COMPENSATION OF INTERNAL AUDITORS: EMPIRICAL EVIDENCE FOR DIFFERENT IMPACT FACTORS

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Abstract

This paper examines the different factors which impact the compensation level of chief audit executives (CAE) and sheds light on often unobservable and, therefore, opaque drivers of CAE remuneration. An ordered logistic regression is used to analyze the effects of internal audit function (IAF) competences, stakeholder relationships, and firm complexity on the CAE compensation using survey data from 212 CAEs from a broad spectrum of companies and industries. The results of the study identify IAF competence and independence as fundamental drivers of CAE compensation and provide evidence that firm complexity in terms of foreign sales, listing status and need for monitoring constitute additional salary determinants related to the IAF environment. Our results are based on questionnaire data and subject to a possible response bias as they rely in part on the participants' assessment of a given situation. This paper provides a benchmark for CAE compensation levels in Austria, Germany and Switzerland and offers insights on different company and IAF inherent factors that can be associated with varying salary outcomes. This study is the first to investigate the factors driving the overall compensation level of CAEs and by providing empirical evidence regarding determinants of CAE compensation.

Keywords: Internal Auditor, Internal Auditing Function, Chief Audit Executive, Compensation, Determinants

Authors' individual contribution: Conceptualization – M.E.; Methodology - M.E.; Writing – M.E., T.M., R.K., J.B.; Investigation – M.E., T.M., R.K., J.B.; Resources – M.E.; Supervision – M.E. and T.M.

1. INTRODUCTION

The internal audit function (IAF) has become one of the main pillars of good corporate governance over the last years (Behrend & Eulerich, 2019). With their consulting and assurance activities, internal auditors can reduce companies' risks, improve business processes or internal controls and therewith, add value to the company (Carcello, Eulerich, Masli, & Wood, 2018).

Furthermore, compensation studies from the Institute of Internal Auditors (IIA) record a salary increase over the last years (IIA, 2017a; 2015a, b). This increase can also be seen as an indicator of a heightened appreciation for the work of chief audit executives (CAE) and the IAF in the companies. Other market reports add to this notion in their observation of intensified demands for qualified internal audit resources (Barclay Simpson, 2017).

On the other hand, numerous compensation studies with a focus on executive directors or other board members find significant effects between compensation and the quality of corporate governance (Vafeas & Waegelein, 2007; Richardson & Waegelein, 2002). Both fixed and incentive-based compensation are widely seen as mechanisms to align employees' interests with those of the company in order to satisfy the shareholder or stakeholders needs and to reduce agency problems (Mohd Hanafi & Stewart, 2015; Baker, Jensen, &

Murphy, 1988; Brickley, Bhagat, & Lease, 1985). Following this line of thought, a CAE with a high salary and incentive-based compensation structure should also lead to an improved IAF quality and, ultimately, corporate governance quality.

To maintain an adequate level of independence, both the structure of the remuneration and budget of the CAE are to be determined either by the board of directors or one of its subcommittees (e.g., audit or compensation committee) (Christopher, Sarens, & Leung, 2009; CIIA, 2013). Fixed components of the CAE's compensation are in this context contingent upon the CAE's organizational status, which in most companies is commonly on par with senior executives. However, addressing the inconsistent adoption of the compensation-formation process, prior literature opposes practices that vest company management instead of the board with CAE compensation authority (McHugh & Raghunandan, 1994).

In a principal-agent setting, the CAEs (as agents) are motivated through their compensation structure to step up efforts on the improvement of business processes and assurance, which satisfies the management and shareholders (as principals) in the long run. However, there is also empirical evidence that incentive-based compensation incites employees to bias performance measures to maximize their own income (Watts & Zimmerman, 1990). Providing a somewhat ambivalent case for such objectivity constraints, Schneider (2003) finds that incentive-based compensation tied to company stock prices can cause internal auditors to be more lenient in their reporting behavior when faced with GAAP violations. A finding, which is not confirmed for direct ownership or earnings-related remuneration.

Only a few studies present empirical evidence about the effects of internal auditors' compensation on governance from an academic perspective. Most of these publications focus on the decision making of internal auditors or the reliance of the external auditor (EA) from a behavioral or experimental point of view (DeZoort, Houston, & Peters, 2001). Also, several theoretical papers with a focus on the overall audit fees do exist. Interestingly, the results show a negative effect between the total amount of IAF compensation and the reliance of the EA, as one of the other pillars of good corporate governance, on internal auditors' work outcomes. Similar to the problematic performance measures mentioned above, the evidence indicates a loss of objectivity and, consequently, a lower reliance of the EA on IAF's results.

Acknowledging the overall scarcity of academic output on this matter, we motivate our study based on the fact that information about the determinants of CAE compensation schemes are highly limited to this date. Given that most of the few existing studies concentrate on the outward effects of the salary level of staff auditors, we aim to shed light on the oftentimes unobservable and, therefore, substantially opaque drivers of the CAE remuneration. More importantly, our perspective is not confined to externally reported firm characteristics, as we also consider characteristics inherent to the IAF such as the relationship towards its key stakeholders and the actual quality structure of the function. By investigating the circumstances that shape the role and responsibilities for which the CAE is compensated, rather than merely studying the characteristics of the individual CAE, we aim to contribute to a deeper understanding of what drives CAE compensation. Thus, the following research question is central to this paper:

RQ1: Which different factors influence the compensation of internal auditors?

While much of the recent research has reached consensus on the construct of IAF quality and its effect on external parties (Felix Jr, Gramling, & Maletta, 2001; Messier & Schneider, 1988; Schneider, 1984), it is yet unknown how some of the quality defining criteria, such as internal audit competence and independence, are being factored in when it comes to the internal valuation of the function. Although the level of certification, for instance, serves as a popular means to assess IAF competence (Krishnamoorthy, 2002) and is commonly recognized as a consistent substantiation for higher salary levels according to most of the IIA compensation studies (IIA, 2017a), no empirical confirmation can be found to corroborate this relation.

