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RESEARCH PAPER

Determinants of performance in Portuguese accounting and auditing firms

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ABSTRACT

Accounting and auditing firms are essential for the success of companies, especially SMEs, which dominate the Portuguese economy. Their role has become even more critical in contexts such as the COVID-19 crisis and the ongoing economic digitalization, where their services ensure compliance, financial stability, and strategic adaptability. The accounting and auditing sector in Portugal lacks specific research on performance determinants, with most studies addressing other industries or focusing narrowly on human resource issues, leaving unexplored the financial dynamics of this critical sector. This study examines the performance determinants of Portuguese accounting and auditing firms, aiming to identify the factors that drive success and mitigate financial vulnerabilities from the perspective of managers and shareholders. Using data from 4,201 firms over the period between 2012 and 2023, the study applies the GMM-System (Generalized Method of Moments) methodology to test the hypotheses, offering robust and policy-relevant conclusions. The findings reveal that intangible assets, tangible assets, current liquidity, and personnel expenses have a negative impact on performance, while sales growth and company size have a positive effect. This is the first known study focusing on the determinants of performance in the Portuguese accounting and auditing sector, offering a broader understanding of the key drivers of performance in this underexplored and vital economic area. Moreover, the results highlight contrasting perspectives between managers and shareholders, particularly regarding leverage and working capital, with managers valuing these tools for enhancing operational performance, while

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shareholders associate them with increased risk and inefficient capital use. The results provide actionable insights for managers, policymakers, and regulators, particularly the Portuguese Order of Certified Accountants and the Portuguese Order of Statutory Auditors, to enhance strategies related to digitalization, resource allocation, and financial management. This contributes to fostering sustainable growth and improving the competitiveness of accounting firms in Portugal, ensuring resilience in an evolving economic landscape.

Keywords: Determinants; Performance; Accounting; Auditing; Portuguese companies; Portugal.

Determinantes da performance nas empresas portuguesas de contabilidade e auditoria

RESUMO

As empresas de contabilidade e auditoria são fundamentais para o sucesso das organizações, especialmente das PME, que predominam na economia portuguesa. O seu papel tornou-se ainda mais relevante em contextos como a crise da COVID-19 e a atual digitalização, nos quais os seus serviços asseguram a conformidade, a estabilidade financeira e a capacidade de adaptação estratégica. O setor da contabilidade e auditoria em Portugal carece de investigação específica sobre os determinantes da performance, sendo que a maioria dos estudos se centra noutros setores ou aborda de forma limitada questões relacionadas com recursos humanos, deixando por explorar a dinâmica financeira deste setor crucial. Este estudo analisa os determinantes da performance das empresas portuguesas de contabilidade e auditoria, com o objetivo de identificar os fatores que impulsionam o sucesso e mitigam vulnerabilidades financeiras, numa perspetiva de gestores e acionistas. Com base em dados de 4.201 empresas, no período entre 2012 e 2023, é aplicada a metodologia GMM-System (Método Generalizado dos Momentos em Sistema) para testar as hipóteses, permitindo obter conclusões robustas e relevantes para a formulação de políticas. Os resultados indicam que os ativos intangíveis, os ativos tangíveis, a liquidez corrente e as despesas com pessoal têm um impacto negativo na performance, enquanto o crescimento das vendas e a dimensão da empresa têm um efeito positivo. Este é o primeiro estudo conhecido a focar-se nos determinantes da performance no setor português de contabilidade e auditoria, oferecendo uma compreensão mais abrangente dos principais fatores que influenciam a performance nesta área económica vital e ainda pouco explorada. Adicionalmente, os resultados evidenciam diferenças de perspetiva entre gestores e acionistas, particularmente no que diz respeito à alavancagem e ao fundo de maneio: os gestores valorizam estes instrumentos como potenciadores da performance operacional, ao passo que os acionistas os associam a um aumento do risco e a uma utilização ineficiente do capital. As conclusões fornecem orientações práticas para gestores, decisores políticos e reguladores, nomeadamente para a Ordem dos Contabilistas Certificados e para a Ordem dos Revisores Oficiais de Contas, no sentido de reforçar estratégias relacionadas com a digitalização, a afetação de recursos e a gestão financeira. Estas recomendações contribuem para promover um crescimento sustentável e melhorar

a competitividade das empresas de contabilidade em Portugal, assegurando a sua resiliência num contexto económico em constante transformação.

Palavras-chave: Determinantes; Performance; Contabilidade; Auditoria; Empresas portuguesas; Portugal.

1. Introduction

The Portuguese economy is characterized by the predominance of small and medium-sized enterprises (SMEs), which accounted for approximately 99.8% of the active companies in the country in 2022 (Pordata, 2024). These SMEs, particularly in the services sector, play a crucial role in job creation and business volume, contributing to around 61% of the added value, 77% of the employment, and 55% of the business volume in 2022 (Pordata, 2024). Among the essential partners for the success of SMEs are accounting firms, whose work is vital for the economic development of countries, providing essential services in financial management and ensuring compliance with tax obligations (Ahmed et al., 2022; Dinis & Martins, 2021).

The importance of accounting firms became especially evident during the COVID-19 crisis, when their support was essential to guarantee the survival of many businesses through the management of emergency financial measures and adaptation to new economic challenges (Antunes, 2020). Beyond times of crisis, accounting firms play a fundamental role in ensuring tax compliance and fiscal efficiency, especially in countries like Portugal, where the tax system is complex and constantly evolving. Without the expertise of these firms, many Portuguese businesses would struggle to meet fiscal deadlines or understand the full extent of their legal obligations (Lopes, 2012). Empirical evidence from Portugal shows that higher audit quality is associated with reduced earnings management, enhancing the credibility of financial reporting (Lopes, 2018). Moreover, the audit function is essential for ensuring the reliability of financial information, promoting transparency, and strengthening the confidence of investors and other stakeholders. In this context, as companies face an increasing need for diversification, internationalization, and digitalization, it is also crucial that accounting firms stay up to date to offer excellent services. These services help businesses adapt to the rapid changes in their respective sectors, thus ensuring their competitiveness and sustainability (Lee, 2023).

