

**SPECIALIZATION AND DIVERSIFICATION IN AUDIT FIRMS:
A TEST OF FIRM'S STRATEGIES IN THE SPANISH AUDIT
MARKET***

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Abstract

This article examines the extent to which strategies of specialization and diversification of audit firms are related to organizational performance. Drawing on the insights of the resource based view (Barney, 1991) as well as on extant research on the determinants of audit fees, our study investigates how performance of audit firms is mediated by (i) specialization on big audit clients; (ii) diversification on client-industries; and (iii) geographic diversification. Empirical support for this study is gathered from a sample of 168 audit firms that operated in Spain during 1999 and provided audit services to 10,106 clients. Our findings suggest that audit firms that are specialised on big clients and/or are geographically diversified outperform their counterparts that specialise on small clients and/or lessen their geographic scope. Further, our results show that diversification on client-industries has a positive, albeit less significant effect on performance of audit firms. Taken together, these results indicate that big audit firms have the necessary resources and capabilities that ensure a steady, growing organizational performance.

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INTRODUCTION

Determinants of audit fees have been the subject of a considerable number of studies in accounting research. Since the early 1980s, a large body of academic literature has attempted to provide evidence of price competition throughout the market for audit services. Overall, the main purpose of previous studies has been to ascertain whether there is a significant difference between audit fees charged by big audit firms in comparison to small and medium firms. Different audit pricing models have been proposed to identify the main factors influencing audit fees. These investigations overwhelmingly focus on measures of market performance from the point of view of regulators and/or clients. That is, the emphasis placed on testing the hypothesis of price competition in the market for audit services attempt to know “what constitutes a fair price for audit services and what determinates the prices actually charged” (Pong and Turley, 1997: 93).

From the perspective of audit services' suppliers prices and audit fees are key factors to define the organizational strategy. Given the focus on demand side of previous research, little is known about the effect of firms' strategies on performance. This investigation adopts a strategic perspective to identify the determinants of audit firms' performance in audit and consultancy markets. For this purpose, we integrate results from previous research on audit pricing to the strategic literature. Specifically, we argue that the different strategies conceived of and implemented by audit firms, such as diversification and specialization strategies, influence their performance.

Traditionally, suppliers in the audit market are divided in two groups: big audit firms versus other audit firms. This dual classification, however, could not provide an adequate description of the audit market. Graph 1 shows us a significant degree of heterogeneity among Spanish audit firms in relation to their revenues by partners (big audit firms are identified as D&T (Deloitte & Touche), PWC (PriceWaterhouseCoopers),

E&Y (Ernst & Young) and KPMG)¹. Firm's heterogeneity is the result of many internal and external forces (Carroll, 1993) and it is reflected on the ability of firms to produce efficiently and/or to better satisfy demand of clients (Peteraf, 1993).

----- Insert Graph 1 here -----

The purpose of this research is to examine audit firms heterogeneity as a consequence of the different specialisation and diversification strategies. The remainder of the paper is organised as follows. The next section discusses the major factors likely to have influenced on audit prices according to previous studies. Section 3 outlines the framework of this research and the hypotheses to be tested. Section 4 and Section 5 describe the data, variables, statistical methods and results. The following section contains the discussion of our findings. Finally, Section 6 provides some conclusions and extensions of the research carried out.

PRICING OF AUDITING SERVICES

Over the past two decades, one of the research questions that has attracted more attention in the audit discipline is the pricing of audit services (Simunic, 1980; Francis and Stokes, 1986; Palmrose, 1986a; Palmrose, 1986b; Simon, Ramanan and Dugar, 1986; Maher, Tiessen, Colson and Broman, 1992; Anderson and Zéghal, 1994; Brinn, Peel and Roberts, 1994; Pong and Whittington, 1994; Craswell, Francis and Taylor, 1995; Johnson, Walker and Westergaard, 1995; Lee, 1996; Iyer and Iyer, 1996; DeFond, Francis and Wong, 2000; Menon and Williams, 2001; Bandyopadhyay and Kao, 2001). Studies on audit fees differ depending upon whether or not they take into account the joint provision of audit and non-audit services (also termed in this paper as consultancy services).

Pricing of auditing services without joint provision of non-audit services

An important number of studies examines audit fees without considering the joint provision of audit and non-audit services. The majority of these studies have been directed toward understanding the nature of competition in the audit market. By focusing on audit-clients, the main objective is to know whether there is price

¹ As explained later, we do not have information about Arthur Andersen.

competition in the audit market or, on the contrary, big audit firms are able to earn a premium given their market power.

Simunic (1980), in a seminal study, models audit fees with the aim to test the hypothesis that price competition exists in the market for audit services. Among the major factors likely to affect audit prices, Simunic (1980) identifies variables related to auditee risk, such as auditee complexity and size, and variables related to the audit production function (for instance, the length of client-auditor relationship). Using a sample of 397 publicly held companies, he finds that price competition prevails throughout the market for the audits of publicly held companies in US.

Palmrose (1986a) investigates if there is evidence of a systematic relationship among audit fees charged to audit clients and auditor size for 331 audit clients in US market. Further, she tests three hypotheses: Big audit firms (i) charge higher audit fees due to their market power; (ii) charge higher audit fees due to the higher quality of their services; and (iii) charge lower prices because of scale economies. Palmrose (1986a) finds a positive relationship between auditor size and audit fees; that is, there is a price premium for Big Firms that charge higher audit fees than other audit firms. She doesn't support the hypothesis of lower audit fees because of scale economies. Auditee size is the most significant variable in explaining audit fees. According to Palmrose (1986a), the premium of Big Firms is plausibly attributable to a higher quality offered by these firms.

A number of studies have provided evidence of audit fees in Australian audit market. For instance, Francis and Stokes (1986) investigate whether there is a price premium for Big audit firms using a sample of 192 listed companies. Their findings indicate that Big audit firms charge a higher audit fees in small clients segments. Small audit firms evidence scale diseconomies when auditing large clients. Employing a larger sample (1,484 audit clients), Craswell et al. (1995) analyse whether the brand name reputation and specialisation in client industries allow audit firms to charge higher audit fees. Their results show that Big audit firms effectively earn a premium fixing a higher price in client industries where they are not specialists. In those client industries with specialists, specialist Big audit firms charge higher fees than Non-Big audit firms. Therefore, results indicate that Big audit firms charge higher audit fees because of their reputation in the audit market and/or their specialisation in client-industries.

Anderson and Zéghal (1994) provide evidence from Canadian audit market by using a sample of 172 audit clients. Their findings indicate that there is evidence of quality differentiation by auditor size. Additionally, they support the hypothesis of a premium for the Big audit firms in the small clients segment. Brinn et al. (1994) apply the audit-pricing model to a sample of 154 firms in UK market. Among other findings, they show that auditee size and complexity along with geographic location are the most important factors explaining audit fees. In contrast to other studies, their results indicate that several variables related to auditee risk do not affect audit fees.

Jonhson et al. (1995), using a sample of 250 firms from New Zealand, show that Big audit firms obtain a price premium. Larger clients pay higher audit fees and smaller clients are willing to pay a higher price depending on the auditor brand name (reputation). DeFond, et al. (2000), employing a sample of 348 audit clients listed in Hong Kong Stock Exchange, investigate audit fees charged by Big audit firms versus other audit firms. As in the case of Craswell et al. (1995), they find support to the hypothesis of a price premium for Big audit firms because of their reputation and specialisation in client industries. The effects of specialisation in client industries on audit fees differs depending on the type of auditor; the optimal strategy for specialist Non-Big audit firms is to charge a lower price for gaining a higher market share. Other studies have tested the effect of audit approach to the production process on audit fees (for instance, Gist, 1994). Table 1 shows the results of several studies about the major factors affecting audit fees.

----- Insert Table 1 here-----

Pricing of auditing services with joint provision of non-audit services

The impact of non-audit services on audit fees has been the subject of research of a large number of studies (Simunic, 1984; Palmrose, 1986b; Abdel-Khalik, 1990; Barkess and Simnett, 1994; Beck, Frecka and Solomon, 1988a; 1988b; Simon and Francis, 1988; Ezzamel, Gwilliam and Holland, 1996; Firth, 1997a; Firth, 1997b; Sharma and Sidhu, 2001; Firth, 2002). One commonly argued advantage of providing jointly audit and non-audit services is the potential cost savings arising from “knowledge spillovers”. Knowledge spillovers are transfers of knowledge that may occur when other services are provided by the incumbent auditor (Simunic, 1984; Abdel-Khalik, 1990). *Ceteris paribus*, the joint provision could have potential reduction in audit fees to the clients. However, evidence from previous studies suggests that such potential cost reduction is not necessarily being passed on to clients. Results from previous research examining the pricing issue under joint provision of audit and non-audit services are inconclusive and conflicting. While some researchers have found a significant positive relation between audit fees and the level of non-audit services purchased by a client (Simunic, 1984; Palmrose, 1986b; Ezzamel et al., 1996), other investigations have not found any association (Simon and Francis, 1988; Abdel-Khalik, 1990).