Unlike prior studies that rely on experimental settings (e.g., DeZoort et al., 2001), we utilize an ordered logistic regression with proprietary data from questionnaire responses of 212 CAEs to analyze the effects of the aforementioned IAF related characteristics. Interestingly, we find significant positive effects for different quality indicators such as percentage of certifications, staff rotation programs as well as audit committee (AC) subordination on different salary levels of the CAE. Furthermore, we find significant positive effects for firm dependent factors such as percentage of foreign sales, investments in IAF proxied by IAF size, and listing status of the respective firm.

This study is further motivated by the practical importance which the internal auditor's compensation carries. As compensation can influence the appeal that pursuing a career in internal auditing has among possible recruits (Bartlett, Kremin, Saunders, & Wood, 2017), extending the available knowledge of what drives compensation is, ultimately, of value to the profession. Additionally, we expect this paper to help increase awareness of the internal auditing profession as a career path. This study should thus be of interest to practitioners and researchers alike.

Our results contribute to the existing literature in numerous ways. First of all, we provide empirical evidence for positive effects of characteristics that are commonly associated with the competence and independence of the IAF and are often recognized by external parties such as the EA. Furthermore, we identify firm related factors that exert direct influence on CAE compensation levels and can, therefore, be seen as fundamental drivers of the IAF valuation alongside quality-related aspects. This study is also the first to provide insights on CAE compensation in the German-speaking area. Overall, our results lay the groundwork for numerous directions of future research and might serve as a first benchmark for practitioners in the field of internal auditing.

The remainder of this paper is structured as follows. After a discussion of the prior literature and the development of our hypotheses in the respective

section, Section 3 explains our research design and data set. Section 4 then presents our empirical results and derives implications for our posed hypotheses. Section 5 offers robustness checks before Section 6 concludes with a discussion of our findings and addresses the limitations of the study.

2. LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

While there is an extensive body of literature on executive compensation examining the determinants of chief executive officer (CEO) compensation (i.e., Core, Holthausen, & Larcker, 1999; Tosi, Werner, Katz, & Gomez-Mejia, 2000 for a meta-analysis; Farid, Conte, & Lazarus, 2011 for an extensive literature review), to the best to our knowledge, no empirical evidence for the compensation of CAEs exists. Thus, we derive a theoretical framework from the CEO literature to investigate the CAE compensation. The standard principal-agent paradigm is often invoked in finance and accounting research to understand the CEO labor market. In this paradigm, the board of directors is assumed to negotiate at arm's length with the CEO, and the optimal contract ties CEO compensation to shareholder wealth (Rajgopal, Taylor, & Venkatachalam, 2012). Differentiated compensation schemes are used by organizations to align the interests of all employees with owners (Baker et al., 1988). In the CAE labor market, the salary of the CAE is predetermined by the AC, CEO or senior management who influences the compensation structures and the AC or board of directors who approve it. At least once a year, the AC should review the performance of the CAE and approve the annual compensation and salary adjustment (Fountain, 2016; IIA, 2016). The AC or board of directors act on behalf of shareholders to reduce the information asymmetry between managers and shareholders based on the work of the CAE and his/her IAF. Thus, considering that the CEO and CAE compensation scheme have the same final purpose, reducing potential agency conflicts and creating an alignment of the interests of the CAE/CEO and the principal, their determinants can be derived by the same theories.

First, compensation is determined by productivity that is related to effort, skills acquired from education and other skills. Economic models of compensation generally assume that higher performance requires greater effort and, in order to provide incentives for this effort, these models predict the existence of reward systems to structure the compensation schemes (Baker et al., 1988). Economic models support the human capital interpretation of the educational structure of wages. Education is valuable to workers, in terms of higher wages, because it can give them skills that increase their productivity (Boissiere, Knight, & Sabot, 1985). Evidence shows that general managerial skills are associated with an increase in CEO wages (Murphy & Zabojnik, 2004). To attract higher-ability CEOs, companies must pay them relatively more (Black, Dikolli, & Dyreng, 2014).

In the CAE setting, a higher ability can be inferred based on competencies acquired by auditors at the staff level as it is a necessity that the CAE at least matches, if not surpasses, the level of competence of his subordinates to avoid getting marginalized. Such competencies can often be ascribed to an educational training (e.g., professional certification) or the acquisition of highly ambitious talent (e.g., as part of rotational career programs). Internal auditors are expected to "possess the knowledge, skills, and other competencies needed to perform their individual responsibilities" (IIA, 2016, para. 1210). The American Institute of Certified Public Accountants (AICPA) (1997) states that external auditors should consider several specific factors in evaluating IA competences, including professional certifications. Competence, measured using the percentage of certified IAF members, is valued as an important factor in the external auditor's evaluation of the IAF (Brown, 1983; Messier & Schneider, 1988). The presence of staff with, e.g., Certified Internal Auditor (CIA) certifications is a proxy of higher competence in the IAF. This certification by the global Institute of Internal Auditors (IIA) implies that internal auditors have passed an examination based on the IIA program covering different audit-related topics, and have specific experience in their profession (IIA, 2017a, b).

The literature argues that managers responsible for overseeing and assessing work outcomes by other employees cannot rely solely on leadership skills but are deemed to possess topic-specific knowledge to assign tasks and evaluate performance (Bernard, 1984). Thus, we assume that to lead qualified staff, the CAE needs to be himself/herself adequately qualified. Thus, we expect that the presence of CIAs in the IAF is positively associated with CAE compensation.

