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INTEGRATING COMPANY-SPECIFIC ACCOUNTING
INFORMATION INTO CREDIT RISK ANALYSIS USING A MULTIMEASUREMENT MODEL IN THE CONTEXT OF IFRS16
APPLICATION

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KEYWORDS: bibliometric analysis, IFRS 16, economic-financial indicators, audit opinion, debt ratio, credit risk, probability of non-reimbursement, real economy variables, monetary factors

INTRODUCTION AND RESEARCH OBJECTIVES

This PhD thesis identifies the quality level of financial information reported by non-financial companies in Romania, listed on the regulated section of the Bucharest Stock Exchange, focusing on financial reporting around IFRS 16 - leasing contracts and on the integration of company-specific accounting information in credit risk analysis.

The paper starts from understanding how assets subject to operating leases were classified and accounted for under IAS 17 a few years ago and aims to distinguish what changes have occurred in the accounting for these leases since 2019. Moreover, the research looks back not only at 'how' this accounting changed, but also tries to find out 'why' the change occurred and what are the benefits of the new standards.

In this context, the PhD thesis aims to analyze the influence of accounting rules on the financial information presented in the balance sheet, as well as the role of auditors' reputation and audit opinion in increasing the quality of financial information. In order to deepen the analysis carried out, control variables were introduced in the study, reaching the conclusion that the application of IFRS 16 "Leasing contracts" by companies listed on the Bucharest Stock Exchange for the preparation of annual consolidated financial statements, has increased the influence of the indicators selected in the analysis on the debt ratio, as a tool for estimating the probability of non-reimbursement. Also, with the implementation of the new accounting standard, an increase in the quality of the information presented in the annual financial statements in terms of relevance, accuracy and persistence of reported results was observed in the case of the application of IFRS 16 international standards, as well as in the case of the audit of financial statements by a Big4 member company or the expression of an "unqualified" opinion in the audit reports prepared for the financial statements of listed companies. In addition, the research was extended to the macroeconomic level, analyzing the influence of macroeconomic variables on the aggregate debt ratio and the impact of these variables on the probability of default in the case of the non-financial corporate sector in Romania. The econometric results obtained suggest that the real economy and monetary factors influence the aggregate debt ratio, especially in the case of companies operating in the agricultural sector.

The current research started from the question:

--- What is the logical rationale for the need to revise IAS 17 and how can the idea of changing the principle of accounting for leases so as to ensure that relevant financial information is reported in the first set of financial statements issued after the new standard is applied be explained?

Through a multivariate quantitative analysis based on the level of disclosures in the 2019 financial statements of some Romanian companies listed on the Bucharest Stock Exchange, we will analyze the relationship with certain indicators.

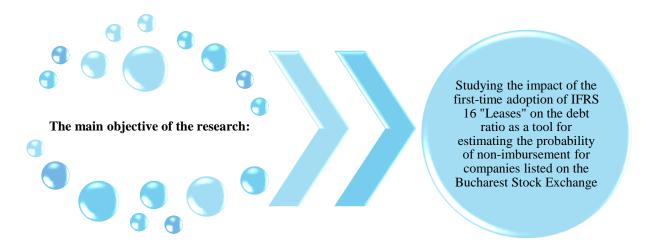
In this context, the second question this research aims to answer is:

--- Is the lease accounting disclosures that companies present in their financial statements as a result of the implementation of the new IFRS 16 standard relevant and of a higher quality than the old standard, so that the new presentation can help reduce credit risk?

By answering these two questions, it can be considered that the PhD thesis will provide an interesting perspective on the relevance of the financial disclosures presented by companies in the context of the application of the new lease accounting standard.

Specifically, the *objectives of scientific research* can be structured as follows:

- 1. Bibliometric analysis of the research domain using the visualization of similarities technique (VOS);
- **2.** Developing state-of-the-art knowledge on the integration of accounting information presented in financial reports in analyzing the probability of non-imbursement using a multidimensional model;
- **3.** Studying the impact of the first-time adoption of IFRS 16 "Leases" on the debt ratio as a tool for estimating the probability of non-imbursement for companies listed on the Bucharest Stock Exchange;
- **4.** Improving the current means of monitoring credit risk using on the one hand, accounting information summarized in companies' financial reporting and, on the other hand, aggregate-level information from standardized industry-level reporting;
- **5.** Understading the importance of linking microeconomic indicators in companies' financial reporting with macroeconomic indicators, which have a decisive impact on the choice of future business strategy;
- **6.** Using tools, methods, techniques that relate to quantification, evaluation, estimation and testing in analyzing data related to the issues addressed in the research topic.



What is the logical rationale for the need to revise IAS 17 and how can the idea of changing the principle of accounting for leases so as to ensure that relevant financial information is reported in the first set of financial statements issued after the new standard is applied be explained?