Simunic (1984) addresses the joint provision of audit and non-audit services by incumbent auditors using a sample of 263 big audit firms’ clients. For testing the existence of externalities arising from the joint provision and its potential effects on audit fees, Simunic (1984) compares audit fees charged to clients purchasing exclusively audit services to audit fees paid by clients of audit and non-audit services. Results indicate that those clients purchasing both audit and non-audit services pay relatively higher audit fees than those clients not purchasing consultancy services. In other words, if there were knowledge spillovers they wouldn’t generate savings for clients; on the contrary, clients who purchase additional services from auditors pay higher audit fees.

Following Simunic (1984), Palmrose (1986b) investigates two additional issues: (i) the influence of specific types of non-audit services on audit fees, and (ii) whether who is the supplier of non-audit services –incumbent auditor versus another audit firm– influences on audit fees. Using a sample of 298 firms, she finds that larger clients have a

higher probability to purchase non-audit services from their incumbent auditors and pay a higher audit fees no matter who is the auditor –incumbent auditor or another audit firm. Furthermore, those companies purchasing non-audit services to incumbent auditors pay higher audit fees than those purchasing additional services to other audit firms.

Ezzamel et al. (1996) examine the pricing issue in UK by using a sample of 314 companies. Their objectives are (i) to measure and determine the nature of supply side in the UK audit market; (ii) to test whether there is a positive relationship between audit fees and non-audit fees; and (iii) to provide evidence on such a relationship using a audit fee model included variables do not consider in previous research (for instance, the association between the purchase of additional services and the geographic location). As previous studies, they find evidence of a positive relationship between audit fees and the purchase of non-audit services. Interaction variables such as the purchase of additional services and the number of subsidiaries or the geographic location of a client, positively and significantly affect to audit fees. Firth (1997b) also provides evidence about the issue in UK. His findings indicate that those companies with higher agency costs purchase a lower level of consultancy services due to the potential doubts about auditor independence arising from the important economic link between client and audit firm when joint provision occurs. Firth (1997a), using data from Norway, obtains similar results to those reported by Simunic (1984) and Palmrose (1986b).

Another relevant issue related to the joint provision of audit and non-audit services is its potential negative effects on auditor independence. Independence is an essential attribute of the external audit, which may be at stake if an auditor is providing both audit and non-audit services to audit clients. Whether an audit firm should provide consultancy services to their audit clients is being a controversial topic debated in a number of countries (Firth, 2002). Regulatory bodies in some countries are adopting different measures to deal with this issue and, in some cases regulators have banned the joint provision (Arruñada, 1999; Firth, 2002). Furthermore, after *Enron* scandal, the issue has become to be in the foreground with regulatory bodies, for instance the *Security Exchange Commission* in US, increasingly concerned about audit independence. As a consequence, several regulatory reforms, such as the rules established by the Sarbanes-Oxley Act in relation to restrictions to provide certain type

of services by auditors to their audit clients (Expansión, 18/10/2002; Cinco Días, 16/07/2002) have been approved with the aim to increase the credibility of financial markets and auditing. In Spain, the new regulation for financial markets, which is being elaborated by the government, includes some incompatibilities for audit firms and the provision of additional services to their clients. Finally, it is interesting to note the current tendency of big audit firms to separate consultancy and audit divisions in part due to the increasing restrictions for joint provision.

The investigation of the relationship between audit pricing and the provision of additional services has been limited by the availability of data. For instance, in Spain it is not mandatory to publish fees paid by a client to its auditor. It constrains the possibility to examine price policies of audit firms. In UK, reporting of audit fees is mandatory for years. Since the early 1990s companies have to provide information about fees paid to their auditors for other services as well (see Pong and Whittington, 1994; Ezzamel et al., 1996). It has benefited importantly research in audit field promoted the investigation of relevant issues such as the potential effects of joint provision of audit and non-audit services on audit quality. In short, it has contributed significantly to a better understanding of the audit market.

AUDIT FIRMS PERFORMANCE AND STRATEGIES

Price is a key variable in the formulation of firm's strategy because it reflects how much the client is willing to pay for obtaining the benefit derived from a service and the revenues for the seller of this services (Tellis, 1989). Due to this dual role, investigations on pricing may be analysed from two different perspectives. In general, research in audit field have adopted the perspective of regulators and clients with the aim to ascertain whether prices charged to clients are value for money given the services they received. On the contrary, the approach of this research focuses on prices as determinants of the flow of revenues of audit firms. Specifically, we integrate results of previous studies on audit fees within the strategic analysis. Our goal is to test how the diversification and specialisation strategies implemented by audit firms affect to their performance.

The Resource-Based View (RBV) of the firm provides a satisfactory explanation of firms' strategies and performance heterogeneity. A basic assumption of the RBV is that the resources bundles and capabilities are heterogeneous across firms (Barney,

1991). From this perspective, a firm pursues certain strategies according to their resources and abilities available (Barney, 1991). Competitive advantages emerge from the correct adjustment of unique internal resources and competencies to those markets where a firm is operating (Itami, 1987). Among categories of resources are all assets, processes, attributes and information available for a firm that, in turn, permit it to elaborate and implement strategies that increase its efficiency and effectiveness (Barney, 1991). Grant (1991) argues that it is not reliable to sustain long-term strategies from current client portfolio given the dynamic and instable characteristics of organisational environment nowadays. However, due to firm's resources and capabilities are univocally linked to medium and long term (Barney, 1991), the current client portfolio may be consider as the result of strategies implemented by the firm in previous periods; in other words, the current location of a firm in a particular market segment is the result of a large of decision tree made in past periods in unique circumstances (Barney, 1991). This logic leads us to identify strategies conceived of and implemented by audit firms by analysing the current client portfolio.

Client firms pay an audit fees for a standard report where an opinion about their financial statements is given. It is the production process more than the product what makes different one audit firm from another. The process to elaborate an audit report depends on client characteristics and on the resources and capabilities of auditor. In this research we are interesting in the diversification and specialisation strategies of audit firms. Strategic literature does not provide a general accepted definition of diversification (Ramanujam and Varadarajan, 1989). For our purpose, we define diversification as a mechanism to promote organisational growth and/or reduce the level of risk by means of different investments aiming to enter into new markets or market segments (Booz, Allen and Hamilton, 1985).

As previous studies have demonstrated, the behaviour of audit firms in the audit market influence upon the revenues gained in the consultancy segment (for instance, the joint provision of consultancy and audit services may generate knowledge spillovers). Audit clients are potential clients of non-audit services. The provision of non-audit services to audit clients eliminates the searching costs characteristic of a new contractual relationship. For instance, Ezzamel et al. (1996) note that more than $\frac{3}{4}$ of audit clients included in their sample paid for consultancy services more than for audit services to their auditors. Figure 1 describes the design of our investigation.

----- Insert Figure 1 here-----

Revenues of audit firms depend on their activities in two business lines: consultancy and audit market segments. This paper focuses on the different strategies within the audit segment. Firstly, in the audit market is possible to identify different segments depending on auditee size. It has been argued that only bigger audit firms own resources and expertise suitable to satisfy the demand of large clients (DeAngelo, 1981a; Benston, 1985). Secondly, the audit production process varies significantly depending upon the industry where clients operate, for instance due to the level of regulation in a specific industry (Danos and Eichenseher, 1986). Hence, audit firms may follow certain specialisation strategies in client industries. Finally, audit firms may conceive and implement a strategy of geographic diversification and decentralisation with the objective to gain new clients and/or to locate themselves closer to current clients. This strategy allows the audit firm to obtain benefits from some strategic resources such as reputation, to minimise contractual cost and to contribute to production efficiency and effectiveness because the proximity to clients (Francis, Stokes and Anderson, 1999). The empirical test is carried out by using a sample of Spanish audit firms. In Spain, there is not publicly available information of audit and consultancy fees. We investigate the effect of strategic decisions mentioned above on the total revenues of audit firms.

In summary, this paper establishes four hypotheses about the effect of strategies implemented by audit firms in the audit market over their performance. Several variables controlling the internal resources of firms and external factors are also included in the model. Figure 2 depicts our model.