The IAF is often characterized by a high turnover, especially when it is used as a Management Training Ground (MTG) (e.g., Barrier, 2001). Prior research and practitioner reports show that more than fifty percent of companies use the IAF as an MTG to rotate their internal auditors into management positions (CBOK, 2015). How this affects the quality of internal audit services and consequently the compensation scheme, however, is subject to controversy. As prior research indicates, using the IAF as a MTG can be a double-edged sword as it is associated with impaired auditor objectivity while simultaneously holding advantages in terms of increased levels of competence of the function. Consistent with the former argument, Messier, Reynolds, Simon, & Wood (2011), not only document that using the IAF as a MTG is associated with increased financial statement audit fees, but provide an explanation in that external auditors hold negative perceptions about the objectivity of MTG internal auditors, causing them to refrain from relying on internal auditors' work and assistance. This is ascribed to the internal auditors' inclination to acquiesce to the demands of executive managers in order to advance to career-promoting management positions; consequently resulting in lower financial reporting quality (Christ, Masli, Sharp, & Wood, 2015; Rose, Rose, & Norman, 2013), management misconduct (Ege, 2015), and biased risk assessments as well as investment recommendations (e.g., Hoos, Messier, Smith, & Tandy, 2018).[1]

[1] It should be noted, however, that effective internal audit oversight, as provided by a capable management and audit committee, is likely to compensate for the MTG induced lack of IAF objectivity (e.g., Christ et al., 2015).

Contrary to the external auditors' perspective, Carcello et al. (2018) find that firm managers tend to rely more on internal auditors' work outcomes in the presence of rotational career development programs as participating auditors are associated with comparatively higher levels of ability and knowledge of the company. The notion of enhanced competence is further strengthened by CAE interview statements included in Christ et al. (2015): "[…] as far as expertise, having rotational [auditors] enlightens people and provides more wisdom to them from the competencies that they're bringing in, so it enhances the department totally" (p. 44).

Also, the existence of an MTG is found to enhance auditor-auditee relationships (D'Onza & Sarens, 2017) due to the auditor's company related experience and ability to provide insightful recommendations. Additionally, Burton, Starliper, Summers, and Wood (2015), in an experiment with 269 senior and graduate accounting students, conclude that job advertisements which characterize internal auditing as a rotational career program and consulting activity are more likely to attract highly qualified and experienced as well as motivated student job candidates.

Although researchers remain undecided about the eventual effects of rotational IAF programs, the vast popularity of the management training ground concept emphasizes the notion of widespread acceptance among practitioners. Therefore, management seemingly perceives that the positives of such career development programs in terms of increased IAF competence outweigh possible negatives (i.e., impaired IAF objectivity). We, therefore, conclude that the existence of a management training ground (MTG) is associated with higher levels of IAF competence, as perceived by management, and therefore leads to higher levels of CAE compensation.

H1: IAF competencies are positively associated with CAE compensation.

Secondly, management literature shows that the relationship to different stakeholders is an important component of the usefulness of work and the generated output. E.g., the work and the output (of CEOs) are directly related to their compensation. To further investigate the relationship with different stakeholders, the output of the specific work is often used as a proxy. In the CEO setting, standard models analyze CEOs' work output based on firms' performance (e.g., accounting and stock return measures of performance) and their compensation (e.g., Lambert & Larcker, 1987; Sloan, 1993; Baber, Janakiraman, & Kang, 1996). Since we cannot measure the concrete output of the CAE with one specific variable, we argue that the collaboration with the CEO, the audit committee and other main stakeholders is a possible proxy for the work output of the CAE. Thus, we expect that CAEs' work output, measured through the accumulated usage intensity of different stakeholders, is positively related to CAEs' compensation.[2]

Prior studies identify the objectivity of individuals within the IAF as fundamental for providing value-added services (D'Onza, Selim, Melville, & Allegrini, 2015). The safeguarding of organizational independence and individual objectivity is imperative to allow internal auditors to perform their assurance and consulting services effectively (de Zwaan, Stewart, & Subramaniam, 2011). In this context, CAE subordination to the audit committee is a proxy for organizational independence (Maletta, 1993; Abdel-Khalik, Snowball, & Wragge, 1983; Abbott, Parker, & Peters, 2016). Given the absence of requirements concerning the IAF's organizational structures, CAEs can be subordinated to different functions within the firm. A decision to be subordinated to the CEO or the executive boards can impair auditor independence for audits of the work of superiors. In other words, the existence of strong stakeholder relationships which promote IAF independence increase the usefulness of the IAF's output (D'Onza et al., 2015; de Zwaan et al., 2011) and, given that work output is related to compensation, we, therefore, expect CAE independence to be related to higher CAE compensation.

H2a: The more intensive the stakeholder relationships are the higher is the CAE compensation.

H2b: A direct subordination of the CAE to the Audit committee leads to a higher CAE compensation.

Thirdly, firms' characteristics are expected to determine CAE compensation. Especially since firms' characteristics are a well-known proxy for the investment into the IAF and the need to monitor the company. IAF size, for example, is an overall measure of the entity's investment in internal controls, where smaller firms are expected to have weaker internal controls (DeFond & Jiambalvo, 1991; Prawitt, Smith, & Wood, 2009). Carcello, Hermanson, and Raghunandan (2005) find a positive association between company size and the IAF budget. They argue that IAF size is a proxy for agency cost because larger firms necessitate greater monitoring and thus more significant investment into their IAF. Therefore, as well as because the number of subordinates a manager oversees is thought to have a positive effect on compensation levels (Simon, 1957; Alkadry & Tower, 2006), we expect a positive association between IAF size and CAE compensation levels.