Is the lease accounting disclosures that companies present in their financial statements as a result of the implementation of the new IFRS 16 standard relevant and of a higher quality than the old standard, so that the new presentation can help reduce credit risk

Figure 1.1: Objectives of scientific research

Source: Own research

In order to achieve the proposed objectives, the *study aimed to test the following hypotheses*:

H1: Does the capitalization of operating leases following the implementation of IFRS 16, by recognizing a right to use the asset and a liability arising from the lease, influence the debt ratio indicator, as a measure of the probability of default at maturity, by increasing it in the first post-implementation reporting year?

H2: At the level of Romanian firms, is there a significant association between the type of audit opinion and the membership of a particular auditor and the debt ratio indicator in the context of IFRS 16 adoption?

H3: Can credit risk be anticipated based on the evolution of macroeconomic variables?

MOTIVATION FOR THE CHOICE OF TOPIC

Convergence of national regulations with International Financial Reporting Standards has been a reality of international accounting in recent decades, with IFRS providing a benchmark for updating national regulations for countries with fewer resources for standard setting. In these circumstances, we have identified a multitude of perspectives from which the issue of changing the accounting

benchmark has been analyzed, as well as the relationship between periods of financial crisis and the increased interest of authorities in developing new financial reporting standards or revising existing ones (Pucci, 2017, p.20).

Furthermore, the research literature is replete with critical analyses of the accounting treatment of leases in IAS 17, mainly because of the complexity of the standard and its rules, as well as the many options allowed by the standard on how to account for the same items.

Thirdly, a comparative analysis of national and international practices shows that international regulations put more emphasis on professional judgment, while national regulations, in line with European directives, limit the accounting practitioner's ability to decide in certain situations, with the modalities of action often being imposed by rules. Accounting policies are influenced, from one country to another, by the tax regime, the political and economic context or the legal system, and the consequences of the application of certain accounting practices in economic entities will be observed in the result and performance achieved by the entity in a given period of time (usually the financial year). This study seeks to understand not only why the significant change in the way of accounting for leases has come about, but also whether the change has achieved its intended objectives.

Fifth, with the expansion of capital markets and the growth of multinational companies, the need for complex and comparable accounting information is becoming increasingly evident, and this is being achieved through the widespread application of high quality global accounting standards accepted by national standardization bodies. The worldwide application of IFRS is a solution in this respect, bringing numerous benefits mainly through increased comparability between companies' financial statements and the possibility for investors to access capital at lower cost and lower risk.

PRESENTATION OF THE RESEARCH METHODOLOGY

This PhD thesis involves the use of qualitative and quantitative research methods. The qualitative research undertaken in chapter two, which aims to study the theoretical notions and issues with regard to the investigation of the IFRS 16 conceptual framework, is continued with a quantitative bibliometric research of the field of interest. The paper continues with the quantitative analysis, at the empirical study level, of the variables and indicators selected for the purpose of the research, the data being modeled using econometric programs in order to test the research hypotheses. To this end, based on OLS (Ordinary Least Squares) regression, the relationship between the dependent variable, the independent variables and the control variables was tested.

This PhD thesis uses appropriate research methods, which are detailed in each chapter and selected according to the issues addressed in that section.

The sample used in the empirical model comprises a number of eighteen Romanian companies listed on the Bucharest Stock Exchange, and the statistical relevance of the results took into account the small sample problem.

STRUCTURE OF THE PAPER

This doctoral thesis has the following structure:

Chapter 2 covers the current state of the research, capturing how leases are accounted for under the two accounting standards (IAS 17 and IFRS 16) and the context that led to the change in how leases are accounted for. This chapter outlines the new provisions, which were introduced by IFRS 16 effective from January 1, 2019, and the differences between the new and the old standard. It can be assessed that the new financial reporting standard has a significant impact on the economic and financial indicators reported by lessees. A first conclusive significant effect that has been observed with the implementation of IFRS 16 relates to the fact that the right of use and the lease liability are recognized in the balance sheet. Moreover, the lessee will recognize in the profit and loss account the amortization of the right of use and the interest charged on the lease liability. In this context, it can be stated that all costs associated with operating leases are recognized under the new standard by straight-line amortization and degressive interest over time. In addition, another significant effect stems from the positive impact that the new accounting standard has on all performance and indebtedness indicators, which has led to changes in the loan agreement clauses.

Chapter 3 involves the elaboration of a bibliometric analysis using the information obtained by querying the existing database on the Web of Science platform, the data being processed through the VOSviewer software application, obtaining the following research results:

- The interest in scientific research in the analyzed field doubled in the period 2014 2024 (4,817 scientific publications) compared to the period 2003 2013 (2,162 scientific publications).
- The country with the most scientific publications is the USA (1,814 papers), followed by China (831 papers), England (604 papers) and Germany (489 papers). Among the countries with a considerable contribution to research on the probability of default and economic-financial indicators are Italy (400 papers), Canada and France with 327 scientific papers each, Australia (270 papers) and

Spain with 252 papers. As for Romania, it contributed to research in the field analyzed by publishing 116 scientific articles (1.57% of the total) at the time of the Web of Science database query, ranking 19th out of 132 countries.

