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## The relationship between investment and accounting conservatism: a study applied to small and medium-sized Portuguese companies

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### Resumo

Conservatism has been present in accounting practice for a long time. Currently, the dichotomy between historical cost and fair value or between the qualitative characteristic of relevance and reliability motivate further research. Thus, in this paper we analyse whether the level of investment on plant, property and equipment affects conditional conservatism in Portuguese small and medium-sized entities over the period from 2014 to 2018. The study was based on the econometric model proposed by Ball and Shivakumar (2005). The results indicate that these firms in general do not opt for conservative accounting practices. However, firms that report investment activities tend to be more conservative aiming at capturing investors' confidence. Furthermore, the empirical evidence does not allow us to conclude that problem of underinvestment and overinvestment of firms is mitigated through accounting conservatism, therefore the association of investment and conservatism tends not to be linear. This study contributes to the debate on the relevance of conservative accounting practice at the level of investment decisions.

**Palavras-chave:** Conditional Conservatism. Investment Efficiency. Financial Reporting. Overinvestment. Underinvestment.



PROGRAMA DE PÓS-GRADUAÇÃO EM  
**CONTABILIDADE**  
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### 1 Introduction

Financial statements are an essential tool in communicating the company's current and expected future economic/financial situation. Investors depend on financial information to make investment decisions. Therefore, financial statements must meet the qualitative characteristics to ensure their reliability and credibility, as well as to reduce uncertainty in decision making. On the other hand, investment decisions should be made with the purpose of reducing the cost of capital, and therefore maximising the value of the company. Accounting conservatism may also impact the decision-making process to the extent that it makes it impossible for managers to sense opportunity and manage gains that result in increasing the value of the firm (Khalifa & Othman, 2015; Khalifa et al., 2016).

According to Biddle et al. (2022, p. 295), "accounting conservatism is a long-standing and pervasive feature of financial accounting". In fact, "accounting conservatism has a long history" (Zhong & Li, 2017, p. 1), namely it has been widely used in accounting practices in the past three decades, and is considered for financial reporting a rather important attribute (Li & Chao, 2020; Zhong & Li, 2017). However, despite its general acceptability, its economic benefits are continuously questionable among those who are policy makers and academics (Francis, 2004; Watts, 2003; Basu, 1997;).

Conservatism involves accounting policies and some authors, in the field of accounting, who have been concerned with explaining the reasons for their continued use (Hassan, 2021). Accounting conservatism refers to the prudent attitude that accountants should adopt when facing the risks of an operating environment and the uncertainties of a firm (Li & Chao, 2020). However, both the International Accounting Standard Boards (IASB) and the Financial Accounting Standards Board (FASB) do not to include accounting conservatism in their conceptual frameworks, namely because it is inconsistent with the desirable qualitative characteristics of accounting information, as financial reporting needs to be neutral and free of bias so as not to contribute an intentional decision or outcome (Ishida & Ito, 2014). However, Lopez et al (2020, p. 301) results show that "IFRS adoption boosts earnings conservatism".

The investment decisions of a company are improved by the timely reporting, i.e., by the timely communication of financial information. In view of this, this improvement in the financial information allows solving the problems of overinvestment or underinvestment in projects of companies (Hope & Thomas, 2008; Biddle & Hilary, 2006). In this context, Costa et al. (2021) suggest that the quality of financial reporting improve the investment efficiency.

This paper aims to analyse the relationship between firm's investment and accounting conservatism. The literature suggests that firms face several challenges such as underinvestment in projects with positive Net Present Value (NPV) or overinvestment in projects with negative NPV that lead to financial inefficiency on the part of the firm (Louis et al. (2012).

Therefore, conservatism is considered as one such accounting principle that requires verifiability for the recognition of early gain to thereby avoid possible concealment or distortion of financial information. In fact, managers tend to engage more in a conservative accounting practice because it allows to capture investors' confidence, then they are willing to invest more. Based on Agency Theory the outsiders of a company have less information about its performance than the insiders. Therefore, investors and creditors tend to demand for a conservative accounting practice because conservatism may act as a corporate governance mechanism, (Goh et al., 2017; Garcia et al., 2014). Besides, conservatism is an efficient contracting mechanism and creditors also prefer a conservative accounting, (Byzalov & Basu, 2016).

On the other hand, literature suggests that accounting conservatism is related to higher levels of investments regardless the source of financing. In this respect, Lara et al. (2016, p. 221) results show “that more conservative firms invest more and issue more debt in settings prone to underinvestment and that these effects are more pronounced in firms characterized by greater information asymmetries”. In addition, Balakrishnan et al. (2016), after the beginning of a crisis period, found that companies with less accounting conservative suffered a clearer decline in investment activity compared to companies more conservative in financial reporting.

The main motivation of this research relies on the analyses the relationship between the level of investment and conditional conservatism. This study is pertinent given that it highlights the importance of conservatism in financial statements in the sense that it may contribute, in an efficient manner, to the ability of a company to create value. Thus, both those who hold debts and shares in the company may obtain benefits resulting from the application of the principle of conservatism, since they may decide in a controlled manner on their investments, considering the best option available, avoiding surprises or cost to them. Similarly, accounting conservatism can assist managers to identify underinvestment and overinvestment issues, contribute to prudence-based investment and maximise shareholder wealth.

The study focuses on conditional conservatism, as it affects the usefulness of accounting information through the differentiated recognition in terms of timeliness of "good" and "bad" news, using the econometric model proposed by Basu (1997) modified by Ball and Shivakumar (2005). The sample consists of 54 Portuguese small and medium-sized companies and the study is carried out for the period from 2014 until 2018 because conservatism could be affected by COVID 19 in the periods after given its impact on the economy of any country (Balakrishnan et al., 2016). In addition, we investigate whether accounting conservative firms exhibit a higher level of investment and whether firms that are more prone to underinvestment or overinvestment tend to be more or less conservative in such a way that regulates the investment activity.