Literature argues that the IAF in publicly listed companies has a higher quality compared to the IAF in private companies. Clatworthy and Peel (2007) argue that, e.g., scandals in listed companies are likely to result in larger potential reputational losses for the (external/internal) auditor and the management. Ittonen, Johnstone, and Myllymäki (2015) find that in Finland, auditors with greater specialization in auditing public firms provide comparatively higher audit quality due to the fact that they develop a keen sense for the reputational risks their public clients are facing. Often, listed companies are imposed with stricter regulatory requirements related to internal controls[3], their

[2] Results of the CAEs' work can be used by the executive board with varying intensities. The audit customers' expectation gap could result in the perception that the IAF is simply an obstacle to achieving organizational objectives. This can lead to underutilized audit services and ignored audit recommendations (Flesher & Zanzig, 2000). The usage intensity is a proxy for the IAF's relationship to stakeholders. A board that values the CAEs' work will use the results of this work more intensively and will be available to pay a higher compensation for high quality work.

[3] Paragraph 91 (2) in the German Stock Corporation Act states: "The management board shall take suitable measures, in particular surveillance measures, to ensure that developments threatening the continuation of the company are detected early" (Norton Rose Fulbright, 2016). This essentially translates into the fact that management must establish a proper risk management system including internal controls. Paragraph 289 of the German Commercial Code also requires the management of listed companies to report upon the basic characteristics of their internal control and risk management system. Regulations in Austria and Switzerland are qualitatively similar.

managers, and financial reporting, and they face reputational scrutiny in the event of an internal control or financial reporting failure (Arena & Azzone, 2009; Srinivasan, 2005; Anderson, Christ, Johnstone, & Rittenberg, 2012). We, therefore, expect that the heightened risk of severe reputational losses and litigation which public companies face increases the demand for high-quality CAEs who are expected to assume expanded accountability. Consistent with the argument that CEOs receive incremental compensation for bearing a multitude of firm related risks (Cordeiro & Veliyath, 2003), we, in turn, posit that CAEs who face serious ramifications for failures in a public firm's governance structure earn comparatively higher salaries than their peers.

The complexity of firm operations, and consequently, the intricacy of its transactions increase as the firm operates, e.g., in international markets or diversified product portfolios. Prior research documents that complexity is a significant determinant of the level of CEO pay (Rose & Shepard, 1997; Black et al., 2014). Firms with greater complexity and scope of operations are more likely to encounter internal control problems. The more complicated the firm's transactions, the more difficult to structure adequate internal controls (Ashbaugh-Skaife, Collins, & Kinney, 2007). Doyle, Ge, and McVay (2007) argue that there are additional staffing challenges introduced by having international operations. This complexity requires higher investments into the IAF and thus expected higher CAE compensation.

The level of risk a company is exposed to and the ensuing demand for internal monitoring may be influenced by industry characteristics (Maletta & Wright, 1996; Beasley, Carcello, & Hermanson, 1999). Carcello et al. (2005) and Barua, Rama, and Sharma (2010) find positive associations of both IAF size and membership in the financial and services industries. Compared to many other industries, financial institutions face higher compliance risks and increased scrutiny from regulators (Carcello et al., 2005). IA is mandatory in banks, insurances and pension funds and such financial companies have stringent requirements for their internal control systems, such as the periodical evaluation of the effectiveness of risk management which is reported to the industry supervisory authority (Federal Financial Supervisory Authority, 2012; Deutsche Bundesbank Eurosystem, 2014). We, therefore, expect that the knowledge needed to address higher risks and additional requirements in financial firms necessitates greater investment in CAE compensation.

H3: A higher grade of complexity (measured through size, industry type, listing and foreign sales) is associated with CAE compensation.

3. RESEARCH DESIGN AND DATA-SET

3.1. Survey and sample

For our sample, we surveyed chief audit executives (CAEs) from Austria, Germany and Switzerland together with the three national IIA chapters from these countries. The survey is used by the national IIAs for benchmarking purposes and to identify important trends in the profession. The institutes provided our proprietary database on conditions of anonymity and confidentiality. There are no specific indicators to identify the respondents and to include further (financial) information. The questionnaire is revised on a three-year basis to include current trends and modify questions etc. It has overall more than 80 questions from different areas of internal auditing (e.g., structure, reporting, quality management). Together with the national institutes, an extensive pre-test of the instrument was conducted with CAEs from different organizations.[4] Using feedback from these CAEs as well as from the national IIAs, the questions were aligned with the research topic of this study.

An online survey was used to facilitate access to the questionnaire. The survey was available for one month (January 2017). Overall, the national IIAs sent the survey invitation to 1,916 participants; all of them are CAEs, from different organizations. Of those, 212 participants provided usable responses to the questions that are relevant for this study (response rate of 11.1 %). The participants represent a broad variety of firm sizes and industry types, with roughly 34% of the sample coming from the financial sector. Around 47% of the sample companies are listed and employ around 17,000 employees on average (additional descriptive statistics can be found in Table 1). All data received was reviewed and cleaned to ensure responses were entered appropriately and interpreted correctly.[5]

3.2. Model

In order to explore the research hypotheses, an ordinal logistic regression model is adopted, since the dependent variable is measured on a seven-point scale. The equation reads as follows:

$$CAECOMP = \beta_1 CIA + \beta_2 MTG + \beta_3 USAGEINT + \beta_4 AC\ OVRSGHT + \beta_5 IAF\ SIZE + \beta_6 LIST + \beta_7 FORSALE + \beta_8 FINANCE + \beta_J CONTROLS + \varepsilon \quad (1)$$

This model uses robust standard errors following White (1980). Variable definitions are described in Appendix A. Each variable is based on a specific question of the survey. *CONTROLS* represents a vector of control variables.

[4] The organizations participating in our pre-testing represent a broad variety of industries (e.g., banking, manufacturing, insurance, etc.) and mainly larger organizations. The participating IAFs can be evaluated as best practice examples for the whole profession and active members of their national IIAs.
[5] The Swiss CAEs were asked to answer questions in euro and not in Swiss Francs. Hence, all values reported in the survey results are in euro.