----- Insert Figure 2 here -----

Specialisation in clients by size and complexity

The level of resources to produce an audit varies significantly depending on the characteristics of auditees (Simon and Francis, 1988; Pong and Whittington, 1994; O'Keefe, Simunic and Stein, 1994; Menon and Williams, 2001). Specifically, previous research has found that the size of auditee and the complexity of auditee's operations are key factors to determinate the number of hours needed to perform an audit (Simunic, 1980; Stein, Simunic and O'Keefe, 1994; Brinn et al., 1994). Complexity arises from factors such as the nature and diversity of auditee's operations, its locations and the

existence of complex transactions (Pong and Turley, 1997). Models of audit fee determinants have found a positive relationship between those variables measuring complexity of auditee and audit fees (Pong and Whittington, 1994; Menon and Williams, 2001; Firth, 2002). Those companies characterised by a high complexity will demand a higher audit effort, which in turn increase production costs.

Besides to influence on production costs, Simunic (1980) argues that the size and complexity of the auditee may also affect the liability loss exposure of audit engagements because, for instance, defective financial statements that result in a lawsuit frequently involve some deficiency in assets valuation. Therefore, larger and more complex auditees are associated to higher audit costs and higher expected litigation costs. Both factors determine the fee charged to the client (Menon and Williams, 2001). In consequence, a positive relationship is expected among the performance achieved by an audit firm and the size and complexity of its clients. Those audit firms specialised in big and complex auditees obtain a higher performance than those audit firms auditing to smaller and less complex clients.

Furthermore, previous research has recognized a positive relationship between the demand of external consultancy services and the size of the auditee (Barkess and Simnett, 1994; Ezzamel et al., 1996; Firth, 1997: 16). That is, those larger audit clients are more likely to demand external consultancy from their incumbent auditors in comparison to smaller audit clients. Thus, those audit firms specialised in large auditees are likely to get additional revenues from consultancy.

To sum up, there are relevant differences between the provision of audit and non-audit services to those bigger and more complex clients in comparison to smaller and less complex clients. Defining specialisation like the general capability of a firm to satisfy the needs of a certain market segment (Teece, 1982: 46), some audit firms may decide specialised in the segment of large auditees. Given the attributes of the product demanded by big clients, size of auditor and expertise will be strategic resources to satisfy efficiently these customers (DeAngelo, 1981; Benston, 1985). At the same time, such factors are the result of past evolution because “history matters” (Teece, Rumelt, Dosi and Winter, 1994: 17). Hence, those audit firms owing resources and capabilities appropriate to become specialists on the provision of audit services to big and complex companies will get a higher performance than those selling audit services to small companies. We test the following hypothesis:

Hypothesis 1a (H1a): Specialisation in larger audit clients has a positive effect on audit firms' performance.

Hypothesis 1b (H1b): Specialisation in more complex audit clients has a positive effect on audit firms' performance.

Diversification and specialization in client industries

Diversification strategies of organisations may be analysed from the perspective of RBV of a firm. Those companies with an extant base of strategic resources use diversification strategies as a mechanism to enter into new markets where these capabilities and resources may be exploited in an efficient way (Rumelt, 1982; Montgomery and Hariharan, 1991).

Audit market literature has examined the issue of auditor specialisation in client industries (Palmrose, 1986a; Craswell et al., 1995; Hogan and Jeter, 1999). It is argued that specialisation in industries reports benefits to audit firms due to: (i) the improvement in audit quality arising from expertise and deep knowledge of the regulatory frame in a client industry (Palmrose, 1986a; Hogan and Jeter, 1999); (ii) the reduction in production costs arising from scale and scope economies (Kwon, 1996; Hogan and Jeter, 1999); and (iii) there is not start-up costs linked to the entry in new client industries (Kwon, 1996).

Previous studies investigating the link between specialisation in client industries and audit fees have not provided conclusive evidence. Palmrose (1986a) did not find evidence of a positive relation between specialisation and higher audit quality and higher fees charged to clients. Chaney, Jeter and Shaw (1997) didn't find a relation between specialisation in industries and the decision to choose a new auditor either. However, Craswell et al. (1995) found evidence that big specialist firms gain a price premium and a positive relationship between the price and the audit engagement with a specialist auditor. Deis and Giroux (1996) argue that a negative relation between audit fees and specialisation is possible given the savings arising from specialisation. The decision to specialise in a particular client industry involves costs (e.g., technology and trained personnel; Hogan and Jeter, 1999) and the higher level of litigation risk exposure due to the concentration in clients from a particular industry (Jones and Raghunandan, 1998; Hogan and Jeter, 1999).

Besides to decide the level of specialisation in client industries, audit firms may conceive and implement strategies regarding to the level of diversification of clients' industries. Several factors may act as incentives to diversify the portfolio of clients: (i) the need to diversify the litigation risk, more and more frequent in the current environment (Dalton, Hill and Ramsay, 1997; Jones and Raghunandan, 1998; Hogan and Jeter, 1999); (ii) the saturation of existing markets where the audit firm operates and the search for new clients (Peel, 1997); (iii) the preferences of clients, which may be not willing to share its auditor with their competitors (Kwon, 1996); (iv) Fusions, mega-fusions and international networks between audit firms may cause a reduction in the costs of entering into new client industries and to achieve important scales economies (Pong and Turley, 1997; Boone, Bröcheler and Carrol, 2000); and v) the current tendency to divide audit firms into audit and consultancy corporations may be an incentive to diversify the clients' portfolio in the audit market.

From the point of view of an adverse auditor, there is a trade-off between benefits arising from specialisation and benefits from diversification (Kwon, 1996). That is, in the audit market persists simultaneously incentives for firm's growth by means of diversification and potential benefits from specialisation (Boone, et al., 2000). In summary, both specialisation and diversification strategies may influence the performance of audit firms. An audit firm rationally decides the level of diversification in client industries in such a way that it positively affects audit firm's performance. By focusing on diversification strategies, we establish the following hypothesis:

Hypothesis 2 (H2): Diversification in client industries has a positive effect on audit firms' performance.

Geographic diversification of audit firms

Strategic literature on the relation between geographic scope and performance argues that the advantages of geographic diversification arise from the use of intangible assets such as brand name reputation in certain markets geographically different to the markets where firm is currently operating (Delios and Beamish, 1999). Traditionally, big audit firms have implemented geographic diversification strategies at international and national scope.

In the audit market, geographic diversification strategies may generate several advantages. Firstly, audit firms may reduce the searching and production costs due to

the mobility of audit firms' resources to locations closer to auditees (Francis et al., 1999). Secondly, a higher geographic scope may increase the quality of audit product due to the proximity of staff and offices to the clients' location (Francis et al., 1999). Finally, audit firms may benefit from the exploitation of strategic resources such as reputation. Small and medium auditees consider location of auditors as a main factor to contract with a certain auditor (García-Benau, Ruiz Barbadillo and Vico Martínez, 1998). Large auditees with operations in different geographic locations benefit from the presence of an auditor in different locations. Gains from geographic diversification in relation to audit clients are reinforced by the benefits, which may arise if audit clients also demand non-audit services to their incumbent auditors. Taken these arguments together, we establish the following hypothesis:

Hypothesis 3 (H3): Geographic diversification has a positive effect on audit firms' performance.

SAMPLES, VARIABLES, METHODS AND RESULTS

Sample and Sources of Data

The initial sample consists of 168 audit firms registered in the Official Register of Auditors in Spain (*Registro Oficial de Auditores de Cuentas, ROAC*). Data were collected from different sources. Firstly, we obtained the annual reports of audit firms from the SABE database. This database contains financial statements of about 200,000 Spanish companies having revenues higher than 60-70 millions of pesetas. Additionally, this database contains information about the auditors of each company. It allowed us to construct a database of clients of each audit firm. Secondly, data from ROAC were collected with the aim to complete information compiled on financial statements, for instance, number of partners of each audit firm.

The initial sample was the result of the following search process. Firstly, we obtained the list of all audit firms registered in the ROAC in 2000. Then, we searched each audit firm in SABE database using the criteria of "name of the company". We the aim to avoid any confusion, we verified whether the address of companies in SABE and ROAC was the same. The search gave us an initial sample of 168 audit firms. A cross-sectional analysis was preferred to a panel data analysis due to the fusions and

acquisitions in the audit sector of last years (e.g., Price Waterhouse and Coopers fusion in 1998) could distort significantly our results.

Data were collected from financial statements in 1999, last year available in SABE when our database was constructed. We have information of four big audit firms (PriceWaterhouseCoopers, Ernst & Young, Deloitte & Touche and KPMG). It was not possible to find information about Arthur Andersen. Variables related to clients' portfolio were constructed by using a sample of 10,106 clients. The final sample after deleting the companies with missing data consisted of 142 companies.

Description of variables

Our dependent variable (*Performance*) is the performance of audit firms in both audit and consultancy services. The variable is defined as the total revenues of an audit firm divided by number of partners. The purpose of dividing by partners is to control the size effect. Although this measure has not been used in previous literature, revenues by partner and revenues by professional staff are considered good indicators of profitability in this particular sector (Expansión & Empleo, 25/04/2002). The ratio revenues by partners provides an orientation of audit firms' profitability due to it helps to determine the partners' performance for audit and consultancy works. The log transformation was used due to the variable is not normal. The variable was noted *Revenues by Partner*.

