

THE IMPACT OF AUDIT QUALITY IN COMPANIES
PERFORMANCE: A COMPARISON BETWEEN NORTHERN
AND SOUTHERN EUROPE

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“Starve your distractions, feed your focus”

Daniel Goleman

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Abstract

Since the financial crisis, a variety of questions have been raised about Europe's south and north division. The origin of this big gap between countries is very complex and involves financial, political and social outlooks. In order to answer this debate, the purpose of the present study is to investigate and understand if there is indeed a different audit quality in northern compared to southern European countries, basing the research in ninety listed companies from Finland, Norway, Denmark, Sweden, France, Belgium, Italy, Portugal and Spain.

The objectives of this investigation consist on examining the effect of auditor size, auditor change, audit fees, auditor opinion and board size, as measures of audit quality and analyze to what extent the five measures can reveal different results between the two European regions. The conclusions show that board size is rejected and do not represent an explanatory variable for audit quality. Auditor size, auditor opinion and auditor change have a statistical significant relation with just one of the measures of financial performance and profitability, which present a limitation, because it only depends on the choice of the precise indicator. Audit fees is the most significant variable to explain the audit measure of the research model. Reinforcing the importance of audit fees in order to explain audit quality. Furthermore, by comparing the north and south region, it is possible to conclude that audit fees and board size present different results depending on the region.

JEL classification: M41; M42

Keywords: Audit Quality; Audit Fees; Northern Europe; Southern Europe

Resumo

Após a crise financeira, surgiram diversas questões a cerca da divisão entre o norte e o sul da Europa. A origem desta teoria entre países é um processo complexo que envolve fatores financeiros, políticos e sociais. Com o intuito de dar resposta a esta problemática, o presente estudo tem como propósito investigar e entender se na realidade a qualidade de auditoria difere entre os países do norte e do sul da Europa, baseando a amostra em noventa empresas cotadas na Finlândia, Noruega, Dinamarca, Suécia, França, Bélgica, Itália, Portugal e Espanha.

Os objetivos desta investigação consistem em analisar se o tamanho do auditor, a mudança de auditor, honorários de auditoria, a opinião do auditor e o tamanho do conselho de administração representam medidas de qualidade de auditoria e até que ponto os cinco indicadores apresentam diferentes resultados entre as duas regiões Europeias. Os resultados revelam que o tamanho do conselho de administração é rejeitado e não representa uma variável explicativa da qualidade de auditoria. O tamanho, a opinião e a mudança do auditor apresentam uma relação estatística significativa com apenas uma das medidas de desempenho financeiro, revelando uma limitação, pois o resultado está dependente da escolha de um indicador em concreto. Os honorários de auditoria são a variável mais importante para explicar o modelo, reforçando a relevância do pagamento ao auditor como indicador explicativo da qualidade de auditoria. Adicionalmente, ao comparar as regiões do norte e do sul, é possível concluir que os honorários de auditoria e o tamanho do conselho de administração apresentam resultados diferentes dependente da região.

Códigos JEL: M41; M42

Palavras Chave: Qualidade de Auditoria; Honorários de Auditoria; Norte da Europa; Sul da Europa

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Introduction

The European continent was one of the most important political, economic and cultural centres in the world. On the last decades, Europe was the principal foreign investor on every continent. Currently, emerging markets and developing economies are looking for Europe to invest, with a financial power that Europe has been gradually losing.

Since the financial crisis, a variety of questions have been rease about Europe's south and north division, and it is described as the "Europe's Two-Speed Economy". This division has detached the creditor's countries, the ones that dictate what other should do, from the debtor's countries, the ones that have to be ruled and governed by the first one. The origin of this big gap between countries is very complex and involves financial, political and social outlooks. However, when it comes to companies and their audit quality do we have a distention between south and north?

The purpose of the present study is to investigate and find if there is effectively a different quality of audit in northern countries compared to southern countries in Europe, taking into account the social and economic differences that affect the performance of companies.

According to the American Accounting Association's Committee on Basic Auditing Concepts, (1972:18) "*auditing is a systematic process of objectively obtaining and evaluating evidence regarding assertions about economic actions and events to ascertain the degree of correspondence between those assertions and established criteria and communicating the results to interested users*". Arens *et al.* (2003) also add to this definition as evaluation that have to be done by a competent and independent person. It plays a crucial role in contributing to the credibility of the financial statements and an essential topic to all stakeholders. Although, how can we measure high standards of auditing? Audit quality is much debated, but little understood. Despite more than four decades of research, there remains little consensus about how to define, let alone measure audit quality. Prior research on audit quality, point to different approaches. In this investigation five key elements are analyzed to measure audit quality: auditor size, auditor change, audit fees, auditor opinion and board of directors' size.

Therefore, relying on the literature in this study, there are two specific objectives. The first one is investigating the effect of the five measures of audit quality in

companies' financial performance, and the second one is examining to what extent audit firm size, auditor change, audit fees, auditor opinion and board size as a representation of audit quality, can reveal different results between north and south countries of Europe.

In order to analyse and investigate this subject, it was developed a quantitative methodological approach, leading to the development of a database that incorporates information about the performance and auditing of companies from the south and north of Europe. The database was elaborated taking into account information from 2017. The sample was selected considering the cluster mapping developed by Ronen and Shenkar (1985). The cluster map helps to define the group of countries in the study. Nordic countries are constituted by Finland, Norway, Denmark and Sweden, while the southern countries, defined as the "Latinos-Europeans", are France, Belgium, Italy, Portugal and Spain. To carry out this investigation, it is going to be realized tests of descriptive statistics, measures of association and multiple linear regressions, which will be conducted using the SPSS – Statistical Package for Social Sciences program.

This research study aims to contribute to a better understanding of audit quality. There are several research and studies carried out, in different approaches, to explain audit higher standards and some are addressed in this study. However, it has not been studied in the context of exposing audit quality as an outcome that can possible be a differentiator in the theory of the division between north and south of Europe.

The remainder of the dissertation is structured as follows: the section of theoretical background discusses literature, and it is separated into three divisions: the first explains the economic and social differences and how they can influence companies, while the second reviews the audit quality and how it can be measured, the third reflects in the financial vs non-financial evaluation of companies. The fourth section explains the methodology of this study, describing the data used in the empirical analyses and the panel data method applied. Section five presents the empirical results. The sixth section presents the conclusions, limitations and future researches.

Theoretical Background

1. Europe's Framework

European continent interest lies in the fact that it has been the scene of the most significant transformations in the history of humanity.

After World War II, with the creation of the European Coal and Steel Community and the European Economic Communities, the process of constitution of the European Union became a reality, with a great cooperation between countries since 1945. From then on, the aim was to encourage economic cooperation, on the assumption that countries had trade relations with each other, thereby reducing the risk of conflict and improving the standard of living of Europeans. Several strategies had been tried in the attempt to harmonisation and unification of Europe. The implementation of the Euro was the most daring and enterprising action of this process and a big step in the integration of Europe. *“The euro was supposed to help integrate Europe's nations into one seamless, fully-integrated economy”* (Alderman, 2010:1). However, the 2008 financial crisis and the policies that each country develop lead to several conflicts and profound repercussions in Europe, each exposes the economic and social inequalities that this complex process has.

Those moments in history act like a flame that provided the start to analyse and investigate Europe and the north-south division, which are still present these days.

1.1. Social and Economic Differences

Before the financial crises, many countries developed large imbalances in their accounts, showing high levels of external debt. In 2017, it is still very current, that southern Europeans countries have far more net external debt (Spain, Italy, France and Greece) than northern Europeans. Also, GDP per capita of the UE in 2017 reveals that Eastern Europe and southern Europe are the ones that represent the majority of countries which are below the European Union average with a distinct contrast compared to the north of Europe. According to research by Landesmann (2013), lower-income economies, notably southern European countries, have developed large external imbalances, unsustainable debt increases and distortions in their economic structures.

Consequently, it led to restrictions on investment due to the weak state of the banking system, resulted in a detriment of the commercial sector, leading to a loss of competitiveness. This resulted in a reduction of consumption, which turns into a decrease in wages, reducing domestic income and increasing unemployment. This combining with the mergers of austerity that were imposed induce a vicious cycle. Until 2017, the countries with the highest unemployment rates were Greece, Spain, Italy, Croatia, Cyprus, and France. Therefore, it prompts into low growth prospects, raising concerns about debt sustainability and the need to maintain high interest rates. An excellent example of this is the 10-year Treasury bond yield¹, that reveals the different dynamic of this division: Greece – 5.98%, Portugal – 3.05%, Italy – 2.11%, Finland – 0.55% and Denmark – 0.48% (EU average of 1.31%).

On the other hand, it is not only the economic differences that we can associate when analysing diversity and inequality in Europe. There is a deep cultural gap between Europeans, which by many, is the main obstacle to the creation of a more homogenous continent. More than two centuries ago, Huntington (1993:22) predicted that "*the great divisions between humanity and the dominant source of conflict will be cultural*". The prediction of Huntington was developed based on the several cultural differences around the world, that would be expose by the increase on interactions between people, resulting from processes of economic modernisation and social change, and by the difficult harmonisation of cultural characteristics and differences that made it challenging to solve political problems, economic growth and economic development.

Culture can be described as a set of beliefs, norms, and actions that are transmitted from one generation to the next inside the family, and through social interactions in the local community. However, identical culture does not restrain at local communities, many researchers investigate and establish connections between countries, naming then country clusters. Studies have shown that by analysing cultural dimensions, countries can be grouped by similar patterns, calling them cultural clusters (Haire, 1966; Sirota and Greenwood, 1971; Hofstede, 1976; Redding, 1976; Ronen, 1977; Badawy, 1979; Grilffeth *et al.*, 1980; House *et al.*, 2004; Ayakwah *et al.*, 2018). According to The Culture for Development Indicators (CDIS), culture can be accessed by seven key policy dimensions – Economy, Education, Governance, Social Participation, Gender

¹ Source: PORDATA - 10-year Treasury bond yield, 2017.

Equality, Communication and Heritage, providing an overview of how culture contributes to sustainable development.

Culture impacts the way families look at education, in other words, the cultural patterns of society guide its educational standards. Psacharopoulos and Patrinos (2004) investigation result highlights the fact that more schooling is associated with higher individual earnings, and suggest that politics need to heed this evidence in the design of policies and crafting of incentives. In addition, Tokel and Öskan (2017) refer that education is a tool that develop the society and allow social and cultural changes. In 2017, the countries with the most significant percentage of the population with higher education¹ were: Finland, Norway, United Kingdom, Ireland and Sweden, contrasting with Malta, Spain, Romania, Italy, Bulgaria and Portugal that had the higher early drop-out rate of education and training. Evidence also suggests that knowledge and educational quality rather than just time in school is what matters and have powerful effects on individual earnings, on the distribution of income, and on economic growth. (Hanushek and Woessmann, 2007)

Another indicator to have in consideration is the public assistance and incentives that the government provides to the ones that need the most. Governance assistance in the percentage of GDP is an indicator that gives a different cultural perspective, showing that north countries, like Denmark, Finland and Belgium, give more support. However, it is generally agreed that it also brings a culture of dependence. According to Schneider and Jacoby (2013), public assistance can develop harmful effects on the social and political orientations of those who receive it.

Also, something quite significant and relevant problem is the corruption or lack of transparency. This implies a political, economic, social and environmental cost to societies. The Transparency International's index on corruption for 2017 results reveal that Nordic European Countries (Denmark, Finland, Sweden and Norway) are in the Top Ten, contrasting whit Italy, Greece and Bulgaria (54, 59 and 71 in the ranking) that have more connection between corruption and inequality.

In addition, openness and transparency play a significant role in innovation and entrepreneurship. Carree and Thurik (2003) provide extensive surveys of the diverse literature on the relationship between entrepreneurship and economic growth. In essence, the literature suggests that entrepreneurship contributes to an economic performance by introducing innovations, creating change, creating competition and

enhancing rivalry. Mabillard and Vuignier (2017) study presents that transparency and clear environments have a major importance in business decisions and increase the attractiveness of a market. Also Churchill (2017) investigation refer that entrepreneurship, including social network and social capital, are affected by trust and that can determinate the level of entrepreneurial success across different countries. The INSEAD 2017 GLOBAL INNOVATION shows that the European countries that are in the top ten are Switzerland, Sweden, Netherlands, Denmark, Finland, Germany and Ireland, by that it can be seen that none of the south European countries are represented.