The dependent variable of interest is *CAECOMP*, which represents the level of CAE compensation from 1 (less than 50,000 euro) to 7 (more than 150,000 euro). *CAECOMP* includes both fixed and variable salary components for the year 2016 and follows the approach of DeZoort et al. (2001), which also covered the whole salary. The total cash compensation has also been used to study the pay of firms' executive management (e.g., Boyd, 1994; Rajagopalan & Prescott, 1990).

This categorical variable is used to motivate the CAEs to answer a question about their personal compensation since a free text field was perceived as too sensitive. While a number of studies shed light on the effects of internal auditors' incentive-based compensation (Schneider, 2003; Mohd Hanafi & Stewart, 2015), to the authors' knowledge, this study is the first to investigate the factors that drive the overall compensation level of CAEs.

Furthermore, the model includes nine (excluding country fixed effects variables) independent variables to analyze possible factors that influence the compensation level and to test the hypotheses. In order to capture the IAF characteristics concerning competence (*H1*), first, the variable Certified Internal Auditor (CIA) is included. It represents the percentage of an IAF's members who carry the title of Certified Internal Auditor and is operationalized following Abdolmohammadi (2009) and Anderson et al. (2012). In order to obtain and keep the CIA certification, candidates are required, among other things, to pass an exam and to pursue professional education continuously. Therefore, having certified personnel is an indicator for the IAF's comparatively higher overall competence, which in turn also requires the CAE to be more highly qualified so that he/she is equipped to manage and evaluate staff accordingly. $\beta 1$ is thus expected to be positive. Moreover, the variable Management Training Ground (*MTG*) is included to capture the importance of the IAF's goal to prepare employees for future leadership positions. Prior literature often uses an indicator variable to denote whether the IAF serves as a MTG (Abbott et al., 2016; Anderson et al., 2012; Messier et al., 2011), while this study measures the importance of the IAF as an MTG on a five-point Likert scale to capture more nuanced differences concerning the use of the IAF as an MTG. β_2 is expected to be positive because regularly rotating new employees into the IAF means IAF members expand their company-specific knowledge and skills and are remunerated accordingly. Additionally, since highly motivated individuals are expected to self-select into an IAF which serves as an MTG, pay levels are expected to be higher.

To examine the IAF's relationship with its main stakeholders (executive board and AC) and to test *H2a* and *H2b*, the model includes the variables *USAGEINT* and *AC OVRSGHT*. Usage intensity (*USAGEINT*) is measured on a five-point scale from very low to very high and measures the intensity with which the management board uses the IAF's work. This measurement can also be found in other studies (e.g., Carcello et al., 2018). *AC OVRSGHT* is a dummy variable assuming a value of one if the CAE is disciplinarily subordinated to the company's AC and which was used in prior studies (Maletta, 1993; Abdel-Khalik et al., 1983). A positive sign for both β_3 and β_4 is expected, first, because a board that values the CAE's work as important should be willing to pay a comparatively higher compensation to obtain useful results. Secondly, because the audit committee subordination indicates a high level of independence, resulting in increased objectivity and autonomy of the CAE and more useful IAF work output.

In order to test for company characteristics (*H3*), the four variables *IAF SIZE, LIST, FORSALE* and *FINANCE* are included. The variable *IAF SIZE* represents the natural logarithm of the number of people employed in the IAF given as the full-time equivalent and including administrative workers as well as supervisors. This variable is operationalized following Carcello et al. (2005) who use the number of internal audit staff. The variable *IAF SIZE* thus acts as a proxy for investments in the IAF due to the larger (smaller) size of the company and the associated increased (decreased) need for monitoring. β_5 is expected to be positive since higher investments in the IAF due to increased internal control demands should mean a higher investment in the compensation of the responsible CAE. *LIST* is a dummy variable with the value of one if the company is listed, as used by Arena and Azzone (2009). β_6 is expected to be positive, given that higher negative outcomes from a reputation loss in listed firms necessitate greater monitoring. According to Bartlett and Goshal (1987), operating in an international environment increases a firm's organizational complexity. Thus, *FORSALE* is used as an indicator of the company's complexity measured by the percentage of revenues the company generates abroad. A higher (lower) percentage of foreign sales indicates a comparatively higher (lower) complexity of the company's structures and operations. The expectation for β_7 is positive since complexity requires a higher investment in the IAF, and thus higher expected CAE compensation. This variable is operationalized following Abbott, Parker, and Peters (2010) who employ foreign sales as a percentage of total sales. *FINANCE* is a dummy variable with the value of one if the company belongs to the finance industry (including banks, financial institutions and insurances), used as an indicator variable similarly to Abbott, Parker, and Peters (2012). β_8 is expected to be positive as higher knowledge to address additional requirements in financial firms necessitates greater investment in CAE compensation. Both industry, as well as the aforementioned listing status, are relevant for the importance and (regulatory) need to install an effective IAF.

Lastly, the model includes *CONTROLS*, a vector of control variables, to control for systematic differences in the CAE compensation across countries as well as the amount of additional expertise the IAF hires. In a similar manner to Carcello et al. (2005), we control for the outsourcing of IAF activities. *OUTSOURCE* represents the additional staff capacity the IAF recruits from both inside and outside the company annually measured as full-time staff equivalent. According to Serafini, Sumners, Apostolou, and Lafleur (2003), outsourcing can be used by CAEs when specific skills or expertise which are needed for a project are unavailable within the organization. In line with the assumption about competence present within the

IAF having a positive influence on CEA compensation levels, having to contract external capacities should be negatively associated with CAE compensation. Furthermore, country effects are included: GER is a dummy variable with the value of one, if the responding CAE is employed in Germany; CH is a dummy variable where the value of one indicates the responding CAE being employed in Switzerland. The comparison group is made up of CAEs being employed in Austria.