The independent variables for testing our hypotheses are the following.

Average size of clients: Based on previous research (e.g., Simunic, 1980; Brinn, et al., 1994) we employ the assets of auditees as a proxy for firm's size. In our case, due to our focus on the portfolio of clients for each audit firm, we calculate the average assets of clients for each audit firms. The variable was added to the model as a log transformation because is not normal.

Complexity: Two variables are included for capturing the complexity of auditees. Firstly, a higher number of subsidiaries implies more audit effort due to the consolidation of financial statements, the elimination of intra-group transactions and a higher exposure to litigation risk (Simunic, 1980; Simunic, 1984; Brinn et al., 1994; Pong and Whittington, 1994; Johnson et al. 1995). We use the variable *Number of Subsidiaries*. It shows the average number of subsidiaries of clients for each audit firm. The variable is not normal requiring the square-root transformation. Secondly, audits of foreign subsidiaries require a higher audit effort and control implying higher costs

(O’Keefe, Simunic and Stein; 1994; Craswell, et al., 1995; Lee, 1996; Pong and Turley, 1997: 94). A variable measuring the average of the percentage of foreign subsidiaries for each audit firm’ clients was added to the model (*Foreign subsidiaries*).

Industries diversification: The entropy index of Jacquemin and Berry (1979) widely used as a measure of diversification in strategic literature (Palepu, 1985; Amit and Livnat, 1988; Hoskisson, Hitt, Johnson and Moesel, 1993; Palich, Cardinal and Miller, 2000) is our continuous measure of the degree of diversification. Entropy index is defined as:

$$Diversification_i = \sum_{j=1}^J P_j \ln \left(\frac{1}{P_j} \right)$$

where P_j is the market share for audit work of the audit firm i in the industry j .

Industry classification of auditees was made according to two-digits CNAE93 level (*Clasificación Nacional de Actividades de 1993*; National Classification of Activities 1993). The sample comprises over 42 industries as determined at the two-digit CNAE93 level². Each client was classified to an industry according to the following criteria: a) in case of a unique code for a company, we took the two first digits; b) in case of more than one code, we took the principal code reported in financial statements. Based on previous research (e.g., Danos and Eichenseher, 1982; Moizer and Turley, 1987; Quick and Wolz, 1999), the square root of clients’ assets was used to subrogate market shares of each audit firm. The reason why we use a proxy for market shares is due to in Spain there is not available information on audit fees. The variable *Industries Diversification* is the entropy index for each audit firm.

Geographic diversification: As a measure of geographic dispersion of audit firms we use the number of offices of each firm divided by the number of partners. Expressing the measure in relation to the number of partners allows us to consider both the size effect and the degree of decentralisation of the decision’s process. The variable was noted as *Geographic diversification*.

² Specifically, the industries included in the sample were the following CNAE 93 codes: 13, 14, 15, 17, 18, 19, 20, 21, 22, 24, 25, 26, 27, 28, 29, 31, 32, 33, 34, 35, 36, 40, 41, 45, 50, 51, 52, 55, 60, 63, 64, 65, 66, 67, 70, 71, 72, 74, 75, 80, 85, 92. Table A-3 in the Appendix describes the literal description of each activity code.

Since audit firms' performance may be dependent on factors other than those capture by independent variables, the model incorporates different control variables. These control variables aim to identify internal resources and external factors that may influence on audit firms' performance.

Opinion: Previous studies have considered the opinion contained in an audit report as a proxy of potential loss exposure for auditors (Simunic, 1980; Deis and Giroux, 1996). A qualified opinion requires a higher audit effort (e.g., searching for additional evidence), which, in turn, will increase the audit fees charged by the auditor (Palmrose, 1986a). There is evidence that the joint provision of audit and non-audit services increase the likelihood to report an unqualified audit opinion (Sharma and Sidhu, 2001; Firth, 2002). We add the variable *Unqualified Opinion* as a control variable with the objective to ascertain whether the type of opinion affects revenues of audit firms (e.g., Simunic, 1984; Menon and Williams, 2001; Firth, 2002: 671). The variable was measured as the number of unqualified opinions of an audit firm's clients in relation to the total number of audit reports.

Average profitability: Due to we carry out a static analysis, it is convenient to include variables controlling the potential effects of past decisions and past results on current revenues. Several measures based on rates of growth and average profitability have been employed previously (Hansen and Wernerfelt, 1989; Chatterjee and Wernerfelt, 1991; Delios and Beamish, 1999). We include the variable *Average profitability*, which measures the average of economic profitability (Return on Assets, ROA) for the period 1993-1999. ROA was calculated as Net Income divided by Total Assets. For those firms founded after 1993, the average from year of foundation until 1999 was calculated.

Employees' productivity: Success of professional organisations such as audit firms depends upon on their ability to produce high quality services and to attract and maintain clients. Human capital is a key resource to achieve both objectives (DeAngelo, 1981b; Doogar and Easley, 1998; Pennings, Lee and Witteloostuijn, 1998; Boone et al., 2000) and it is expected to influence profitability of audit firms (Pennings et al., 1998). We include a variable controlling human capital by measuring the productivity of employees. Specifically, the ratio *Employees productivity* is defined as Operating Income divided by personnel expenses.

Auditor Reputation: A variable was included for taking into account the effect of auditor reputation. DeAngelo (1981) argues that there is a positive relationship between auditor size and audit quality. The classification “Big audit firms” versus other firms has been widely used in previous research to identify differences in audit quality. For instance, Pong and Whittington (1994) employ this variable as a proxy of reputation and audit quality. In our case, we construct the variable *Reputation*, as a dichotomic variable which takes value “1” if the firm is a Big audit firm (PriceWaterhouseandCoopers, Deloitte and Touche, KPMG or Ernst and Young) and “0” otherwise.

Auditor size: As mentioned before, the size of an audit firm is a relevant factor in the audit market. We add a variable to control the effect of auditor size on their performance. As a proxy of auditor size we use the value of property, plant and equipment of each audit firm. Additionally, this variable allows us to take into account the level of investments of each audit firm and the relevance of tangible resources. Log transformation was used for this variable.

Debt: As in previous research on firms’ performance (e.g., Johnson and Thomas, 1987), we include in the model a variable related to the financial decisions taking by audit firms. The debt ratio, defined as total debt divided on total liabilities plus equity capital, was used to calculate the variable *Debt*.

Market density: A variable of the total number of auditors and audit firms operated in the same province than audit firms –main office- was included with the objective to measure the density of competitors (Pennings et al., 1998). The variable *Market Density* was constructed by using the number of auditors registered in ROAC by province in 1999.

Descriptive analysis, regression model and results

Table 2 provides the descriptive statistics for the variables. As mentioned before, the final sample of audit firms consists of 142 companies. The log transformation of revenues by partners is the dependent variable.

----- Insert Table 2 here -----

Table 3 displays the correlation matrix. Some correlations are significant at 0.05 although their magnitude is not very important. The highest correlation is 0.47 between *Average profitability* and *Employees productivity*. Correlation analysis suggests

multicollinearity is not a relevant problem for the regression model reported below. We will test formally test the existence of multicollinearity later in the regression diagnostic.

----- Insert Table 3 here -----

The regression model for testing the hypotheses is the following:

$$\begin{aligned}
 \text{Performance} = & \mathbf{b}_0 + \mathbf{b}_1 \text{ Average size of clients} + \mathbf{b}_2 \text{ Number of subsidiaries} + \mathbf{b}_3 \text{ Foreign} \\
 & \text{subsidiaries} + \mathbf{b}_4 \text{ Industries diversification} + \mathbf{b}_5 \text{ Geographic} \\
 & \text{diversification} + \mathbf{b}_6 \text{ Opinion} + \mathbf{b}_7 \text{ Average profitability} + \mathbf{b}_8 \\
 & \text{Employees productivity} + \mathbf{b}_9 \text{ Auditor size} + \mathbf{b}_{10} \text{ Debt} + \mathbf{b}_{11} \\
 & \text{Reputation} + \mathbf{b}_{12} \text{ Market density} + \mathbf{e}
 \end{aligned}$$

where

Performance = Log transformation of audit firm's revenues divided by number of partners.

Average size of clients = Log transformation of average of total assets of clients for each audit firm.

Number of subsidiaries = Square root transformation of average number of subsidiaries of each audit firm.

Foreign subsidiaries = Average of the percentage of number of foreign subsidiaries for clients for each audit firm.

Industries diversification = Entropy index based on market share of the audit firm in each client industry.

Geographic diversification = Log transformation of the number of offices divided by number of partners.

Opinion = Number of unqualified reports over total number of audit reports for each audit firm.