Given the central role that accounting and auditing firms play in the Portuguese economy, it makes sense to study this sector in detail. Accounting firms are knowledge- and human-resource-intensive (Cheng et al., 2000; Wu & Chang, 2003), and their ability to deliver high-quality services depends on the efficient allocation of resources and talent management (Chen et al., 2013). However, the literature presents a scarcity of research on the determinants of performance in this sector, with the few existing studies mostly focused on human resource issues (e.g., Chen et al., 2013; Lee & Lin, 2019; Lee & Cheng, 2018; Lizote et al., 2023). Studies on Portugal are also limited, with more research conducted in other sectors such as metallurgy (Neves et al., 2022a), winemaking (Neves et al., 2022b), and listed companies (Neves et al., 2022c).

In light of this, the aim of this study is to analyse the performance determinants of accounting and auditing firms in Portugal, from the perspective of managers and shareholders. To achieve this, 4,201 firms were analysed between 2012 and 2023 using the GMM-System methodology. Performance is evaluated based on operational Return on Assets (ROA) and Return on Equity (ROE). The results show that intangible assets, tangible assets, current liquidity, and personnel expenses have a negative impact on performance, while sales growth and company size have a positive effect.

This study contributes in several ways to the existing literature. First, by focusing on accounting and auditing firms, it provides a more comprehensive understanding of business practices in this sector in Portugal, addressing a gap identified in the literature. Second, it explores the determinants of the financial performance of these firms based on variables such as intangible assets, tangible assets, current liquidity, leverage, working capital, sales growth, size and personnel expenses, which is particularly relevant in a context of increasing digitalization and global competitiveness. Lastly, the results of this study may be valuable for managers and regulators, such as the Portuguese Order of Certified Accountants and the Portuguese Order of Statutory Auditors, in optimizing digitalization, human resources policies, and improving competitiveness, sustainable growth, and financial performance in this key sector of the Portuguese economy.

The remainder of this article is organized as follows: the next section presents a literature review and the formalization of hypotheses; this is followed by the methodology; section four presents the empirical results; and finally, the article concludes with a discussion of the study's implications, as well as its limitations and opportunities for future research.

2. Literature review and hypothesis development

2.1. Performance

A company's performance is universally recognized as one of the key drivers of sustainable economic growth, a factor that investors heavily consider when making decisions (Vieira et al., 2019). In the literature, several proxies are commonly used to assess performance and provide valuable insights into a company's financial health. This study focuses on ROA (Return on Assets) and ROE (Return on Equity). These proxies not only help investors evaluate a company's current and potential performance but also allow for comparisons and benchmarking against competitors and performance over time. ROA, as a measure of operational profitability, provides insight into how effectively a company uses its assets to generate profit. Meanwhile, the ROE reflects the company's ability to generate profit from shareholders' investments, capturing the efficiency with which equity capital is employed to create

value. Together, these metrics present a well-rounded picture of firm performance, with ROA reflecting the managerial perspective and ROE reflecting the investors' perspective.

2.1.1. Return on Assets (ROA)

ROA is a measure commonly used to evaluate a company's performance (Alareeni et al., 2020; Khoury et al., 2021; Kristianti et al., 2016), assessing how efficiently a company uses its assets to generate profits. The higher the ROA, the more effective the company is at managing its assets (Pulino et al., 2022), and the more consistent its performance (Amosh et al., 2022). One of the key advantages of ROA is that it remains unaffected by non-fundamental values, making it less susceptible to speculation (Pu, 2022). However, its usage is not universally accepted, as some believe it can be manipulated internally (Pu, 2022). Additionally, Stickney (1996) observed that ROA does not account for the costs and funds necessary to support assets, which may limit its applicability in certain analytical contexts. Therefore, while ROA offers a valuable measure of a company's operational efficiency, it is essential to consider its limitations and the nuances involved in interpreting its results.

2.1.2. Return on Equity (ROE)

ROE is commonly employed as an accounting-based indicator of corporate performance, calculated as the ratio of net income to shareholders' equity. It has traditionally served as a key measure of profitability from the perspective of shareholders (Neves & Proença, 2021; Vieira et al., 2019). This metric captures the efficiency with which a company uses shareholders' invested capital to generate earnings. As one of the most widely used profitability indicators, ROE reflects how much profit a firm can generate relative to the equity it holds (Vintilă & Duca, 2013). A higher ROE implies a stronger ability to produce returns using equity capital (Horak & Cui, 2017), offering a direct assessment of the financial gains attributable to shareholders' investment (Lee & Kim, 2013).

2.2. Performance determinants

As determinants of performance, the literature has used various variables, such as the ratio of intangible assets to total assets, tangible assets, the current liquidity ratio, the debt ratio, working capital, sales growth, company size measured by total assets, and personnel expenses. Below is a literature review for each of these variables.

2.2.1. Intangible assets

Intangible assets, as outlined in International Accounting Standard (IAS) 38, are an identifiable non-monetary asset without physical substance (International Accounting Standards Board, 2004). Despite this standardized definition, various authors have provided different perspectives on intangible assets. Hendriksen & Breda (1999) suggest that intangible assets are the rights and services of a company

that, in the long run, generate economic benefits. According to Hoss (2010), these are non-physical assets, such as intellectual property and rights, which, regardless of their accounting treatment, hold value and provide competitive advantages. Lastly, Kayo (2002) defines intangible assets as the principles, practices, and attitudes of a company that, when combined with its tangible fixed assets, help generate value. This definition is crucial, as many companies face challenges in measuring intangible assets, either due to the restrictions of IAS 38 or the complexity involved in assigning monetary values to them.

