The Staff Capacity of the Internal Audit Function of German Corporations

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ABSTRACT: This study explores determinants of large German corporations' internal audit function size, controlling for possible outsourcing of internal audit workforce. Analyses are based on survey data from chief internal audit executives of 121 companies, representing a large proportion of the German non-financial-service and non-public-sector companies that maintain an internal audit function. The instrument was developed in a multi-stage process, which among other steps involved semi-structured expert interviews.

Our multivariate regression model has high explanatory power, accounting for 80 percent of the variance in internal audit function size. Results highlight that company size is the major driver of internal audit function size, and that the significance of the capital markets for the company is another positive driver. More notably, we document that the task range of different audit tasks to cover is another important driver of internal audit function size, as is the spatial decentralization of the internal audit function.

Key Words: *Internal Audit Function Size, Staff Capacity, Internal Audit Characteristics.*

INTRODUCTION

This paper addresses the size of the internal audit function of German corporations as measured by its staff capacity. The internal audit function is considered to be an integral part of (at least large) enterprises' corporate governance and monitoring system (Herdman 2002; SEC 2004; Carcello et al. 2005a). Monitoring, in a row with planning and implementation, is a core activity of business administration and is an original duty of the enterprise's top-management. Due to the information asymmetry between top and section management (Fama 1980) and the complexity of a firm that grows with its size, top-management needs to install a monitoring system in order to assure that the planning goals are effectively pursued (and if possible achieved), and the selected strategies adequately implemented. From a certain company size on, it is efficient for top-management to install an internal audit function to support it in its monitoring duties.

Aside from this economic argument, repeated emphasis was put on the claim to install internal audit functions in public companies in quite a number of normative pronouncements over the last decades. In the 1980s, the National Commission on Fraudulent Financial Reporting (1987, 37) recommended that all public companies "should maintain an effective internal audit function staffed with an adequate number of qualified personnel appropriate to the size and the nature of the company." Since then, this recommendation was repeated by corporate governance committees worldwide, like the Cadbury Committee (Committee on the Financial Aspects of Corporate Governance 1992), the COSO Report (1992), or the Blue Ribbon Committee (1999) (see Goodwin-Stewart and Kent 2006, 81-82). The New York Stock Exchange (NYSE 2002) now requires all listed companies to maintain an internal audit function, and this requirement and its implementation received further emphasis by the stipulations of Section 404 of the Sarbanes-

Oxley Act of 2002 (Carcello et al. 2005a). In Germany, since 1998 already, stock corporations are required to maintain an *adequate* monitoring system, which includes the installation of adequate internal audit function (§ 91 II AktG (German Stock Corporation Law), and the explanatory memorandum by the German legislator to the KonTraG (Enterprise Control and Transparency Law of 1998), see Deutscher Bundestag 1998, 11 and 15). Moreover, according to § 317 IV HGB (German Commercial Code), the financial statements auditor of a listed stock corporation must audit and evaluate the *adequacy* of the company's monitoring system, comprising the adequacy of the internal audit function.

However, little guidance is given about the question when an internal audit function is (to be considered) *adequate* and when it is not. The normative pronouncements that stipulate this requirement leave this question largely unanswered (e.g. § 91 II AktG and even the explanatory memorandum to the KonTraG that introduced this requirement (see Deutscher Bundestag 1998, 15), or the so called MaRisk of the German Federal Financial Supervisory Authority, BaFin, which regulate the requirements of internal audit functions in financial-service companies such as banks or insurance companies (see BaFin 2007)). Hence, while the normative pronouncements provide little help on what precisely is an "adequate" internal audit function, the companies in practice must necessarily resolve this question.

Up to now, there is only a limited understanding of the characteristics of internal audit functions and their determinants, which may be partially explained with difficulties to identify, isolate, and measure these determinants. One of the major characteristics of an internal audit function that should be related to its adequacy is its size. Basically, adequacy has two major components, one being qualitative and the other quantitative adequacy. Size is the immediate characteristic related to quantitative adequacy. Hence, knowledge about the size of internal audit

functions and the determinants that can explain this size would constitute helpful information for both the company's management and the auditor, who both must (factually and required by law) evaluate the adequacy of the internal audit function.

To date, a small number of empirical studies have explored factors that may explain the size of the internal audit function, either measured by the staffing of (Goodwin and Kent 2004; Sarens 2007) or the investment in internal auditing (Carcello et al. 2005a). In particular, the mentioned studies have explored a number of rather "hard-fact factors", i.e. governance (or agency model related) factors, company risk, and accounting and auditing related determinants. Our study contributes to this line of research by exploring a set of potential determinants of the size of the internal audit function of German corporations, which includes factors not tested in the existing models (e.g. the task range/ specialization, or the decentralization of the internal audit function). In addition, our model statistically explains a higher proportion of variance than was the case in the previous studies.

Our analyses are based on survey data from chief internal audit executives of 121 non-financial-service and non-public-sector enterprises. Considering that at the time of the survey the German Institute for Internal Auditing (IIR) had 314 non-financial-service and non-public-sector institutional members, our sample represents a large portion of the German firms that have an internal audit function (assuming that most of these firms are members of the IIR).

We find that internal audit function staff capacity is positively and significantly associated with company size, importance of the capital market for the company, task range of different audit tasks to be covered by the internal audit function, spatial decentralization of the internal audit function, and affiliation of the company to either the services, trading, or supplies industry, rather than the processing/ production industry.

The remainder of this paper is organized as follows: The next section contains the theoretical background and development of hypotheses. Subsequently, the applied methodology is described, followed by a section with the empirical results. The paper concludes with a discussion of the results and their implications in the final section.

THEORETICAL DEVELOPMENT

Prior Literature

Prior research has dealt with several aspects related to the size of the internal audit function. A descriptive investigation by Kusel and Oxner (1994) revealed that 85 percent of companies surveyed in the USA and 92 percent of Canadian companies had internal audit functions with 16 or less employees. In a worldwide survey, the International Federation of Accountants Institute (IFACI) and Arthur Anderson (1995) found that 80 percent of internal audit departments had between 1 and 20 employees. For Germany, a mean of 23 employees was documented. In contrast, regularly conducted surveys by the German Institute for Internal Auditing (IIR) showed that 90 percent of German internal audit departments had less than 20 employees, and over 50 percent less than five employees. Since a very small number of internal audit departments was very large, the mean number of internal audit employees for Germany was found to be 10.2 (IIR 1996, 7-9; IIR 2004, 40-42). Aside from these contrasting results, the mentioned studies did not systematically explain which factors drive the size of the internal audit function.