Average profitability = Average of economic profitability (ROA).

Employees productivity = Ratio measuring the productivity of employees.

Auditor size = Log of property, plant and equipment of the audit firm.

Debt = Debt ratio.

Reputation = Dichotomic variable with value "1" if the firm is one Big Firm; "0" otherwise.

Market density = Log number of audit firms in the same province than the main office of each audit firm.

e = Error term.

Results of the regression

Coefficients were estimated by least-squares estimation using a sample of 142 firms. The results of the model are shown in Model 1, Table 4. For each variable the coefficient and its standard errors are reported. In addition, the computed *F*-ratio for the regression, its *p-value* and the unadjusted and adjusted *R*-squared values are provided. The least-squares estimation was significant at the 0.000 levels. The explanatory power of the model is 0.54. All the variables included in the model were significant at different levels of significance but *Employees productivity and Market density*.

----- Insert Table 4 here -----

Signs of the coefficients for the variables measuring size and complexity of clients (*Average size of clients, Number of subsidiaries, Foreign subsidiaries*) are significant and in the expected direction according to H1a and H1b. Therefore, those audit firms with clients' portfolio characterised by larger and more complex clients earn a higher level of revenues than those auditors auditing smaller and less complex companies, (even when we control auditor size). The variable *Industries Diversification* is significant at 0.10 and positive as hypothesised in H2. According to our model, more diversified auditors could obtain better performance indicating a positive relationship between the degree of diversification and audit firms' performance. In relation to the effects of geographic diversification, results indicate that those companies more geographically diversified generate more revenues than those with a lower level of geographic diversification as hypothesised in H3. Therefore, Model 1 supports the hypotheses established about the relation between different audit firms' strategies and their performance.

All the variables added as control variables are significant but *Employees productivity and Market density*. Those audit firms with a higher percentage of unqualified opinions among their audit reports (*Opinion*) and with higher profitability in last years (*Average profitability*) perform better than those auditors with a lower percentage of unqualified opinions and with lower average profitability. Additionally, larger audit firms (*Auditor size*), with a higher level of debt (*Debt*) and with higher reputation (*Reputation*), obtain a higher level of revenues in both audit and non-audit services.

As mentioned above, variables of employees' productivity and market density are not significant and both have a negative sign. It is reasonable to think that the higher competence on a market the lower is expected performance, so the negative sign of market density is not surprised. We perform several additional tests to analyse the non-significance of the variable *Employees productivity*. The simple regression of performance and employees productivity indicated its low explanatory power. Therefore, its lack of significance in the global model does not seem to arise from its association with the variable *Average profitability*. Alternatively, we employed a different proxy for measuring the effect of human capital on audit firms' performance by considering the ratio personnel expenses over operating costs. Again, the simple regression indicated that the variable has a very low explanatory power. A potential explanation may be that the variation in the productivity of employees among the audit firms in the sample is not big enough for explaining differences in performance.

Due to the presence of non-significant variables in the model, we perform a new regression without these variables. The results are shown in Model 2, Table 4. One of the effects of this process was that the variable *Industries diversification*, related to hypothesis 2 is not significant. Therefore, results are not robust to hypothesis 2 due to results obtained in the optimal model indicating that diversification in client-industries does not influence or has a low level of influence upon audit firms' performance.

Diagnostic of the regressions

We carried out the diagnostic of the regression models. The diagnostic tests for Model 1 are reported in the Appendix. Firstly, the presence of extreme observations or outliers can have an impact on the results. The analysis of the standardised residuals did not indicate presence of outliers or extreme observations, which could alter significantly our estimations. In relation to the normality of residuals, both the graphical analysis and Shapiro-Wilk test indicated that the hypothesis of normality could not be rejected (see Graph A1). Secondly, in relation to heteroskedasticity, besides the graph analysis we calculated the Cook-Weisberg test for heteroskedasticity and the White test. In both cases, the *p-values* indicated that the hypothesis of constant variances of errors could not be rejected.

As showed before, correlation matrix indicated some significant correlations between the variables in the model. With the aim to test whether there is multicollinearity, we analysed variance inflation factors (VIF). The highest VIF had a

value of 1.56. Due to only VIF higher than 10 indicate evidence of significant multicollinearity (Neter, Wasserman and Kutner, 1989), multicollinearity is not a major problem in interpreting our regression results. Lastly, tests of model specification and omitted values perform optimal results for our model. To sum up, the regression diagnostic carried out indicated that our model fit well to the assumptions under the linear regression model.

Additional analysis

The hypotheses were tested by analysing the effect of different diversification and specialisation strategies upon the flow of revenues gaining by an audit firm. We perform a similar model by investigating the effects on operating costs incurred by the audit firm with the purpose to know the effect upon costs of these strategies. Table 5 shows the results after subtracting all those non-significant variables.

----- Insert Table 5 here -----

Model 3 presents the results of a regression model where the log transformation of operating expenses divided by number of partners is the dependent variable. The log transformation was used due to the variable is not normal. The model explains 44 percent of variability of the dependent variable. The diagnostic of the model did not point out any relevant problems with outliers, multicollinearity, normality, and omitted variables. In comparison to the model explaining revenues (Model 1), those variables measuring client complexity were not significant explanatory variables of costs (for instance, number of subsidiaries). The other independent variables are positive and significant. Similar to Model 1, control variables related to market density and employees productivity do not have a significant influence on operating expenses of the audit firms. The level of debt is also significant.

Given the effects on the flow of revenues and on operating costs the next straightforward issue is to analyse is the influence on operating income. Although we run the regression of all the independent and control variables over operating income, several statistical concerns such as persistence of heteroskedasticity did not allow us to draw conclusions from the analysis.

DISCUSSION

The purpose of this research is to analyse whether and how the different diversification and specialisation strategies of audit firms affect their performance in audit and consultancy markets. Based on results from previous studies on determinants of audit fees several hypotheses are established. Specifically, the hypotheses attempt to test whether the specialisation in big clients and clients characterised by high level of complexity, the diversification by client industries and geographic diversification positively affect the audit firms' performance. Nowadays, the audit market is characterised by an increasing threat of litigation from third parties and a significant reduction in profitability. Under these circumstances it is specially relevant to know whether and how the strategies implemented by audit firms contribute to their performance. For instance, the increasing concerns by auditors related to potential litigation might prompt audit firms to diversify risks by diversifying their clientele (Hogan and Jeter, 1999).

The RBV of the firm is building on the following two assumptions. First, firms within an industry may be heterogeneous with respect to the strategic resources they control. Secondly, these strategic resources may not be perfectly mobile across firms, and thus heterogeneity can be long lasting (Barney, 1991: 100). Following the RBV of the firm, firms will conceive and implement strategies according their resources (Wernefelt, 1984; Barney, 1991). History is a determinant of firm performance and competitive advantage especially due to the ability to acquire and exploit some resources depends upon the place of firms in time and space. In this research, we identified the strategies implemented by audit firms by looking at their current portfolio of clients (Barney, 1991; Grant, 1995). By observing the characteristics of their clients we may determine the kind of strategies adopted by these firms. We present a model where the impact of three different strategies on performance is tested. Our model explains a significant part of the variability of audit firms' performance.

In first place, we test whether those firms specialised in big and complex clients are able to obtain a higher level of revenues in both audit and consultancy markets. The expectations of a higher level of revenues lies on the fact that these clients require a greater audit effort and they have a higher likelihood to demand consultancy services. The results support hypotheses H1a and H1b. In our sample from the Spanish audit market, those audit firms that have a portfolio of large and complex clients achieve

better results than those firms auditing small and less complex companies. The additional analysis carried out with the aim to test the impact on costs of these strategies shows that production costs are a positive function of the different variables measuring auditee size and complexity.

These findings lead us to take into account some additional issues. Firstly, our results are similar to those reported in previous studies about the relevance of the size and complexity of the auditee as main determinants of audit fees, and, in turn, of audit firms' revenues (Palmrose, 1986a; Pong and Whittington, 1994; Menon and Williams, 2001). Secondly, the provision of audit and non-audit services to large and complex clientele requires the availability of certain resources such as expertise. Only those auditors with an optimal size and expertise are able to provide audit and non-audit services to large and complex clients (DeAngelo, 1981; Benston, 1985). That is, auditors may conceive and implement a strategy of specialisation in big and complex auditees if and only if the audit firm has the resources required for providing services to these clients. Our results indicate that after controlling by auditor size, a clientele with a higher average size positively affects audit firms revenues. The current tendency of audit firms to be associated with international alliances and networks and to merge with other audit firms may be understood as a strategy to achieve a higher size and improve the competitive situation in the segment of big and complex clients.