Research conducted by authors such as Appelbaum et al. (2017), Lantz & Sahut (2005), and Riahi-Belkaoui (2003) indicated a positive relationship between intangible assets and performance. Similarly, Kothari et al. (2002) found that increases in R&D (Research and Development) expenses, accounted for as intangible assets, have a positive impact on a company's future profits, thus positively influencing performance. Nijun (2017) studied the relationship between the intangible assets ratio and performance using a sample of listed telecommunications companies in China, concluding that the more investment in intangible assets these companies make, the higher their return on total assets, because investment in intangible assets such as R&D impacts innovation and differentiation, which leads to higher sales and profits.

However, several studies point to a negative relationship between intangibles and firm performance. Amadieu & Viviani (2010) argue that intangible expenses do not always translate into effective investments. Without complementary changes in management and organizational structure, these assets may be underutilized, resulting in poor returns. Nguyen-Anh et al. (2022) found that in the Vietnamese AFF sectors (Agriculture, Forestry, and Fisheries) intangible investments often fail to generate profit, due to either weak commercialization mechanisms or institutional inefficiencies. The time lag and risk associated with R&D, licensing, and training further reduce their immediate impact on performance. Dragomir (2024) shows that in technology and healthcare sectors, a high share of intangible assets may reflect mismanagement or poor cost accounting, rather than innovation success — leading to lower profitability.

Thus, the first hypothesis is defined as follows:

H1: Intangible assets influence the performance of the accounting and auditing firms in Portugal.

2.2.2. Tangible assets

Tangible fixed assets represent a company's long-term physical resources, essential for operational continuity and future economic benefits. These assets, which cannot

be easily sold in the short or medium term, are controlled by firms and often reflect strategic investments (Neves et al., 2022a).

Several studies investigated the effect of tangible assets on firm performance. On one hand, tangible assets could improve performance, because they could serve as collateral, reducing financing costs (Margaritis & Psillaki, 2007). Similarly, Norman et al. (2013) found that firms with higher levels of tangible assets tend to be more resilient and achieve better outcomes, as these investments often involve asset acquisition or upgrades that drive value creation. This positive association is also supported by Nakatani (2019), who links tangible investments to improved performance.

However, other research highlights a negative relationship (e.g., Deloof, 2003; Serrasqueiro & Nunes, 2008; Nunes et al., 2009). These studies suggest that lower levels of tangible assets can foster innovation and efficiency, contributing to better performance. Moreover, Gharaibeh & Khaled (2020), and Neves et al. (2021) associate higher tangible asset intensity with reduced profitability, due to inefficiencies in asset management.

Thus, the second hypothesis is defined as follows:

H2: Tangible assets influence the performance of the accounting and auditing firms in Portugal.

2.2.3. Current liquidity

Lippmann & McCall (1986) describe liquidity as the time required to convert an asset into liquid financial means, while Hirshleifer (1968) defines an asset as having the property of being convertible into goods for immediate consumption or investment. To calculate a company's current liquidity, the value of current assets is divided by the value of current liabilities. For Small and Medium Enterprises (SMEs), current liquidity is crucial for their survival. It allows the assessment of the available margin of safety and the company's ability to meet short-term obligations (Deloof, 2003). Additionally, it enables the company to seize investment opportunities that arise, thereby benefiting its efficiency and performance (Honjo & Harada, 2006). Goddard et al. (2005) emphasize that companies with good liquidity levels are better equipped to handle unpredictable market changes resulting from the highly competitive environment in which they operate.

The liquidity ratio reflects the firm's short-term financial health, and a higher ratio indicates a better ability to meet its immediate liabilities, enhancing the company's operational flexibility and overall performance. Therefore, maintaining an optimal liquidity position is seen as a key determinant of success, particularly in highly

dynamic and competitive industries. The relationship between current liquidity and performance is inconsistent, with no consensus among authors. Pratheepan (2014), when analysing a sample of 55 manufacturing companies in Sri Lanka, concluded that there is a positive relationship between liquidity and profitability. Similarly, Bandara & Wijesinghe (2021) found the same result in their study of industrial companies in Sri Lanka, conducted over a four-year period, ending in 2019. However, authors such as Bibi & Amjad (2017), Owolabi et al. (2011), and Rehman et al. (2015) found a negative relationship. This suggests that if a company has liquidity levels above the optimal range, it may potentially lead to losses on investments, which in turn results in lower performance (Calcagnini et al., 2020). The same holds true if top management decides to retain highly liquid assets, rather than utilizing them to create value for the company (Gitman, 2003).

Thus, the third hypothesis is defined as follows:

H3: Current liquidity influences the performance of the accounting and auditing firms in Portugal.

2.2.4. Leverage

Leverage can be determined by the ratio between a company's external capital and its own equity. This ratio represents the use of resources obtained through loans as a form of financing, aiming to achieve higher profitability. When dealing with financing, there is always an inherent risk, whether it is business or financial in nature. Therefore, it is up to managers to determine the best approach, deciding between using debt or equity to fund the company's activities. For SMEs that cannot obtain sufficient internal financing (self-financing), access to leverage can be a viable solution to seize favourable investment opportunities, which would not be possible without this resource (Fagiolo & Luzzi, 2006).

However, Goddard et al. (2005) identify a clear negative relationship between a company's performance and its level of leverage. The authors explain that companies must make periodic debt payments, which first reduces current liquidity and subsequently hampers investment and profitability. All of these factors have future impacts on the organization's growth and market diversification (Fagiolo & Luzzi, 2006). Caskey et al. (2012) also argue that excessive dependence on leverage leads to a negative relationship between leverage and performance. However, when the leverage level is optimal and the associated risks are controlled, no significant relationship exists. Thus, the fourth hypothesis is defined as follows:

H4: Leverage influences the performance of the accounting and auditing firms in Portugal.