## **2. Literature review**

Accounting conservatism is considered “a long-standing and pervasive feature of financial accounting” (Biddle et al., 2022, p. 295). The philosophy of conservatism is commonly summarised in the literature by the thought that conservatism does not aim to anticipate profits, but to predict all losses that are likely to occur (Watts & Zimmerman, 1986; Bliss, 1924;). Nevertheless, IASB and FASB were reluctant to embrace accounting conservatism in their conceptual frameworks based on the argument that it is not neutral and it bias the financial statements (Ishida & Ito, 2014).

Thus, a counterpoint between the benefits and costs of the use of such accounting practice will be carried out, some studies that have been developed in various contexts, economic and legal, which somehow contribute to the identification of the determinants of the practice of conservatism will be presented, as well as the main differences between the two types of conservatism that generate the undervaluation of the book value, namely conditional and unconditional conservatism, will be pointed out.

### **2.1. Definitions of Conservatism**

Over the past few years it has been verified that the influence of conservatism in accounting practice has been long and significant (Cerqueira & Pereira, 2020; Watts, 2003; Basu, 1997). Conservatism arises in the need for accounting to demand a greater degree of verification of "good" and "bad" news to recognize them as profit. Timeliness, one of the qualitative characteristics of accounting information, may interfere with the economic outcome as it is related to conservatism (Maia et al., 2018).

The traditional definition of conservatism is given by Basu (1997). This author establishes that conservatism reflects the tendency of accountants to demand a higher degree of verification for the recognition of "good" news (profits) than for the recognition of "bad" news (losses) in the financial statements. Also, Guay and Verrecchia (2006) define conservatism in a similar manner to Basu (1997). The authors consider that conservatism is the timelier recognition of losses than of gains. In relation to an accounting system that seeks to capture information in a timely manner, Guay and Verrecchia (2006) further clarify that the defining characteristic of conservatism is not the recognition of loss, but rather the delay in the recognition of gains.

Thus, the problem that arises here relative to this measurement of gains and losses between information that is timely and that which is verifiable is resolved in favour of the latter, that is, by delaying the recognition of gains until an upper limit of verifiability is reached. Accounting conservatism is also traditionally defined as a method whereby the main purpose is not to anticipate any profits but rather, effectively anticipate all losses. This anticipating profit translates into recognizing profits before there are revenues and these are verifiable (Watts, 2003). According to the same, the greater the difference between the level of verification of gains in relation to losses, the greater the level of accounting conservatism used. For Li and Chao (2020, pg. 65), conservatism "refers to the prudent attitude that accountants must adopt when facing the risks of an operating environment and the uncertainties of a firm".

Conservatism can be seen in two perspectives. First by the asymmetric recognition of the "good" and "bad" news in the accounting results, that is, the accountants reflect the economic losses more quickly than the economic gains, and the second perspective lies in the flexibility and discretion existing in the accounting standards, which enables a certain degree of interpretation and influences the choice of the accounting method when recognizing a particular operation (Santos, 2009). According to the Laux and Ray (2020) "conservative accounting practices require companies to prepare financial reports with caution and to choose reporting methods that reduce the risk of exaggerated financial statements".

According to Aider et al. (2021.p 3), although accounting conservatism is a measure of bias, it "may have benefits for investors to the extent that conservative reporting reduces the chance of asset overstatement, which is a major contributing factor for most corporate collapses". In addition, these authors indicate that "tax planning involves managerial choice of accounting policies and practices in order to lower the net present value of the taxation liability" (p.3).

## 2.2. Conservatism issues

Previous studies identify two types of accounting conservatism that generate, as mentioned above, the understatement of the book value, namely conditional conservatism and unconditional conservatism (Abd-Elnaby & Aref, 2019). The main difference between these two forms of conservatism lies in the fact that the application of conditional conservatism depends on the occurrence of economic news, whereas the application of unconditional conservatism no longer takes this into consideration, i.e. it does not depend on the occurrence of economic news (Ruch & Taylor, 2015). Examples of conditional conservatism include the market value for the calculation of impairments for long-lived tangible and intangible assets and the systematic recognition of research expenses as expenses and not as assets are examples of unconditional conservatism (Beaver and Ryan, 2005).

According to Ruch and Taylor (2015), conditional conservatism occurs when negative economic news are recognised in accounting earnings in a timelier manner than positive economic news. Otherwise, conditional conservatism is characterised by the asymmetric recognition of positive and negative economic news, as "bad" news is recognised in advance while "good" news is not anticipated. On the other hand, unconditional conservatism occurs through the consistent under-recognition of net accounting assets. Unlike conditional conservatism, unconditional conservatism does not depend on the occurrence of news.

Taking into account what was previously mentioned, it is then important to mention that its main distinction lies in the fact that unconditional conservatism systematically underestimates the book value of assets due to accounting practices that are predetermined and independent of future circumstances (Sodan et al., 2013). Jackson (2008) referenced by Gutiérrez and Rodríguez (2017), adds that unconditional conservatism is associated with low earnings quality. The most common empirical measures for unconditional conservatism are Price to Book Value (Beaver & Ryan, 2000), the accumulation of negative accruals (Givoly & Hayn, 2000) and the existence of hidden reserves (Penman & Zhang, 2002). Examples of this type of conservatism include the depreciation/amortisation of long term assets at an expected economic rate, the immediate recognition, as an expense, of intangible development expenses, etc. (Beaver & Ryan, 2005).

In opposition to conditional conservatism, Ball and Shivakumar (2005) note that unconditional conservatism is inefficient or, in the best of circumstances, contracting neutral. Since conditional conservatism involves the recognition of loss in a timely manner, i.e. it recognises losses more easily than it recognises gains, which thus increases the efficiency of debt contracting and its offsetting. In the face of conditional conservatism, the requirements for recognising 'good' news (profits) are more stringent than the requirements for recognising 'bad' news (losses), so it is found that losses will be recorded at the most opportune time relative to gains (Rodrigues, 2019). Examples of conditional conservatism include recording at the lower of cost between market value or historical value in accounting for inventories and in accounting for impairment for long-lived tangible and intangible assets (Beaver & Ryan, 2005).