Finally, it is expected that shifts in the size and preferences of clients and potential clients cause changes in audit firms strategies. Audit firms try to conceive of strategies that fit to clients' demands. In contrast to past times where some big clients were audited by several small audit firms (Pong, 1999), clients seem to prefer to be audited by just one audit firm able to satisfy their requirements. Additionally, nowadays the business environment is characterised by mergers and globalisation which lead to an increasing in the average size of companies. These new trends in the demand side of the audit market affect the suppliers that attempt to satisfy the demands of higher and complex organisations. Specialisation in big and complex clients may positively affect to the performance of audit firms, as our results indicate.

To sum up, our model shows that specialisation on large and complex clients positively affect to performance after controlling by auditor' size. That is, those audit firms specialised in big and complex clients achieve a higher level of revenues. At the same time, there is an increase the production costs of the services they provide due to

the higher audit effort required. Attributes such as size and expertise seem to be determinants for providing services to this particular segment. Lastly, it is interesting to note that measures used in previous studies, such as the proxies to auditee's complexity, are useful to identify the main characteristics of the clients' portfolio and specialisation strategies of audit firms.

Another issue under investigation is whether the strategy of diversification in client industries influences on audit firms' performance. Our results are inconclusive in this regard. On the one hand, Model 1 supports the hypothesis of a positive association between the degree of diversification in client industries and the performance of audit firms. *Ceteris paribus*, a higher diversification in client industries positively affects audit firms' revenues. However, Model 2, which includes only significant variables, does not support such a hypothesis. The strategic decision to diversify the portfolio of clients by industries depends upon the availability of resources. In this regard, it is important to remark the following. Firstly, although our models did not indicate the presence of multicollinearity, it is reasonable to think that our continuous variable for diversification, which was calculated as a function of market shares by industries, depends on auditor size. The correlation matrix shows that the association between *Industries diversification* and *Audit size* is significant. Secondly, the decision to diversify is related to the availability of certain strategic resources which, given their characteristics, are able to produce a sustainable advantage in other markets, such is the case of reputation (Delios and Beamish, 1999). In our sample, the correlation between *Industries diversification* and *Reputation* is significant. Therefore, it could be possible that those variables related to auditor size and strategic resources capture part of the potential effect that diversification may have on performance.

Our results complement previous results related to the influence of specialisation and diversification in client industries and fees charged by auditors. For instance, Palmrose (1986a) and Chaney, Jeter and Shaw (1997) did not find evidence of a relationship between specialisation in client industries and clients' preferences. In our case, the diversification in client industries by audit firms seems to have a minor positive influence on auditors' revenues. Prior research suggests important differences in patterns of specialisation for industry experts in regulated versus no regulated industries (e.g., Eichenseher and Danos, 1982; Kwon, 1996; Hogan and Jeter, 1999). In our case, such a distinction was not made. It may constrain the ability of our variable to

identify the diversification strategies of audit firms. Under the assumption that the degree of regulation in a particular industry may affect significantly to specialisation and diversification strategies, it would be needed to introduce this distinction when measuring the impact of diversification strategies on performance. On the one hand, it has been argued that audit firms are mainly interested in providing services to clients in unregulated industries due to the lower production costs and the lower level of risk. On the other hand, economies of scale or superior operating efficiencies of high-involvement auditors are common in regulated industries. Additionally, those clients in regulated industries under may require specialist auditors with expertise in the sector (Eichenseher and Danos, 1982; Hogan and Jeter, 1999). Therefore, to test the hypothesis of relationship between diversification in client industries and performance may require taking into account the type of client industry depending on the level of regulation.

To sum up, our results about the positive effect of diversification in client industries on performance are inconclusive. Several factors may influence on our results: a) we do not distinguish between regulated and no regulated industries. Given the results of previous research, such a distinction can be determinant to explain how audit firms diversify in client industries and potentially, on their results; and b) it is expected than auditor size and the availability of specific resources significantly influence on the strategic decision of diversification.

Lastly, this investigation tests the effect of geographic diversification on audit firms' performance. Our findings show that those audit firms more geographically diversified achieve a higher level of revenues; therefore, this strategy positively affects the performance of audit firms. Strategic literature has widely focused on international diversification (e.g., Delios and Beamish, 1999). In the audit market, Big audit firms constitute a good example of success in diversification at international scope (e.g., Kirsch, Laird and Evans, 2000). Benefits from geographic expansion are also applied whether dispersion at national level are considered. For instance, Francis et al. (1999) argue that the analysis of the audit market at a national level could not be optimal due to the important variations in market shares at local level. Decisions to merger between big audit firms may be motivated by the purpose to penetrate into new geographic markets. Also, small and medium firms can consider mergers and alliances as a mechanism to gain market shares in different geographic markets. These strategies also influence on costs, as we find in Model 3. In summary, benefits arising from a higher geographic

dispersion, such as (i) reduction in searching costs; (ii) the improvement in efficiency and effectiveness by means of the proximity to clients; (iii) the economies of scale and scope; or (iv) the exploitation of strategic resources as brand name, positively affect the performance of audit firms.

In relation to the control variables, it is important to note the significant effect of the type of audit opinion on audit firms' performance. Simunic (1980) and others note that qualified audit reports should increase audit production costs and audit fees. This argument leads us to expect a negative association among the number of unqualified audits and the revenues of an audit firm. Previous studies show that the provision of non-audit services by the incumbent auditor increase the likelihood of unqualified audit report (e.g., Sharma and Sidhu; 2001; Firth, 2002). Due to we investigate the influence of audit opinion on resources generated by audit and consultancy services, our findings are interpretable as favourable evidence of the argument above. That is, the positive association between a higher number of unqualified opinions and the audit firm's performance could be affected by the positive relationship between unqualified reports and the purchase of non-audit services. Our findings do not allow us to obtain final conclusions due to we cannot discriminate between both kind of revenues. This is an issue that requires further attention because, on the one hand, the evidence of a positive association between fees and unqualified reports could indicate lack of independence of auditors (Firth, 2002: 662). On the other, it could happen that the purchase of non-audit services to the incumbent auditors can improve the accounting systems of the auditees in such a way that the auditor faces a lower level of uncertainty and, therefore, the likelihood of unqualified audit reports increases (Firth, 2002: 669).

Other control variables included in the model indicate that factors such as auditor size, evolution in past years or reputation are major determinants of audit firms' revenues. Other variables such as the human capital in audit firms and the variable related to external environment are not significant. Additionally measures of such factors should be taking into account due to the potential effect of variables' definition on the results obtained.

CONCLUSIONS, LIMITATIONS AND EXTENSIONS

This paper investigates whether and how the strategic decisions of audit firms influence on audit firms' performance. Based on contributions from research on

determinants of audit fees and strategic literature, we identify the portfolio of clients for each audit firm with the purpose to test several hypotheses about the association of strategic decisions and performance. Specifically, we focus on diversification and specialisation strategies conceived of and implemented by audit firms in audit market segment. The empirical test is carried out by using a sample of Spanish audit firms in 1999. Our findings indicate that specialisation in larger and more complex clients and geographic diversification have positive effects on the flow of revenues gained by audit firms. Our evidence is inconclusive in relation to the association between audit firms' performance and industries diversification. The inclusion of different variables measuring the internal resources of audit firms leads us to argue that factors such as auditor size, reputation or the percentage of unqualified reports positively affect the performance. Due to the requirements for implementing strategies such as geographic diversification or specialisation in big clients, we conclude that audit size is the main factor explaining the performance of audit firms. Lastly, the significant association of type of audit opinion and performance is especially important due to the consequences it can have on audit quality and auditor independence.

This investigation bears some limitations that may encourage future research. Firstly, our analysis is static. Mergers in last years were an important limitation to analyse a longer period of time. However, a dynamic analysis would be needed for a better understanding of the relationship between strategy and performance. As a future line of research, we consider the analysis of a panel data taking into account mergers, foundation of new audit firms and mortality of existing firms for several years. Secondly, some of our measures may not capture efficiently the strategies of audit firms. For example, in relation to the measure of diversification, we have chosen a continuous measure as the entropy index. However, other discrete variables have been used in previous literature. It could be interesting to test the results whether we use a different proxy for this variable. As mentioned before, it is important to differentiate between regulated and no regulated industries.

As a future research, we propose to undertake the investigation of the determinants of audit fees for the Spanish audit market. This research could add much to the understanding of the audit market in Spain and to test whether the determinants of audit fees identified in other countries as also major factors in the Spanish market. This research would need information on audit fees, which is not available in Spain. As in

other countries where data on audit fees are not available (e.g., US), questionnaires can be useful. Additionally, it would be desirable changes in regulation regarding transparency in the audit function, for instance establishing the mandatory disclosure of audit fees by auditees, as in other countries (for instance, Australia, UK and Norway, Firth, 1997a; Firth, 2002: 667). More than this, taken into account the results of this and previous research, issues such as the impact on audit quality of the joint provision of audit and non-audit services could enhance significantly the evidence to support measures related to restrictions in the joint provisions. Not only regulators but also the audit profession should beat for a major transparency with the aim to face the credibility crisis of the audit profession in last time, for example, after Enron's case.