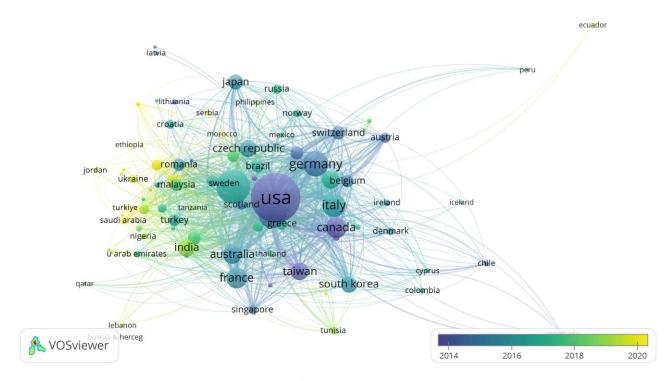


Figure 1.2: The map of the most productive countries

Source: Own research

- Alfonso Antonio, Greiner Alfred Alfred and Crook Jonathan are the authors who have published the most scientific papers on the subject under research.
- The most frequently used keywords in the analyzed publications are: capital structure (568 occurrences), credit risk (389 occurrences), public debt (215 occurrences), probability of default (210 occurrences), default risk (180 occurrences), leverage (163 occurrences), profitability (105 occurrences).
- The most productive journal is the Journal of Banking Finance with a total of 200 articles published, followed by Applied Economics (84 articles), Economic Modeling (82 articles), Journal of Financial Economics (75 articles) and Journal of Corporate Finance (73 articles).
- The most cited papers are "Why Do US Firms Hold So Much More Cash than They Used To?" published in the Journal of Finance, 2009, authored by Bates, T.W., Kahle, K.M. and Stulz, R.M.

(1379 citations) and "Private credit in 129 countries" published in the Journal of Financial Economics in 2007 by Djankov, S. et all. (1,242 citations).

- The most cited authors are Stulz, R. (1775 citations), Kahle, K. (1479 citations) and Bathes, T. (1379 citations).

Taking into account the results obtained as a result of the bibliometric analysis, it can be stated that the objective examination of the entire research activity in a given field, accompanied by the analysis of the most productive journals and the most cited documents, is the starting point for the development of scientific research in our country.

Bibliometric analysis has proven its usefulness in providing an organized and highly objective understanding of the field of scientific research addressed in this PhD thesis, highlighting the connections and interactions between keywords and other relevant concepts and providing a broad perspective on the state of research in the chosen field that can lead to the identification of future research directions.

Chapter 4 presents the model used to investigate the issues of integrating company-specific accounting information, in the context of the adoption of IFRS 16 "Leases", in analyzing credit risk through a multidimensional model. This analysis is built empirically through a multivariate regression based on the debt ratio, as a tool to quantify the probability of default and a series of indicators presented in the balance sheet of companies listed on the Bucharest Stock Exchange, as well as on the audit opinion expressed on the financial statements and the auditor's reputation.

As a result of the research undertaken, it can be concluded that the application of IFRS 16 "Leasing contracts" by companies listed on the Bucharest Stock Exchange for the preparation of consolidated financial statements has led to an increase in the influence of the indicators selected in the analysis on the debt ratio, as a tool for estimating the probability of default. At the same time, the study emphasizes the increase in the quality of financial information, in terms of its relevance, accurate presentation and persistence of reported results in the case of the application of IFRS 16 international standards, as well as in the case of the audit of financial statements by a Big4 member company, or in the case of the expression of an "unqualified" opinion in the audit reports prepared for the financial statements of listed companies.

The analysis of descriptive statistics shows that the application of IFRS 16 as of 2019 has led to a significant increase in total assets and total liabilities reported in the balance sheet, which has led to an increase in the debt ratio, concomitant with a reduction in profitability, return on equity and

solvency, in the case of entities listed on the BVB. The debt (ratio) ratio indicator increased on average for the entire population tested from 25.64% in 2018 to 27.37% in 2019, which shows that the recognition of operating leases in the balance sheet favoured the increase in the debt ratio as a measure of the probability of default at maturity for the population tested, a result that validates hypothesis H1.

In terms of auditor reputation, it can be noted that the proportion of reports audited by Big4 member companies compared to data audited by other companies remains constant pre-post IFRS 16 implementation. However, it is worth noting that the reputation of the auditor, determined by the high specialization of the staff, the high bargaining power or the ability to anticipate legislative changes, adds relevance to the reported financial information. Thus, lenders include information from reports audited by Big4 member companies in their creditworthiness analysis to a greater extent than data audited by other companies.