4. RESULTS

4.1. Descriptive statistics and correlation matrix

Table 1 provides descriptive statistics. For the dependent variable, CAE compensation, the average on a seven-point scale is 5.45, which translates to an annual salary of between 110,000 and 130,000 euro in the year 2016. Independent variables are distributed as follows: concerning IAF competencies, on average, 25.2% of an IAF's members are Certified Internal Auditors (CIA) while there are IAFs on both ends of the spectrum with either none of their members being CIAs or all of them holding the CIA-title. On a five-point scale, the average importance of the use of the IAF as management training ground (MTG) lies at 2.29, indicating that regularly rotating new auditors into the function in order to prepare them to take on leadership roles ranks comparatively low among the average IAF's goals. Looking at stakeholder relationships, with a mean of 4.07 and a 25th percentile of 4 on a five-point scale, USAGEINT illustrates that, on average, the IAF's work is used intensively by the company's management board. As for the relationship to the AC, only 15.1% of respondents are disciplinarily subordinated to the audit committee. IAF SIZE, as the natural logarithm of full-time equivalent IAF staff, averages 2.02. A little less than half of our sample is made up of CAEs working for listed companies (46.7%). The average amount of sales realized in non-domestic markets is 29.4% of a company's total sales and thus denotes the average level of company complexity. Table 1 shows that our sample contains companies on either end of the spectrum, including companies of comparatively low complexity which operate exclusively in their respective domestic market (0% foreign sales) as well as a company which generates its revenue almost exclusively in non-domestic markets with the maximum of 99% of sales being foreign sales. Roughly a third of the surveyed CAEs work for companies that are based in the finance industry (34%) and are therefore subject to increased supervision and stricter regulations. The average additional expertise which an IAF hires is 0.75, which translates to three-quarters of a full-time staff member annually. With 67%, the majority of respondents in the sample are CAEs working in Germany, while 20.3% are working for IAFs in Switzerland. The remaining 12.7% of respondents work for an Austrian company.

Table 2 presents the cross-correlations. It shows that there are no high levels of correlation between the independent variables of the model, as all values are well below the threshold suggested by literature (Kennedy, 2006). Moreover, the variance inflation factor (VIF) is employed to check for collinearity between the explanatory variables. All variables have a VIF below the recommended maximum value of five (Rogerson, 2001). Thus, it is noted that collinearity of variables does not seem to be an issue for this study.

Table 1. Summary statistics

Variable	*Mean*	*Std. Dev.*	*Min*	*p25*	*Median*	*p75*	*Max*
Dependent variable							
CAECOMP	5.448	1.720	1.000	4.000	6.000	7.000	7.000
Independent variables							
IAF competences							
CIA	0.252	0.296	0.000	0.000	0.140	0.425	1.000
MTG	2.292	1.328	1.000	1.000	2.000	3.000	5.000
Stakeholder relationships							
USAGEINT	4.066	0.895	1.000	4.000	4.000	5.000	5.000
AC OVRSGHT	0.151	0.359	0.000	0.000	0.000	0.000	1.000
Complexity							
IAF SIZE	2.023	1.164	0.000	1.099	1.946	2.773	5.598
LIST	0.467	0.500	0.000	0.000	0.000	1.000	1.000
FORSALE	0.294	0.338	0.000	0.000	0.130	0.600	0.990
FINANCE	0.340	0.475	0.000	0.000	0.000	1.000	1.000
Control variables							
OUTSOURCE	0.750	2.522	0.000	0.000	0.000	1.000	30.000
GE	0.670	0.471	0.000	0.000	1.000	1.000	1.000
CH	0.203	0.403	0.000	0.000	0.000	0.000	1.000
AT	0.127	0.334	0.000	0.000	0.000	0.000	1.000

Note: Refer to Appendix A for variable definitions.

Table 2. Cross-correlation matrix

	Variables	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*
1	CAECOMP	1.000									
2	CIA	0.089	1.000								
		(0.196)									
3	MTG	0.357	0.048	1.000							
		(<0.001)	(0.487)								
4	USAGEINT	0.058	-0.068	0.135	1.000						
		(0.404)	(0.325)	(0.049)							
5	AC OVRSGHT	0.351	0.194	0.215	0.102	1.000					
		(<0.001)	(0.005)	(0.002)	(0.140)						
6	IAF SIZE	0.561	-0.196	0.345	0.136	0.168	1.000				
		(<0.001)	(0.004)	(<0.001)	(0.048)	(0.015)					
7	LIST	0.329	0.049	0.236	0.047	0.134	0.250	1.000			
		(<0.001)	(0.482)	(0.001)	(0.494)	(0.052)	(<0.001)				
8	FORSALE	0.395	0.155	0.412	0.177	0.357	0.184	0.362	1.000		
		(<0.001)	(0.024)	(<0.001)	(0.010)	(<0.001)	(0.007)	(<0.001)			
9	FINANCE	0.144	-0.080	-0.158	0.003	-0.080	0.172	0.127	-0.341	1.000	
		(0.037)	(0.245)	(0.021)	(0.968)	(0.247)	(0.012)	(0.064)	(<0.001)		
10	OUTSOURCE	0.120	0.106	0.090	-0.047	0.136	0.201	0.071	0.044	0.075	1.000
		(0.082)	(0.123)	(0.192)	(0.494)	(0.048)	(0.003)	(0.307)	(0.528)	(0.276)	

Note: Pearson correlation coefficient and p-value in parentheses. Refer to Appendix A for variable definitions.