Given the reasons presented above, this study focuses on conditional conservatism since it conditions the usefulness of accounting information through the differentiated recognition in terms of timeliness of "good" and "bad" news. Another reason for the focus on conditional conservatism lies in the fact that it conveys information on uncertain events and is thus deemed of greater relevance to the study of issues that pertain to the contracting and valuation perspective (Ryan, 2006; Ball & Shivakumar, 2005).

An additional question that has contributed to the development of several studies is the fact of trying to find an answer that elucidates what determines and motivates the adoption of conservative practices and procedures in the recognition of accounting results, on a conditional and unconditional basis (Santos, 2009). The functions of financial statements are different for the various users, depending mainly on whether there is separation between the ownership and control of the company, i.e., between shareholders and managers, this being a characteristic of countries whose business economies are developed (Moreira, 2006).

Although the capital market is the main source of corporate financing, the main users of accounting information are mainly shareholders, analysts and the financial press. In the context of less developed business economies, as is the case of Portugal, which is the target of this particular study, the capital market does not play a relevant role in corporate financing. The main function of accounting information is mainly for the purpose of access to financing in banking institutions (Bank) and for the purpose of income taxation (State) (Moreira, 2006).

Most studies conducted at international level, which investigate the determinants of accounting conservatism, focus on the reasons identified by Watts (2003). This author identifies four factors that contribute to accounting conservatism, with some of these factors being characteristic of countries whose business economies stand out as being more developed. Lara et al. (2009) study how contracting, litigation, taxation and regulatory costs contribute to the existence of conditional conservatism. The authors argue that contracting induces only conditional conservatism, while litigation, taxation and regulation induces both conditional and unconditional conservatism. However, other studies (Ball, 2001; Ball & Shivakumar, 2005; Basu, 2005; Qiang, 2007) show that taxation and regulation induce conservatism only in its unconditional form, which implies that aspects of the accounting process determined at the inception of assets or liabilities generate unrecorded expected goodwill (Beaver & Ryan, 2005).

Some of the following factors are considered to be characteristic of countries with more developed business economies.

Contracting: According to Watts (2003), the majority of existing contracts within a company have underlying accounting figures in their execution, namely as regards contracts established between the company, creditors and managers. There is thus a greater incentive on the part of managers to develop conservative accounting practices, namely through the flexibility that exists within the accounting standards to disclose results that meet their objectives. One form of safeguarding against investment risk is, for example, the execution of debt contracts, either through the capital market or also through the banking system, given that these generally include clauses of restriction on the company's management (Santos, 2009). According to this author, compensation contracts, which are defined as contracts in which a certain bonus is received by means of certain results achieved and which are established between managers and shareholders, whenever there is a separation between ownership and management, constitute a strong incentive for the practice of conservatism, giving rise to a trade-off between managers and shareholders. This trade off occurs due to the fact that, while creditors require conservative results to limit compensations, managers seek to increase current earnings and maximise the value of the company due to the compensations in force in the contract.

Litigation costs: In particular, in recent years, shareholder litigation (legal conflict of interest) has contributed significantly to conservatism. Litigation risk arises in a company when different constituent parties may sue (or may threaten to sue) managers, directors or auditors in an attempt to recover losses incurred that are due to the financial statements not mirroring the true economic performance of the company. To reverse this situation, conditional conservatism plays a key role in mitigating the negative effects on information asymmetry by reducing moral hazard, adverse selection and other agency problems, which therefore helps to reduce the risk of litigation (Lara et al., 2009). Litigation costs result from ongoing litigation; however, these costs are more likely to be generated when the firm's earnings and net assets are overstated rather than when they are effectively understated.

Taxation: Tax considerations affect financial accounting choices (Shackelford & Shevlin, 2001), as the income tax rate and the tax calculation method have a major influence on the calculation of current results. Firms defer results as a way of reducing the present value of the tax payable, thus providing an incentive to understate results and net assets (Watts, 2003). Both conditional and unconditional conservatism are used by managers as a means to reduce the present value of tax payable and thus constitutes a way to increase the value of the firm (Lara et al., 2009). Moreira (2006) empirically demonstrates the Portuguese reality in which the incentive of tax order motivates companies to adopt profit reduction practices to reduce the amount of tax payable. Therefore, it is expected that the motives to minimise tax payments through conditional conservatism are expected to be higher as the tax pressure on firms increases (Lara et al., 2009).

Regulation: Watts (2003) states that regulation may induce conservative accounting practices. Accounting information is influenced by the country's legal origin civil law or common law (Ball et al., 2000).

In the Portuguese context, Guimarães (2000) referenced by Santos (2009), considers the following factors as influencing the process of preparation and presentation of accounting information: the legal system, the political and economic ties, the company's financing system and the relationship between accounting and taxation. It also presents the two areas of legal influence performance, namely Anglo-Saxon influenced countries and Europe-Continental influenced countries. Countries of Anglo-Saxon influence or common law, in this case, countries such as the United Kingdom, Denmark, the Netherlands and Ireland, have a weak relationship between accounting and taxation, that is, in these countries, accounting is outside the sphere of influence of the government. Investors are the main sources of finance and require accounting information to be the pursuit of the true and appropriate picture of the company's financial position. Countries with European-Continental or civil law influence, such as Germany, Spain, France, Italy and Portugal, where there is a close relationship between accounting and taxation, banks predominate as sources of corporate financing and accounting regulations are mainly aimed at protecting creditors.

Portugal is characterised by a highly regulated structure in which the capital market comprises a few dozen companies classified as medium-sized when compared to international standards. The banking system plays an important role in financing and the shareholder structure of companies is not very dispersed (Moreira,

2006). The accounting system is legally and highly regulated by the government and Banco de Portugal and aligned with the tax system. Companies are obliged by law to prepare annual financial reports, aiming to meet mainly and primarily the tax administration, as regards their needs in the estimation of income taxes (Moreira, 2006). The accounting standards in Portugal aim, above all, at protecting creditors and investors. The main sources of funding are the financial institutions (Banks) and accounting practices are strongly linked to tax effects (State), influencing most of the time the choices, among several options allowed in the accounting standards, in the recording of certain operations.

