and the Cash Flow Statement the most relevant ones. In this domain, financial ratios, either in a univariate or multivariate approach, are an indispensable tool in financial analysis, since they allow to build the synthesis and identify the relationship of the data being analyzed. More importantly, as it enables a better comparison between different companies, they allow to control the effect of the magnitude of the

variables, evaluating companies with greater independence from their size.

This dissertation aimed to study the content of financial information sources of companies representing three different sectors, from Portugal and Brazil, through the analysis of financial ratios and bankruptcy prediction models, in order to draw conclusions about their financial situation and respective sectors' and country's macroeconomic environment. For this purpose, detailed accounting information was obtained from each company's annual financial statements, for the period of 2010 until 2020, as well as stock market's data. The use of these economic-financial ratios allowed a geographical, temporal, and sectoral comparison, and understanding the essence of these three effects and how they affect companies, and their ratios is central to an economic and financial analysis of a given reality. The comparative study of economic and financial indicators was established in five different dimensions: four groups of ratios – Performance, Efficiency, Leverage and Liquidity - and a group referring to the multivariate approach of bankruptcy prediction models (as a Sustainability assessment tool).

It was found that, although very different situations could be observed between companies inside same countries (and therefore same economic, political, cultural, and social contexts) and sectors of activity, related to their internal situation, the macroeconomic environment exerts very relevant influences on the economic and financial performance of companies, as well as the nature of their activities (sector), have significant impacts on their capital and financial structures.

In relation to the Construction sector, the major difference between Brazil and Portugal's situation was brought by a sector-specific crisis in the first country, caused by a bribery scandal inside on major corporation of this sector, in 2016. In all four groups of ratios (Performance, Efficiency, Leverage and Liquidity), the general relative circumstance was the same: the Portuguese sample depicted more stable indicators, with healthier levels and only with some deterioration in 2020. It is important to highlight, however, that similarities, brought by the nature of activity of these companies, could still be observed between both countries: as asset-heavy industries, the proportion of most liquid assets (cash and cash equivalents) over total assets are low, as elevated inventory levels and high amounts of accounts receivables are characteristic to this sector.

Inside the Pulp & Paper sector, a significant deterioration of the Brazilian sample could also be observed between 2017 and 2020, related to the political and economic turmoil of the country during this period, with higher impacts felt by the industrial sector. In relation to the Performance, Efficiency and Leverage dimensions, similarly to the Construction sector, healthier and more stable values were observed in the Portuguese sample. The Liquidity indicators, however, were able to show a relatively more comfortable situation for the Brazilian companies.

Additionally, in relation to the Communications sector, which depicts the situation of a service-oriented segment, a common decline in both countries' metrics was witnessed in 2019 and 2020. However, a more favorable circumstance for the Brazilian sample was observed in almost all dimensions, through the 10 fiscal years analyzed. Although Sonaecom was responsible

for significant distortions inside the Portuguese selection, Brazilian companies have still shown healthier figures in the three Performance, Efficiency and Leverage dimensions. Inside the 2013-2020 period however, with the dissipation of the Sovereign crisis effects, Portuguese companies depicted a slightly more attractive Liquidity situation.

Finally, although the overall results of bankruptcy prediction models (Sustainability dimension) depicted a non-healthy situation for all the samples analyzed, with its final binary results not being able to contribute to the analysis, a more careful observation of their results was able to show the existent differences between companies and countries, that helped to sustain the conclusions obtained from the univariate (isolated ratios) analysis.

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