1.2. Influence of Economic and Social Indicators in Companies

In today's, VUCA (volatility, uncertainty, complexity and ambiguity) world, companies have the need to obtain knowledge, updating and deal with intense and rapid changes to conditions and environment around them. In line with Fekete and Bocskei (2011) study, business organizations are struggling to survive in today's competitive business world. To follow modern tendencies and benefit from globalization, companies must define clear objectives, invest on resources and create innovative capabilities (Milkovic *et al.*, 2018). In this sense, cultural clusters are extremely important, because they induce knowledge to companies and help them to understand the cultural background of people in a particular country, giving a valuable tool to establish strategies. Nowadays, companies are looking for ways to be more creative, innovative and are trying to develop differentiator factors. The culture of a country can guide business's options and results by leading to increased productivity, innovation and new business formation. According to Ketels (2004), clusters can constitute a crucial opportunity to modernising economic policies in Europe and give companies an advantage, because they need strong clusters and business environments at their home locations to compete successfully. This approach includes the view of culture first as an external variable, but culture can also be viewed as an internal variable of an organisation. As Muya and Wesonga (2012:211) said "*culture impacts most aspects of organizational life, such as how decisions are made, who makes them, how rewards are distributed, who is promoted, how people are treated, how the organization responds to its environment, and so on*". National culture of a country builds and shapes the culture and performance of organisations where they function (Lindholm, 1999; Doung *et al.*, 2016; Lut, 2016).

Much popular and scholarly attention has been focused on the hypothesis that organisational culture is related to the company's performance and employees conduct. Organisational culture is the set of important assumptions (beliefs and values) that members of an organisation share in common (Ng'ang'a and Nyongesa, 2012; Saifi 2015). According to Taslim (2011), it is the set of operating principles that determine how people behave in the organisation, in other words, it can be described as the personality of the company. Culture impact a variety of organisational processes and can be a source of sustained competitive advantage under certain conditions (Lee and Yu, 2004; Chatzoglou and Chatzoudes, 2018). Nukic and Braje (2017) investigation reveal that the national culture effect competitiveness, and is necessary to take it into consideration when developing business strategies. Organisational culture influence and determines employee behaviour, learning and job satisfaction (Lund, 2003; Sanz-Valle *et al.*, 2011; Tsai, 2011; Arayesh *et al.*, 2017); innovation (Vincent *et al.*, 2004; Pucetait *et al.*, 2016), motivation (Taslim, 2011; Nikpour, 2016) and knowledge management (Moustaghfir, 2008; Saifi, 2015; Imran *et al.*, 2017).

Organizational culture is also determinate by corporate governance, and vice-versa. Thanetsunthorn and Wuthisatian (2015) study reveals that national culture influences the adoption level of corporate government policies. Corporate governance is defined as a set of processes, customs, policies, laws, regulations and intuitions that define the way a company is managed and controlled, trying to ensure that the power within organizations is exercised in the interests of the company and not of particular benefits (Shleifer and Vishny, 1997; Turnbull, 1997). Hence, companies developed internal controls, implemented by executive and non-executive managers and administrators, and external controls, realized by shareholders and creditors, that is, government mechanisms are created to ensure that the company is implementing the stewardship theory. For instance, a larger size board provide greater supervision and more diversity among their directors (Arnegger *et al.*, 2014; Moghaddam *et al.*, 2018), or the mix between independent members and dependent, that determines the level of commitment and independence of board member and is correlated with less cases of fraudulent financial reporting (Dunn, 2004; Smaili and Labelle, 2016), or even the gender, there is some evidence that indicates that women on the board can increase a corporation's value, by having higher earnings and greater shareholder wealth (Ripley, 2003; Pucheta-Martínez *et al.*, 2018; Selahudin *et al.*, 2018). Rodriguez-Fernandez (2016)

investigation concludes that the application of good corporate government mechanism improve financial performance and lead to a greater social behavior index.

In fact, corporate governance can influence the culture of a company, but it is also influenced by the national country characteristics, making an interrelationship between all these aspects. The national country characteristics, such as legal protections for minority investors and the level of economic and financial development, improve the corporate governance and transparency of firms because they influence the costs that companies incur to bond themselves to higher-quality governance and the benefits from doing so (Love and Klapper, 2004; Doidge *et al.*, 2007).

Another point of view that can develop firms' potential for value creation is good corporate reputation. Reputation involves intangible assets as public opinion, reliability, merit, trust, transparency, corruption so it is not simple to define, neither measure. Existing empirical research confirms that there is a positive relationship between reputation and financial performance. Corruption decreases sales growth and return on equity, leading to a reduction of firm competitiveness and innovation (Gaviria, 2000; Vig *et al.*, 2017), and have adverse effects on taxation (Fisman, R. and Svensson, 2007), impacting the firm's execution and growth. Domadenik *et al.* (2016) study reveals that countries that do not punish political corruption have a negative impact on companies' performance. Interpersonal trust between contact persons has positive influences on reputation. In agreement with that, some researchers studies results show that common knowledge between contact persons has a positive impact on corporate credibility, managerial performance and influence consumers' attitude and purchase intent (Goldsmith *et al.*, 2000; Bone, 2017; Straub, 2018). When a company have a bad reputation, the costs of doing business are significantly higher, it becomes challenging to retain customers, employees, shareholders and other relevant stakeholders. According to Tirole (1996), when a company is defined as having a bad reputation, there are two options: the firm is stuck in a bad-reputation steady state, or it takes an extended period to re-establish a good-reputation level.

It is also generally accepted that the business environment of a country (the legal, regulatory, financial, and institutional system) has an impact on the results and performance of companies. Usually, a country with lower regulation and fewer impediments to investment and transacting tend to be associated with stronger economic growth (Bengoa and Sanchez-Robles, 2003; Alesina *et al.*, 2005). A well-developed

legal system allows companies a more natural way to obtain external funds and support the firm growth (Demirgüç-kunt and Maksimovic, 1998; Zhang, 2018). For example, in the resolution of agency problems, the law is one of the major solutions. Corporate and government policies give stakeholders, mainly shareholders, specific powers to protect their investment against expropriation by insiders. The information asymmetries between the agent and the principal lead to costs (namely agency costs) and that influence the position and accounting of a company (Jensen and Smith, 1985; La Porta *et al.*, 2000; Gomez-Mejia *et al.*, 2005; Boučková, 2015; Allam, 2018). According to La Porta *et al.* (1998), the extent of legal protection of outside investors differs enormously across countries.

In the economic wealth point of view of a country, firms are going to be affected by the government's decisions and financial progress. Akif *et al.* (2019) investigation reveals that one of the most important priorities of a country is the development of balanced macroeconomic strategies to achieve a sustainable economy, leading to an increment of production capacity, jobs and taxes. Also Iliescu (2016) reports that national structures, such as economic environment, influence entrepreneurship behavior and competitiveness. In fact, a good example of the influence of economy in firms' performance is when countries are at a point of financial crises. According to Campello *et al.* (2010) study, firms with financial constraints affect the corporate behavior differently from the ones with financial unconstraint. Revealing that during the period of crisis, companies with financial limitation have a tendency to cut more investment, technology, marketing, and employment.

On the whole, it can be seen that these economic, cultural, political and social matters are going to influence the company's actions and results. The firm performance is going to reflect the extent of goals achievement in the organization's workforce, capital and finance, and also, the external aspects of culture and economic framework of a country.

2. Audit Quality

The economic development and globalisation gave the impulse to big companies to attest the clear image of the accounts, the quality of the internal control and protection against fraud. Consequently, audit services are demanded as monitoring devices, as a result of the potential conflicts of interest and information asymmetries between owners and managers (Watts and Zimmerman, 1983) and because audit quality is positively related with great financial reporting quality (DeFond and Zhang, 2014).

Audit quality is about delivering an appropriate professional opinion obtaining and evaluating the necessary evidence and objective judgements (ICAEW' Audit Quality 2002). In these terms, the auditor creates pre-established criterius that will permit to determine whether there are deviations from those references and whether they are materially relevant, as referenced in ISA 320. So according to DeAngelo (1981), audit quality is defined by the joint probability that an auditor will (a) discover a breach in the client's accounting system, and (b) report the breach. To discover a breach, will depend on the auditor's technological capabilities, the audit procedures employed on a given audit, the extent of sampling, and others. On the other hand, some investigators believe that it transcends that simple definition, saying that "*auditors are legally responsible for how well the financial statements reflect the form's underlying economics, not just the mechanical application*" (DeFond and Zhang, 2014: 281). In reality the definition of audit quality is a complex and multi-faceted concept, that is affected directly and indirectly by different factors and is often related to the competence and independence of auditors (e.g. Hope and Langli, 2010; Tepalagul and Lin, 2015; Christensen *et al.*, 2016). As mentioned in ISA 220 the audit quality process pass by control procedures, so "*...the firm has an obligation to establish and maintain a system of quality control to provide it with reasonable assurance that: (a) the firm and its personnel comply with professional standards and applicable legal and regulatory requirements; and (b) reports issued by the firm or engagement partners are appropriate in the circumstances.*".

It is also difficult to measure the quality of an audit, because it is not public information and cannot be directly observed by an external user of financial statements. According to Defond and Zhang (2014) the more commonly measures of audit quality can be divided into two classifications: input-based proxies and output-based proxies.

The input-based proxies are related to audit fees and auditor characteristics. The output-based proxies refer to material misstatements, audit opinion, financial reporting characteristics and perception based measures. Therefore, in this study, five instruments to measure audit quality are going to be analyzed: audit firm size, audit fees, auditor change, auditor opinion and board size.

2.1 Audit Firm Size

A vast auditing literature concludes that Big N auditors provide higher audit quality than non-Big N auditors. The general concept that audit firm size is a positive indicator of how to measure audit quality, comes to the extent that investors look at the Big N as providing a more credible financial statements, compared to non-Big N and that they have the expertise and experience in auditing to easily identify, report and insist on correcting problems in the clients financial statements.

The demand for large international audit firms came to answer the need for multinational enterprises and legal regulations specific to the audit industry (Lenz and James, 2007; Asthana, 2017). According to, Klein and Leffler (1981) and Shapiro (1983), is vital maintain the premium quality of a service providing a uniform quality over time and across different markets and consumers. Therefore, Big N companies have more incentives to create and maintain a homogeneous level of service quality across offices from a different location in the world, although each country constitutes a separate legal practice and audit market.

Given their large size, the audit firms have access to better technology, facilities and allow them to attract and retain a higher quality of human resources and expertise (Dopuch and Simunic 1982; Chaney *et al.*, 2004; Francis *et al.*, 2014; Chan and Sun, 2015; Siriois *et al.*, 2016). Not only that, but the effect of firm size give companies a better information environment compared to smaller firms (Llorente *et al.*, 2002). This factor allows them to carry out audits more efficiently for large and complex clients.

Previous studies also found, that audit large firms with international brand names provide higher quality audit services and further reliable financial reporting than smaller ones because they suffer greater reputational risk (Weber *et al.*, 2008; Skinner and Srinivasan, 2012). For instance, according with Krishnamurthy *et al.* (2006) and Barton (2010) studies, when news about the Andersen's indictment was released, marring the

reputation of the company, the market reacted negatively to Andersen's clients. Along with this finding, one fascinating fact was that when firms fired Andersen, the announcement returns were significantly higher when firms switched to a Big 4 auditor than when they either switched to non-Big 4 auditors or did not announce the identity of the replacement auditor. However, Khurana and Raman (2004) investigation suggest that it is the litigation exposure that determinates audit quality instead of the reputational risk that large firms suffer. Big N auditing companies are more exposed to litigation risk since they audit most of the large companies while non-Big 4 auditors audit the medium and small firms.

Another point of view is the relation between firm audit size and clients firm financial performance. According with Alfraih (2016) investigation, Big 4 auditors have a bigger impact in the value of accounting measures of the clients companies then Non-big 4 auditors, translating this relation in a significant influence in earnings and book value results. In line with this perception, Francis *et al.* (1999) and Garven and Taylor (2015) analysis the relationship with client earnings quality showing that Big N auditors proportionate higher levels of earnings to their clients then Non-Big N. Alternatively, according to the Khurana and Raman (2004) study results reveal that the assurance on financial statements provided by Big 4 can be translated into a real benefit for the client in the form of a lower ex-ante cost to equity capital, introducing the notion that investors' perception of financial reporting quality increase.

Audit quality is fairly related to auditor independence, and Big N auditors are thought to be more independent (Shockley, 1981; Tepalagul and Lin, 2015; Alfraih, 2017; Yip and Pang, 2017). First, Big N firms usually have different sectors to provide the services needed by clients, and consequently, the person who audits the client would be unlikely the same person who provided non-audit services. Secondly, they rely less on an individual client's revenues, because the audit fee generated from a particular client represent a smaller percentage of the audit firm's total income, and are less likely to be influenced by an individual client. For instance, in the Portuguese matter, an audit firm should decline the client if the percentage is superior to 15 % of the annual net sales of the auditing firm or the total annual fee of the individual auditor, unless this situation clearly does not affect the professional ethic and independence or if the firm is in the beginning of activity (Barrote, 2010).

However, some questions have been raised about the Big N effect, and the main question is: Is audit quality and auditor size driven by Big N auditors having higher quality clients? According to Ireland and Lennox (2002:89) “*large auditors attract clients that are of higher than average quality and require less than average audit effort*”. Lawrence *et al.* (2011) study also suggests that propensity score matching (PSM) on client characteristics causes the Big N effect to disappear, in other words, the study concludes that after controlling the client characteristics, the audit quality does not evidence many difference between the two groups. On the other hand, subsequent investigations show that it is premature to conclude it (e.g. DeFond *et al.*, 2014; Eshleman and Guo, 2014).