### **2.3. Conservatism and Investment Efficiency**

According to Francis & Martin (2010), a potentially important benefit of conservatism is that it enables better investment decisions. Therefore, this study seeks to analyse whether the investment level effectively affects conservative accounting practices.

Therefore, it is noteworthy that several studies in this area refer that conservative financial reporting can somehow influence investment efficiency by limiting the opportunistic attitudes that arise from managers through the existence of information frictions (LaFond and Roychowdhury, 2008; LaFond and Watts, 2008; Watts, 2003). These information frictions direct us to what is the definition of the agency theory. This theory essentially results from the divergence between the incentives of the agent (manager) vis-à-vis those of the principal (shareholder) (Contreira, 2016). These discrepancies of interests arise mainly when there is a separation between those who own the company and those who effectively control it, that is, when the identity of managers is distinct from that of shareholders (Jensen and Meckling, 1976).

Besides, conservative reporting is demanded by shareholders because it assist to mitigate information asymmetries (Ma & Jeong, 2022; Lawal & Hassan, 2021; Goh et al., 2017, Garcia et al., 2014; LaFond & Watts, 2008). Creditors also demand for conservatism because it is an efficient contracting mechanism (Byzalov & Basu, 2016). Manoel and Moraes (2022, p. 335), based on literature indicate that “conservatism is a governance mechanism that can alleviate agency problems associated with managers' investment decisions”. Furthermore, Cerqueira and Pereira (2020) find that European entities tend to be more conservative and their results suggest that it is higher in common law countries as a response to investors demand for conservatism in financial statements. In the same vein Pereira et al. (2021) find evidence suggesting that firms engage in accounting conservative practices when they are committed with corporate social responsibility activities in order to respond to the demand of more transparency by shareholders.

Conservative financial reporting somewhat leads managers to avoid increasing the value of assets (Balakrishnan et al., 2016). In addition, conservative financial reporting makes managers less likely to make inefficient investments, i.e. in projects that they recognise upfront will lead to losses for the firm, as well as less willing to continue with investments whose cash flows are negative, as the application of timely loss recognition will decrease their earnings-based remuneration (Ball & Shivakumar, 2005).

According to Ahmed and Duellman (2011), to draw the proper conclusions about the potential benefits of conservatism in the management of companies, it is necessary that future profitability is observable in investment decisions. If conservatism results in the restriction of investments in projects whose NPV is negative and/or the timely identification of projects with unsatisfactory performance, it will make it possible to achieve greater profit in the future. Moreover, these authors also add that, in the presence of accounting conservatism, managers are encouraged to act swiftly to limit economic losses in projects deemed loss-making, which bring about poor performance for the company. Companies that do not act according to these accounting practices will continue to operate in projects with negative NPV and therefore do not achieve the economic and financial performance that would be desired.

In the same vein, Francis and Martin (2010) find that companies that recognise economic losses more timely are able to make more profitable investments and are less likely to make post-acquisition divestments. Thus, it can be stated that conservatism provides an improvement in the investment efficiency of companies, reducing the ability to overinvest. However, Balakrishnan et al. (2016), based on the studies of Bushman et al. (2011), Francis and Martin (2010), Guay and Verrecchia (2006) and Lambert (2010), indicate that the likely dysfunctional effects of accounting conservatism cause underinvestment as it drives over-cautious investment behaviour.

While, for example, Francis and Martin (2010), Ahmed and Duellman (2011) and Louis et al. (2012) show evidence that conservatism limits the investment in projects whose NPV is negative, Kravet (2014) empirically verifies that such a situation can lead to costs for the company by not supporting the investment in projects that are considered risky, but that could be profitable. The research conducted by Ruch and Taylor (2015) on the impact of conservatism on financial reporting and decision-making by key company stakeholders (shareholders, managers, board of directors, etc.) highlights that conditional conservatism favours company management by providing earnings that are considered more relevant to compensation options and elucidates management to make more appropriate investment decisions.

Among the various measures of financial reporting qualities, it is considered that accounting conservatism can apprehend a first order effect of financial reporting quality on investment efficiency. Thus, conservatism is believed to improve investment efficiency through four ways: (1) reducing information asymmetry between managers and shareholders; (2) providing a disincentive to make inefficient investments through early warning signals about the profitability of projects undertaken; (3) reducing managers' overconfidence; and (4) promoting a long-term orientation in investment decisions made by management (Ha & Feng, 2018). In addition, literature suggests that companies more conservative financial reporting are those that make more efficient investments, which promotes greater investment in assets -plant, property and equipment- (Balakrishnan et al., 2016; Lara et al., 2016). In view of the above, we posit the first hypothesis:

H1: Accounting conservatism increases the investment on property, plant and equipment.

Among the companies that need a high level of financing or where obstacles are placed in their way when applying for it, the companies that present a lower degree of conservatism will face a greater obstacle in obtaining financing in comparison to the companies that present more conservative financial reports. Therefore, the latter will have a higher level of investment than less conservative companies (Balakrishnan et al., 2016).

Conservatism enhances the access to external resources, reduces the possibility of underinvestment and minimizes financing costs, limiting the role of shareholders, as well as reducing agency problems, according to the results of the study conducted by Razzaq et al., (2016). This work evidences that, conservatism plays a key role in management to identify losses early and delay overvaluation of the firm's assets in response to rapid revenue recognition or asset appreciation, discouraging investment in projects with negative NPV and considered riskier. The study of the same authors reveals that conditional conservatism increases investment efficiency, as the problem of underinvestment and overinvestment of firms is mitigated through accounting conservatism. According to Ishida and Ito (2014, p. 59) results show that "although firms with higher conditional conservatism take more negative investment initiatives, those firms with higher unconditional conservatism take more positive investment initiatives".