2.2.5. Working capital

According to Aravindan & Ramanathan (2013), working capital refers to the amount used to invest in the day-to-day operations and activities of a company. On the other hand, Tagaduan & Nicolaescu (2011) link working capital to permanent capital used to fund the company's current assets. Santos (1987) defines working capital as the set of values that undergo cyclical short-term changes and are typically reused at the end of the cycle. This process ensures that the company maintains a safety margin, enabling it to continuously adjust and transform assets in line with creditors' demands. From a liquidity perspective (Brandão, 2012; Tagaduan & Nicolaescu, 2011), working capital is determined by the difference between current assets and current liabilities. This value indicates the amount of money required to sustain the company's operations and activities (Aravindan & Ramanathan, 2013). Effective management of working capital contributes to the smooth operation of the company, increases its profitability, and creates value. This management allows the company to build a positive image among its stakeholders, expand into new markets, and foster a harmonious working environment between employees and top management (Nwankwo & Osho, 2010). Agha (2014) demonstrated that the management of a company's working capital significantly influences its performance, and companies can improve this performance through effective management of working capital. Malik (2011), when analysing the profitability of a sample of 35 life and non-life insurance companies in Pakistan, found a positive relationship between these indicators.

Based on this, the fifth hypothesis is defined as follows:

H5: Working capital positively influences the performance of the accounting and auditing firms in Portugal.

2.2.6. Sales growth

Sales growth is often seen as a driver of improved financial performance, as it may lead to higher profits (Asimakopoulos et al., 2009; Coad & Rao, 2010). For Alarussi & Alhaderi (2018), strong sales growth enhances profitability and improves firms' access to financing by reducing capital costs. Similar findings are presented by Asche et al. (2018) and Neves et al. (2022a).

However, other studies suggest that sales growth does not necessarily translate into higher profitability. Ramezani et al. (2002) argue that firms with moderate sales and profit growth can outperform those with aggressive expansion strategies in terms of shareholder returns. Additionally, Goddard et al. (2005) found a negative link between sales and profitability, possibly due to competitive pressures in expanding markets.

Given the mixed evidence in the literature regarding the impact of sales growth on firm performance, the following hypothesis is proposed:

H6: Sales growth influences the performance of the accounting and auditing firms in Portugal.

2.2.7. Size

The size of a company significantly influences various aspects of its operations and functioning, including performance. Larger companies have greater capacity to exploit economies of scale, diversify activities and products, implement strategies, and establish barriers against new competitors (Gschwandtner, 2005; Hardwick, 1997; Winter, 1994; Wyn, 1998). Furthermore, larger companies exert a greater impact on stakeholders due to their larger market share (Gaio & Henriques, 2018). However, the advantages these companies gain from economies of scale can be offset by higher costs in competitive markets. In such markets, there is pressure to lower product prices, which leads to reduced profitability (John et al., 2010). An increase in company size may reduce the ability of top management to control the actions of their employees, who may act against the company's best interests, resulting in lower performance (Pi & Timme, 1993; Goddard et al., 2005). Kaukab & Nawaz (2019) identified a negative relationship between profitability and total assets in Pakistani companies, a result confirmed by Abeyrathna & Priyadarshana (2019). On the other hand, resource-based theory suggests that greater access to financial resources reduces the cost of capital and consequently increases profits, especially in large companies (Alarussi & Alhadary, 2018). However, Sritharan & Vinasithamby (2015) demonstrated a positive relationship between the size of non-industrial companies and profitability, a result that is also confirmed by Ahinful et al. (2021). Based on the above, the seventh hypothesis is defined as follows:

H7: Size influences the performance of the accounting and auditing firms in Portugal.

2.2.8. Personnel expenses

Employee remuneration is a fundamental aspect for the proper functioning of a company. The continuity of activities and the competitiveness of the company in the market depend on the skills and performance of its employees, which vary depending on whether they are well-paid or not (Gupta & Shaw, 2014). Adequate remuneration leads to greater motivation and dedication from employees, which increases productivity, reduces agency costs, and fosters greater innovation within the company, culminating in higher profits and performance (Cao & Rees, 2020; Edmans et al., 2017; Iverson & Zatzick, 2011; Wei et al., 2020; Neves et al., 2021).

However, employees may boycott the company and prioritize their own interests over those of the company in order to secure higher wages, potentially damaging the company's optimal performance (Dong, 2015; Gupta & Shaw, 2014). Kim & Jang (2020) demonstrate that, in the short term, the impact of personnel expenses on performance is negative, but over the long term, it can become positive. Vu et al. (2019) argue that wages negatively affect a company's profitability.

However, Maqbool & Zameer (2018) contend that companies that practice corporate social responsibility, including good remuneration, are more reliable, which ultimately influences their performance positively. Similarly, Orellano & Quiota (2011), when studying Brazilian companies from 2001 to 2007, concluded that there is a positive relationship between personnel expenses and performance. Lima et al. (2013) conducted a similar study and reached the same conclusion. Thus, the eighth hypothesis is defined as follows:

H8: Personnel expenses influence the performance of the accounting and auditing firms in Portugal.

3. Methodology

3.1. Sample

The analysis of the study covers the period from 2012 to 2023. To obtain the sample, the SABI database (*Sistema de Análise de Balanços Ibéricos*, i.e. Iberian Financial Statements Analysis System) was used with the following criteria: *i*) active Portuguese companies; ii) companies incorporated before 31 December 2011, to ensure a 11-year study period; iii) companies with the CAE 69200 – Accounting and Auditing Activities. Based on these criteria, a sample of 4,201 companies in the sector was retained, distributed as follows: 3,622 companies with total assets of ⩽ 350 thousand euros, 558 companies with total assets between 351 and 4,000 thousand euros, 13 companies with total assets between 4,001 and 20,000 thousand euros, and 8 companies with total assets above 20,000 thousand euros.