2.2. Auditor Change

When a company decides to change the auditor it normally presents a transformation in one or more areas of this three components: potential auditors’ characteristics (e.g auditor reputation), client’s characteristics (e.g. adjustments in top management team) and the auditing environment (Cravens *et al.*, 1994; Beattie and Fearnley, 1995). Changing auditor can be a complex and delicate process. Mande *et al.* (2017) study reveals that firms who expend a long time searching for a new auditor company are less likely to be accepted by one of the Big n, the audit fees are higher and it is related with a negative stock market reaction.

The concept of auditor change is related with auditor independence. Previous studies suggests that the longer the audit tenure the more likely auditors and managers agree with important reporting decisions lacking the appropriate professional skepticism and influencing the audit quality (Davis *et al.*, 2000; Ryan *et al.*, 2001; Ghosh and Siriviriyakul, 2018). To prevent this situation many researchers support the implementation of mandatory auditor rotation. According with Brody and Moscovice (1998), it is essential to have mandatory auditor rotation, because although it would involve the increase of cost for companies, clients and public, the main concern is the credibility and quality of the financial report. Monroe and Hossain (2013) show that when it is mandatory an audit partner rotation, it is more likely that the auditor gives a qualified opinion for companies that are suffering from financial problems. Also, Ghosh and Siriviriyakul (2018) explain that audit firms normally do not support the idea of

mandatory firm rotation, because audit fees of Big 4 increase during the audit tenure and the cost of delivering the service decrease gradually, involving more audit investment in the first years and increasing the earning over time. However, some investigations do not support the argument that longer auditor tenure is positively associated with a lower audit quality. Johnson *et al.* (2002) demonstrate that short audit tenure (two to three years) is related with a decrease of quality in the financial report, but there are not strong evidences that longer audit tenure (nine or more years) reduce audit quality. As well Myers *et al.* (2003) and Yasser and Mohamed (2018) studies reveal that longer audit tenure is not related with a reduction of audit and have a significant impact in earnings quality.

Another point of view to take in consideration is the loss of client knowledge when the auditor changes. According to Kinney and McDaniel (1996) when doing an audit the three main resources are: general data of the business, analysis of the financial and nonfinancial information related to the company, and client specific knowledge. Client specific knowledge, for instance, operations, internal control and accounting system, gives the auditors an advantage, becoming more independent and relying less on managerial estimates (Solomon *et al.*, 1999). This indicates that in the first years of the new auditor it normally implies a greater effort, normally by making substantive testing and client interactions to reduce the information asymmetry (Bedard and Johnstone, 2010). Consequently, in the first years the auditor failures are normally higher, because auditors have less information about the client firms, the detection of material errors and misstatements decrease and the cost of the additional work required rise (Johson *et al.*, 2002; Arel *et al.*, 2005).

Mandatory audit partner rotation may possibly impede companies to select the most qualified audit firm, but successor auditors possibly will provide a new view to the audit of a business (Ionescu, 2014; Ionescu, 2016). Also, Hoyle (1978) defend the idea that looking for a new auditor improve audit quality, because auditors will compete with which others and will try to differentiated and upgrade their services.

2.3. Audit Fees

Previous studies suggest that audit fees are determined taking into consideration the base price of delivering the service and the audit quality. According to, Simunic (1980)

and Choi *et al.* (2010), to calculate the value of an audit, normally, it is going to have in deliberation the client characteristics (e.g client size, client complexity, and client-specific risk), country's legal environment and auditor attributes (e.g audit firm size and industry expertise at the national level).

In the literature, there are many associations between audit fees with audit firm size and industry specialists. As analysed before, Big N firms are positively related with audit quality, in a sense, larger audit firm should reflect their quality in the price of the service, charging higher fee premiums, and this relation is also evident when associating with industry specialists that generally can charge a higher cost of audit service to their clients (Ferguson *et al.*, 2003; Chaney *et al.*, 2004; Francis *et al.*, 2005; Carson, 2009; Sundgren and Svanström, 2013; Bradbury, 2017). Ireland and Lennox (2002) study reveal that large audit firms earn more in higher fees than smaller audit firms. However, they also found that higher quality client firms tend to choose large audit firms and pay low fees because they involve less than average audit effort. Another point of view is that large audit firms have a beneficial advantage that can allow them to charge lower prices. According to Choi (2010), this happens because of economies of scale and synergies in the company group. The better technology and facilities, the amount and quality of human resources, the variety of clients, the information and knowledge of the environment give Big N a competitive advantage compared to small offices enabling them to charge lower fees.

Recent studies investigate a positive relation between fee pressure and audit quality. In the current time of recession, evidence shows that the reduction of some clients payment was related to misstatements and audit risk, and that fee pressure was associated with a lower audit quality in 2008 (Ettredge *et al.*, 2014; Sonu *et al.*, 2017). Also, audit fees decrease when discretionary accruals decrease being an indicator of earnings management risk and concomitant litigation risk (Abbott *et al.*, 2006).

An alternative outlook is associating audit fee with the level of effort that the auditor puts into scrutinising a client. Rajgopal *et al.* (2015) investigation reveal an unpredictable result. According to the study, abnormal audit fees are positively related with the total number of violations of audit deficiencies, which is contrary with the assumption that abnormal audit fees involve a superior audit effort typically in the case of clients with higher risk and complexity. In addition, the level independence of the

auditor throw is client can be evaluated used the proportion of audit fees to non-audit fees (Frankel *et al.*, 2002).

A different point of view is the increase of audit fees do to new regulations. According with Dey and Lim (2018) the increase of payment is justified by the additional hours of audit work necessary to implement the regulations.

Clients companies' shareholders and the corporate governance representatives also have a major key influence in audit fees. In agreement with Mayhew and Pike (2004) and Dao *et al.*, (2012), audit fee are higher in firms with shareholder voting, and also, firms that started having a shareholder vote compare to firms that stopped. As well, board characteristics have a positive relation with audit fees and audit quality. A board that is more independent, that has more diligence and expertise is associated with a higher payment and higher quality of audit services (Carcello *et al.*, 2002). Also, the audit committee, for instance audit committee size and expertise, have a significant impact in audit fees (Hines *et al.*, 2015; Jizi and Nehme, 2018). Another insight was presented by Ittonen *et al.* (2010), the study reveal that female audit committee representation may reduce audit fees by influencing the auditor's evaluation of audit risk.

2.4. Auditor's Opinion

The final stage of the external auditing process is to transmit the independent auditor report, summarizing all the process and concluding with an opinion of the financial status of the client firm. In 1981, DeAngelo affirmed that a competent and independent auditor is more likely to detect a breach and then report it. So according to this prediction, a better audit quality is going to have in consideration the fact that the auditor easily reports important matters and that can provide significant information to stakeholders. Farinha and Viana (2006) study reveals that some of the factors that can determinate the audit opinion of a client firm is the company's financial health, the firm's performance, business grow opportunities and the existence of dividend payments. Also, Lenghel (2018) investigation refers that the auditor has to evaluate whether the financial statements of the client company were established base in the system of the accounting references guidelines.

When analyzing the financial report of a company it is essential that the audit service is performed by an independent audit to secure the credibility of the evaluation. According to Defond *et al.* (2000) investigation, after the implementation of new auditing standards in Chyna to increase the reliability of the capital markets and to improve auditor independence, the number of going concern modified opinions increased nine times more. On the other hand, a very interesting fact was that after the adoption of the new standards the audit market share among auditor large size decrease, because client firms chose smaller audit companies in order to improve their chance of getting a clean opinion. Also Carey *et al.* (2008) study suggests that one of the reasons why clients decide to switch auditor is receiving a modified opinion. Firms that deliver a first time modified opinion are more likely to lose their clients and consequently their fees, than comparing with audit firms that issue a clean opinion to financially stressed clients. This can be related with evidences that unexpected first time going concern reports have a negative stock market reaction (Loudder *et al.*, 1992). Or according with Davidson III *et al.* (2006) that after client's companies receive a going concern modified audit opinion found that the level of earnings management were higher for those that switch from large size audit firms to smaller audit firms. Usually audit firms that have insufficient mechanisms to mitigate independence risk, use resignation to present such threat (Adams *et al.*, 2017).

An additional point of view is the link between auditor independence with audit firm size. Big 4 audit firms are thought to be more independent, and according to Tusek and Jezovita (2018), they have a bigger probability to report more key audit matters and give a more extensive opinion.

Previous research findings suggest that the auditor opinion have an information role (Dopuch *et al.*, 1986; Loudder *et al.*, 1992; Raghunandan, 1993; Menon and Williams, 2010; Marshall and North, 2011; Siriois *et al.*, 2018). Marshall and North (2011) search evidences show that when an auditor issue a modified audit opinion it is view as a communication of risk and can lead to a change in the structure of the market value for distressed companies. As well Menon and Williams (2010) study reveal that a going concern audit report can give significant information to investor. This can lead to a worse reaction when it involves a problem with obtaining financing or if it is related with technical violation of a debt covenant. Additional, Sirois *et al.* (2018) investigation reveal the effects of communicating key audit matters, reveling that stakeholders pay

attention and make their decision based on the information presented in the auditor's report.

On the other hand, the type of opinion can lead to unroll of different consequences. When an auditor reports any opinion other than an unmodified one, the client company's cost of capital raise (Francis and Yu, 2009). Additionally, a modified audit opinion can be a concern to lenders, since it gives information about the inability of a company to pay back its debts, and according with Chen *et al.* (2016:141) "*loans issued in the year after an modified audit opinions are associated with higher interest spreads (17 basis points on average), fewer financial covenants, more general covenants, smaller loan sizes, and a higher likelihood of requiring collateral*". Also, Nunoz-Iquierdo *et al.* (2019) article reveal that any user can predict a bankruptcy situation be scrutinizing the auditor report and analyze three essential information's: the auditor opinion, verify if exists a matter section and examine the quantity of comments disclosed.

However something to take in consideration is the misstatements of an audit opinion. In the literature it can be found two types of errors (e.g: Hopwood *et al.*, 1989; McKeown *et al.*, 1991; Geiger and Raghunandan, 2002; Knechel and Vanstraelen, 2007; Carey *et al.*, 2008; Mareque *et al.*, 2015; Cao *et al.*, 2017; Berglund *et al.*, 2018). The type I error happens when the auditor present a going concern modified opinion to a company which remain viable and the type II error when the auditor produces a clean opinion to a company which subsequently fails. According with Carey *et al.* (2008) the percentage of firms that receive a modified auditor opinion and do not subsequently fail is approximated of 80 to 90 per cent. Or based in the study of Cao *et al.* (2017) that found that when the payout of a firm decreases the auditor is thrice more probably to make type II error.

2.5. Board of Directors Size

Given the significance of audit quality, researchers have been investigating the relation between board size and composition. Boards of directors have an essential role of supervision and monetarizing the actions of top managements, and at the same time, safeguarding the interests of the company and its shareholders', reducing the asymmetry of information (Fama, 1980; Moghaddam *et al.*, 2018). One of the most important

responsibilities of the board of directors is to choose the auditor to test the credibility of the financial report. According with Alfraih (2017) study, board size, independence and diversity increase the probability of a firm select a higher quality audit firm.

In consonance with many researchers, larger size boards provide a better quality of corporate governance and audit. It allows the inclusion of a higher number of independent members. According to Boone *et al.* (2007), monetarization quality is increase by the inclusion of outside directors, in other words, board independence is positively related to implementing limitations on the influence of manager's. Also, the independence and expertise of the corporate board constraints the propensity of managers to engage in earnings management (Xie *et al.*, 2002; Lin and Hwang, 2010). Carcello and Neal (2000) research conclude that more independent boards lead to a lower probability of auditors relist a going concern audit report. On the other hand, the corporate governance role in a company is not only to motorize the firm, but also advise the managements, creating more value (Andres and Vallelado, 2008). Weisbach and Hermalin, (2003) and Dunn (2004) investigation reveal that the proportion of independent members are positively related with less cases of fraudulent financial report. Carcello *et al.* (2002) study results show that corporate boards that have more independence, diligence and expertise seek a higher quality audit service and induce on such costs in order to protect the shareholder interests.

Also, a larger board size provides greater supervision and more diversity among their directors. Hillman and Dalziel (2003) found that directors with a solid educational background in finance have a greater probability to demand higher audit quality services to improve their supervision and monetarizing role. In addition, Mustafa *et al.* (2017) investigation reveal the directors that have this educational background can understand and manage financial reporting issues in a better way and have strong motivations to minimize earnings management. In other perspective, gender and age are matters very debated in board diversity. Sithipongpanich and Polsiri (2013) investigation reveal that the diversity in age is beneficial to companies, because it provide different perspectives of different age groups. Older members provide experience and usually the economic resources, middle groups normally have the main positions of active responsibility, and the younger group has the energy, motivation and now point of views. Selahudin *et al.* (2018) findings suggest that female directors give more attention to details compared to male directors and are very strict delivering a better control of the management reports.

Therefore, Pucheta-Martínez *et al.* (2018) study results show that a balance between female and male on the board is necessary because of the many styles that each one can bring, and this proportion is influenced by different external factors, such as: corporate governance structure, financial crisis, financial scandals, among others.