Wallace and Kreutzfeldt (1991) investigated factors that covary with the existence vs. non-existence of an internal audit function. They found that companies with an internal audit function were significantly bigger, more decentralized, more profitable, more liquid, followed

more conservative accounting practices, and were more subject to regulation than were companies without an internal audit function. Carey et al. (2000) investigated determinants of the voluntary use of internal and external auditing in Australian private companies. They showed that the use of internal auditing was more frequent than of external auditing, that outsourcing of internal audit services was quite frequent, and that there was a negative relationship between the use of internal and external labor, suggesting that internal and external audit services were regarded as substitutes rather than complementary functions.

Only quite recently, a small number of empirical studies explicitly addressed the question which factors determine the size of the internal audit function. Goodwin and Kent (2004) and Goodwin-Stewart and Kent (2006) investigated factors associated with the voluntary use and size of the internal audit function in Australian listed companies (for which there was no legal obligation to install an internal audit function). Using survey and financial report data, they found that the dominant driver of the use of internal auditing was company size. They further documented that commitment to risk management, strong corporate governance structures (weak support), and financial industry affiliation were associated with the existence of an internal audit function. They used the number of employees in the internal audit function for measuring internal audit function size, hence not controlling for possible (in-house or external) outsourcing or co-sourcing of internal audit services.

Carcello et al. (2005a) studied determinants of U.S. public companies' investment in internal auditing, showing that this investment was associated with company size and company risk, the ability to pay for monitoring, firm industry, and a number of accounting and auditing related factors like the leverage, operating cash-flow, or current ratio. Their model explained 43 percent of the variance in internal audit investment (unadjusted), thus leaving a considerable

proportion unexplained. In another paper, Carcello et al. (2005b) studied changes in internal auditing during the time of the major accounting scandals such as Enron or Worldcom. They documented that internal audit budget, staffing level, and number of meetings of the internal audit function with the audit committee increased during that time.

Finally, Sarens (2007) used an agency-model with eight independent variables to explain the size of the internal audit function in Belgian companies. His model had high explanatory power (adjusted R^2 of .70), though used a rather small sample (n = 73). Furthermore, it did not address non-agency model related (as well as more "soft") factors, which, from a theoretical point of view, should be associated with the size of the internal audit function as well (e.g. additional aspects of company risk level, task range or specialization of the internal audit function, centralization vs. decentralization of the internal audit function, etc.). Like Goodwin and Kent (2004), Sarens (2007) used the number of internal auditors as dependent variable, hence not considering the possible use of in-house or external outsourcing and co-sourcing of internal audit services. However, prior research findings (e.g. Carey et al. 2000) and interviews that we conducted with chief internal audit executives of large German corporations revealed that this occurs frequently. Hence, controlling for these sourcing activities would be desirable and necessary to proxy for the *total* internal audit staff capacity (or the *overall* internal audit function size), which may be considerably bigger than the "formal" number of internal audit employees.

Our study contributes to the still small, but emerging body of literature on the determinants of internal audit function size, by using as dependent measure the number of internal employees plus outsourced and co-sourced internal audit workforce from both outside and inside (from other business functions) the company.[1] This correction for outsourced internal

audit staff level was not done in the mentioned previous studies (besides Carcello et al., 2005a, who, however, studied investment in internal auditing rather than the staffing size of the internal audit function), but seems important for the reasons stated above. Furthermore, our model includes factors of internal audit function size that were not addressed in the existing explanatory models, which from a theoretical point of view appear relevant (e.g. the task range/ specialization, or the decentralization of the internal audit function), and explains a higher amount of variance than the prior models. Finally, our study provides insight for a non-North-American context in a large European country (Germany, where it is the first study on this topic). Our sample covers a large proportion of the German companies that have an internal audit function, and thereby offers a "broad" picture for this country.

Development of Hypotheses

Previous studies suggest that company size is an important driver of internal audit function size (Carcello et al. 2005a; Füss 2005, 139-140; Goodwin and Kent 2004; IIR 2004, 15; Sarens 2007). From a theoretical perspective, this is explained with a principal-agent relationship between top-management and subordinate management (e.g. Fama 1980; Sarens 2007). Top-management delegates management responsibilities to subordinate managers, who in turn are responsible for section operations and results, as well as for subordinate employees. With increased delegation of this kind, monitoring and control requirements increase. Internal auditing is one of the major mechanisms applicable to address these requirements, so that the size of the internal audit function is likely to increase with the size (e.g. total number of employees) of the company. Our first hypothesis therefore is as follows:

H1: The larger the company, the larger is the size of the internal audit function.

Monitoring and control requirements are likely to increase as organizational structures become more decentralized. In particular, if the company has business units not only locally, but nationwide or even worldwide, organizational structures become more decentralized. This results in a loss of control for the company's top-management, since organizational complexity and decisional discretion of subordinate management increase (Hadaschik 1993, 29; Hofmann 1998, 125; Hofmann 2002, 101-102; Treuhand-Kammer 1992, 58). This should lead to an increased usage of internal audit services, which is also supported by prior empirical findings (Wallace and Kreutzfeldt 1991; Goodwin and Kent 2004)[2]:

H2: The more spatially decentralized the company, the larger is the size of the internal audit function.

The German Stock Corporation Law (AktG) requires stock corporations to maintain an adequate monitoring system (§ 91 II AktG), which comprises an adequate internal audit function (introduced with the Enterprise Control and Transparency Law of 1998, KonTraG, see the explanatory memorandum by the German legislator, Deutscher Bundestag 1998, 11 and 15). Due to the so called "Ausstrahlungswirkung"[3], this requirement also affects private limited companies (GmbH). Moreover, the auditor of the financial statements of a listed stock corporation must audit and evaluate the adequacy of the corporation's monitoring system, including the adequacy of the internal audit function (§ 317 IV HGB (German Commercial Code)). Hence, legal requirements for maintaining an adequate internal audit function increase as companies are more strongly oriented to the capital markets.

Despite these legal requirements, it is likely that with increasing significance of the capital markets for a company, control requirements increase due to corresponding expectations of the company's investors. Stockholders and creditors will expect and require the company to

maintain strong control mechanisms in order to guarantee the efficient usage of the capital, to assure that profit is made with it, and/ or that the company is able to repay the debt when it is due. This should result in a larger internal audit function (e.g. Adams 1994, 8-11; Carey et al. 2000, 38; Sherer and Kent 1983; Smith 2002, 14; Watts 1988), which leads to the following hypothesis:

H3: The greater the significance of the capital markets for a company, the larger is the size of the internal audit function.