3.2. Variables

Table 1 presents a summary of the operationalization of the variables, as well as the key studies supporting them.

Table 1. Operationalization of variables

	Abbreviation	Formula	Sign	Authors
1. Dependent variables				
Return on assets	*ROA*	EBIT/total assets		Alareeni et al. (2020); Amosh et al. (2022); Khoury et al. (2021); Kristianti et al. (2016); Pu (2022); Pulino et al. (2022); Stickney (1996)
Return on equity	*ROE*	Net income/Total equity		Horak & Cui (2017); Lee & Kim (2013); Neves & Proença (2021); Vieira et al. (2019); Vintilă & Duca (2013)
2. Independent variables				
Intangible assets	*IA*	Intangible assets to total assets ratio	+/-	Amadieu & Viviani (2010) ; Appelbaum et al. (2017); Dragomir (2024) ; Hendriksen & Breda (1999); Hoss (2010); Kayo (2002); Kothari et al. (2002); Lantz & Sahut (2005); Nguyen-Anh et al. (2022) ; Nijun (2017); Riahi-Belkaoui (2003).
Tangible assets	*TANG*	Fixed tangible assets to total assets ratio	+/-	Deloof (2003); Gharaibeh & Khaled (2020); Margaritis & Psillaki (2007); Nakatani (2019); Neves et al. (2021); Neves et al. (2022a); Norman et al. (2013); Nunes et al. (2009); Serrasqueiro & Nunes (2008)
Current liquidity	*LIQ*	Current assets/current liabilities	+/-	Bandara & Wijesinghe (2021); Bibi & Amjad (2017); Calcagnini et al. (2020); Deloof (2003); Gitman (2003); Goddard et al. (2005); Hirshleifer (1968); Honjo & Harada (2006); Lippmann & McCall (1986); Owolabi et al. (2011); Pratheepan (2014); Rehman et al. (2015)
Leverage	*LEV*	Total liabilities/equity	+/-	Caskey et al. (2012); Fagiolo & Luzzi (2006); Goddard et al. (2005)
Working capital	*WC*	(Current assets - current liabilities) / Total assets	+	Agha (2014); Aravindan & Ramanathan (2013); Brandão (2012); Malik (2011); Nwankwo & Osho (2010); Santos (1987); Ramezani et al. (2002); Tagaduan & Nicolaescu (2011)
Sales growth	*SG*	(Total sales$_t$ - Total sales$_{t-1}$)/ Total sales$_{t-1}$	+/-	Alarussi & Alhaderi (2018); Asche et al. (2018); Asimakopoulos et al. (2009); Coad & Rao (2010); Goddard et al. (2005); Neves et al. (2022a)
Size	*Ln (TA)*	Natural logarithm of total assets	+/-	Abeyrathna & Priyadarshana (2019); Ahinful et al. (2021); Alarussi & Alhadary (2018); Gaio & Henriques (2018); Goddard et al. (2005); Gschwandtner (2005); Hardwick (1997); John et al. (2010); Kaukab & Nawaz (2019); Pi & Timme (1993); Sritharan & Vinasithamby (2015); Winter (1994); Wyn (1998)
Personnel expenses	*Ln (PE)*	Natural logarithm of personnel expenses	+/-	Cao & Rees (2020); Dong (2015); Edmans et al. (2017); Gupta & Shaw (2014); Iverson & Zatzick (2011); Kim & Jang (2020); Lima et al. (2013); Maqbool & Zameer (2018); Neves et al. (2021); Orellano & Quiota (2011); Vu et al. (2019); Wei et al. (2020)

3.3. Model

In the analysis of company performance, econometric models are commonly used to relate various independent variables to financial performance indicators. In this

research, we use two panel data models, which are employed to study the impact of different explanatory factors on the ROA and ROE of companies.

The first model investigates the determinants of the ROA:

$$ROA_{it} = \alpha_0 + \alpha_1 ROA_{i,t-1} + \alpha_2 AI_{it} + \alpha_3 TANG_{it} + \alpha_4 LIQ_{it} + \alpha_5 LEV_{it} + \alpha_6 WC_{it} + \alpha_7 SG_{it} + \alpha_8 Ln(TA)_{it} + \alpha_9 Ln(PE)_{it} + u_i + \epsilon_{it} (1)$$

where $\alpha_0, \ldots, \alpha_8$ are the parameters, i and t are the individual and time indices, respectively, u_i represents the unobservable specific effect of the company, and ϵ_{it} are the error terms, ROA – Return on Assets, IA – Intangible Assets, TANG – Tangible Assets, LIQ – Liquidity, LEV – Leverage, WC – Working Capital, SG –Sales Growth, Ln (TA) – Size (Log of Total Assets) and Ln (PE) – Personnel Expenses (Log of Personnel Expenses).