However, some scholars claim that small boards are more efficient in decision making, and may imply lower remuneration costs for the company. According to Jensen (1993) when the board of directors is smaller it is easier to express the ideas of each member and they are more effective in monitoring and supervising. In addition, Amarjit and Mathur (2011) study reveals that a larger number of directors have a negative impact on the performance and profitability of companies. This can explain poor communication and poor decision which may impact the results of the firms.

The optimal size board is influenced from different factors, for instance industry, and which company has to determine what they should consider when analyzing the dimension of the board of directors. As stated by ASX Corporate Governance Council (2014), firms need to consider the value of each new member in the monetizing and performance processes. Once that better internal governance mechanisms are associated with a high audit quality (Adel and Shamharir, 2018).

2.6. Other Factors

Several empirical researches found a positive relationship between audit quality and financial performance to clients dimension and leverage. According with Ehikioya (2009), both size and leverage are related with the financial status of a company.

Size is an important characteristic, because firm size is related to a weaker opportunity of financial fraud (Carcello and Nagy, 2004) and is negatively associated with a delay of the audit report (Fathi and Grayli, 2017), due to the responsibilities of bigger companies and the monitoring role of stakeholders. Also, the bankruptcy probability decreases with the increasing of firm sizes, for instance a company will have more assets to sell in the event of a financial struggle (Carey and Simnett, 2006; Gupta *et al.*, 2018).

Leverage is seen as an investment strategy, being associated with a higher risk. Companies that have more leveraged are more likely to breach a debt covenant (Chava and Roberts, 2008). Also, in the literature there are evidences of the relation between

audit independent reports and debt. According to Gomez-Guillamon (2003) the decisions of stakeholders, such as brokering firms and credit financial institutions, to provide financing and investment are going to have to consider the opinion of the auditor on the financial status. Menon and Williams (2010) and Chen *et al.* (2016) additionally found that when companies are trying to obtain financing, the type of opinion is very important, affecting negatively the request when the audit firms issue a modified audit judgment. As well, the board independence of a firm and the audit quality are related with leverage, suggesting that higher board independent and higher audit quality are associated with a decrease in the cost of debt (Anderson *et al.*, 2004; Francis and Yu, 2009; Kalyanaraman and Altuwajri, 2016). Francis and Yu (2009) findings suggest that Big 4 audits, firms with non-modified audit opinion and audits with more than one responsible have lower cost debt capital. Chang *et al.* (2009) develop a model that relates higher audit quality with financing choices of the clients firms and market conditions. The investigation reveals that companies audited by big audit firm size are less likely to issue debt in stead to equity comparing to smaller audit firms. Another investigation that show the relation between debt and audit quality, is the Jiang and Zhou (2017) study, they found that an increment of audit fees is related with lower costs of borrowings after covenant violations.

3. Firm's Indicators of Performance and Profitability

As seen in the first section, the organizational performance of companies is influenced by different characteristics of a country, such as: business environment, national culture, government's decisions, government's financial progress, and others. In this sense, it is thinkable to say that firms are a reflection of their country.

There are two dimensions to measure firm performance and profitability: financial/quantitative and non-financial/qualitative indicators. In general concept, financial information is based on past economic-financial values, while non-financial information reflects the possible impacts on future economic-financial value.

Previous researches shows, such as Eccles (1991), Epstein and Manzoni (1998) Kaplan and Norton (2006), Dossi and Patelli (2010), Simon *et al.* (2015) and Eze (2018), show that non-financial indicators better translate investments and performance into aspects such as product quality, customer satisfaction, workforce development,

innovation measures and others, allowing a more valuable prediction of future financial performance. However, Dess and Robinson (1984) and Coram *et al.* (2011) studies reveal that subject measures should not be interpreted as substitutes for objective measures, in particular when analyzing economic performance. Several investigators recognize that financial measures focus on what is more important in the organization profitability, being the oldest and most practical/objective management accounting tool (i.e: Kaplan and Atkinson, 1998; Wu, 2012). However, when analyzing a company based in financial indicators it can lead to financial myopia and managers have a tendency to adjust the results of the company. In this sense, the introducing of non-financial performance measures can help by reducing the amount of earnings management and information asymmetries (Ibrahim and Lloyd, 2011; Bini *et al.*, 2018). On the other hand, non-financial variables can encumber to compare the performance and profitability among firms, because the way that companies calculate these indicators often differs and can suffer modifications over time (Eccles and Mavrinac, 1995). Also, this instruments of firm performance and profitability are easier to manipulate, since they are less subjected to public authentication (Ittner *et al.*, 1997). Additionally, Schiffel, *et al.* (2003:16) claim that “The cost of developing the systems to collect, compile and disseminate these measures is substantial”. Another point of view that Kotane and Kuzmina-Merlino (2011) evidence, was that industry experts and academic could not decide what should be the non-financial measure of evaluation. According to the facts presented, non-financial firms indicators are not going to be objective of analyze in this investigation.

There are several financial indicators to evaluate a firm. For instance some of the key indicators are: net sales, net profit, economic value added, earnings per share, return on assets, return on equity, among others. This performance and profitability measures give a good insight into how healthy the company's business is.

A huge variety of studies use these indicators widely as measures of economic and financial performance and profitability, and a number of authors have emphasized the relation between audit quality and different measures. Chen *et al.* (2008) and Yang *et al.* (2013) study show the relation between audit firm training and gender gap with financial performance, revealing that professional training and gender-role stereotype can influence the net income of a company. Also, Chen *et al.* (2013) investigate the association of audit quality for national, regional and local firms with financial

performance, using the net income measure. In addition, Yang and Chen (2016) complement saying that audit market concentration and audit services have a positive impact in the net income. Another measure to evaluate the health state of a company is the net sales, representing the amount of revenues. According with, Hariadi *et al.* (2016) in the auditor's perspective the financial performance reflect the environmental and health safety risks of a company, the study reveal that this connection is confirm by the increase of sales. In other point of view, audit quality is evidence throw good corporate governance and they are related with the firm's financial outlook. Surifah (2017) make evidence that corporate government index has an important impact on market price, represented by the Tobin's Q ratio, and decrease earnings management. Naseem *et al.* (2017) demonstrate that board characteristic and audit committee independence are positively related with firm performance, which in the study is represented by return on assets. Additionally, Aloui and Jarboui (2018) expose that outside directors, audit firm size, firm size and debt ratio impact the stock return volatility. On the other hand, Shtefan (2017) study relates estimated liabilities with the responsibility of planning of the audit team, revealing that it is more prone to errors due to the lack of regulation and the appropriate professional judgment. An alternative outlook is measuring equity, since it reflects the degree of ownership in any asset after deducting all debt related, and represents the value of an investor's stake. Alfraih (2016) conclude that accounting information is affect by high audit quality, showing that more Big 4 audit firms in a company audit team is related with an increase in the value of earnings and/or book value of equity. Ruiz-Barbadillo and Guiral (2019) research found that unexpected going concern opinions lead to a lower market value and decrease of book value of equity rather than an expected going concern opinions.

Methodology and Methods

4.1 Objectives

The purpose of the present research is to investigate and find if there is effectively a different quality of audit in northern countries compared to south countries in Europe, taking into account the social and economic differences that affect the performance of companies. The specific objectives consist of:

- i) investigating the effect of the five measures of audit quality in companies' financial performance,
- ii) examining on what extent auditor size, auditor opinion, audit fees, auditor's change and board independence as a representation of audit quality, can reveal different results between north and south countries of Europe.

4.2 Data

The sample was selected considering the cluster mapping developed by Ronen and Shenkar (1985). The cluster map helped to define the group of countries in the research, nordic countries are constituted by Denmark, Finland, Norway, and Sweden, while the southern countries, defined as the "latinos-europeans", are Belgium, France, Italy, Portugal and Spain. After selecting the countries of this investigation, it was chosen the companies. In order to select the most aleatory alternative possible, the criterion of research was to select the principal index of each country and select the first teen companies, without following any type of conditions, for instance: dimension or sector. In sum, the current research is based on ninety listed companies.

The data was extracted from the companies' annual financial statements, corporate governance reports and information on the website for the fiscal year that ended in 2017, which are publicly available. Companies that did not present their annual reports in end of the civil year, were not take into consideration.

The database financial information was collected in millions of euros for all the companies. For the firms that did not present the information in euro, the exchange rate use for the conversion corresponds to the rate in place publish by the Bank of Portugal

and the European Central Bank (December 29th), through the Bank of Portugal converter website.

4.3 Hypotheses

Hypotheses were formulated as follow, based on the theoretical background developed in the previous chapter:

H1: Audit firm size has a significant impact on the companies' financial performance and profitability.

H2: Auditor change has a significant impact on the companies' financial performance and profitability.

H3: Audit fees have a significant impact on the companies' financial performance and profitability.

H4: Auditor opinion has a significant impact on the companies' financial performance and profitability.

H5: Board size has a significant impact on the companies' financial performance and profitability.

H6: The distribution of the audit quality of the north of Europe is different from audit quality of the southern Europe.

4.4 Variables

To explain the previous hypotheses it was used independent, dependent and control variables to construct the regression models, based on information from ninety firms obtained from companies' annual financial statements, corporate governance reports and information on the website.

In agreement with the theoretical background, were selected four dependent variables, five independent variables and two control variable were selected. They summarize in the following table.

Table 1 - Description and framework of variables

<i>Variable Typology</i>	<i>Variable</i>	<i>Description</i>
Dependent	NSAL	Natural logarithm of gross sales minus the cost of sales allowances, discounts and returns.
	NRES	Natural logarithm of total revenues minus total expenses
	LIAB	Natural logarithm of the book value of liability
	EQ	Natural logarithm of the book value of shareholders' equity
Independent	ASIZE	0 if the organization is audited by a Big 4 auditor, 1 if the organization is audited by a Non-Big 4 auditor, 2 if the organization is audited by a Big 4 and Non-Big 4 auditor
	ACHA	0 if the organization changed the audit firm, 1 otherwise
	AFEE	Natural logarithm of total audit fees of the organization
	AOPN	0 if the audit firm reports an unmodified opinion about the organization, 1 if the audit firm report a modified opinion
	BSIZE	Size of the organization's board of directors
	EURR	European region of the organization
	Control	LEV
SIZE		Natural logarithm of total assets

Notes: NSAL = Net Sales; NRES = Net Result; LIAB = Liability, EQ = Equity; ASIZE = Auditor Firm Size; ACHA = Auditor Change; AFEE = Audit Fees; AOPN = Auditor Opinion; BSIZE = Board Size; EURR = European region; LEV = Leverage.

For the variable NSAL, NRES, LIAB, EQ, AFEE and SIZE, it was used the natural logarithm to adjust the greatest values and standardize the data inserted.

In order to measure the companies' financial performance and profitability, four dependent variables were selected. This selection was made based in previous studies that explore these indicators on other audit investigations (Chen *et al.*, 2008; Chen *et al.*, 2013; Yang *et al.*, 2013; Ayers, 2015; Kausar, 2015; Alfraih, 2016; Hariadi *et al.*, 2016; Yang and Chen, 2016; Shtefan, 2017; Al-Dhammari, *et al.*, 2018; Geiger and Kumas, 2018; Ruiz-Barbadillo and Guiral, 2019). They represent four different measures of the sustainability degree of a company. Net sales (NSAL) reflect the total amount of revenues a business receives in a period of time, deducting the allowances, discounts and returns. Net result (NRES) measure how successful and profitable the business is. Additionally, the book value of the liability indicate the company's obligations that arise during the course of business operations. Another significant key

performance measure is shareholders' equity (EQ). It represents the net value of a company, in other words, if all assets were liquidated and the debts repaid the amount that would be recovered by shareholders. All the indicators are very important, because a lot of different stakeholders, such as government, creditors, investors and shareholders, can have a better understand of the sustainability of a company, and the ability to pay or get a return on the investment based in this financial measures.