Haixin and Kyunbeom (2022) find that conservative accounting tends to mitigate the occurrence of inefficient investments. In fact, the existing literature suggests that conservatism improves investment efficiency, namely by reducing both overinvestment and underinvestment (Razzaq et al., 2016; Francis & Martin, 2010; Lara et al., 2016). Consistently, Lara et al. (2016) demonstrate that conservatism improves investment efficiency. In particular, these authors find that more conservative companies show a higher level of investment in projects considered prudent but less profitable, issuing more debt in environments prone to underinvestment. The same



research shows that conservatism is associated with a reduction in overinvestment. In these overinvestment environments (companies with high investment capacity), conservatism aids decision-making to the extent that it leads managers to opt for profitable projects, which will promote the early abandonment of projects considered as loss-making. However, when it comes to companies prone to underinvestment (companies with reduced investment capacity), conservatism favours access to additional financing, particularly for projects considered low risk and less volatile, with rates of return lower than those of existing projects. This suggests, then, that conservatism supports low risk, NPV positive investments and promotes that new investments are financed with new debt.

In this investigation, we aim to determine if the relationship between investment and conservatism is linear or not. In the case of being linear, for firms that invest more, we expect that more conservative firms allow to reduce the overinvestment because when firms report all the bad news, for example impairments, leads them to be more selective in the investments and thus enhances investment efficiency. This is consistent with the empirical evidence of Razzaq et al., (2016). In the same vein Haixin and Kyunbeom (2022) mention that accounting conservatism may help to reduce over investment by controlling managers and shareholders' investment activities. Therefore, we posit out second hypothesis:

H2: Accounting conservatism reduces overinvestment

Furthermore, as in the study of Razzaq et al. (2016), this paper focuses on the effect of conditional accounting conservatism not only on the over investment but also on the under investment. Based on Haixin and Kyunbeom (2022), the underinvestment may increase with conservatism because it is difficult to obtain funds. By contrast, conservatism may help to obtain more funds if managers are able to capture creditors confidence, namely by acting in a more conservative and transparent way (Goh et al., 2017; Garcia et al, 2014). In the same vein, Lara et al. (2016) find that more conservative firms invest more in underinvestment environment. Therefore, we expect that a more conservative accounting practice allows to reduce underinvestment and to exhibit a more stable investment level. Given this background, we formulated the following research hypotheses:

H3: Accounting conservatism reduces underinvestment

### **3. Empirical research methodology**

The main objective of this empirical study is to quantitatively analyse the impact that corporate investment has on conditional conservatism. This analysis will be supported by the collection of data from the Financial Statements of Portuguese companies available in the Iberian Balance Sheet Analysis System (SABI).

The research method of this study is characterised by a quantitative research with recourse to panel data analysis, since it considers the effects of the sample companies and the effect of time (5 years). Through this quantitative analysis it is intended to ascertain the veracity of the various theories that were mentioned throughout the literature review and to test the hypotheses formulated in this research.

To this end, the sample is described below, the conservatism measures used in this study are defined, as well as the empirical model to test the research hypotheses.

#### **3.1. Data Selection and Sampling**

The sample aggregates the most representative companies of the Portuguese business fabric, i.e. small and 15hen15r-sized entities (PME's). The companies considered in the sample were obtained 15hen according to the criterion of total Balance Sheet and 15hen 15hen15r15 the small entities, given that the entities whose values were between 350.000 and 1.000.000 euros were selected. The data taken from the SABI database refer to the period from 2014 to 2018. We exclude the periods 2019, 2020 and 2021 in order to avoid the 15hen15r15 n conservatism resulting from the COVID19 crisis.

The initial sample is composed of 79 Portuguese companies, having been subsequently excluded companies belonging to the financial and insurance sectors, as 15hen follow quite specific rules. Finally, companies with a 15hen15r atypical behaviour, designated as outliers, were also excluded. Given the selection procedures referred our final sample is composed of 54 firms for a five-year period, with a total of 270 observations. This firms represent 3,7% of the total firms in Portugal for the period under analysis, according with information collected on Pordata. Thus, it is a convenience and non-probabilistic sample, a criterion often used 15hen the population is quite large (Cepêda & Monteiro, 2020; Monteiro et al., 2022).

In addition, it was also necessary to collect data relative to Net Results and Tangible Fixed Assets in 2013 in order to calculate the variation in Net Results and the variation in Investments in 2014 (relative to 2013).

### 3.2. Empirical Model

Based on the information presented, we intend to understand whether the level of investment and conditional conservatism are positively correlated. This study falls, then, on a quantitative analysis through the use of a multiple linear regression model. All regressions are carried out using the R. Studio.

This study relies on the econometric model proposed by Basu (1997), modified by Ball and Shivakumar (2005), which enables the estimation of the level of accounting conservatism. In this case, we opted to use the model modified by Ball and Shivakumar (2005), given the fact that it is considered the most appropriate model for the research intended in this study, since it takes into account the use of accounting variables and can also be applied to companies with unlisted securities. Bearing in mind that one intends to analyse the Financial Statements of Portuguese listed and unlisted companies, Ball and Shivakumar's (2005) model proves to be the most appropriate for the study under consideration.

This model analyses the change in net income in a given period over the change in net income in the previous period, using a dummy variable that records the negative change in net income in the previous period and an interaction term given by the dummy on the change in net income in the previous period.

Ball and Shivakumar's (2005) model is described by the following formula:

$$\Delta NI_{i,t} = \beta_0 + \beta_1 D\Delta NI_{i,t-1} + \beta_2 \Delta NI_{i,t-1} + \beta_3 D\Delta NI_{i,t-1} * \Delta NI_{i,t-1} + \varepsilon_{i,t}$$

The variables considered in the model are:

- $\Delta NI_{i,t}$  : Change in net income of company  $i$ , from year  $t-1$  to year  $t$  adjusted by the value of total assets at the beginning of year  $t$ ;
- $\Delta NI_{i,t-1}$  : Change in net income of company  $i$ , from year  $t-2$  to year  $t-1$  adjusted by the value of total assets at the beginning of year  $t-1$ ;
- $D\Delta NI_{i,t}$  : *Dummy* variable, indicates whether there is negative variation in the net accounting result of company  $i$  from year  $t - 1$  to year  $t$ , assuming value 1 if  $\Delta RLt < 0$  and 0 in the remaining cases;
- $\varepsilon_{i,t}$  : Standardized regression error.