The second model examines the explanatory factors of the ROE:

$$ROE_{it} = \alpha_0 + \alpha_1 ROE_{i,t-1} + \alpha_2 AI_{it} + \alpha_3 TANG_{it} + \alpha_4 LIQ_{it} + \alpha_5 LEV_{it} + \alpha_6 WC_{it} + \alpha_7 SG_{it} + \alpha_8 Ln(TA)_{it} + \alpha_9 Ln(PE)_{it} + u_i + \epsilon_{it} (2)$$

where $\alpha_0, \ldots, \alpha_8$ are the parameters, i and t are the individual and time indices, respectively, u_i represents the unobservable specific effect of the company, and ϵ_{it} are the error terms, ROE – Return on Equity, IA – Intangible Assets, TANG – Tangible Assets, LIQ – Liquidity, LEV – Leverage, WC – Working Capital, SG – Sales Growth, Ln (TA) – Size (Log of Total Assets) and Ln (PE) – Personnel Expenses (Log of Personnel Expenses). These models have a dynamic nature, as past performance explains the present. In this sense, the most suitable methodology is the GMM-System model proposed by Blundell & Bond (1998). This approach is selected for two key reasons. First, it addresses potential endogeneity issues that could bias the results, as for example, intangible assets explained performance, but companies with more performance could invest more in intangibles assets. Second, it captures the dynamic nature of the model, allowing past performance to influence the present performance. The estimator integrates two equations: one in levels, using lagged first differences of the variables as instruments, and another in first differences, where lagged levels serve as instruments.

4. Results

4.1. Descriptive statistics

Table 2 presents the descriptive statistics of the variables used in the study for the panel of companies.

Table 2. Descriptive statistics

Variable	Obs.	Mean	Standard deviation	Min	Max
ROA	50.412	0.0602	0.1630	-0.7260	0.5913
ROE	50.412	0.1068	0.4241	-2.0281	2.1151
IA	50.412	0.0086	0.0543	-0.0618	0.9909
TANG	50.412	0.2404	0.2617	0	1
LIQ	50.412	4.8099	5.5777	0.1217	34.3069
LEV	50.412	1.3435	3.6820	-12.2435	22.8595
WC	50.412	0.3818	0.4509	-1.8724	0.9523
SG	50.412	0.0428	0.1723	-0.4070	0.8502
Ln (TA)	50.412	4.4555	1.1647	-8.7403	13.8059
Ln (PE)	50.412	3.8666	1.0811	-8.1807	10.2234

Note: Ln(TA) and Ln(PE) have negative minimum values because the figures are expressed in thousands, and there are companies with low asset values (for example, €800, which is equivalent to 0.8 in thousands).

It should be noted that, in this study, the variables are winsorized at the 1st and 99th percentiles, meaning that extreme values below the 1st percentile and above the 99th percentile are replaced with the respective percentile values.

From the analysis of Table 2 regarding ROA, on average, the companies have an asset profitability of around 6% and the ROE around 11%. However, the high standard deviation and the wide range indicate significant variability, with some companies experiencing substantial losses and others achieving very high returns. Regarding intangible assets, the average investment in these assets is low (around 0.86%), though some firms report values close to 99%, while others show fully amortized. Tangibility, on average, represents 24% of total assets, but also shows wide variation across firms.

The liquidity ratio (LIQ) has a mean of 4.81, indicating that, on average, current assets are nearly five times greater than current liabilities. However, the very high standard deviation and minimum value of 0.12 indicate that some companies face significant liquidity problems. The working capital aligns with these conclusions.

The average leverage ratio (LEV) is 1.34, suggesting that debt is, on average, higher than equity. However, some firms exhibit extreme leverage levels, with liabilities exceeding equity by more than 22 times, while others report negative leverage due to negative equity positions.

Sales growth (SG) shows high variability, with a mean around 7%, indicating rapid expansion in certain firms and contraction in others. The average size of the companies in terms of total assets shows some variability, with an average value of €86,000 ($e^{4.45555}$). Personnel expenses, on average, amount to €48,000 ($e^{3.8666}$), with variability across the sample.4.2. Correlation Matrix

Table 3 presents the correlation matrix between the variables under study.

Table 3. Correlation Matrix

	ROA	ROE	IA	TANG	LIQ	LEV	wc	sg	Ln(TA)	Ln(Pe)	VIF
ROA	1.0000										1.21
ROE	0.2543***	1.0000									1.09
IA	-0.0310***	-0.0152***	1.0000								1.03
TANG	-0.0783***	-0.0344***	-0.0468***	1.0000							1.51
LIQ	0.0419***	-0.0362***	-0.0455***	-0.2377***	1.0000						1.55
lev	0.0077*	-0.0493***	0.0177***	0.1117***	-0.1080***	1.0000					1.03
wc	0.2624***	-0.0185***	-0.0908***	-0.4799***	0.5206***	-0.0491***	1.0000				1.92
sg	0.0302***	0.0170***	0.0063	-0.0045	-0.0130***	0.0075*	-0.0063	1.0000			1.00
Ln(TA)	0.1300***	0.0050	0.0323***	0.1936***	0.0637***	0.1093***	0.0939***	-0.0046	1.0000		2.04
Ln(Pe)	0.0081*	0.0037	0.0149***	0.0031	-0.1750***	0.0723***	0.0144***	-0.0005	0.6267***	1.0000	1.93

Note: *p-value < 10%; **p-value < 5%; ***p-value < 1%. *Vide* Table 1 for description of variables.

Analysing the correlations, we find weak correlations between the independent variables, indicating that they do not undermine the construction of models (1) and (2). Moreover, the computed Variance Inflation Factor (VIF) values are all below the commonly accepted threshold of 10, suggesting that multicollinearity does not pose a significant issue in our estimations.

4.3 Results

Table 4 presents the estimation results of models (1) and (2) for the panel of companies under analysis.