The majority of the independent variables represent the audit quality measures. As explored in the literature review, there are different ways to measure audit service quality and there are different perspective how to get a broad evaluation. Defond and Zhang (2014) research reveals that the measures of audit quality are divided into proxy categories: input-based variables that represent the observable input to the audit process, and output-based measures that show the level of audit quality actually delivered, it also refers another category that represent the client competencies to fulfill their audit quality demands and reduce agency cost incentives. In this investigation, the input-based proxies are audit firm size (ASIZE) and audit fees (AFEE). Big 4 audit firms were used as a representative of audit firm size, according with different studies in the section of theoretical background, this indicator, for a huge variety of reasons, provide a higher quality of audits that is reflected in the financial results of the companies. The companies that constitute the Big 4 are Ernest & Young, Deloitte, KPMG and PricewaterhouseCoopers. According with Rapoport (2016) article, the Big 4 audit companies are apparently getting better at avoiding problem and consequently preparing more trustfully opinions. Audit fees are define as a fee that is paid to the external auditor in order to receive an audit. In the last decade there was a grow of studies for this topic reveling how important and significant it is. Furthermore, Hay (2013) research reveal that recent investigations relates audit fees with the improvement of corporate governance, regulation, bigger audit firms, non-audit fees and client location. The output-based proxy is represented by audit opinion (AOPN). In this investigation the AOPN is based in the concept of modified and unmodified opinion. According with ISA 700 (International Auditing and Assurance Standards Boards, 2018: 705), an unmodified audit opinion represents *“The opinion expressed by the auditor when the auditor concludes that the financial statements are prepared, in all material respects, in accordance with the applicable financial reporting framework”*. Lenghel (2016) refers that the role of the auditor is to improve the confidence of stakeholders when analyzing

the financial statements of companies by giving a credible and reliable opinion. Board of directors size (BSIZE) is included in the group of client competencies. Board size and diversity are related with a lower probability of financial risk, are more efficient in innovation processes and have a better organizational performance (Bernile *et al.*, 2018). It is also used the audit change variable (ACHA), according with different researchers this perspective is important, because it is connected with the possible lack of independence and is associated with the above variables (i.e: Tepalagul and Lin, 2015; Ayorinde and Babajide, 2015; Mande *et al.*, 2017).

To analyze if there is a differential performance of audit quality between north and south of Europe, it was created the indicator EURR, as a dummy variable (the north companies of Europe = 1; the south companies of Europe =2).

The control variables add to the study were leverage (LEV), representing the proportion of equity and debt that companies use to finance their assets, and SIZE, as natural logarithm of the total assets of a company.

4.5 Regression model

The model aim is to explain the effects of the audit characteristics in the financial performance and profitability of companies, in order to analyze and conclude the impact of audit quality. In this sense, the purpose is to identify which variables ($X_i; i = 1, \dots, k$) best contributed to explain net sales, net results and equity, one model was regressed.

$$\hat{Y} = B_0 + B_1 ASIZE_{i,t} + B_2 ACHA_{i,t} + B_3 AFEE_{i,t} + B_4 AOPN_{i,t} + B_5 BSIZE_{i,t} + B_6 LEV_{i,t} + B_7 SIZE_{i,t} + \varepsilon_{i,t}$$
$$\hat{Y} = NSAL; NRES; LIAB; EQ$$

Results and Discussion

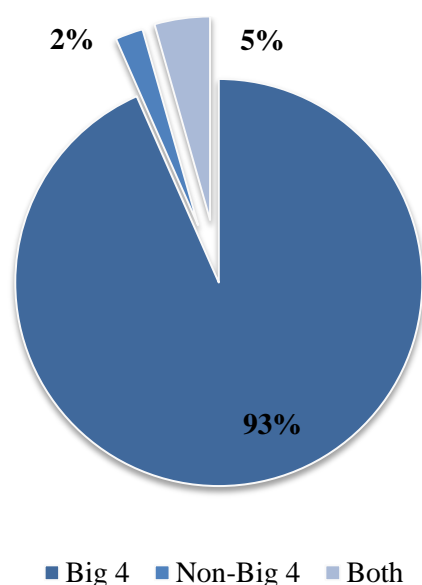
5.1 Descriptive measures

The sample consists of ninety publicly listed companies, and the data base was collected using information of the 2017 year. Table 2 reports the descriptive statistics for quantitative variables, particularly minimum, maximum, mean and standard deviation of the dependent, some independent and control variable throughout this study. Graphic 1, graphic 2 and graphic 3 reports the descriptive statistics for qualitative variables, particularly the percent for the remaining independent variable.

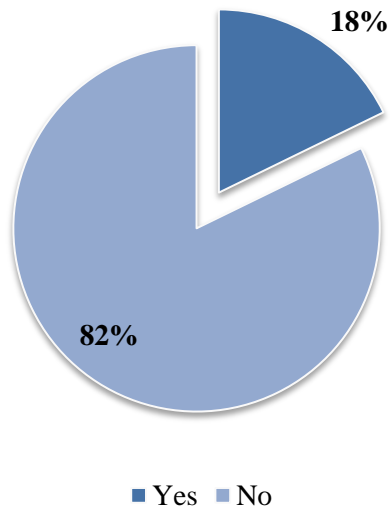
Table 2 - Descriptive measures for quantitative variables (univariate)

<i>Variable Typology</i>	<i>Variable</i>	<i>N</i>	<i>Minimum</i>	<i>Maximum</i>	<i>Mean</i>	<i>Standard Deviation</i>
Dependent	NSAL	90	2.335	4.965	3.689	0.616
	NRES	90	0.000	3.914	2.581	0.700
	LIAB	90	1.648	6.268	3.878	0.870
	EQ	90	2.276	5.030	3.562	0.595
Independent	AFEE	90	-0.894	1.649	0.320	0.565
	BSIZE	90	3	20	11.344	3.814
Control	LEV	90	0.053	20.037	3.755	4.662
	SIZE	90	2.640	6.292	4.098	0.765

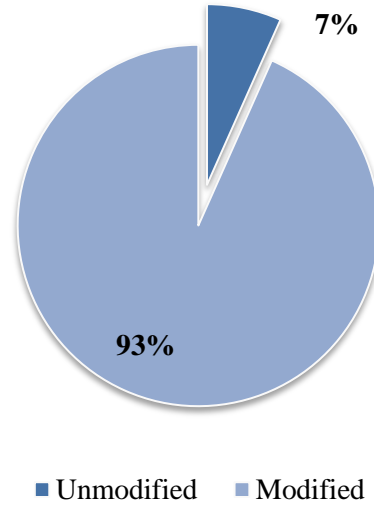
Graphic 1 - Descriptive measures of ASIZE (univariate)



Graphic 2 - Descriptive measures of ACHA (univariate)



Graphic 3 - Descriptive measures of AOPN (univariate)



Regarding the dependent variables, the results reveal that by using the financial performance and probability through NSAL, each company registered a mean of EUR 3.689 million with EUR 0.616 million of standard deviation. Measuring NRES, each company had a profit, in mean, of EUR 2.581 million with a standard deviation of EUR 0.700 million. Relative to the variable LIAB it can be conclude that in mean companies have EUR 3.878 million, with EUR 0.870 million of standard deviation . Analyzing the shareholders' equity as a financial indicator, each company registered a mean of EUR 3.562 million and, on average, the equity distances from its mean in EUR 0.595 million.

Considering the control variables, it is possible to verify that the companies which constitute the sample present a LEV, in mean, 3.76% (standard deviation = 4.66%) and a SIZE with a mean of EUR 4.098 million (standard deviation = EUR 0.765 million).

The reported descriptive statistics show that 93.3% of the companies' external auditor was a Big 4 and that from 2016 to 2017, 17.8% of the auditors change, being the first year of examination in 2017. The average amount of audit firms fees were EUR 0.320 million, with a wide range of EUR 2.540 million and a standard deviation of EUR 0.565 million. In the sample year, it was issue 93.3% of modified opinions versus only 6.7% of clean opinions. Also, the average number of the board size is 11.34 (standard deviation = 3.81), with a difference between the smallest and largest board of 17 members.

Of the ninety chosen companies approximately 44% represent nordic countries (Finland, Norway, Denmark and Sweden) and the highest percentage is from southern countries (France, Belgium, Italy, Portugal and Spain). Table 4 and table 5 reports the relation between to variables that were built based in the means comparison table and the contingency table, respectively.

Table 3 - Descriptive measures for quantitative variables (bivariate)

<i>EURR</i>		<i>AFEE</i>	<i>BSIZE</i>
North	Mean	0.164	9.050
	N	40	40
	Standard Deviation	0.417	2.428
South	Mean	0.445	13.180
	N	50	50
	Standard Deviation	0.637	3.740
Total	Mean	0.320	11.344
	N	90	90
	Standard Deviation	0.565	3.814

Table 4 - Descriptive measures for qualitative variables (bivariate)

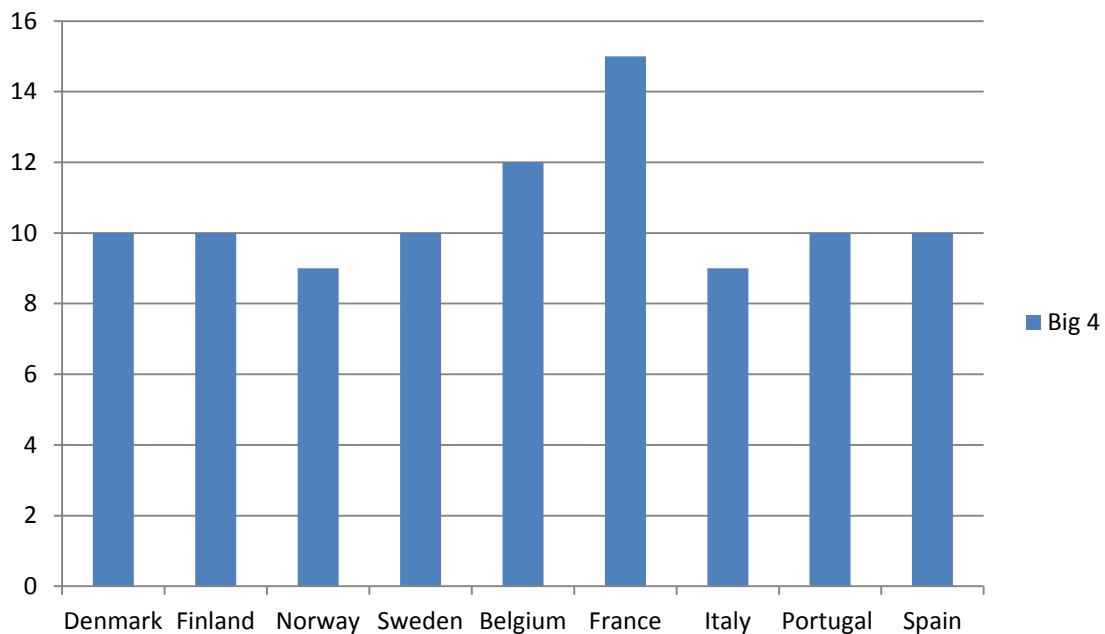
<i>Variable</i>		EURR		
		<i>North</i>	<i>South</i>	<i>Total</i>
ASIZE	Big 4	39	45	84
	Non-big 4	1	1	2
	Both	0	4	4
ACHA	Yes	6	10	16
	No	34	40	74
AOPN	Unmodified	3	3	6
	Modified	37	47	84

The reported statistics reveal that audit fees are bigger in south countries compared with north countries of Europe. The fees that north companies pay to the external audit is in mean EUR 0.164 million (standard deviation = 0.417) compared with a huge difference of EUR 0.445 million, with a standard deviation of EUR 0.637 million to south companies. Also, the size of the board of directors in the north region is about 9 members and in the south is about 13 members, revealing that the two regions differ in the board size and composition. When analyzing if the auditor changed in 2017, it can be seen that both regions had approximately the same percentage, that is, 18% of north

companies and 25% of south companies change from external audit firm. Therefore, the number of unmodified opinions was equal for north and south countries. The large majority of external auditors are represented by Big 4 audit firms, for both regions. In the case of Belgium some companies had more than one external audit firm, and joint audits for listed companies are required in France, where firms share the audit work and sign together the independent audit report.

Graphic 4 show the companies' choice of Big 4 audit firm in the different countries. By examining the data, it is possible to conclude that in north region, PWC is the audit firm most requested in Denmark and Sweden, E&Y in Finland and KPMG in Norway, and only one company in Norway opt for a Non-big 4 audit firm (JANUAR - Løggilt grannskoðanarvirki). In the south region, the largest proportion of companies of Belgium, France and Spain designated Deloitte as their auditor, in Portugal the most selected was PWC and in the case of Italy there was not a Big 4 audit firm that stood out. It can also be observed that France, due to the obligation of having more than one audit firm, represent the majority of audits independent reports issue by Non-big 4, which were presented in the vast bulk by Mazars.

Graphic 4 – Big 4 per country



5.2 Association Measures

The aim of the bivariate measure of association analysis is to study the correlation between the indicators of audit quality and the three selected measures of performance. Table 8 reports the statistic independence between a quantitative variable and a qualitative variable through the ETA measure, and table 7 gives out the correlation between two quantitative variables through the Pearson correlation coefficients matrices.

By analyzing the reported association measures relatively to the performance and profitability indicator NSAL, it can be observed that there is a positive and significant association with ASIZE ($\eta = 0.428$), AFEE ($r_{(90)} = 0.000$; p-value = 0.684), BSIZE ($r_{(90)} = 0.001$; p-value = 0.344) and SIZE ($r_{(90)} = 0.000$; p-value = 0.653), although reflecting a negative and a weak degree of correlation with LEV ($r_{(90)} = 0.009$; p-value = -0.276). In addition, it can be seen a very weak association with ACHA ($\eta = 0.027$) and AOPN ($\eta = 0.039$).