The specification of the *dummy* variable  $D\Delta R_{i,t}$ , assumes that the timely recognition of gains reflected in a temporary increase in revenue tends to reverse in the following period, which is consistent with a negative coefficient, i.e.  $\beta_2 < 0$ . In case losses result, the *dummy* variable  $D\Delta NI_{i,t}$  equals one and therefore the coefficient explaining the reversal is the sum of  $\beta_2 + \beta_3$ . Therefore, a timely loss recognition implies that this sum is negative  $\beta_2 + \beta_3 < 0$ . Finally, if losses are recognised in a timely manner, then gains  $\beta_3 < 0$ , and this last condition is what reflects a conservative accounting practice.

Considering the original model of Ball and Shivakumar (2005), the variable INV was added to the terms to understand the effects of the investment increase on conditional conservatism in companies. This regression was prepared with the objective of verifying the first hypothesis formulated, that is, whether companies that invest present a higher level of conservatism.

The original formula with the new term results in the following form:

$$\Delta NI_{i,t} = \beta_0 + \beta_1 D\Delta NI_{i,t-1} + \beta_2 \Delta NI_{i,t-1} + \beta_3 D\Delta NI_{i,t-1} * \Delta NI_{i,t-1} + \beta_4 INV + \beta_5 INV * D\Delta NI_{i,t-1} + \beta_6 INV * \Delta NI_{i,t-1} + \beta_7 INV * D\Delta NI_{i,t-1} * \Delta NI_{i,t-1} + \varepsilon_{i,t}$$

In which the variables already presented above remain in the formula, adding only the variable:

INV: *Dummy* variable that indicates whether the observation is from a year in which there was an increase in investment of plant, property and equipment (= (fixed assets in year t—fixed assets in year t-1)/total assets in year t-1)), where it will assume the value 1 if the investment variation less revaluations is positive and 0 in the remaining cases (Ma and Jeong, 2022).

The coefficient of interest in this new regression is  $\beta_7$  where it is expected to show a negative sign, considering that if there is more investment there is expected to be more conservatism. The assumptions made in the original regression by Ball and Shivakumar (2005) also remain in this regression, implying that  $\beta_3 < 0$  and  $\beta_2 + \beta_3 < 0$ . Expecting that an increase in investment contributes to an increment in the level of conditional conservatism applied, the coefficient  $\beta_7$  is assumed to be smaller than the sum of  $\beta_2 + \beta_3$ .

In the second part of the research it is intended to develop two new regressions with the objective of testing the second and third hypotheses, that is, to verify whether the companies more prone to overinvestment or underinvestment are more or less conservative, respectively.

Thus, the original model of Ball and Shivakumar (2005) was once again modified to include the variables OVER and UNDER to analyse the sensitivity with regard to variations in the level of investment in conditional conservatism in the companies already presented.

Therefore, the regression formulas used consist of the following:

$$\Delta NI_{i,t} = \beta_0 + \beta_1 D\Delta NI_{i,t-1} + \beta_2 \Delta NI_{i,t-1} + \beta_3 D\Delta NI_{i,t-1} * \Delta NI_{i,t-1} + \beta_4 OVER + \beta_5 OVER * D\Delta NI_{i,t-1} + \beta_6 OVER * \Delta NI_{i,t-1} + \beta_7 OVER * D\Delta NI_{i,t-1} * \Delta NI_{i,t-1} + \varepsilon_{i,t}$$

OVER: *Dummy* variable that captures the sensitivity to variations in the investment level above the average investment variation on plant, property and equipment. Thus, overinvestment takes on the value 1 if the investment rate of change is higher than the sample average and 0 otherwise.

$$\Delta NI_{i,t} = \beta_0 + \beta_1 D\Delta NI_{i,t-1} + \beta_2 \Delta NI_{i,t-1} + \beta_3 D\Delta NI_{i,t-1} * \Delta NI_{i,t-1} + \beta_4 UNDER + \beta_5 UNDER * D\Delta NI_{i,t-1} + \beta_6 UNDER * \Delta NI_{i,t-1} + \beta_7 UNDER * D\Delta NI_{i,t-1} * \Delta NI_{i,t-1} + \varepsilon_{i,t}$$

UNDER: *Dummy* variable that captures the sensitivity to investment level variations below the average investment variation on plant, property and equipment. Thus, underinvestment takes on the value 1 if the investment rate of change is lower than the sample average and 0 otherwise.

Therefore, the coefficients of the regressions presented are expected to be the same as in the previous regression. Given that companies that are more likely to overinvest are those that show an increase in the level of conditional conservatism of results, and companies that are more likely to underinvest are those that show a decrease in the level of conditional conservatism, it is assumed that the sum between  $\beta_2 + \beta_3$  is less than 0, that  $\beta_3$  analysed individually is also less than 0 and, furthermore, that  $\beta_7$  is less than the addition of  $\beta_2 + \beta_3$ .

## 4. Empirical results and their interpretation

### 4.1. Descriptive Statistics

This sub-chapter presents the descriptive statistics of the variables. Table 1 shows the descriptive statistics for the variable variation in net income, namely the average, median, standard deviation, maximum and minimum values and the first and third quartiles. In the period under consideration, the average variation in net income. As we can see net income has evidenced a negative mean in net income, thus it decreases in the period under analysis.

Regarding investment, plant, property and equipment has increase 10,56% on average in the period 2014-2018.

**Table 1**

*Descriptive statistics of change in net income and in change in investment*

Variables	Minimum	Median	Maximum	Average	Standard Deviation
$\Delta NI$	-4023.19%	-1.03%	1050.94%	-44.34%	3.824
$\Delta INV$	-96,10%	-2.82%	1,596.85%	10.56%	1,135

In order to analyse in more detail the variables change in net income and in investment, table 2 documents the evolution of position and dispersion of the dependent variable over the period from 2014 to 2018.