Table 4. Results of the different specifications of the base model with GMM-System

	Model 1	Model 2
Dependent variable	***ROA***	***ROE***
Lagged Dependent Variable 1 Period	0.6317***	0.3263**
IA	-0.0377***	-0.1346**
TANG	-0.0207***	-0.0943***
LIQ	-0.0032***	-0.0023***
LEV	0.0036	-0.0052*
WC	0.0646***	-0.0430***
SG	0.0457**	0.0225**
Ln(TA)	0.0201***	0.0184***
Ln (PE)	-0.0245***	-0.0125***
m_1	-17.8300	-5.2900
	(0.0000)	(0.000)
m_2	5.4800	1.8900
	(0.0000)	(0.0590)
Hansen	71.4700	48.6700
	(0.0380)	(0.6430)

Notes: The p-values associated with the statistical tests are in parentheses; *: p-value < 0.10; **: p-value < 0.05; ***: p-value < 0.01. m_*i*, *i*=1,2, denotes a serial correlation test of order *i*, asymptotically distributed as a random variable N(0,1) under the null hypothesis of no correlation between residuals; Hansen denotes the value of the test statistic for over-identification restrictions, asymptotically distributed as a chi-square variable under the null hypothesis of no correlation between the instruments and the error term. *Vide* Table 1 for the description of variables.

As seen in Table 4, the results presented belong to two models that investigate the determinants of ROA and ROE for the companies under analysis. The variable IA has a negative and significant impact on both ROA and ROE. This result suggests that, for accounting and auditing firms, greater investment in intangible assets does not necessarily translate into improved financial performance. This finding aligns with prior studies that point to the limitations of intangible investments when they are not supported by complementary organizational changes. Amadieu & Viviani (2010) argue that intangible expenditures often fail to deliver value if they are not part of a broader strategic transformation. Similarly, Nguyen-Anh et al. (2022) found that intangible assets may diminish firm performance when innovations lack market applicability or when coordination among stakeholders is weak. Dragomir (2024) also reports that high levels of structural capital can reflect managerial inefficiencies and poor cost allocation, contributing to lower profitability. In line with this literature, the negative and significant coefficients on ROA and ROE indicate that, in this sector, intangible investments may be underutilized, poorly managed, or subject to delayed returns, thereby reducing overall firm performance.

Asset tangibility negatively influences the performance, in line with Deloof (2003), Serrasqueiro & Nunes (2008), and Nunes et al. (2009), who argue that lower levels of tangible assets can promote innovation and operational efficiency, ultimately enhancing firm performance. Moreover, Gharaibeh & Khaled (2020), as well as Neves et al. (2021), highlight that a high intensity of tangible assets may lead to inefficiencies in asset management and reduced profitability, especially when such investments are not aligned with the firm's strategic needs or generate excessive fixed costs. In the context of Portuguese accounting and auditing firms, these findings suggest that an overreliance on tangible resources might hinder flexibility, slow down digital adaptation, and divert investment away from intangible assets that are more critical to value creation in knowledge-intensive services.

The variable LIQ (Current Liquidity) has a negative and significant impact on ROA and ROE, in line with Bibi and Amjad (2017), Owolabi et al. (2011), and Rehman et al. (2015), who argue that excess liquidity may reduce performance due to inefficient capital use. As Calcagnini et al. (2020) and Gitman (2003) suggest, retaining high liquidity without reinvestment can lead to lost value creation opportunities. For Portuguese accounting and auditing firms, this may reflect overly cautious financial policies, where excess liquidity is not redirected into innovation or service development, limiting competitiveness and profitability in the long term.

The variable LEV (Leverage) has a positive impact on ROA (managers' perspective) and negative impact on ROE (shareholders' perspective). For managers, more leverage leads to more operational performance, as it allows firms with limited internal financing capacity to access external capital and seize valuable investment opportunities that would otherwise be out of reach (Fagiolo & Luzzi, 2006). In the case of Portuguese accounting and auditing firms, which often operate as small and medium-sized enterprises, access to debt can be particularly important to fund technological upgrades, expand service offerings, or improve digital infrastructure. However, shareholders have a different perspective. For them, an increase in leverage results in a decrease in profitability and an increase in the risk of insolvency, as demonstrated by Caskey et al. (2012) and Goddard et al. (2005). These authors emphasize the importance of prudent debt management to ensure that leverage does not undermine financial health and the ability to generate positive returns on assets. In this context, Portuguese accounting and auditing firms that become excessively leveraged may struggle to maintain their profitability and solvency, as the heavy burden of financial charges can reduce their capacity for investment and innovation. Additionally, higher debt levels may limit their ability to quickly respond to new opportunities or sustain periods of low liquidity, putting their long-term stability at risk.

Regarding Working Capital (WC), it has a positive and significant impact on ROA, consistent with Agha (2014) and Malik (2011), who demonstrated that efficient working capital management ensures investment capacity, and financial flexibility, leading to better performance. However, shareholders may hold a different view, as higher levels of working capital can reduce performance due to inefficient capital utilization. Shareholders typically seek profit maximization with minimal investment in working capital.

Sales Growth (SG) has a positive and significant impact on both ROA and ROE, which aligns with the results presented by Asimakopoulos et al. (2009), Coad & Rao (2010), Alarussi & Alhaderi (2018), Asche et al. (2018), and Neves et al. (2022a), who highlight that increasing sales can enhance profitability and reduce financing costs by improving firms' access to capital.

In the case of Portuguese accounting and auditing firms, sustained sales growth may reflect the expansion of service portfolios or client bases, which contributes to operational efficiency and strengthens financial performance in a competitive and increasingly digitalised market.

Regarding company size (Ln(TA)), it has a positive impact on both ROA and ROE, as confirmed by Ahinful et al. (2021) and Sritharan & Vinasithamby (2015). They highlight that the increase in assets and economies of scale positively affects the financial performance of companies, making them less likely to face insolvency. In this sense, Portuguese accounting and auditing firms with a larger balance sheet may be more operationally efficient, increasing their capacity to generate profits. Additionally, larger firms may have greater access to resources and investment opportunities, as well as more ability to diversify their income sources and mitigate risks. This makes them less vulnerable to economic-financial crises and, consequently, reduces their likelihood of insolvency.