When measuring the companies' performance and profitability through NRES, it was found a very weak association with ACHA ($\eta = 0.089$), AOPN ($\eta = 0.026$) and ASIZE ($\eta = 0.115$). There is a significant and positive correlation with AFEE ($r_{(90)} = 0.000$; p-value = 0.413), BSIZE ($r_{(90)} = 0.011$; p-value = 0.266) and SIZE ($r_{(90)} = 0.000$; p-value = 0.665). As in the case of NSAL, the variable SIZE ($r_{(90)} = 0.174$; p-value = -0.144) reveals a negative association with the financial indicator.

Regarding the financial indicator LIAB, there are a strong relation with SIZE ($r_{(90)} = 0.000$; p-value = 0.982), a moderate relation with AFEE ($r_{(90)} = 0.000$; p-value = 0.642) and BSIZE ($r_{(90)} = 0.000$; p-value = 0.503), and a moderate and negative relation with LEV ($r_{(90)} = 0.000$; p-value = -0.442). Also a lower correlation with ASIZE ($\eta = 0.370$), ACHA ($\eta = 0.005$) and AOPN ($\eta = 0.107$).

It is also possible to verify that ASIZE, AFEE, BSIZE and SIZE are significant and positively correlated with EQ ($\eta = 0.391$; $r_{(90)} = 0.000$; p-value = 0.648; $r_{(90)} = 0.000$; p-value = 0.490 and $r_{(90)} = 0.000$; p-value = 0.920, respectively). Contrarily, ACHA ($\eta = 0.104$) and AOPN ($\eta = 0.100$) reveal a very weak association with the independent variable. Such as the first two previous analysis, LEV also have an insignificant and negative correlation with EQ ($r_{(90)} = 0.130$; p-value = -0.161).

In sum, there is evidence that the four performance and probability indicators have similar relationships with the dependent variables. The association measures show that the financial indicators have strong and moderate relation intensity with audit fees, audit firm size and companies' size, a weak correlation with board size, a very weak relation with the change of audit firm and auditor opinion, and also a very weak and negative relation with leverage.

Table 5 - ETA

		<i>Value</i>
<i>ASIZE*NSAL</i>	ASIZE Dependent	1.000
	NSAL Dependent	0.428
<i>ASIZE*NRES</i>	ASIZE Dependent	0.939
	NRES Dependent	0.115
<i>ASIZE*LIAB</i>	ASIZE Dependent	1.000
	LIAB Dependent	0.370
<i>ASIZE*EQ</i>	ASIZE Dependent	1.000
	EQ Dependent	0.391
<i>ACHA*NSAL</i>	ACHA Dependent	1.000
	NSAL Dependent	0.027
<i>ACHA*NRES</i>	ACHA Dependent	1.000
	NRES Dependent	0.089
<i>ACHA*LIAB</i>	ACHA Dependent	1.000
	LIAB Dependent	0.005
<i>ACHA*EQ</i>	ACHA Dependent	1.000
	EQ Dependent	0.104
<i>AOPN*NSAL</i>	AOPN Dependent	0.954
	NSAL Dependent	0.039
<i>AOPN*NRES</i>	AOPN Dependent	0.906
	NRES Dependent	0.026
<i>AOPN*LAIB</i>	AOPN Dependent	1.000
	LIAB Dependent	0.107
<i>AOPN*EQ</i>	AOPN Dependent	1.000
	EQ Dependent	0.100

Table 6 - Pearson correlation coefficients

		<i>NSAL</i>	<i>NRES</i>	<i>LIAB</i>	<i>EQ</i>	<i>AFEE</i>	<i>BSIZE</i>	<i>LEV</i>	<i>SIZE</i>
<i>NSAL</i>	PC	1							
	Sig.								
	N	90							
<i>NRES</i>	PC	.596***	1						
	Sig.	0.000							
	N	90	90						
<i>LIAB</i>	PC	.635***	.630***	1					
	Sig.	0.000	0.000						
	N	90	90	90					
<i>EQ</i>	PC	.750***	.702***	.856***	1				
	Sig.	0.000	0.000	0.000					
	N	90	90	90	90				
<i>AFEE</i>	PC	.684***	.413***	.642***	.648***	1			
	Sig.	0.000	0.000	0.000	0.000				
	N	90	90	90	90	90			
<i>BSIZE</i>	PC	.344***	.266**	.503***	.490***	.260**	1		
	Sig.	0.001	0.011	0.000	0.000	0.013			
	N	90	90	90	90	90	90		
<i>LEV</i>	PC	-.276***	-.144	-.442***	-.161	-.258**	-.121	1	
	Sig.	0.009	0.174	0.000	0.130	0.014	0.256		
	N	90	90	90	90	90	90	90	
<i>SIZE</i>	PC	.653***	.665***	.982***	.920***	.656***	.516***	-.291***	1
	Sig.	0.000	0.000	0.000	0.000	0.000	0.000	0.005	
	N	90	90	90	90	90	90	90	90

Notes: *** $p < 0.001$; ** $p < 0.05$; * $p < 0.1$

P. C – Pearson Correlation

5.3 Regression Model

According to Laureano (2013), the linear regression applies when two or more explanatory variables are being studied and it is intended to develop a linear equation to observe data. Therefore, in this investigation the purpose was to explain the impact of audit quality in the financial indicators of companies, by analyzing the independent variables (NSAL; NRES; LIAB and EQ) with the dependent variables (ASIZE; ACHA; AFEE; AOPN; BSIZE; LEV and SIZE).

5.3.1 Multiple Linear Regression Parameters

To explain the effect of the explanatory variables on the financial performance and probability of companies for the model, four key parameters were analyzed. The R^2 and adjusted R^2 that explains the model adherence, in other words, it explain the strength of the linear regression equation according to the data, the F-statistic and the p-value associated measure the overall of the global adherence of the model, the Durbin-Watson test the independence of the residuals with a range of 0 to 4 where 2 represents no autocorrelation, plus taking in consideration the size of the sample and the number of variables the limits are $D_L = 1.444$ and $D_U = 1.881$, also the parameter estimates predict the statistically significance of the independent variables through the dependent variable giving specific information about the components of the model. In table 7, table 8, table 9 and table 10 is evidence the study model through NSAL, NRES, LIAB and EQ, respectively.

By analyzing the regression model equation it can be observe that NSAL (Adj. $R^2 = 51.90\%$; $F = 14.697$; $p < 0.000$), NRES (Adj. $R^2 = 48.10\%$; $F = 12.805$; $p < 0.000$), LIAB (Adj. $R^2 = 99.00\%$; $F = 1303.409$; $p < 0.000$) and EQ (Adj. $R^2 = 85.40\%$; $F = 75.618$; $p < 0.000$) are valid.

Table 7 shows that 51.90% of the variance of NSAL is explained by the model. The first measure of financial performance and probability reveal a positive and significant correlation with AFEE ($t = 4.549$; $p\text{-value} = 0.000$), which means that the increase of audit fees increase the value of NSAL. The remaining dependent variables are not statistically significant, ASIZE ($t = 0.462$; $p\text{-value} = 0.645$), ACHA ($t = 0.947$; $p\text{-value} = 0.346$), AOPN ($t = -4.703$; $p\text{-value} = 0.484$), BSIZE ($t = 0.506$; $p\text{-value} = 0.614$), leading

to the rejection of H1, H2, H4 and H5. Also by analyzing the control variables, it can be seen that SIZE ($t=2.699$; $p\text{-value} = 0.008$) have a positive and significant correlation with NSAL, but on the other hand, LEV ($t=-0.670$; $p\text{-value} = 0.505$) do not have a significant impact on the independent variable. In addition, the Durbin-Watson is 1.463, revealing that the value is between the lower limit and the upper limit allowing to conclude that the teste is inconclusive.

Table 7 - Regression model equation (NSAL)

Variable		Unstandardized coefficient β	Standardized coefficient β	t	Sig.
β_0	Constant	2.432		7.702	.000***
β_1	ASIZE	0.052	0.037	0.462	.645
β_2	ACHA	0.118	0.073	0.947	.346
β_3	AFEE	0.511	0.469	4.549	.000***
β_4	AOPN	-0.131	-0.053	-0.703	.484
β_5	BSIZE	0.007	0.044	0.506	.614
β_6	LEV	-0.015	-0.052	-0.670	.505
β_7	SIZE	0.246	0.306	2.699	.008***
R^2	55.60%				
Adj. R^2	51.90%				
F	14.697				
Sig.	.000***				
D-W	1.463				

Notes: *** $p < 0.001$; ** $p < 0.05$; * $p < 0.1$

The results obtained from table 8 allow to conclude that the variance of NRES is explained in 48.10% of cases by independent variables and there is no autocorrelation between errors ($D-W = 1.960$). There is a significant and negative relation with ASIZE ($t=-0.525$; $p\text{-value} = 0.004$) and AOPN ($t=-1.876$; $p\text{-value} = 0.064$) at a confidence level of 90%. By analyzing the control variables it can be seen a significant and positive relation with SIZE ($t=7.050$; $p\text{-value} = 0.000$). The remaining independent variables and control variables are not significant ACHA ($t=-0.936$; $p\text{-value} = 0.352$), AFEE ($t=0.022$; $p\text{-value} = 0.983$), BSIZE ($t=-1.373$; $p\text{-value} = 0.173$) and LEV ($t=0.642$; $p\text{-value} = 0.523$). Taking the previous examination into account, this financial measure conduces to the rejection of H2, H3 and H5.

Table 8 - Regression model equation (NRES)

Variable		Unstandardized coefficient β	Standardized coefficient β	t	Sig.
β_0	Constant	-0.184		-0.493	0.623
β_1	ASIZE	-0.396	-0.246	-0.525	.004***
β_2	ACHA	-0.137	-0.075	-0.936	0.352
β_3	AFEE	0.003	0.002	0.022	0.983
β_4	AOPN	-0.412	-0.148	-1.876	.064*
β_5	BSIZE	-0.023	-0.125	-1.373	0.173
β_6	LEV	0.017	0.052	0.642	0.523
β_7	SIZE	0.757	0.828	7.050	.000***
R^2	52.20%				
Adj. R^2	48.10%				
F	12.805				
Sig.	.000***				
D-W	1.960				

Notes: ***p<0.001; **p<0.05; *p<0.1

By evaluating table 9 in regard to the explanatory capacity of the model, the adjusted R^2 evidence that the model explains in 99% the variance of the financial measure of performance and probability LIAB. Also the Durbin Watson test reveal that there not an autocorrelation between errors (D-W = 2.115), in other word, the model have independence of the residuals. Results show ACHA (t=2.285; p-value = 0.025) has a significant and positive impact on explaining this measure, not rejecting H2. However, the statistical significance of ASIZE (t=0.742; p-value = 0.460), AFEE (t=-1.284; p-value = 0.203), AOPN (t=0.120; p-value = 0.905) and BSIZE (t=-0.333; p-value = 0.740) results in the rejection of H1, H3, H4 and H5 As expected considering the literature review, LEV (t=-15.194; p-value = 0.000) and SIZE (t=58.194; p-value = 0.000) are significant in the prediction of LIAB as control variables.

Table 9 - Regression model equation (LIAB)

Variable		Unstandardized coefficient β	Standardized coefficient β	t	Sig.
β_0	Constant	-0.455		-7.204	.000***
β_1	ASIZE	0.017	0.008	0.742	0.460
β_2	ACHA	0.057	0.025	2.285	.025**
β_3	AFEE	-0.029	-0.019	-1.284	0.203
β_4	AOPN	0.004	0.001	0.120	0.905

Table 9 - Regression model equation (LIAB) (continue)

Variable		Unstandardized coefficient β	Standardized coefficient β	<i>t</i>	Sig.
β_5	BFSIZE	-0.001	-0.004	-0.333	0.740
β_6	LEV	0.069	0.169	15.194	.000***
β_7	SIZE	1.075	0.946	58.947	.000***
R^2	99.10%				
Adj. R^2	99.00%				
F	1303.409				
Sig.	.000***				
D-W	2.115				

Notes: *** $p < 0.001$; ** $p < 0.05$; * $p < 0.1$

Table 10 allows to determine that the model is capable to explain 85.40% of EQ's variance, with the Durbin Watson between the two limits (D-W = 1.568) such as in the NSAL case. At a confidence level of 90%, AFEE present a positive and significant impact on EQ ($t=1.699$; p -value = 0.093), causing the not rejection of H3, as in the first case of NSAL. Again, like in the previous model LEV and SIZE are significant in the prediction of EQ. The other independent variables are not statistically significant ASIZE ($t=-0.831$; p -value = 0.408), ACHA ($t=-0.768$; p -value = 0.445), AOPN ($t=-0.313$; p -value = 0.755) and BFSIZE ($t=0.582$; p -value = 0.562).

Table 10 - Regression model equation (EQ)

Variable		Unstandardized coefficient β	Standardized coefficient β	<i>T</i>	Sig.
β_0	Constant	0.639		3.808	.000***
β_1	ASIZE	-0.050	-0.036	-0.831	0.408
β_2	ACHA	-0.051	-0.033	-0.768	0.445
β_3	AFEE	0.101	0.096	1.699	.093*
β_4	AOPN	-0.031	-0.013	-0.313	0.755
β_5	BFSIZE	0.004	0.028	0.582	0.562
β_6	LEV	-0.690	-0.887	-14.248	.000***
β_7	SIZE	0.033	0.119	2.762	.007***
R^2	86.60%				
Adj. R^2	85.40%				
F	75.618				
Sig.	.000***				
D-W	1.568				

Notes: *** $p < 0.001$; ** $p < 0.05$; * $p < 0.1$

5.3.2 Discussion of Results

In this section it was analyze the impact of the audit quality variables and control variables on the four measures of financial performance and profitability of companies, synthetized in the table 11.