**Table 2**

*Evolution of the change in net income and change in investment, on average*

Variable/Years	2014	2015	2016	2017	2018
$\Delta NI$	-28.60%	-81.47%	-87.38%	-3.99%	-20.24%
$\Delta INV$	18.45%	4.49%	3.51%	1.53%	23.80%

It can be seen that the average values of the change in net income variable are negative in all years, with the lowest variation in net income in 2016 (-87.38%) and the highest in 2017 (-3.99%). Regarding invest, it was positive for the entire period. In addition, the 2018 presents the highest increase on investment (23.80%) while 20217 the lowest (1.53%).

## 4.2. Regression Results

In this sub-chapter of empirical results, we provide the estimated coefficients of the respective regressions mentioned above. The first model is based on the original model proposed by Ball and Shivakumar (2005), without taking into account the addition of *dummy* variables for investment. Subsequently, the model is estimated with the introduction of the *INV dummy* variable, and the coefficient values obtained are presented in Table 3.

**Table 3**

*Conservatism and the effect of investment on conservatism*

This table contains the results for the original model and the modified model of Ball and Shivakumar (2005):

$$\Delta NI_{i,t} = \beta_0 + \beta_1 D\Delta NI_{i,t-1} + \beta_2 \Delta NI_{i,t-1} + \beta_3 D\Delta NI_{i,t-1} * \Delta NI_{i,t-1} + \varepsilon_{i,t}$$

$$\Delta NI_{i,t} = \beta_0 + \beta_1 D\Delta NI_{i,t-1} + \beta_2 \Delta NI_{i,t-1} + \beta_3 D\Delta NI_{i,t-1} * \Delta NI_{i,t-1} + \beta_4 INV + \beta_5 INV * D\Delta NI_{i,t-1} + \beta_6 INV * \Delta NI_{i,t-1} + \beta_7 INV * D\Delta NI_{i,t-1} * \Delta NI_{i,t-1} + \varepsilon_{i,t}$$

Note: \*\*\*, \*\*, \* indicates statistical significance at 1 percent, 5 percent and 10 percent, respectively. The t-statistic is shown in parentheses.

PANEL A	$\beta_0$	$\beta_1$	$\beta_2$	$\beta_3$	$\beta_4$	$\beta_5$	$\beta_6$	$\beta_7$
	0.6947**	-2.047***	-0.256***	0.207**				
	(2.428)	(-4.897)	(-2.935)	(1.899)				
F-statistic	1.848***							
R <sup>2</sup> adjusted	0.188							
PANEL B	$\beta_0$	$\beta_1$	$\beta_2$	$\beta_3$	$\beta_4$	$\beta_5$	$\beta_6$	$\beta_7$
<b>Investment</b>	0.374	-1.671**	-0.325***	0.274**	1.120	-1.367	1.032*	-0.982*
	(1.039)	(-3.265)	(-3.580)	(2.443)	(1.60)	(-1.443)	(2.188)	(-1.789)
F-statistic	1.861***							
R <sup>2</sup> adjusted	0.202							

Through the previous table we verify that the value of the F statistic, which is the one that allows us to evaluate the global significance of this regression and which relates to the analysis of variance test, is 1.848, corresponding to a p-value of 0.0015, which leads to the conclusion that at least one of the regression coefficients is statistically different from zero for any reasonable level of significance used. With regard to the adjusted R<sup>2</sup> value, this is 0.1880, which implies that 18.80% of the variation in the dependent variable is explained by the variation in the independent variable.

Concerning the estimated coefficients, we denote that the estimated value for  $\beta_3$  is positive (0.2072), being statistically significant at the 5% level. Given that in Ball and Shivakumar (2005) this coefficient should be negative, then we find an opposite sign to that expected, therefore indicating that there is no timely recognition of the "bad" news in relation to the "good" news, i.e., it does not meet conservative accounting practice. The results suggest, therefore, that Portuguese firms tend not to be conservative. On the other hand, we find that  $\beta_2 + \beta_3$  is lower than zero, due to the early recognition of earnings.

For the model with the investment effect, the value of the F statistic is 1.861 thus implying that at least one of the regression coefficients is statistically different from zero for any reasonable significance level used. The value presented by the adjusted R<sup>2</sup> was 0.2015, that is, with the incorporation of the *INV* variable in the model modified by Ball and Shivakumar (2005), we denote that there was an increase in percentage terms of little significance, about 1.35% in the sum of squares of the regression, thus concluding that investment increases the quality of adjustment.

In addition, firms continue to exhibit a non-conservative accounting practice, given that  $\beta_3$  remains positive and it is statistically significant at the 1% level. In what concerns the coefficient  $\beta_7$ , it reveals a negative sign, being statistically significant for a significance level of 10%. Thus, this result provides some evidence of companies that made investments tend to present a higher level of conservatism which allows to accept the first hypothesis. This last result is in line with the studies conducted by Francis (2010), Balackrishman (2016) and Lara et.al, (2016), by referring that companies with a conservative financial reporting present a higher level of investment compared to less conservative companies.

To further develop our analysis, we analyse the extreme values of the variation on investment of plant, property and equipment. Therefore, in the models presented below, the effect of overinvestment and underinvestment behaviour on conservatism is analysed. For that purpose, the *dummy* variable OVER/UNDER is included. Table 4 documents the estimation results.

Table 4

Effect of overinvestment/underinvestment on conservatism

This table contains the results for the modified model of Ball and Shivakumar (2005):

$$\Delta NI_{i,t} = \beta_0 + \beta_1 D\Delta NI_{i,t-1} + \beta_2 \Delta NI_{i,t-1} + \beta_3 D\Delta NI_{i,t-1} * \Delta NI_{i,t-1} + \beta_4 OVER/UNDER + \beta_5 OVER/UNDER * D\Delta NI_{i,t-1} + \beta_6 OVER/UNDER * \Delta NI_{i,t-1} + \beta_7 OVER/UNDER * D\Delta NI_{i,t-1} * \Delta NI_{i,t-1} + \varepsilon_{i,t}$$

Note: \*\*\*, \*\*, \* indicates statistical significance at 1 percent, 5 percent and 10 percent, respectively. The t-statistic is shown in parentheses.