An important purpose of internal auditing is to assure that business risks that the company faces are identified, evaluated, and controlled (e.g. Leithhead 1999; Walker et al. 2003). This should lead to increased internal audit activities in firms that face higher risk levels than in firms with lower risk levels. Business risk can stem from different sources, like operational and market risks, risks from unexpected developments in the firm's environment, risks from regulation and compliance requirements, litigation risks, or fraud risks (e.g. Clark 2000; Goodwin and Kent 2004; Nikkinen and Sahlström 2005; Pryal 2008; Wallace and Kreutzfeldt 1991). Thus, our fourth hypothesis is as follows:

H4: The higher the risk levels the company faces, the larger is the size of the internal audit function.

To adequately perform internal audit tasks, internal audit staff must have sufficient qualification/ competence and practical experience (e.g. Clark et al. 1980; Gibbs and Schroeder 1979; Gramling et al. 2004). It is plausible that the lower the qualification and experience of the internal audit staff, more staff will be needed in order to approach at least "in sum" the required level of qualification and experience. Stated differently, more qualified and experienced staff will be able to conduct audits and other tasks more effectively and efficiently (see the extensive body of literature on the effects of auditors' skills and experience on audit effectiveness and

efficiency, e.g. Bonner and Lewis 1990; Davis 1996; Libby and Frederick 1990; Libby and Luft 1993; Libby and Tan 1994; Salterio 1994; Shelton 1999; Wright and Wright 1997), resulting in less staff required to fulfill the internal audit function's tasks. This expected relationship is also supported by the results of an empirical study on the staffing size of large German corporations' tax functions (Hebig 1984, 165), which is an analogous question to the one studied in this paper. We therefore state:

H5: The higher the qualification and experience of the internal audit staff, the smaller is the size of the internal audit function.

The degree of the internal audit function's centralization vs. decentralization (by means of subsidiary internal audit sections or offices) is likely to be related to its overall size, too. The more decentralized the internal audit function is organized, sufficiently qualified and experienced auditors must be maintained at each location. Ceteris paribus, this should require a greater total number of audit staff. The association of centralized (as opposed to decentralized) departments with a lower number of staff required was also documented for other business functions such as IT-service departments (e.g. Saran 2005; see also Anonymous 2007). Hence, *H6* is:

H6: The more decentralized the internal audit function is organized, the larger is the size of the internal audit function.

The demand for internal audit services should further depend on the task range the internal audit function of a company must cover (Aldhizer et al. 2003, 7; Böhmer et al. 1981, 54; Heigl 1989, 211; Kurowski and Winter 2000, 137). If the internal audit function has to cover a broader range of different task areas such as financial auditing, operational auditing, management auditing, IT auditing, technical auditing, or compliance auditing, rather than specializing in only a few task areas, a broader range of skills and qualifications of the audit staff is required. This would potentially lead to an increased number of internal auditors, since many

auditors will usually be skilled only in a limited number of task areas. This leads to the following hypothesis:

H7: The broader the range of (the higher the specialization on) audit tasks to cover, the larger (smaller) is the size of the internal audit function.

The work burden of the internal audit function can be relieved from some of its usual duties if these are taken over by other functions or institutions. Potentials of relief of this kind may first stem from a trade-off between audit services provided by the external (financial statements) auditor and corresponding services from the internal audit function (Jensen and Payne 2003). Second, reliefs of the internal audit function's work burden may result from other business functions within the company that enhance monitoring effectiveness, e.g. the audit committee, a compliance function, risk management systems, management accounting and control systems, or other corporate governance functions (e.g. Farber 2005; Krishnan 2005; McMullen 1996; Zhang et al. 2007). Third, the internal audit function may be relieved by a higher-order audit function (group audit), provided there is a parent company that maintains such a function (e.g. Hayn 1977; Reinecke and Wagner 2003). Finally, transferring (back) monitoring tasks from the internal audit function to the operational business functions by means of control self assessment (i.e. self-auditing/ process-integrated controls) (Jordan 1995; Marks 2000; McNally 2007; Wade and Wynne 1999, 15) may relieve the internal audit function. These reliefs should result in a lower number of staff required to fulfill its tasks and hence lead to a smaller internal audit function, as the following hypothesis states:

H8: The greater the reliefs of the internal audit function's work burden by other business functions or institutions that (partially) take over typical audit tasks, the smaller is the size of the internal audit function.

The staffing size of the internal audit function that is necessary to adequately perform its tasks is likely to depend on the level of cooperation of the audited departments (i.e. the people who work in the departments) with the internal auditors. If the departments constructively cooperate, provide the auditors with desired information and documentation willingly and on a timely basis, and generally support them in doing their work, the audit may be performed more efficiently, than if the auditors must "work against" resistance or defensive reactions on part of the auditees, or against any other reasons of lacking auditability (Richter 1978, 720-723; Richter 2002, 1773-1774). This increase in efficiency should be associated with a smaller number of auditors required to properly fulfill the audit work:

H9: The more auditable the audited departments are and the more constructively they cooperate with the internal auditors, the smaller is the size of the internal audit function.

Finally, to outsource parts of the production and/ or other business functions is a common practice in today's business world. Implications for the required size of the internal audit function are likely, though not directionally clear. On the one hand, with an increased level of outsourcing, dependencies from the external providers increase, and so does the danger of lacking continuity in strategic management. Due to the possibility that the external provider also works for competitors within the same industry, there may also be a lack of agreement of interests. As the outsourcing company remains responsible for the outsourced business functions, a larger size of the internal audit function may be required to fulfill the monitoring and control requirements, since outside processes are more difficult and costly to audit than in-house processes (e.g. Huissoud 2002, 84-88; Marcella 1995, 20-27). On the other hand, if the external provider maintains an effective internal audit on its own, or if the provider's audit function even conducts joint audits with the outsourcing firm's audit function, the effective workload for the

outsourcing firm's internal audit function may be reduced, leading to a smaller staffing level (Grießhaber and Walter 2002, 293-294; Gröflin 2004, 801). Since the possible effect of the degree of outsourcing on the size of the internal audit function remains theoretically inconclusive, we state the following research question:

RQ: Is the size of the internal audit function (positively or negatively) related to the degree of outsourcing of business functions?

RESEARCH METHOD

Instrument Development

The empirical study reported in this paper is based on a survey instrument completed by the heads of internal audit of large German companies. The instrument was developed in a multi-stage process. The first step involved a theoretic analysis of possible determinants of the size of the internal audit function, based on prior literature that was directly or indirectly relevant to this research question. As recommended by Churchill (1979), Dillman (2000), and Salterio (1998), based on the insights developed at the first stage, semi-structured interviews with eight heads of internal audit departments (one chief audit executive of a large pharmaceutical company, one of an energy supply company, one of a retailing company, one of a real estate service company, one of a media-business company, one of a major bank, one of a regional bank, and one of a big city's department of public works), and the participants of a CIA (Certified Internal Auditor) workgroup meeting were conducted. These interviews served to generate and adapt a pool of questionnaire items that describe expected determinants of internal audit function size, as suggested by the prior literature and the views of the experts.