Table 11 - Resume of the independent variables that explain the performance and profitability measures

<i>Independent Variables</i>	<i>Performance and Profitability Measures</i>			
	NSAL	NRES	LIAB	EQ
ASIZE	n.s.s	-	n.s.s	n.s.s
ACHA	n.s.s	n.s.s	+	n.s.s
AFEE	+	n.s.s	n.s.s	+
AOPN	n.s.s	-	n.s.s	n.s.s
BSIZE	n.s.s	n.s.s	n.s.s	n.s.s
LEV	n.s.s	n.s.s	+	-
SIZE	+	+	+	+

n.s.s: The variable is no statistically significant in the model

+: The independent variable present a significant and positive impact in the performance and profitability measure

-: The independent variable present a significant and negative impact in the performance and profitability measure

Considering the previous table, it can be concluded that BSIZE is the only variable that did not have a significant relation with any of the financial measures, leading to the rejection of H5. Despite the importance and the role of board size in the companies actions (Weisbach and Hermalin, 2003; Dunn, 2004; Alfraih, 2017; Boone, 2007; Sitthipongpanich and Polsiri, 2013; Moghaddam *et al.*, 2018) and the influence in the increase of audit quality (Carcello and Neal, 2000; Carcello *et al.*, 2002; Hilman and Dalziel, 2003; Mustafa *et al.*, 2017; Abel and Shamharir, 2018), in the research model the board size did not emerge as an explanatory audit quality variable. This result is in line with the studies of Wulandari (2006) and Sari and Ardiana (2014), which reveal that board size could have a positive relationship, but it does not significantly affects the company value.

Furthermore by analyze the model, it can be seen that ASIZE, AOPN and ACHA have a statistical significant relation with one of the measures of financial performance and profitability. The hypotheses 1 is not rejected exclusively in regard with NRES, like the hypotheses 4, and the hypotheses 2 is only not rejected for the measure of LIAB.

The sample of the research was based in companies of the principal index of each country. These companies are required to present financial information publicly and because of that are more expose to external validation. In this sense, companies prefer to choose Big 4 auditors that can guarantee the answer to the legal request and international requirements, ensuring the independence and the best service with the greater technology, information environment and professionals (Chaney *et al.*, 2004; Lenz and James, 2007; Francis *et al.*, 2014; Chan and Sun, 2015; Tegalagul and Lin, 2015; Siriois *et al.*, 2016; Alfraih, 2017; Asthama, 2017; Lin *et al.*, 2017; Yip and Pang, 2017). The sample of the research reveals that only 2% of the auditors are exclusively done by Non-big 4, which makes the correlation with this variable challenging when designing the model. However, the companies' choice of auditor is in accordance with the perspective of the studies examined in the literature review.

In the same order of ideas, the audit opinion variable is predominantly a modified opinion, only six out of ninety companies reported a clean opinion. Although being a minor variable in the model, the percentage of unmodified opinions is in agreement with the literature analyzed. The more competent and independent the auditors, which are important requests for multinational companies, easier it is to report the limitations and errors of the companies' accounts in the independent auditor report (DeAngelo, 1981; Defond *et al.*, 2000; Tusek and Jezovita, 2018). Moreover, they conclude based on the previous affirmation, larger audit firm sizes are more likely to report a modified report. The information role of the independent audit report is essential to stakeholders, and has a consequence that is reflected in the financial aspect of companies (Siriois *et al.*, 2018; Inquierdo *et al.*, 2019). Although in the study model the impact of the audit opinion is only significant for the net result financial measure, the literature review gives information about the impact in the market value, cost of capital and loans (Francis and Yu, 2009; Menon and Willians, 2010; Marshall and North, 2011; Chen *et al.*, 2016). In addition, when the auditor clients receive a modified opinion, the companies are more probable to switch auditor (Davidson III *et al.*, 2006; Carey *et al.*, 2008; Adams *et al.*, 2017).

Regarding the independent variable ACHA the literature review point to two different approaches, revealing that the topic is to this point controversial. On one side when a company has a strategy based in the approach of auditor change it gives more credibility and quality for the financial information reported, because the new auditor in the first years is going to invest more, making tests and reducing asymmetric information having an appropriate professional skepticism and a new vision of the business (Brody and Moscove *et al.*, 1998; Davis *et al.*, 2000; Ryan *et al.*, 2001; Ionescu, 2014; Ionescu, 2016; Gohsh and Siriviriyakyl, 2018). On the other hand there aren't studies that prove that longer tenure decrease audit quality, also in the first years auditors suffer from loss client knowledge and are more prone to make mistakes (Johson *et al.*, 2002; Myers *et al.*, 2003; Arel *et al.*, 2005; Bedard and Johnstone, 2010; Yasser and Mohamed, 2018). This distinct notion goes in order with the research model who cannot found a relation as an audit quality variable with the majority of the financial indicators. The relation between ACHA and the book value of liabilities can be justified on the viewpoint that in the first year of the new auditor the analyze made involve more details and a profound examination which leads to the recognition of unrecorded liabilities and consequently an increase of the book value. Also, companies are more prone to change from auditor before facing changes in their capital structure. This perspectives go in line with the Beattie and Fearnley, 2002; Copley and Douthett, 2002; Heliodoro and Lopes, 2014). In addition, Lequericaonandia (2003) study reveal that the audit change is related with the financial ratios of solubility and liquidity, that are calculated based on the value of liabilities. Furthermore, the variable ACHA is related to other financial measures of performance and profitability (e.g Mande *et al.*, 2017; Gohsh and Siriviriyakyl, 2018).

However, ASIZE, AOPN and ACHA are only significant for one of the four dependent variables of the model, which indicate a limitation, because it only depends on the choice of the precise indicator. So taking this analysis in consideration this independent variables are suitable, but do not explain the model in more than one dependent variable.

The most relevant independent variables are AFEE, LEV and SIZE. They are presented in more than one financial indicator and contribute as a robust explanatory input for the model.

AFEE is the most significant variable to explain the audit measure of the research model, this variable reinforces the importance of audit fees in order to explain the audit quality. There are evidences in the literature that the reduction of audit fees is related to an increase of mistakes during the audit service provided and a higher risk associated, revealing that the audit quality in this cases decrease (Abbott *et al.*, 2006; Ettredge *et al.*, 2014; Sonu *et al.*, 2017). Also, companies that need additional support to validate the new regulations and to secure the auditor independence in the process will pay more fees in order to get the confirmation that the company has credible financial reports (Dey and Lim, 2018). In other perspective, when companies pay abnormal audit fees it is related to violations of audit deficiencies, revealing that companies try to induce audit firms to hide information and devalue significant evidences (Rajgopal *et al.*, 2015). In the study, AFEE was positive and statistical significant with NSAL ($\beta=0.469$, $t=4.549$, $p < 0.000$) and EQ ($\beta=0.096$, $t=1.699$, $p < 0.093$), showing that companies which pay more fees to audit firm have higher financial performance and profitability measures, particularly through net sales and equity. As mention in the studies of Al-Dhamari *et al.* (2018). They reveal that audit fees are greater with bigger levels of related parties' sales and according with Habib *et al.* (2013) "*auditors charge higher audit fees for clients posing increased audit risks because of equity overvaluation*".

In addition, audit fees are associated with the other audit variables. Normally, big audit firms and audit industry specialists charge higher fees in order to reflect their quality in the price (Ireland and Lennox, 2002; Ferguson *et al.*, 2003; Chaney *et al.*, 2004; Francis *et al.*, 2005; Carson, 2009; Sundgren and Svanstrom, 2013; Bradbury, 2017). Further, auditors that issue a modified opinion in the first time are more likely to lose their clients and the audit fees associated (Carey *et al.*, 2008). Plus, during audit tenure the audit fees of Big 4 audit firms increase involving more audit investment in the first years (Ghosh and Siriviriyakul, 2018). Additionally, companies that expend more time searching for a new auditor have a higher probability of get charge with larger payments (Mande *et al.*, 2017). Also, more independent, diligence and expertise board are associated with higher payment (Carcello *et al.*, 2002; Hines *et al.*, 2015; Jizi and Nehme, 2018). This allows to conclude that audit fees are also a reflection and are influence by the remaining audit quality indicators. In sum, audit quality is measured by what companies are willing to pay in order to get a competent and efficient service.

The statistical results for the variable SIZE and LEV, which represent the control variables, consolidate with the literature. Companies with bigger sizes are less likely to suffer from financial fraud and bankruptcy, because of the accountability and monitoring role of stakeholders and the higher level of assets (Carey and Simnett, 2006; Carcello and Nagy, 2014; Fathi and Grayli, 2017; Gupta *et al.*, 2018). This goes in line with the study model, which reveals that the bigger the companies' size the higher the financial performance and profitability indicator, especially NSAL ($\beta=0.306$, $t=2.699$, $p\text{-value} = 0.008$), NRES ($\beta=0.828$, $t=7.050$, $p\text{-value} = 0.000$), LIAB ($\beta=0.946$, $t=58.947$, $p\text{-value} = 0.000$) and EQ ($\beta=0.119$, $t=2.762$, $p\text{-value} = 0.007$). Also leverage has a significant effect in the financial indicators, revealing that the higher the leverage ratio, it leads to a higher impact in total book value of liabilities ($\beta=0.169$, $t=15.194$, $p\text{-value} = 0.000$) and a lower impact in the shareholders equity ($\beta=0.119$, $t=2.762$, $p\text{-value} = 0.007$), as expected. A higher audit quality leads to lower costs relating with debt and impact the possibility to obtain financing, in addition more leverage leads to a higher possibility of debt covenant (Gomez-Guillamon, 2003; Anderson *et al.*, 2004; Chava and Roberts, 2008; Francis and Yu, 2009; Menon and Williams, 2010; Chen *et al.*, 2016; Kalynaraman and Altuwaijri, 2016; Jiang and Zhou, 2017).

5.3.3 Reliability of the Model

To verify the reliability of the model some statistical tests were analyzed, in particular the normal distribution, the variance inflation factor and the heteroscedasticity.

According to the central limit theorem when the sample size gets larger from a population with a finite level of variance, the sample means from the same population will be approximately equal to the mean of the population, in other words, approximates to a normal distribution. The definition of large sizes sample is in general rule equal to or greater than 30. So in consonance with the theorem the research has a normal distribution, because the sample is composed by 90 observations.

The variance inflation factor (VIF) estimates the degree of multicollinearity in the model. In the research there is an absence of multicollinearity, because none of the independent variables has a VIF close to 10 (VIF varies between 1.065 and 2.370) and a tolerance equal or superior to 1.

It was also tested the heteroscedasticity of the model to see patterns in the residuals. This allowed to conclude that the variance was homogenies, validating the model.

5.4 Distribution of Audit Quality through the North and South Europe Regions

In this section, the fifth Hypotheses was analyzed in order to examine if the distribution of the audit quality in the north region of Europe differs from the southern region of Europe. To complete this task, table 12 reports the statistic relation between a qualitative measure (EURR) and a quantitative measure through the independent sample t-test, and table 13 present a comparison of means between the two regions. Table 14 represent the statistic relation between two qualitative measures, particularly the mode and the percentage.

Table 12 - T-test to compare the equality of means between the north and south European regions

<i>Variable</i>	<i>Equal variance assumed (F)</i>	<i>Sig.</i>	<i>Equal mean assumed (t)</i>	<i>df</i>	<i>Sig.</i>	<i>Hypothesis test</i>
<i>NSAL</i>	7.025	0.010	-1.282	88	0.203	Not Rejected
<i>NRES</i>	0.282	0.597	-1.649	88	0.103	Not Rejected
<i>LAIB</i>	1.859	0.176	-3.815	88	0.000***	Rejected
<i>EQ</i>	2.768	0.100	-2.874	88	0.005***	Rejected
<i>AFEE</i>	11.606	0.001	-2.410	88	0.018***	Rejected
<i>BSIZE</i>	8,449	0.005	-6,037	88	0.000***	Rejected
<i>LEV</i>	20.266	0.000	-2.914	88	0.005***	Rejected
<i>SIZE</i>	2.861	0.094	-3.679	88	0.000***	Rejected

Table 13 – Comparison of means between the north and south European regions

<i>Independent Variable</i>	<i>EURR</i>	<i>N</i>	<i>Mean</i>	<i>Std. Deviation</i>
NSAL	North	40	3.596	0.491
	South	50	3.763	0.696
NRES	North	40	2.447	0.673
	South	50	2.689	0.709
LIAB	North	40	3.514	0.750
	South	50	4.170	0.856
EQ	North	40	3.368	0.486
	South	50	3.717	0.633
AFEE	North	40	0.164	0.417
	South	50	0.445	0.637
BSIZE	North	40	9.050	2.428
	South	50	13.180	3.740
LEV	North	40	2.218	3.415
	South	50	4.990	5.170
SIZE	North	40	3.788	0.631
	South	50	4.347	0.778

Table 14 – Comparison of mode and percentages between the north and south European regions

<i>Variable</i>		<i>EURR</i>		<i>Mode</i>
		<i>North</i>	<i>South</i>	
ASIZE	Big 4	43%	50%	Big 4
	Non-big 4	1%	1%	
	Both	0%	5%	
ACHA	Yes	7%	11%	No
	No	38%	44%	
AOPN	Unmodified	3%	3%	Modified
	Modified	42%	52%	

To test hypothesis 6, the null hypothesis assumes that the mean distribution of the audit quality of the northern European countries is equal to the mean of distribution of the audit quality of southern European countries.