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Graph 1: HETEROGENEITY OF AUDIT FIRMS

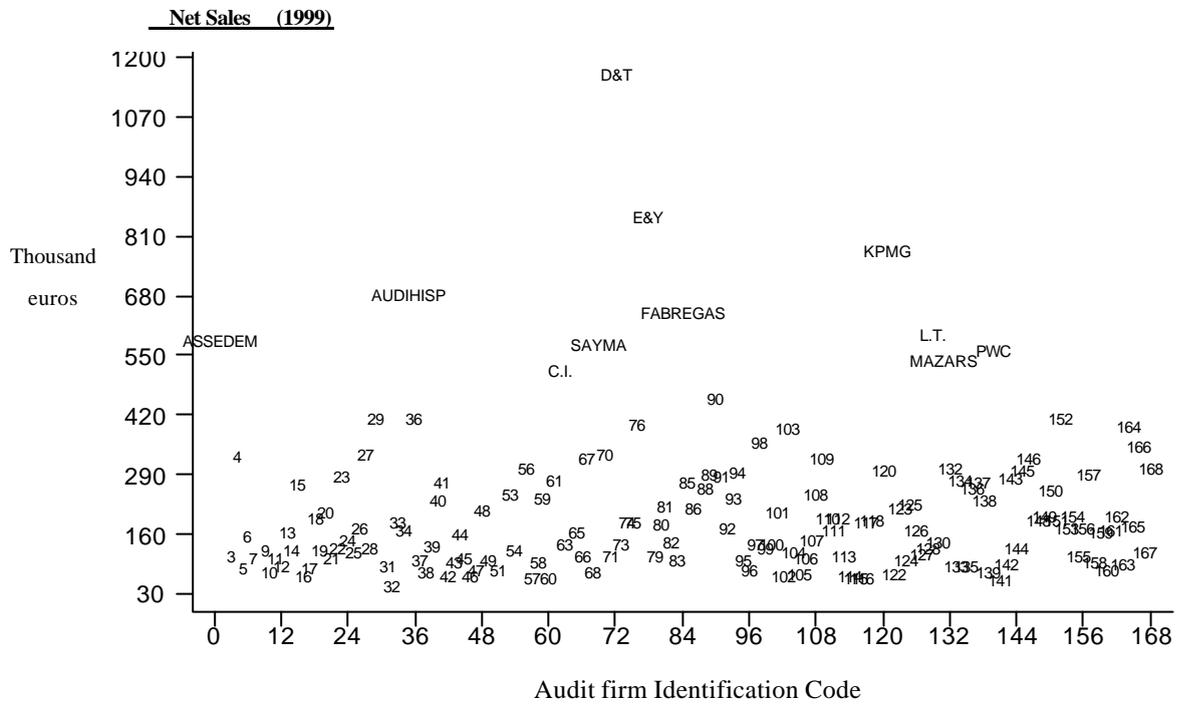


Table 1: MAJOR FACTORS AFFECTING AUDIT FEES. SUMMARY OF SOME STUDIES

Country	US	US	US	US	Hong Kong	Hong Kong	UK	Canada	New Zealand	India
Study	Simunic (1980)	Simon (1985)	Palmrose (1986 ^a)	Simon (1997)	Defond et al. (2000)	Lee (1996)(*)	Pong and Whittington 1994	Anderson and Zeghal (1994)	Johnson et al. (1995)	Simon et al. (1986)
Dependent Variable	Fees Assets ^{0.5}	Fees Assets ^{0.5}	Ln(Fees)	Ln(Fees)	Ln(Fees)	Ln(Fees)	Fees	Ln(Fees)	Ln(Fees)	Ln(Fees)
Independent Variables (**)										
Clients										
Auditee Size: Assets, Turnover			+	+	+	+	+	+	+	+
Subsidiaries	+	+	B	+	+	+	+	+	+	+
Foreign assets or foreign subsidiaries	+	+	B	+	+	+	B	+ only large	B	B
Client Industries; Diversification	+	A	B	B	B	+	B	A	B	B
% payables on total assets	+	A	B	B	B	B	B	B	B	B
Current Assets	B	B	B	+	+	+	B	+	+	+
% Inventories over total assets	+	+	B	B	B	B	B	B	B	B
Quick ratio	B	B	B	B	-	B	B	B	B	B
Working Capital	B	B	B	B	B	B	+	B	B	B
Profitability, Profits	-	B	B	B	-	B	-	A	B	B
Losses in part years	+	B	B	B	A	B	B	A	A	-
Type of Opinion	+	+	+	+	B	A	B	B	A	A
Debt/Capital Ratio	B	B	B	B	A	+	B	B	B	B
Localization	B	B	+	B	B	B	B	B	B	B
Type of client industries (regulated)	-	B	-	B	B	+	B	- only large	B	B
Lag/data of audit	B	B	B	B	A	B	B	B	B	B
Client Participation	B	B	-	B	B	B	B	B	A	B
Number of audit reports	B	B	+	B	B	B	B	B	B	B
Auditor										
Auditor Size	-	A	+	+	A	+	+	+ only small	+	+
Length of relationship, Change auditor	-	B	B	-		B	B	B	A	B
Specialist Auditor	B	B	A	B	A	B	B	B	B	B
<p>A: variable included in the study and no significant. B: variable not included in the study. (*) Interactions between variables are included in the study. (**) Results for full samples: results for sub samples are not showed.</p>										