The next step was a pilot test of the developed instrument. In the presence of one of the authors, the questionnaire was sequentially presented to and filled out by the chief audit executives of eight (other) German corporations. According to the comments of the participants obtained during and after filling out the questionnaire, questions were clarified, otherwise adapted, and some further items added. The final survey was set up electronically via the internet, using the TYPO3 survey-module "Pbsurvey", and could alternatively be obtained and filled out in paper form upon request.

Administration of the Questionnaire and Description of the Sample

Target participants of the study were the heads of internal audit of non-financial-service and non-public-sector companies (due to important particularities of these branches that were not expected to generalize across other branches).[4] We addressed our target participants via multiple channels: A support letter from the German Institute for Internal Auditing (IIR) was sent to the Institute's 314 non-financial-service and non-public-sector institutional members. Roughly 100 work group members of the IIR were also informed via email. The survey was further announced in the "agens Audit Newsletter" (www.agens.com) that has over 1,000 subscribers in the internal audit profession, and was also announced on the homepage of www.audit-net.net. 140 members of the internet portal www.xing.com (a platform for establishing and maintaining personal networks), who described their current position as "head of internal audit", "chief audit executive", or the like, and who worked at non-financial-service and non-public-sector companies, were contacted through this platform. Though it is likely that participants received the invitation to the study several times, it would be implausible to assume that they filled out the survey more than once.

Due to the announcement of the survey on multiple channels and the anonymous participation, an exact response rate cannot be computed. However, assuming that about three fourths of German companies with internal audit functions are members of the IIR, the total population excluding financial-service and public-sector enterprises would be roughly 600 companies. We obtained 163 questionnaires from non-financial-service and non-public-sector companies, which suggests a response rate of over 30 percent.[5] This relatively high response rate may be explained with the multiple and often wide-ranging channels of announcement. Also, a high degree of personal interest of the chief audit executives can be expected. Almost all of the chief audit executives who were interviewed or who participated in the preliminary steps of the questionnaire development expressed a high interest in the study and its results. Participants were offered to obtain a brief summary of the study's findings if they separately provided a contact email address (voluntarily).

Since confidentiality was guaranteed to the participants, fully anonymous participation was possible, and no confidential or personally delicate information was sought, it is implausible that participation in the study systematically depended on the subject topic or the included variables. Hence, there is no plausible reason to assume a non-response bias. Formally testing for non-response bias by comparing early and late responses did not reveal any reasonable concerns in this respect, either.

Prior surveys conducted by the IIR (e.g. IIR 2004) suggest that internal audit characteristics vary considerably among smaller companies on the one hand and also among extremely large companies on the other. That is, different relationships may be descriptive for these firms, which therefore would not generalize for the majority of firms "in the middle". Preliminary statistical analyses of our 163 cases supported this view. First, internal audit function

size for both smaller (with less than 2,000 employees) and extremely large companies (with more than 60,000 employees) scattered over a much wider range than for the firms "in the middle". Second, the assumptions of the linear regression model (inter alia, expected value of residuals of zero, homoscedasticity and normal distribution of residuals) were met for the final sample that excludes the companies with less than 2,000 and more than 60,000 employees, but were not fully met when these companies were included. As a consequence, we excluded the 42 questionnaires from either small or extremely large companies prior to the main analyses. Thus, our final sample consists of 121 companies.

Dependent Variable

As proxy for the size of the internal audit function, we use the full-time equivalent of internal audit staff, plus the full-time equivalent of in-house co-sourced and externally outsourced audit personnel that is bought on behalf of the internal audit function in order to increase the internal audit workforce (be it on an ad-hoc or a mid-term or long-term basis). In order to correct for skewness and ensure that the regression model assumptions are met, the square-root transformation of this measure is used.

Independent Variables

Main Independent Variables

Company size is measured by the total number of employees in the firm. Here as well, in order to correct for skewness of the distribution and ensure that the assumptions of the linear regression model are met, a square root transformation was applied prior to the analyses. Firm decentralization is an index that is calculated as the mean of a measure capturing the portion of firm employees who are employed in foreign countries, and the regional, nation-wide, European

wide, or worldwide existence of business units, production sites, or subsidiaries (see the Appendix for exact descriptions and wordings of all items).

Significance of the capital market is measured by a correspondingly worded single item. Company risk level is measured by an index that is calculated as the mean of five items. These items are operational (including market) risks, risks from unexpected developments in the firm's environment, risks from regulation and compliance requirements, litigation risks, and fraud risks. Qualification and experience of the internal audit staff is measured by a four-item index, which is the mean of the portion of internal audit staff holding a (university) graduate degree, the portion holding an audit related professional certification (like CIA, CISA, CPA, or WP (the German equivalent of CPA)), the portion that is employed in the company longer than two years (in the internal audit function or elsewhere), and the portion with more than two years of audit experience.

Decentralization of the internal audit function is measured by an index calculated as the mean of the portion of professional audit staff employed in subsidiary internal audit sections or offices, and the number of these departments or offices (the latter winsorized upperbounds by 4 to make the two scales equivalent). The range of audit tasks to cover by the internal audit function is measured by the number of different audit areas that participants rated fairly important or exceptionally important in their audit work. These audit areas are financial auditing, operational auditing, management auditing, IT auditing, technical and construction auditing, compliance auditing, and subsidiary/ branch office auditing.

Reliefs of the internal audit function's work burden by other business functions or institutions is measured by a four-item index, the mean of perceived reliefs from task coordination with the external (financial statements) auditor, from other business or corporate

governance functions within the company that take over audit related tasks, from higher-order audit functions, and from control self assessment. Cooperation with the audited departments is measured by a two-item index, which is the mean of one question on the perceived auditability/ preparedness of the audited departments, and another question on the perceived constructiveness of cooperation with the audited departments. Finally, degree of outsourcing is also measured by a two-item index, precisely the mean of one item that captures the inverse depth of the production program (as indicator of outsourced production processes), and another that captures the amount of outsourced administrative and support functions such as IT or accounting functions.

Control Variables

The size of the internal audit function is likely to vary among industries, e.g. due to differential monitoring requirements in different industries, and/ or due to legal obligations (e.g. Goodwin and Kent 2004). We include a set of industry dummies to capture these effects (as far as they are not already captured by the main independent variables). Precisely, affiliation to the processing/ production industry serves as "benchmark", and dummy variables for service industry, trading (wholesale and retail) industry, and supply industry are included. 1 represents a company's affiliation to an industry and 0 its non-affiliation.