By analyzing table 12 it can be observed that the dependent variables present contrary results. NSAL and NRES have similar distributions, and LAIB and EQ have different distributions depending on the region. The LIAB and EQ results are justified on the companies' capital structure. According to table 13, northern countries have lower levels of liabilities compare with southern countries, therefore south companies have higher ranks of leverage. These facts are in agreement with the Landesmann

(2013) study, the net external debt data and the interest rates presented in the theoretical background section.

It is also possible to verify that both AFEE and BSIZE reject the hypothesis 6, which means that the distribution of the variables have distinct results depending on the region. AFEE has a higher mean in the south companies than in the north ones, allowing to deduce that south European companies pay more audit fees than north European companies. The BSIZE variable lets conclude that, in mean, in the north there are 9 people that represent the board of directors and in the south there are, in mean, 13 directors on the board.

The results obtain from the table 14 allows to conclude that ASIZE, ACHA and AOPN are not rejected, the mode and the percentage of the two regions are very similar. This is consisting with the previous analyzes made in the regression model section. Companies that are in their national indices, regardless of the region, have more obligations and because of that prefer to be audited by a Big 4. Also because of the risk and the scrutiny involved, auditors issue a modified report in the vast majority of cases. In addition, the number of companies that change from auditor from 2016 to 2017 of the north Europe region is resemble to the number of companies of the south Europe region.

The variables of control, LEV and SIZE, reveal that south European companies of this study are bigger and have more leverage then northern European companies.

Conclusion

The general purpose of this study is to investigate and understand if there is in deed a different quality of audit in northern countries compared to south countries in Europe, taking into account the social and economic differences that affect the performance of companies. The specific objectives consisted of:

- i) investigating the effect of the five measures of audit quality in companies' financial performance,
- ii) examining to what extent auditor size, auditor opinion, audit fees, auditor's change and board independence as a representation of audit quality, can reveal different results between northern and southern European countries.

6.1 Final Remarks and Practical Implications

To answer the previous objectives of investigation, testes of descriptive statistics, measures of association and multiple linear regressions were conducted.

By analyzing the descriptive statistic, it is possible to determine that regarding the audit quality variables the companies that constitute the sample are represented 93.3% by Big 4, 17.8% of the auditors change between 2016 to 2017, being the first year of examination in 2017, and the average amount of audit firms fees were EUR 0.320 million. The percentage of modified opinions is 93.3%, leading to the conclusion that only 6.7% of the independents reports were clean opinions, and the average number of the board directors is 11 elements with a difference between the smallest and largest board of 17 members. When examining the variables in the two different regions, the northern Europe region is constitute by Finland, Norway, Denmark and Sweden and southern Europe region is represented by France, Belgium, Italy, Portugal and Spain, it is thinkable to conclude that in the two regions the majority of companies are audit by a Big 4, the percentage of auditors that changed in 2017 is similar, with 18% in the north region and 25% in the south region, and the percentage of unmodified opinions was equal for north and south countries. Further, the audit fees are bigger in south countries compared with north countries of Europe, and the average size of the board of directors in the north region is about 9 members and in the south is about 13 members. In addition, the companies' choice of Big 4 audit firm in the different countries were

studied, deducing that PWC is the audit firm most requested in Denmark, Portugal and Sweden, E&Y in Finland, KPMG in Norway, Deloitte in Belgium, France and Spain and in Italy here was not a Big 4 audit firm that stood out. In regard with the Non-big 4 option choice, only one company in the north region (Norway) opt for a Non-big 4 audit firm, and in the south region the big majority of companies that choose Non-big 4 were from France, due to the obligation of having more than one audit firm, which were presented in the vast bulk by Mazars.

The association measure allows to verify that the performance and probability variables, NSAL, NRES, LIAB and EQ, have similar relationships with the audit quality indicators and control variables. Through the test of Person's correlation coefficients and ETA, it was show that the financial measures have strong and moderate relation intensity with audit fees, audit firm size and companies' size, a weak correlation with board size, a very weak relation with the change of audit firm and auditor opinion, and also a very weak and negative relation with leverage.

In order to answer the first objective and to know if the audit size, audit change, audit fees, audit opinion and board size are considered measures of audit quality through the financial indicators NSAL, NRES, LIAB and EQ, it was developed a multiple linear regression model.

The model shows that the BSIZE is the only variable that does not have a relation with none of the performance and profitability indicators. So we can conclude that the board size does not represent an explanatory variable for audit quality.

The ASIZE, AOPN and ACHA variables have a statistical significant relation with just one of the measures of financial performance and profitability. ASIZE and AOPN are not rejected exclusively in regard with NRES, and ACHA is not only rejected by the measure of LIAB. This presents a limitation, because it only dependents on the choice of the precise indicator. The companies of the sample required to present financial information publicly and for that reason are more exposed to external validation. Consequently, companies prefer to choose Big 4 auditors that can guarantee the answer to the legal request and international requirements, ensuring independence and the best service with the greatest technology, information environment and professionals. Furthermore, the audit opinion variable is predominantly a modified opinion as stated in the literature analyzed. For multinational companies it is essential to have auditors that are regarded as more competent and independent, so auditors with this characteristics

more easily report the limitations and errors of the companies' accounts in the independent auditor report. Additionally, the audit literature present different perspectives about the ACHA variable revealing that companies that change more times auditor more often have more credibility and add a greater quality for the financial information. On the other hand in the first years auditors suffer from loss client knowledge and are more prone to make mistakes. The diverse viewpoints are according to the research model which cannot found a relation with the majority of the financial indicators. Taking this to account, it can be concluded that the independent variables are suitable, but do not explain the model in more than one dependent variable.

AFEE is the most significant variable to explain the audit measure of the research model. This variable reinforces the importance of audit fees in order to explain the audit quality. The study show that companies that pay more fees have higher values of financial performance and profitability measures, mainly through net sales and equity. The literature conveys that the reduction of audit fees is related to an increase of mistakes and a higher risk associated to the service provided. Further, the need for more support in order to certify new regulations and to secure the auditor independence, lead to an increase of the payment to get the confirmation that the company has credible financial reports. Also, companies that pay abnormal audit fees have more violations associated to audit deficiencies, reveling that companies try to induce audit firms to hide information and devalue significant evidences.

The study also allows to conclude that audit fees are related to the other audit measures of the investigation, deducing that audit fees is influenced by audit size, audit opinion, audit change and board size. Previous studies relate higher fees with big audit firms and audit industry specialists in order to reflect their quality in the price. Auditors have a higher probability of losing their clients and the audit fees associated when they show a modified opinion in the first time. Moreover, some researchers relate audit fees with audit change, by reveling that the audit fees of Big 4 firms increase during audit tenure involving more audit investment in the first years and that companies who spend more time searching for a new auditor have a higher probability of get charge with larger payments. Regarding the board variable, a more independent, diligence and expertise board of director is related with higher payment. In sum, audit quality is measured by what companies are willing to pay in order to get a competent and efficient service.

SIZE and LEV represent the control variables of the model and both reveal to be statistical significant and important. The bigger the company the higher financial performance and profitability indicator. The higher leverage ratio, the higher impact in total book value of liabilities and lower the impact in the shareholders equity. This is consistent with the literature, which reveals that bigger companies are less likely to suffer from financial fraud and bankruptcy, because of the accountability and monitoring role of stakeholders and the higher level of assets. Also, lower costs relating with debt are related with higher audit quality which impacts the possibility to obtain financing.

To examine the second objective and analyze if the auditor size, auditor opinion, audit fees, auditor change and board independence as a representation of audit quality, can reveal different results between the northern and southern regions of Europe, tests were run to confirm hypothesis 6.

ASIZE, AOPN and ACHA are not rejected, which means that the mode and the percentage of the two regions are very similar. This follows with the explanation that companies, regardless of the region, have more duties and responsibilities and because of that they prefer to be audited by a Big 4, and also due to the risk and the scrutiny involved, auditors usually present modified reports. In addition, the number of companies that changed from auditor between 2016 and 2017 in the north Europe region is resemble to the number of companies of the south Europe region.

When studying the AFEE and BSIZE variables, it is possible to verify that effectively the distribution of the variables have distinct results depending on the region. AFEE are higher, in mean, in the south companies than in the north ones, revealing that south European companies pay more audit fees than north European companies. Further, the board of directors is compose, in average, by 9 members and in the south, in average, by 13 elements. In addition, the results reveal that southern European companies are bigger and have more leverage then north European companies.

The present study provides more support to the previous research by increasing the knowledge of audit fees as an audit quality measure, adding value to the current literature. Furthermore, despite of the numerous studies conducted in the past, this investigation innovates by comparing and analyzing the audit quality measures between the northern European region and the southern European region.

6.2 Limitations

The study presents some limitations. The sample selection was based in companies from the principal index of each country, this companies play a very important role in the country's economy. However, the sample does not represent all the sectors and only includes big sizes companies, diminishing small and medium-sized enterprises.

The samples was selected bearing in mid the cluster mapping developed by Ronen and Shenkar (1985), which helped to define the two regions: north of Europe and south of Europe. On the other hand, there are other studies that define the same regions but rely on different countries.

Furthermore, the present study only use financial performance and profitability indicators as dependent variables, and although this approach is justified in the theoretical background, it is important to include of non-financial measures.

In addition, the data of the investigation was manually collected which leads to restrictions in sample size, and there is also a higher risk to make mistakes due to the way information was collected.

6.3 Future Research

In the long run, it would be interesting to explore other variables as audit quality measures, introduce non-financial indicators and to include other period of time, to compare and verify if the results would be different from this study. Additionally, it would be valuable to include small and medium-sized enterprises in the sample selection.

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Appendix

Annex 1

<i>Country</i>	<i>Company</i>	<i>Country</i>	<i>Company</i>
Belgium	Ackermans & van Haaren	France	Accor
Belgium	Ageas	France	Air Liquide
Belgium	Ahold Delhaize	France	Airbus
Belgium	Anheuser-Busch InBev	France	ArcelorMittal
Belgium	Bekaert	France	Atos
Belgium	BPOST	France	AXA
Belgium	Cofinimmo	France	BNP Paribas
Belgium	Elia System Operator	France	Bouygues
Belgium	ENGIE	France	Capgemini
Belgium	Groupe Bruxelles Lambert	France	Carrefour
Denmark	Carlsberg	Italy	A2A
Denmark	Chr. Hansen	Italy	Atlantia
Denmark	Coloplast	Italy	Azimut
Denmark	Danske Bank	Italy	Banca Generali
Denmark	DSV	Italy	Banca Mediolanum
Denmark	FLSmidth	Italy	Banco BPM
Denmark	Genmab	Italy	BPER Banca
Denmark	GN Store Nord	Italy	Buzzi Unicem
Denmark	H. Lundbeck	Italy	Campari
Denmark	ISS	Italy	CNH Industrial NV
Filand	Amer Sports	Norway	Aker ASA
Filand	Cargotec	Norway	Aker BP
Filand	Elisa	Norway	Aker Solutions
Filand	Fortum	Norway	Bakkafrost
Filand	Huhtamaki	Norway	DNB
Filand	Kesko	Norway	DNO International
Filand	Kone	Norway	Equinor
Filand	Konecranes	Norway	Gjensidige Forsikring
Filand	Metsa Board	Norway	Golden Ocean
Filand	Metso	Norway	Grieg Seafood

Annex 1 (continue)

<i>Country</i>	<i>Company</i>
Portugal	Altri
Portugal	Milennium BCP
Portugal	Corticeira Amorim
Portugal	CTT Correios de Portugal
Portugal	EDP Renovaveis
Portugal	Galp Energia
Portugal	Ibersol
Portugal	Jerónimo Martins
Portugal	Mota Engil
Portugal	NOS
Spain	Acciona
Spain	Acerinox
Spain	ACS
Spain	Aena
Spain	Amadeus
Spain	ArcelorMittal
Spain	Bankia
Spain	Bankinter
Spain	BBVA
Spain	Caixabank
Sweden	ABB
Sweden	Alfa Laval
Sweden	Assa Abloy
Sweden	AstraZeneca
Sweden	Atlas Copco
Sweden	Autoliv
Sweden	Boliden
Sweden	Electrolux
Sweden	Essity
Sweden	Getinge