4.2. Regression results

Table 3 presents the results of the ordered logistic regression used to test our hypotheses, focusing on different CAE compensation determinants. The overall model is significant (p-value < 0.001), with a pseudo R^2 of 0.368. Supporting the first hypothesis about IAF competence, the results indicate that a higher percentage of CIAs within the IAF positively affects the salary level of the CAE (CIA 1.571, p-value 0.004). Further corroborating the first hypothesis favorably, the results provide evidence that using the IAF as an MTG (MTG 0.343, p-value 0.014) is associated with higher levels in the CAE compensation schemes. This indicates that hiring new staff not only offers new perspectives to vitalize the knowledge pool of the function but that employees join the IAF specifically to expand their company-specific knowledge and acquire specialized skills. This combination results in a more qualified IAF, positively affecting the compensation of the CAE, who is charged with managing the function.

Consistent with *H2b* concerning the relationship to audit committee, the results show that certain organizational reporting structures of the CAE are significantly associated with higher levels of CAE compensation (AC OVRSGHT 2.523, p-value 0.005). More specifically, a subordination of the CAE to the AC reflects the ability as well as the need to operate independently (Maletta, 1993; Abdel-Khalik et al. 1983; Abbott et al., 2016) and leads to more valuable IAF output that is remunerated accordingly. This leads to the assumption that the CAE's capability of maintaining well-functioning relationships with the AC in terms of reporting exerts direct influence on his compensation.

Consistent with *H3* about the firms' characteristics, responsibility for a larger IAF is associated with a higher salary (IAF SIZE 1.414, p-value <0.001) which reinforces the theory that larger companies tend to have more resources and risk-related incentives to invest into internal auditing (DeFond & Jiambalvo, 1991; Prawitt et al., 2009; Carcello et al., 2005). Furthermore, CAEs of listed companies are more likely to receive higher salaries than CAEs of non-listed companies (LIST 0.752, p-value 0.025) which can partly be attributed to the increased need for assurance and exculpation by a company's management which is often highly liable and strongly driven by reputational concerns (Arena & Azzone 2009; Anderson et al., 2012). FORSALE (2.911, p-value <0.001) indicates a positive relation between internationally operating companies and CAE compensation, adding to the literature on complexity and internal controls (Ashbaugh-Skaife et al., 2007; Doyle et al., 2007). Finally, turning to the control variables, OUTSOURCE (-0.2763, p-value 0.002) has a significant negative effect on CAE compensation.

Table 3. Multivariate analysis results

Dependent variable is CAECOMP	*Estimate*	*p-value*
CIA	1.571	0.004
MTG	0.343	0.014
USAGEINT	0.015	0.924
AC OVRSGHT	2.523	0.005
IAF SIZE	1.414	<0.001
LIST	0.752	0.025
FORSALE	2.911	<0.001
FINANCE	0.734	0.078
OUTSOURCE	-0.276	0.002
Country effects	included	
Pseudo R^2	0.368	
Mean Variance Inflation Factors	1.54	
Observations	212	

Note: Coefficient p-values are two-tailed and robust standard errors follow White (1980). Refer to Appendix A for variable definitions. The regression is an ordered logit.

5. ROBUSTNESS

The model is run on observations coming from three different countries. While country effects are controlled for, particular country characteristics can influence the CAE compensation level. Possible wage differences between Germany, Switzerland and Austria, the three countries our survey participants are located in, should be considered. Data on wages and labor costs for the three countries was downloaded from Eurostat and included as substitutions for the country dummy variables. Table 4 (Model 1) shows the results controlling for the median gross hourly earnings of all employees (excluding apprentices) by country. Table 4 (Model 2) shows results controlling for the percentage of employees (excluding apprentices) earning less than two-thirds of the median gross hourly earnings by country. Finally, Table 4 (Model 3) shows the results controlling for the employment protection by country, representing an indicator built using an average of different indicators for regular contracts (procedural inconveniences, notice and severance pay for no-fault individual dismissals, difficulty of dismissal) and short-term contracts fixed-term and temporary) by country following Pagano and Volpin (2000). Results are qualitatively the same as in the main analysis using country dummy variables. All coefficients are positive and significant as expected, with the exception of USAGEINT, LIST, and OUTSOURCE.

Table 4. Robustness analysis

Dependent variable is CAECOMP						
	Model (1)		*Model (2)*		*Model (3)*	
	Estimate	*p-value*	*Estimate*	*p-value*	*Estimate*	*p-value*
CIA	1.569	0.004	1.346	0.013	1.343	0.014
MTG	0.341	0.013	0.275	0.045	0.285	0.039
USAGEINT	0.015	0.925	-0.112	0.438	-0.102	0.477
AC OVRSGHT	2.541	0.004	1.953	0.014	1.879	0.021
IAF SIZE	1.412	<0.001	1.467	<0.001	1.469	<0.001
LIST	0.756	0.024	0.382	0.220	0.394	0.208
FORSALE	2.910	0.000	2.586	<0.001	2.657	<0.001
FINANCE	0.734	0.078	0.688	0.071	0.680	0.075
OUTSOURCE	-0.275	0.001	-0.103	0.416	-0.111	0.358
Hourly earnings	**0.700**	**0.001**				
%Employees less2/3			**-0.156**	**<0.001**		
Employment protection					**-1.064**	**<0.001**
Country effects	excluded		excluded		excluded	
Pseudo R^2	0.368		0.281		0.288	
Observations	212		212		212	

Note: Coefficient p-values are two-tailed and robust standard errors follow White (1980). Refer to Appendix A for variable definitions. The regression is an ordered logit.

6. DISCUSSION AND CONCLUSION

The primary objective of this study was to identify possible factors that influence the compensation level of CAEs. While there is some empirical evidence that the type of compensation (e.g., fixed vs. variable compensation) affects the objectivity, no empirical results identify possible drivers of the compensation. Furthermore, most prior studies that investigate internal auditors' compensation applied an experimental approach, especially for the staff level, so that the proprietary data set which was used allows this study to generate unique insights. To the authors' knowledge, this approach is the first to empirically investigate CAE compensation drivers and to establish a connection between the CAE's compensation and factors such as the company's complexity by using a broader database.