Figure 1: PERFORMANCE OF AUDIT FIRMS

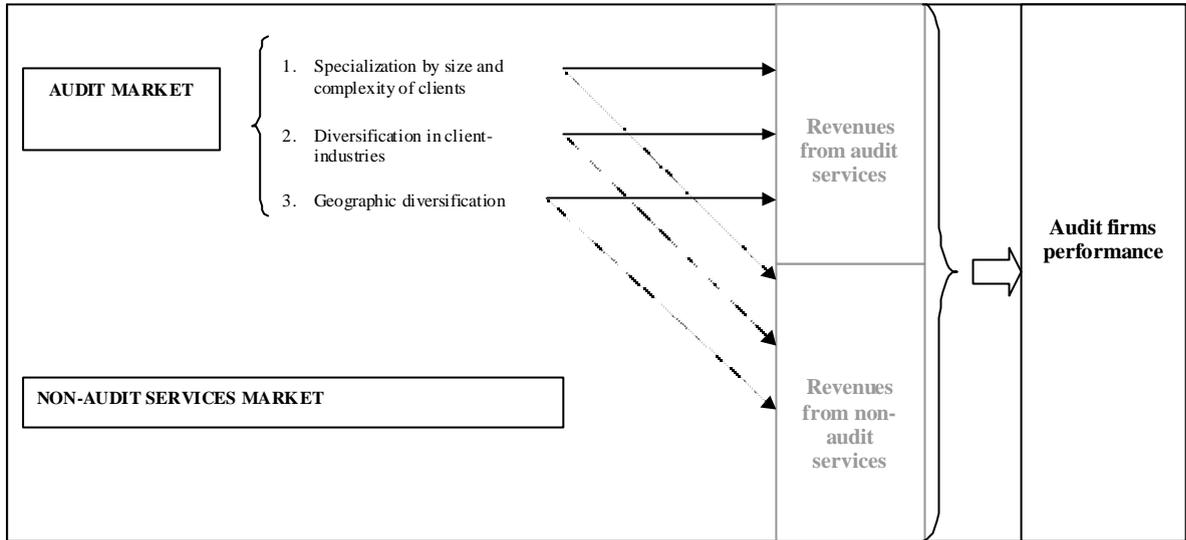


Figure 2: MODEL

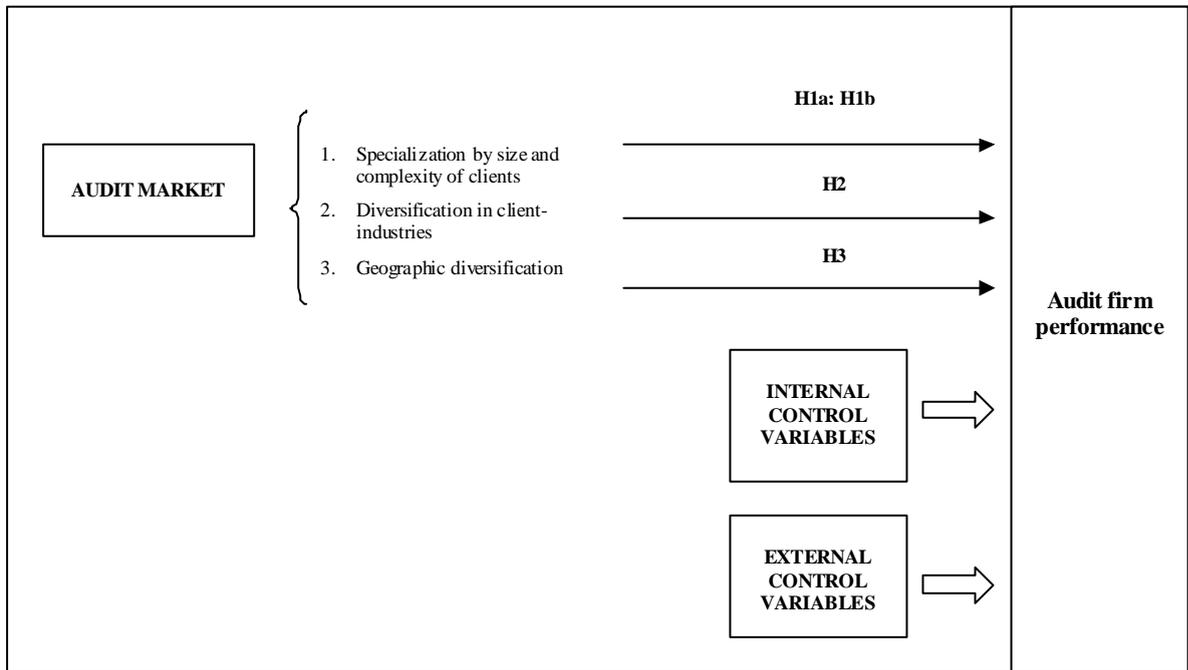


Table 2: DESCRIPTION OF VARIABLES

Variable	Sample	Mean	Standard Deviation	Minimum value	Maximum value
<i>Performance</i>	157	5.055	0.691	3.522	7.047
<i>Average size of clients</i>	153	2.762	1.630	-0.247	9.704
<i>Number of subsidiaries</i>	153	1.167	0.431	0.000	2.739
<i>Foreign subsidiaries</i>	153	0.0463	0.054	0.000	0.330
<i>Industries diversification</i>	161	1.902	0.748	0.000	3.243
<i>Geographic diversification</i>	159	-0.668	0.633	-2.197	1.872
<i>Opinion</i>	152	0.434	0.196	0.000	1.000
<i>Average profitability</i>	159	9.867	16.522	-105.120	69.590
<i>Employees productivity</i>	154	1.418	0.574	0.850	6.000
<i>Reputation</i>	160	0.025	0.157	0.000	1.000
<i>Auditor size</i>	153	3.612	1.483	-1.054	8.121
<i>Debt</i>	159	61.980	23.150	0.000	124.910
<i>Market density</i>	160	5.898	1.073	2.639	6.820

Table 3: CORRELATION MATRIX OF VARIABLES IN MODELS

Variable	Performance	Average size clients	Number of subsidiaries	Foreign subsidiaries	Industries diversification	Geographic diversification	Opinion	Average profitability	Employees productivity	Auditor size	Debt	Market density	Reputation
<i>Performance</i>	1.0000												
<i>Average size clients</i>	0.2427* (0.0028)	1.0000											
<i>Number of subsidiaries</i>	0.2363* (0.0036)	0.2902* (0.0003)	1.0000										
<i>Foreign subsidiaries</i>	0.2303* (0.0046)	0.0743 (0.3613)	0.2297* (0.0043)	1.0000									
<i>Industries diversification</i>	0.2273* (0.0042)	0.2298* (0.0043)	0.2641* (0.0010)	0.1105 (0.1740)	1.0000								
<i>Geographic diversification</i>	0.2482* (0.0017)	-0.0951 (0.2437)	-0.1156 (0.1561)	0.0512 (0.5310)	-0.0336 (0.6744)	1.0000							
<i>Opinion</i>	0.3229* (0.0001)	0.3346* (0.0000)	0.1704* (0.0358)	0.1096 (0.1787)	0.1111 (0.1729)	0.0136 (0.8683)	1.0000						
<i>Average profitability</i>	0.1733* (0.0305)	0.0137 (0.8677)	0.1116 (0.1726)	0.0258 (0.7533)	0.0172 (0.8296)	-0.2016* (0.0111)	0.0127 (0.8767)	1.0000					
<i>Employees productivity</i>	0.1754* (0.0302)	-0.0104 (0.9010)	-0.0223 (0.7890)	-0.0422 (0.6130)	0.0417 (0.6075)	-0.0102 (0.9001)	0.0572 (0.4930)	0.4730* (0.0000)	1.0000				
<i>Auditor size</i>	0.4291* (0.0000)	0.0411 (0.6236)	-0.0553 (0.5085)	0.0090 (0.9143)	-0.0374 (0.6461)	0.1205 (0.1393)	0.0660 (0.4303)	-0.0433 (0.5964)	0.0888 (0.2783)	1.0000			
<i>Debt</i>	0.1539 (0.0544)	0.0092 (0.9110)	0.0999 (0.2223)	0.0604 (0.4615)	0.0852 (0.2856)	0.0567 (0.4791)	0.0524 (0.5232)	-0.1310 (0.1008)	-0.0631 (0.4369)	0.0841 (0.3014)	1.0000		
<i>Market density</i>	-0.0192 (0.8116)	0.0062 (0.9398)	0.0725 (0.3750)	0.1926* (0.0174)	0.1973* (0.0124)	0.0329 (0.6803)	0.1061 (0.1933)	-0.1319 (0.0976)	-0.0851 (0.2940)	-0.0952 (0.2417)	0.0349 (0.6620)	1.0000	
<i>Reputation</i>	0.3816* (0.0000)	0.1619* (0.0463)	0.1647* (0.0426)	0.1568 (0.0538)	0.2765* (0.0004)	-0.1020 (0.2009)	0.1676* (0.0390)	0.0372 (0.6412)	0.2796* (0.0004)	0.2323* (0.0039)	0.1870* (0.0183)	0.1373 (0.0834)	1.0000

* *p*-value <0.05

Table 4: REGRESSION MODELS

<i>Variables</i>	Model 1	Model 2
	Dependent Variable: Ln(REV/Partners) (a) (n=142)	Dependent Variable: Ln(REV/Partners) (a) (n=142)
	Coefficients (standard errors)	Coefficients (standard errors)
<i>Average size of clients</i>	0.0509 † (0.0265)	0.0580 * (0.0265)
<i>Number of subsidiaries</i>	0.1960 † (0.1007)	0.2349 * (0.1002)
<i>Foreign subsidiaries</i>	1.6082 * (0.7463)	1.5105 * (0.7465)
<i>Industries diversification</i>	0.1192 † (0.0707)	
<i>Geographic diversification</i>	0.3993 *** (0.0662)	0.3590 *** (0.0654)
<i>Opinion</i>	0.6087 ** (0.2148)	0.6389 ** (0.2157)
<i>Average profitability</i>	0.0128 *** (0.0035)	0.0116 *** (0.0031)
<i>Employees productivity</i>	- 0.0493 (0.1053)	
<i>Auditor size</i>	0.1588 *** (0.0288)	0.1665 *** (0.0288)
<i>Debt</i>	0.0043 * (0.0019)	0.0046 * (0.0019)
<i>Reputation</i>	0.8379 ** (0.3055)	0.8788 ** (0.3022)
<i>Market density</i>	- 0.0435 (0.0386)	
<i>Constant</i>	3.7383 *** (0.3535)	3.5066 *** (0.2139)
	R-squared = 0.58 Adj R-squared = 0.54 F(12, 129) = 14.77 Prob > F = 0.000	R-squared = 0.55 Adj R-squared = 0.52 F(9, 132) = 18.17 Prob > F = 0.000

† p < 0.10
* p < 0.05
** p < 0.01
*** p < 0.001

(a) REV: Revenues

Table 5: REGRESSION MODEL: OPERATING EXPENSES

Variables	Model 3 Dependent Variable: Ln(Operating expenses/Partners) (n=142)	
	Coefficients	
<i>Average size of clients</i>	0.1112 (0.0367)	**
<i>Foreign subsidiaries</i>	2.3400 (1.0236)	*
<i>Industries diversification</i>	0.2221 (0.0963)	*
<i>Geographic diversification</i>	0.3872 (0.0906)	***
<i>Opinion</i>	0.6003 (0.3029)	†
<i>Average profitability</i>	0.0075 (0.0041)	†
<i>Auditor size</i>	0.1727 (0.0403)	***
<i>Reputation</i>	0.9815 (0.4275)	*
<i>Constant</i>	3.1114 (0.2846)	***
		R-squared = 0.44
		Adj R-squared = 0.41
		F(8, 133) = 13.07
		Prob > F = 0.000
†	p < 0.10	
*	p < 0.05	
**	p < 0.01	
***	p < 0.001	