As mentioned above, legal requirements in Germany virtually oblige stock corporations and private limited companies to install an adequate internal audit function (though leaving open what size and characteristics would constitute an "adequate" function), whereas this is formally not the case for non-limited private companies (partnerships, so called "Personengesellschaften"). In order to control for possible effects of the firm's legal form, a control variable is included. It is coded in a way that the legal or factual obligation to install an internal audit function increases with higher values of this variable.

Method of Analysis

For testing the hypotheses, a multivariate regression model using ordinary least squares (OLS) estimation is calculated. The transformed staffing variable serves as dependent variable. The model is as follows:

$$\text{Sqrt}(IA\_Staff\_Level) = \alpha_0 + \alpha_1 \text{Sqrt}(Firm\_Size) + \alpha_2 Firm\_Decen + \alpha_3 Cap\_Markets + \alpha_4 Risk\_Level + \alpha_5 Qualif\_Exp + \alpha_6 IA\_Decen + \alpha_7 Task\_Range + \alpha_8 IA\_Relief + \alpha_9 Auditab\_Coop + \alpha_{10} Firm\_Outsourcing + \alpha_{11} Service\_Ind + \alpha_{12} Trading\_Ind + \alpha_{13} Supply\_Ind + \alpha_{14} Legal\_Form + \varepsilon$$

where[6]

Sqrt(*IA_Staff_Level*) = square-root transformation of the internal audit staffing size = $\sqrt{\left(Num\_Aud\_IA \cdot \frac{Work\_Hours}{40} \right) + \frac{IA\_Outsourcing\_Int + IA\_Outsourcing\_Ext}{225}}$

Num_Aud_IA = full-time equivalent of the number of internal audit staff employed in the firm's internal audit function

Work_Hours = average working hours of the auditors per week

IA_Outsourcing_Int = additional internal audit workforce bought by or for the internal audit function from (other functions) within the firm (in man/ woman-workdays, assuming 225 workdays per year)

IA_Outsourcing_Ext = additional internal audit workforce bought by or for the internal audit function from outside the firm (in man/ woman-workdays, assuming 225 workdays per year)

Sqrt(*Firm_Size*) = $\sqrt{total\ number\ of\ employees\ in\ the\ firm}$

Firm_Decen = spatial firm decentralization (0 = low to 4 = high decentralization)

Cap_Markets = significance of capital markets (0 = low to 4 = high)

Risk_Level = company risk level (0 = low to 4 = high)

Qualif_Exp = internal audit staff qualification (0 = low to 4 = high)

IA_Decen = spatial decentralization of the internal audit function (0 = low to 4 = high decentralization)

Task_Range = number of different audit areas that participants rated fairly important or exceptionally important in their audit work (0 = no audit area to 7 = seven audit areas)

IA_Relief = relief of the internal audit function's work burden by other business functions or institutions (0 = low to 4 = high)

Auditab_Coop = auditability and cooperation of audited departments (0 = low to 4 = high)

Firm_Outsourcing = degree to which parts of production and other business functions in the firm are outsourced (0 = low to 4 = high)

Service_Ind = 1 if firm belongs to service industry, 0 otherwise

Trading_Ind = 1 if firm belongs to trading (wholesale or retail) industry, 0 otherwise

Supply_Ind = 1 if firm belongs to supply industry, 0 otherwise

Legal_Form = 3 if firm is a stock corporation, 2 if firm is a private limited company, 1 if firm is a combination of a non-limited partnership and a limited company (but "overall" is a non-limited partnership), and 0 for other non-limited partnerships.

RESULTS

Industry affiliations of the companies included in the sample are summarized in Table 1, and descriptive statistics of the variables used in the regression model are included in Table 2. Table 3 contains the correlation matrix of the variables.

[Insert Tables 1, 2, and 3 about here]

Results of the multivariate OLS regression on the square-root transformed internal audit staffing size are shown in Table 4. The model explains 80 percent of the dependent variable's variance, i.e. has high explanatory power (Adjusted R^2 = .80). The model's *F*-Test is highly significant ($F_{14, 97} = 33.38$; $p < .01$).

[Insert Table 4 about here]

t-Tests of the model's independent variables that are addressed by the hypotheses reveal the following: The total number of employees in the firm is positive, clearly significant ($p < .01$), and clearly the dominant driver of internal audit staffing size (*Beta* = .60). Hence, *H1* is supported. Spatial decentralization of the firm is negative as expected, but not significant, leaving *H2* unsupported. Significance of the capital markets for the firm is positive and significant ($p = .03$; *Beta* = .10), supporting *H3*. Contrary to expectation, company risk level is negative, but not significant. Thus, *H4* is not supported. *H5* on the qualification/ experience level

of the internal audit staff is not supported, either, due to lacking significance, although the coefficient is in the predicted direction. Decentralization of the internal audit function is positive as predicted, highly significant ($p < .01$), and explains an important portion of the variance in the dependent variable (*Beta* = .27), lending support to *H6*. The parameter of the variable that captures the range of audit tasks to cover is positive and highly significant ($p < .01$; *Beta* = .18), too. Thus, *H7* is supported as well. However, reliefs of the internal audit function by other business functions or institutions are not significant, even though having the predicted negative sign. Consequently, the model does not support *H8*. *H9* on the auditability and cooperation of audited departments is not supported, either, since the parameter fails to be significant (the sign is in the expected direction, but the estimated parameter value is close to zero). With regard to the *RQ* on the firm's degree to outsource parts of the production and other business functions, no impact on internal audit function size was detected in our model. Though the parameter of the corresponding variable is positive, it is not significant.

With respect to the control variables, all three industry variables are positive and significant, suggesting that the internal audit functions of companies belonging to the service industry, trading industry, and supply industry are larger than the internal audit functions of processing/ production industry. Of the three variables, affiliation to the trading industry has the highest explanatory contribution to internal audit staffing size ($p < .01$; *Beta* = .30), followed by the service ($p < .01$; *Beta* = .18) and supply industry ($p < .01$; *Beta* = .14). Somewhat surprisingly, the parameter of the variable that captures the legal form of the firm is negative, but not significant.

DISCUSSION

The purpose of this study was to explore factors that determine the staffing size of large German corporations and thereby to contribute to the still limited literature on this topic. An understanding of these factors is important for firm management who is responsible for installing an *adequate*, i.e. effective and efficient internal audit function. This implies the desire to install an internal audit function sufficiently large to be effective, but also sufficiently small to be efficient. An understanding of these factors is also important for external auditors of listed stock corporations' financial statements, because they are legally obligated to assess the adequacy of the internal monitoring system that comprises the internal audit function.