Personnel expenses (Ln(PE) have a negative impact on both ROA and the ROE. An increase in personnel costs leads to a decrease in performance, as observed by Kim & Jang (2020) and Vu et al. (2019). In light of these findings, in Portuguese accounting and auditing firms, human resources may only be seen as an expense if they are not managed strategically, as poor management of human resources can lead to a disproportionate increase in personnel costs without a corresponding return in terms of productivity or efficiency. Moreover, there may also be human resources that tend to prioritize their own interests over those of the company to secure remuneration, which in turn affects performance. This lack of alignment between individual and organizational interests can result in a less collaborative environment, negatively impacting the profitability and financial stability of these companies.

It should be noted that to assess whether the determinants of performance differ between the periods before and after 2016, a year in which a significant update of accounting standards occurred, we conducted a Chow test. The test result indicated a p-value of 0.0136, and therefore, at the 1% significance level, we do not reject the null hypothesis of model stability. Thus, the model can be considered stable at the 1% level.

To conclude this subsection, it is observed that all the models adopted are correctly specified for the following reasons: *i*. There is no evidence of second-order autocorrelation (m2 statistic), as the null hypothesis is not rejected at acceptable significance levels (1%, 5%, and 10%); ii. There is no evidence of correlation between the instruments and the error terms (Hansen statistic), as the null hypothesis that the instruments are valid is not rejected; iii. Past performance positively influences present performance at the usual significance levels (1%, 5%, and 10%).

4.4 Robustness tests

To ensure the robustness of the results obtained through the GMM-System estimation, additional analyses are conducted using fixed effects models. While the GMM approach is suitable for addressing potential endogeneity and dynamic relationships, fixed effects estimation serves as a useful robustness check by controlling for unobserved time-invariant heterogeneity across firms.

The results of the fixed effects models are presented in Table 5. As can be observed, the estimates are consistent with those obtained using the GMM-System approach, which reinforces the robustness and reliability of the main findings and the conclusions. The Hausman test (Ho: the preferred model is random effects; no correlation between regressors and individual effects) indicates that the fixed effects model is more appropriate in this context.

Table 5. Results of the different specifications of the base model with fixed effects

	Model 1	**Model 2**
Dependent variable	***ROA***	***ROE***
Lagged Dependent Variable 1 Period	0.2140***	-0.0337***
IA	-0.0592***	-0.0973
TANG	-0.0412***	-0.0680***
LIQ	-0.0040***	-0.0027***
LEV	-0.0005***	-0.0075***
WC	0.0990***	-0.0226**
SG	0.0258***	0.0272***
Ln(TA)	0.0388***	0.0401***
Ln (PE)	-0.0506***	-0.0398***
Hausman	14651.2000	12346.2800
	(0.0000)	(0.0000)

Notes: The p-values associated with the statistical tests are in parentheses; *: p-value < 0.10; **: p-value < 0.05; ***: p-value < 0.01. m_*i*, *i*=1,2, denotes a serial correlation test of order *i*, asymptotically distributed as a random variable N(0,1) under the null hypothesis of no correlation between residuals; Hansen denotes the value of the test statistic for over-identification restrictions, asymptotically distributed as a chi-square variable under the null hypothesis of no correlation between the instruments and the error term. *Vide* Table 1 for the description of variables.

5. Conclusions

This study provides an analysis of the determinants of performance in accounting and auditing firms in Portugal, addressing a gap in the existing literature. By analysing 4,201 companies between 2012 and 2023, it is possible to identify that intangible assets, tangible assets, current liquidity, and personnel expenses have a negative impact on performance, while sales growth and company size have a positive effect. These findings contribute to a more comprehensive understanding of how different factors affect profitability in the perspective of managers and shareholders in this sector, highlighting the importance of strategic resource management and adapting to market dynamics.

This study presents several implications for managers, regulators, employees, and society at large. First, the results of this study can guide managers of accounting firms in implementing practices that optimize asset utilization and promote liquidity. Additionally, managers can use this study to review the firm's leverage and assess whether it could compromise the financial health of the business, making it more vulnerable to economic shocks and changes in market conditions. Moreover, managers may also see this as an opportunity to evaluate the alignment of employees' objectives with those of the company, to improve performance.

Furthermore, this study offers relevant insights for shareholders, by highlighting how the performance of accounting and auditing firms contributes to financial transparency and long-term value creation. Reliable accounting practices and high-quality audit services reduce informational asymmetries and strengthen investor confidence. Therefore, the findings may help shareholders assess whether the firm's financial practices and governance contribute to sustained profitability and the efficient use of resources, supporting the enhancement of shareholder value.

For regulators, such as the Portuguese Order of Certified Accountants and the Portuguese Order of Statutory Auditors, the results underscore the need for policies that encourage digitalization and continuous training, ensuring that firms in the sector remain competitive and adaptable to market changes.

For employees, this study can be significant as it helps identify the factors influencing the performance of the firms they work for. By understanding how efficient resource management, such as liquidity and sales growth, impacts profitability, employees can better appreciate the importance of their role in maximizing results. Furthermore, effective human resource management should foster a work environment that encourages motivation and goal alignment, enabling employees to experience more satisfactory professional development and a greater sense of belonging to the company.

Finally, the implications of this study extend to society at large. A strong performance by accounting and auditing firms not only contributes to their own financial health but also to the economic stability and growth of Portugal, supporting job creation and ensuring that clients meet their accounting and tax obligations.

Although this study has provided important insights, it is not without limitations. The analysis is restricted to a specific period and a limited sector, which may constrain the generalizability of the results. Future studies could expand the sample to include different sectors, allowing for a more comprehensive comparison. Furthermore, qualitative studies exploring the perceptions of managers and employees regarding the determinants of performance could offer a richer, more contextualized view, further enhancing the understanding of the dynamics within the accounting and auditing sector in Portugal.

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