Last but not least, in the first reporting year under IFRS 16, unqualified audit opinions decreased by 11 percentage points. It is well known that a 'qualified' opinion is associated with a lower level of relevance than an 'unqualified' opinion. In this context, investors and creditors are tempted to adopt a cautious approach in case of auditor's reporting of items not in line with accounting regulations.

Chapter 5 extends the research by capturing the influence of macroeconomic variables on the aggregate debt ratio, as well as the influence of these variables on the probability of default for non-financial companies in Romania. The econometric results suggest that the real economy and monetary factors influence the evolution of the aggregate debt ratio, in particular in the case of companies operating in the agricultural sector.

In this chapter, a bibliometric analysis was conducted in order to document the research interest in the area of the influence of macroeconomic variables on the probability of default of non-financial companies in Romania, which complements the issues addressed in chapter 3 of this PhD thesis. The analysis was carried out by querying the Web of Science database, using "macroeconomic indicators", "probability of default" and "debt ratio" as subject filters, resulting in a total of 10,692 scientific publications in the fields of economics, business finance, management, business and operations research management science, 7,294 of which (68%) were published in the last 10 years, which highlights the growing interest in the area of research on macroeconomic variables and their influence on credit risk. The papers were published in 200 sources under the names of 201 authors using a total of 230,956 references and 23,273 keywords.

Chapter 6, the last chapter of this thesis, presents the general conclusions, based on the entire research, regarding the integration of company-specific accounting information in the analysis of the probability of default of non-financial companies in Romania, under the conditions of the implementation of IFRS 16 "Leases", to which the auditor's reputation, the audit opinion and the general macroeconomic context are added.

The results obtained after applying the econometric model on the selected variables validated hypothesis H1, which refers to the influence of capitalization of operating leases on the debt ratio as a measure of the probability of default for companies listed on the BVB. The descriptive statistics revealed that the debt ratio indicator increased on average by 1.73% in the first IFRS 16 reporting year.

As regards hypothesis H2, concerning auditor reputation and audit opinion, this hypothesis was not validated by the results obtained by applying multiple linear regression. In the first year of reporting under IFRS 16 it was found that while the proportion of reports audited by Big4 member companies remained constant, unqualified audit opinions decreased by 11 percentage points (from 89% to 78%). In this context, it can be argued that investors and creditors will be tempted to adopt a more cautious behaviour in case of auditor's disclosure of items not in compliance with accounting regulations.

Hypothesis H3, which refers to the association between the probability of default, expressed by the debt ratio at aggregate level and real economy variables, is supported by the results obtained for firms active in agriculture. However, in the case of firms active in industry, construction and transportation, the hypothesis regarding the association between the aggregate debt ratio and real economy variables is not supported by the regression model results. Thus, in the case of entities active in agriculture, the critical p-value associated with the t-statistic test is below the 5% significance level for the three real economy variables under analysis and the coefficients are statistically significant. As regards the influence of monetary factors on the debt ratio, hypothesis H3 is supported by the results of the regression model in all four sectors of activity analyzed: the critical p-value associated with the t-statistic test is below the 5% level of relevance in the case of the exchange rate and the coefficients are statistically significant.

PERSONAL CONTRIBUTION TO THE DEVELOPMENT OF THE RESEARCH LITERATURE

We also recall the *personal contribution to the development of the research literature* through:

-bibliometric analysis of the research domain using the visualization of similarities technique (VOS);

By examining scholarly works addressing the selected keywords, bibliometric analysis highlights the evolution of research in the field under analysis, the contributions of authors, institutions and countries to the development of this research and of research in the subfields and adjacent research topics. At the same time, the bibliometric analysis can highlight the connections and interactions between keywords and other relevant concepts, providing a broad perspective on the state of research in the chosen field, which can lead to the identification of future research directions, and is a bridge between the theoretical part of this paper and the research undertaken in chapters four and five.

- complementing the literature within the scope of the research by approaching a multidimensional model that captures both the influence of accounting rules on the financial disclosures presented in the balance sheet from the perspective of IFRS 16 and the influence of audit opinion and auditor reputation on the debt ratio as a measure of the probability of non-reimbursement;
 - multivariate quantitative analysis to validate the hypotheses developed;
- the development of interdisciplinary research, emphasizing aspects in the fields of taxation, accounting, macroeconomics, statistics, economic-financial analysis and econometric modeling, research based on a rational judgment, starting from the general to the particular, by combining quantitative and qualitative elements;
- The results of the research have both practical application and policy implications, with a clear link between the aggregate debt ratio and the deterioration of the macroeconomic environment.

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