This study contributes to the existing literature in several ways: First, it replicates and thereby further supports several findings from the previous studies. Like Carcello et al. (2005a), Goodwin and Kent (2004), and Sarens (2007), we found company size to be the most important driver of internal audit function size. As well, significance of the capital markets was found to be a positive and significant driver. Second, our study added several new factors that from a theoretical point of view appear relevant to explain the size of the internal audit function, but were not addressed in the existing studies. Of these variables, the range of different audit task areas that the internal audit function must cover (as opposed to a higher degree of task specialization) was found to be a highly significant positive driver of internal audit function size. While the spatial decentralization of the *firm's* activities was not found to have explanatory power, as was the case in the study by Sarens (2007), too, we found that the spatial decentralization of the *internal audit function* is a highly significant factor associated with larger internal audit functions and makes a high explanatory contribution. From the control variables,

industry dummies suggest that the internal audit functions of trading companies, service companies, and supply companies are larger than those of processing/ production companies.

Third, by explaining 80 percent of the variance in internal audit function size, our model has very high explanatory power, which is higher than of the models presented in the previous studies. Fourth, similar to Carcello et al. (2005a) (who proxied internal audit function size with the investment in internal auditing), but unlike Goodwin and Kent (2004) and Sarens (2007), we controlled for additional internal audit work bought from inside or outside the company (in-house or external outsourcing). Doing this seems to be important due to the frequent practice to temporarily reinforce the internal audit function by these means, and which thereby may considerably enhance the internal audit function's (staff) capacity. Finally, there are good reasons to believe that we have a large proportion of the German non-financial-sector and non-public-sector companies that maintain and internal audit function in our sample, thus conveying a quite robust picture for the German market. The model may e.g. be used for benchmarking purposes by company management or auditors to assess the quantitative adequacy of the internal audit function. In a similar vein, it may be applied by the heads of internal audit departments as a supportive argument to defend or even increase the staffing capacity of their department opposite contrary attempts of the firm's management.

Despite the additional contributions to the existing literature described above, the knowledge about the determinants of internal audit function size still remains limited, which is also associated with the limitations of this study. Several factors predicted to determine the size of the internal audit function were found to work in the expected direction, but failed to be significant in the model (e.g. audit staff qualification, or company risk level). Further research seems desirable to clarify the role of these variables. This also applies to the firm's degree to

outsource parts of the production and other business functions, which had no significant impact on internal audit function size in our study. A reason for this finding may be that the opposite effects of higher monitoring efforts for outsourced processes (due to being more difficult and costly to audit than in-house processes) on the one hand, and a reduced work burden on the other (e.g. due to effective controls and monitoring activities by the provider) may offset each other. However, this remains speculative, and future studies may address this issue in more depth by controlling for the monitoring quality and monitoring intensity of outsourced functions ensured by the providing firm.

Another limitation is that our study is based on subjective assessments and evaluations of chief internal audit executives. Notwithstanding, there are no reasons to assume responses to be systematically biased. Chief internal audit executives can be expected to have the best understanding and knowledge to provide the information sought in the survey and should be interested to provide correct answers if possible. Participants could answer the survey fully anonymously, which should reduce social desirability effects to a minimum. In addition, most of the heads of internal audit contacted in the preliminary stages of questionnaire development expressed a high interest in the study and its results. These results were promised to be made available in a research summary to the participants if they separately (and voluntarily) provided a contact email address. Thus, participants should not have had an interest to bias the study's results. Finally, like the previous studies (Carcello et al. 2005a; Goodwin and Kent 2004; Sarens 2007), this one investigated the association between factual staffing levels of internal audit and the predicted determinants. However, such a model can only explain which factors affect internal audit staffing *in practice*, and these factual staffing levels may not be optimal.

Finally, our results are limited to German corporations that have between 2,000 and 60,000 employees. This focus was necessary and justified for several reasons. First, it is consistent with the presumption that internal audit characteristics may vary considerably among smaller and among extremely large companies, as suggested by prior empirical findings and by preliminary statistical analyses of our data. Second, also consistent with this presumption, the focus on the mentioned range was necessary to ensure that all assumptions of the linear regression model were met. For the investigated range, our regression model achieved high explanatory power, suggesting that rather stable relationships hold within this range.

To sum up, this study explored factors that determine the size of the internal audit function of large German corporations and found company size to be the major driver of internal audit function size. Furthermore, the significance of the capital markets for the company was positively related to internal audit function size, as were the task range of different audit tasks to be covered by internal audit and the spatial decentralization of the internal audit function. With the mentioned insights, and particularly the latter ones that have not been investigated before, this study contributes to the emerging literature on internal audit characteristics.

[1] This measure was adjusted to full-time employees, and a square-root transformation was applied (see section 3.3 for details).

[2] In an analogous fashion, a meta-analysis by Hay, Knechel, and Wong revealed a strong association between client decentralization and internationalization on the one hand and (external) audit fees on the other (Hay et al. 2006).

[3] This means that duties and responsibilities of stock corporation managers have a binding character for managers of private limited companies as well (settled case law with respect to § 43 I GmbHG (Law of the Private Limited Company)).

[4] See footnote 5 for details.

[5] We also obtained 21 completed questionnaires from financial-service and 53 from public-sector companies. Three public-sector companies simultaneously belonged to the financial industry, leading to a total of 234 questionnaires obtained. These cases had to be eliminated from the sample for two major reasons: First, financial-service companies are subject to extensive regulation in Germany, which significantly affects internal audit requirements. Likewise, public-sector enterprises differ from private-sector companies in several important respects (e.g. regulation, enterprise objectives, governance structures, control environment), which likely affect internal audit characteristics. Second, companies from the financial and the public sector were not addressed in the announcements/ invitations to participate. As a result, these companies are underrepresented in our overall sample, so that results from these cases would not be representative. Hence, an analysis across the entire original sample would likely produce biased results.

[6] See the Appendix on how the model variables relate to and are constructed from the original questionnaire items.