PANEL A	$\beta_0$	$\beta_1$	$\beta_2$	$\beta_3$	$\beta_4$	$\beta_5$	$\beta_6$	$\beta_7$
<b>Overinvestment</b>	0.683*	-1.882***	-0.253**	0.206*	0.054	-0.929	0.010	-0.013
	(2.049)	(-4.023)	(-2.837)	(1.862)	(0.065)	-0.811	(0.012)	(-0.014)
F-statistic	1.711***							
$R^2$ adjusted	0.173							
PANEL B	$\beta_0$	$\beta_1$	$\beta_2$	$\beta_3$	$\beta_4$	$\beta_5$	$\beta_6$	$\beta_7$
<b>Underinvestment</b>	0.737	-2.811**	-0.242	0.193	-0.054	0.929	-0.010	0.013
	(1.011)	(-2.690)	(-0.281)	(0.208)	(-0.065)	(0.811)	(-0.012)	(0.014)
F-statistic	1.711***							
$R^2$ adjusted	0.173							

The value of the F statistic is 1.711, which implies that at least one regression coefficient is statistically different from zero for any significance level reasonably used. The adjusted  $R^2$  shows a value of 0.1725, indicating that including the variable OVER in the model under study leads to a percentage loss in the sum of squares of the regression, since without its inclusion the adjusted  $R^2$  was estimated at 0.2015.

Portuguese companies remain non-conservative, because  $\beta_3$  continues to show a positive value, proving to be statistically significant at the 5% level. As for the  $\beta_7$  coefficient, it shows a negative value of 0.0131, however it is not statistically. Therefore, our evidence does not allow to support our second hypothesis.

In the case of the model modified by Ball and Shivakumar (2005), with the inclusion of the impact of underinvestment, the value of the F-statistic and the value of the adjusted  $R^2$  are equal to the values calculated in the previous regression, being 1.7113 and 0.1725, respectively. This indicates that the incorporation of the SUB variable in the model modified by Ball and Shivakumar (2005) gives rise to neither a gain nor a loss in the sum of squares of the regression in relation to the previous regression.

Once again, it is not possible to statistically demonstrate that the Portuguese small and medium size companies engage in a conservative accounting practices, given that  $\beta_3$  continues to show a positive value and is not statistically significant at any reasonable significance level. It is also observed that while the interaction of

the three variables, captured by the coefficient  $\beta_7$  presents a positive value of 0.0131, which is opposite to that expected, it is not statistically significant. Therefore, we find no evidence that companies that invest less are more conservative, which not allows to confirm the third hypothesis. This lack of statistical significance in the relationship between companies with a low investment level and conservatism may be due to the poor economic performance of small and medium-sized companies, having been aggravated throughout the period considered.

## **5 Conclusions**

The main objective of the present work was to identify and explain the existing relationship between conservatism and investment efficiency for Portuguese small and medium-sized entities, in the period from 2014 to 2018, therefore excluding the most recent years (2019, 2020 and 2021) in order to avoid the potential effect of COVID19 pandemic on conservatism.

In a first analysis, we investigate whether the conditional conservative accounting practice affects the investment level. In a second analysis, we investigate if the relationship between investment and conservatism is liner or not. Therefore, our purpose consists on analysing whether the conservatism produces a regulating effect on overinvest/ underinvest.

A first evidence we find is that Portuguese small and medium-sized firms are not accounting conservative. This may be due to the fact that they have negative income and therefore the motivation to improve their income. In addition, our results show that conservatism tends to produce a positive impact on investment which is consistent with the need to capture the confidence of investors. In fact, based on the agency theory, there exists information asymmetry between outsiders and insiders, leading to the need of investors to monitor managers' activity and conservatism serves as a mechanism of corporate governance. As regards overinvestment, the empirical evidence does not allow us to conclude that the companies that conservatism present a moderate impact on firms with over investment given that we do not find statistic significance to confirm the second hypothesis. This result may be justified by the circumstance that for higher levels of investment, conservatism is not fundamental. Concerning the third hypothesis, the evidence that we find does not allow to confirm that in companies with low levels of investment, conservatism allows to reduce the underinvestment. The absence of statistical significance between companies with a low investment level and conservatism may be due to the poor economic performance of small and medium-sized companies, aggravated by the decrease in results in the period considered.

Overall, this study may be useful for creditors and shareholders of a firm by suggesting that the application of a conservative accounting enhances investments efficiency, considering the best option available, avoiding surprises or cost to them. In addition, the results of this study can alert managers to the issues of underinvestment and overinvestment, as accounting conservatism can contribute to prudence-based investment and then to maximising shareholder wealth.

The study's main limitation is related to the fact that the sample contains a small number of entities. Therefore, it would be a suggestion for future research to include in the study, the most representative companies that are micro entities. In addition to broadening the sample, we suggest to applying the study to the post-Covid 19 period in order to analyse whether in times of crisis companies tend to change their accounting practices to be more or less conservative.

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2. Definição do problema de pesquisa	✓	✓		
3. Desenvolvimento das hipóteses e constructos da pesquisa (trabalhos teórico-empíricos)	✓	✓	✓	
4. Desenvolvimento das proposições teóricas (trabalhos teóricos os ensaios teóricos)	✓			
5. Desenvolvimento da plataforma teórica	✓	✓		
6. Delineamento dos procedimentos metodológicos	✓	✓		
7. Processo de coleta de dados			✓	
8. Análises estatísticas	✓	✓	✓	
9. Análises e interpretações dos dados coletados	✓	✓	✓	✓
10. Considerações finais ou conclusões da pesquisa	✓	✓		✓
11. Revisão crítica do manuscrito	✓	✓		
12. Redação do manuscrito	✓	✓	✓	✓