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APPENDIX

Model Variables and Corresponding Questionnaire Items*

Model Variable	**Indicator(s)** **[Original Scale]**	**[Recoded Scale]** (if applicable)
Work_Hours	What are the average working hours of the internal audit staff per week? Please state the full-time equivalent, including work overtime not settled with leisure time. [in hours]	---
IA_Outsourcing_Int	How many man/ woman-workdays are annually performed by external providers from outside the company on behalf of the internal audit function? (Outsourcing) [in man/ woman-workdays]	---
IA_Outsourcing_Ext	How many man/ woman-workdays are annually performed by company-own specialists from outside the internal audit function (e.g. from the organization function, the IT function, the accounting function, the legal department, …)? (Co-Sourcing) [in man/ woman-workdays]	----
Firm_Size	How many internal audit staff (including chief internal audit executives and section executives) are employed in your internal audit function? [in full-time equivalent, including audit staff in subsidiary audit sections/ offices]	---
Firm_Decen	1) How many of the employees in your company are employed in foreign countries? (Please consider the part of the company/ group for which your internal audit function is responsible – state of the last financial statements.) [number of employees in the company]	[divided by *Firm_Size*, then coded as follows: 0 = 0-19.99 percent 1 = 20.00-39.99 percent 2 = 40.00-59.99 percent 3 = 60.00-79.99 percent 4 = 80.00-100 percent]
	2) Where does your company have significant operating units, production sites, branch offices, or subsidiaries? (Please consider only the part of the company/ group for which your internal audit function is responsible.) [0 = in a single region in Germany 1 = across Germany 2 = across European countries 3 = across different continents]	[0 = in a single region in Germany 1.33 = across Germany 2.66 = across European countries 4 = across different continents]

Model Variable	**Indicator(s)** **[Original Scale]**	**[Recoded Scale]** (if applicable)
Cap_Markets	How important is the capital market for your company? [0 = not at all 1 = scarcely 2 = average 3 = fairly 4 = exceptionally]	---
Risk_Level	How intensively is your company subject to the following risks? (Please compare your company throughout the industry with other companies.) 1) …general operational and market risks (e.g. volatility of business, variability of cashflows, …)?	---
	2) …risks from unexpected developments in the company's environment (e.g. frequency, strength, and discontinuity with which environmental changes occur)?	---
	3) …risks from external regulation (compliance requirements, e.g. due to the Sarbanes-Oxley-Akt, AktG, KonTraG, …)?	---
	4) …litigation risks?	---
	5) How intensively is your company subject to the risk of dolose action (fraud)? [all five scales ranging from 0 = not at all 1 = scarcely 2 = average 3 = fairly 4 = exceptionally]	---

Model Variable	**Indicator(s)** **[Original Scale]**	**[Recoded Scale]** (if applicable)
Qualif_Exp	How many of the internal audit staff … (Please convert to full-time equivalent, including chief internal audit executives and section executives, including subsidiary audit sections/ offices.) 1) … hold a (university) graduate degree?	[divided by *Firm_Size*, then coded as follows: 0 = 0-19.99 percent 1 = 20.00-39.99 percent 2 = 40.00-59.99 percent 3 = 60.00-79.99 percent 4 = 80.00-100 percent]
	2) … are employed in your company (or the internal audit function in your company) longer than two years?	[divided by *Firm_Size*, then coded as follows: 0 = 0-19.99 percent 1 = 20.00-39.99 percent 2 = 40.00-59.99 percent 3 = 60.00-79.99 percent 4 = 80.00-100 percent]
	3) … hold an audit-related professional certification (e.g. CIA, CISA, WP [the German equivalent of CPA], CPA, …)?	[divided by *Firm_Size*, then coded as follows: 0 = 0-19.99 percent 1 = 20.00-39.99 percent 2 = 40.00-59.99 percent 3 = 60.00-79.99 percent 4 = 80.00-100 percent]
	4) … have more than two years of (internal or other) audit experience? [all four scales in number of full-time audit staff]	[divided by *Firm_Size*, then coded as follows: 0 = 0-19.99 percent 1 = 20.00-39.99 percent 2 = 40.00-59.99 percent 3 = 60.00-79.99 percent 4 = 80.00-100 percent]
IA_Decen	1) How many subsidiary internal audit sections/ offices does your audit function run? (E.g. in subsidiary companies) [in number of subsidiary sections/ offices]	[divided by *Firm_Size*, then coded as follows: 0 = 0 1 = 1 2 = 2 3 = 3 4 and more = 4 (winsorized at upper bound)]
	2) How many professional audit staff is employed in subsidiary internal audit sections/ offices of your audit function? (E.g. auditors, section executives, …; in full-time equivalent) [in number of employees]	[divided by *Firm_Size*, then coded as follows: 0 = 0-19.99 percent 1 = 20.00-39.99 percent 2 = 40.00-59.99 percent 3 = 60.00-79.99 percent 4 = 80.00-100 percent]

Model Variable	**Indicator(s)** **[Original Scale]**	**[Recoded Scale]** (if applicable)
Task_Range	How important are the following audit tasks for your internal audit function? 1) Financial auditing? 2) Operational auditing? 3) Management auditing? 4) IT auditing? 5) Technical and construction auditing? 6) Compliance auditing? 7) Subsidiary/ branch office auditing? [all seven scales ranging from 0 = not at all 1 = scarcely 2 = average 3 = fairly 4 = exceptionally]	[number of task areas rated with 3 or 4 (i.e. fairly or exceptionally important), leading to the following scale: 0 = no task area fairly or exceptionally important 1 = 1 task area fairly or exceptionally important 2 = 2 task areas fairly or exceptionally important 3 = 3 task areas fairly or exceptionally important 4 = 4 task areas fairly or exceptionally important 5 = 5 task areas fairly or exceptionally important 6 = 6 task areas fairly or exceptionally important 7 = 7 task areas fairly or exceptionally important]
IA_Relief	To what degree is the internal audit function relieved… 1) …due to coordination of the audit program with the external auditor?	---
	2) …due to other business functions within the company that enhance monitoring effectiveness? (E.g. risk management systems, the organization function, the compliance function, the audit committee, …)	---
	3) …due to a higher-order audit function (group audit), provided there is a parent company that maintains such a function?	---
	4) …due to an application of control self (risk) assessment (CSA)/ self-auditing? [all four scales ranging from 0 = not at all 1 = scarcely 2 = average 3 = fairly 4 = exceptionally]	---

Model Variable	**Indicator(s)** **[Original Scale]**	**[Recoded Scale]** (if applicable)
Auditab_Coop	1) How good is the auditability of the to-be-audited departments on average? (E.g. personal preparedness and willingness, documentation of facts, …)	---
	2) How constructive is the cooperation with the to-be-audited departments on average? [both scales ranging from 0 = not at all 1 = scarcely 2 = average 3 = fairly 4 = exceptionally]	---
Firm_Outsourcing	1) How large is the proportion of the amount of cost of materials or the amount of sales input, respectively, with regard to turnover in your company? (Measure for the depth of the production program) [0 = 0-19.99 percent 1 = 20.00-39.99 percent 2 = 40.00-59.99 percent 3 = 60.00-79.99 percent 4 = 80.00-100 percent]	[0 = 80.00-100 percent 1 = 60.00-79.99 percent 2 = 40.00-59.99 percent 3 = 20.00-39.99 percent 4 = 0-19.99 percent]
	2) To what degree are administrative and supportive functions outsourced in your company? (E.g. IT function, accounting function, …) [0 = not at all 1 = scarcely 2 = average 3 = fairly 4 = exceptionally]	---
Service_Ind	Which is the industry to which the main activity of your company belongs? [full categorical scheme omitted here]	[1 = service industry, 0 = otherwise]
Trading_Ind	Which is the industry to which the main activity of your company belongs? [full categorical scheme omitted here]	[1 = trading industry, 0 = otherwise]
Supply_Ind	Which is the industry to which the main activity of your company belongs? [full categorical scheme omitted here]	[1 = supply industry, 0 = otherwise]

Model Variable	**Indicator(s)** **[Original Scale]**	**[Recoded Scale]** (if applicable)
Legal_Form	Which is the legal form of your company? [3 = stock corporation (AktG) 2 = private limited company (GmbH) 1 = combination of non-limited partnership and limited company (GmbH & Co. KG) 0 = other non-limited partnership ("Personengesellschaft")]	---

* This is the translation from the original German version into English.

TABLE 1

Industry Affiliations of the Companies in the Sample (n = 121)

Variable	Frequency	Percentage
Processing/ Production Industry	63.00	52.07 percent
Service Industry	37.00	30.58 percent
Trading Industry	15.00	12.40 percent
Supply Industry	6.00	4.96 percent

TABLE 2

Descriptive Statistics for the Variables Included in the Regression Model (n = 121)

Variable	Minimum	Maximum	Mean	Standard Deviation	Median
Sqrt(*IA_Staff_Level*)	1.04	7.28	2.54	1.18	2.15
Sqrt(*Firm_Size*)	44.72	244.95	106.71	49.30	97.47
Firm_Decen	.00	4.00	2.30	1.14	2.50
Cap_Markets	.00	4.00	1.99	1.28	2.00
Risk_Level	.00	3.40	2.11	.59	2.00
Qualif_Exp	.85	3.50	2.44	.62	2.50
IA_Decen	.00	4.00	.40	.87	.00
Task_Range	1.00	7.00	3.07	1.30	3.00
IA_Relief	.25	2.50	1.34	.47	1.25
Auditab_Coop	.50	4.00	2.74	.63	3.00
Firm_Outsourcing	.00	3.00	1.71	.64	1.50
Service_Ind	.00	1.00	.31	.46	.00
Trading_Ind	.00	1.00	.12	.33	.00
Supply_Ind	.00	1.00	.05	.22	.00
Legal_Form	.00	4.00	2.98	1.34	4.00

For variable descriptions and underlying questionnaire items see the Research Method section and the appendix.

TABLE 3

Pearson Correlations Among the Variables Used in the Regression Model

Variable	Sqrt (*IA_Staff _Level*)	Sqrt (*Firm _Size*)	*Firm _Decen*	*Cap _Markets*	*Risk _Level*	*Qualif _Exp*	*IA _Decen*	*Task _Range*	*IA_Relief*	*Auditab _Coop*	*Firm _Out-sourcing*	*Service _Ind*	*Trading _Ind*	*Supply _Ind*	*Legal _Form*
Sqrt(*IA_ Staff_Level*)	1,00														
Sqrt (*Firm_Size*)	.77***	1,00													
Firm_Decen	.12	.42***	1,00												
Cap _Markets	.17*	.17*	.01	1,00											
Risk_Level	.06	.09	.16	.36***	1,00										
Qualif_Exp	-.24***	-.12	-.03	.03	.11	1,00									
IA_Decen	.58***	.48***	.16*	.03	.22**	-.21**	1,00								
Task_Range	.37***	.26***	.09	.29***	.12	-.06	.15	1,00							
IA_Relief	.04	.01	-.20**	-.06	.08	.10	-.03	-.10	1,00						
Auditab _Coop	.16*	.18**	-.01	.07	-.11	.06	-.02	-.02	.26***	1,00					
Firm_Out-sourcing	.12	.05	-.11	.13	.12	.08	.06	.00	.10	.21**	1,00				
Service_Ind	-.08	-.16*	-.20**	.09	.23**	.02	-.02	-.23**	.00	-.02	.22**	1,00			
Trading_Ind	.35***	.09	-.31***	-.27***	-.21**	-.25***	.12	.04	.15	.09	-.08	-.25***	1,00		
Supply_Ind	.11	.01	-.17*	.03	-.12	.03	.05	-.01	.07	-.03	.17*	-.15*	-.09	1,00	
Legal_Form	.14	.20**	.09	.35***	.22**	-.03	.07	.10	.04	.18*	.08	.08	-.03	.10	1,00

***, **, and * indicate statistical significance at the .01, .05, and .10 level, respectively (two-tailed).

TABLE 4

*OLS Regression on the Dependent Variable "*Sqrt(*IA_Staff_Level*)*" (square-root transformation of the internal audit staffing size adjusted for outsourced/ additionally bought in-house and outside internal audit workforce*

Variable	Hypothesis	Predicted Sign	Non-Standardized Coefficient	Standard Error	Standardized Coefficient (*Beta*)	*t*	*p* -value*
Constant	(---)	(---)	.39	.42	(---)	.91	.36
Sqrt (*Firm_Size*)	*H1* (supported)	+	.02	.00	.60	10.26	.00
Firm_Decen	*H2* (not supported)	+	-.04	.06	-.04	-.68	.25
Cap _Markets	*H3* (supported)	+	.09	.05	.10	1.91	.03
Risk_Level	*H4* (not supported)	+	-.08	.10	-.04	-.79	.22
Qualif_Exp	*H5* (not supported)	–	-.07	.09	-.04	-.80	.22
IA_Decen	*H6* (supported)	+	.37	.07	.27	5.15	.00
Task_Range	*H7* (supported)	+	.16	.04	.18	3.66	.00
IA_Relief	*H8* (not supported)	–	-.03	.12	-.01	-.29	.39
Auditab _Coop	*H9* (not supported)	–	.-01	.09	-.01	-.12	.45
Firm_Out-sourcing	*RQ* (no impact)	?	.10	.09	.05	1.09	.28
Service_Ind	(control)	(---)	.48	.13	.18	3.61	.00
Trading_Ind	(control)	(---)	1.08	.20	.30	5.29	.00
Supply_Ind	(control)	(---)	.72	.26	.14	2.82	.01
Legal_Form	(control)	(---)	-.05	.04	-.06	-1.27	.21

* One-tailed test where direction predicted, otherwise two-tailed test.

Model summary: n = 121 Adjusted R^2 = .80 $F_{14,97}$ = 33.38; p = .00

For variable descriptions and underlying questionnaire items see the Research Method section (3.5) and the Appendix.