This paper provides evidence on the association between IAF characteristics, stakeholder relationships, and firm characteristics on CAE compensation. It finds positive significant effects for IAF competence on CAE compensation. Employing the IAF as a management training ground for future leadership positions has a significant positive effect on the responsible CAE's salary as does the employment of CIAs. Furthermore, looking at the relationship of the IAF to different stakeholders, this study finds significant positive effects for the CAE's subordination to the AC. In contrast, no significant effect for the intensity with which the board of directors uses the IAF's work could be documented. Both the IAF's size, its listing status, as well as the company's complexity as proxied by the percentage of foreign sales, have a significant positive effect on CAE compensation. The amount of outsourcing has a significant negative effect on the CAE's compensation.

Results can be interpreted in light of agency theory, looking at potential conflicts between CAEs with their IAFs, on the one hand, and the AC or board of directors, on the other hand, showing that CAE compensation is related to IA independence, competences and firms' investment in it. This paper supports the theory that compensation is an instrument to reduce information asymmetry and increase IAF quality. Furthermore, this study finds supporting pieces of evidence on the economic theory on compensations linked to education in the internal audit labor market. IAF competence, as demonstrated through professional certification and continuing education, was identified as one of the main drivers of CAE compensation. Further, these findings indicate that companies that assess internal audit work to be a valuable and value-enhancing task for personnel development, and thus place a stronger emphasis on training specialists and future leaders by rotating them into the IAF, are also investing more in the IAF leadership itself. CAE compensation levels are accordingly higher.

This study also finds evidence for the relationship between higher payment and a higher reputational loss. Large, public and/or international companies with e.g., stringent regulatory

requirements and a higher level of complexity require higher investment in the IAF, and thus expected higher CAE compensation to avoid the negative outcome of a reputational loss.

Our study contributes to the existing literature in numerous ways. First, by providing empirical evidence regarding determinants of internal auditor compensation, it contributes to the growing field of internal auditing literature and answers the call for more research on the IAF (Fanning & Piercey, 2014; Lenz & Hahn, 2015). By investigating IAF characteristics and stakeholder relationships alongside company characteristics, this paper offers insights on the IAF as part of the company's governance system by contributing to a deeper understanding of the role and responsibilities of the CAE and how these are valued monetarily within the respective company. Since we include companies from Austria and Germany with a two-tier board system and Swiss companies with a one-tier board system, our results should give unique insights for other countries as well. Taking into account that relatively few regulations and guidelines exist regarding the establishment and ongoing organization of an IAF within a company, it is important to investigate further the internal auditors' working environment and conditions, one of which is the compensation they receive for their labor. This study's results are, therefore, relevant to practitioners as they provide benchmarks for CAE compensation, especially regarding the IAF and different company characteristics.

Furthermore, findings fill an important gap in the literature and help to strengthen the scientific discussion. While a number of studies shed light on the effects of internal auditors' incentive-based compensation (Schneider, 2003; Mohd Hanafi & Stewart, 2015), to the authors' knowledge, this study is the first to investigate the factors that drive the overall compensation level of CAEs. Analyzing the effect specific compensation structures have on the IAF's relationship to parties outside of the company, such as external auditors, is highly relevant. However, examining the characteristics and dynamics inside the company which drive the internal auditors' compensation level is of at least equal importance. Investigating the underlying factors which determine the make-up of the CAE's salary provides insights on the individual CAE's standing as well as on the intricate position the IAF holds within a company.

Recent company scandals serve to emphasize that leaders of an IAF are responsible for the identification and audit of main risk areas. The study's findings indicate that factors such as IAF size and company complexity drive CAE compensation and that companies are aware of the resulting responsibilities and willing to remunerate their CAEs accordingly. Similarly, it is interesting to see that the IAF's staff's competence seems to go hand in hand with a higher CAE compensation, a circumstance indicating that firms which understand the importance of investing in their staff, e.g., by providing them with resources such as time and money to get certified and to keep up their status as a CIA through regular attendance of seminars and classes, are also willing to invest in a competent CAE's salary.

This study is subject to the following limitations. First, due to the structure of the survey, categorical variables had to be used to measure compensation, where continuous variables might have provided more nuanced information. Furthermore, the results are based exclusively on questionnaire data, and, as is common for studies using survey data, results are subject to a possible response bias as they rely in part on the participants' assessment of a given situation.

This study opens up a variety of future research avenues: using different research methods, such as conducting an interview study to verify and deepen our understanding of what drives CAE compensation poses a useful extension to survey-based results. Future studies could also expand the research subject to include data sets on compensation from other European or Non-European countries in order to investigate country and culture specific salary differences. Using archival data to investigate the effect of internal auditors' compensation on their performance could provide further important insights while also addressing the issue of incentive-based compensation. This could complement past experimental studies whose results suggest internal auditors' objectivity to be impaired when compensation is tied to company performance (Mohd Hanafi & Stewart, 2015). Lastly, research on drivers of compensation of internal auditors from varying hierarchy levels would pose a valuable addition to the presented findings.

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APPENDIX A

Variables from the survey	*Description*	*Question*
Dependent variable		
CAECOMP	Scale from 1 to 7 where 1 = less than 50,000 euro, 2 = 50,000 to <70,000 euro, 3 = 70,000 to <90,000 euro, 4 = 90,000 to <110,000 euro, 5 = 110,000 to <130,000 euro, 6 = 130,000 to <150,000 euro, 7 = 150,000 euro or more.	What was the CAE's gross salary (fixed and variable) for the year 2015?
Independent variables		
IAF competences		
CIA	Percentage of IAF members who are CIAs	What percentage of IAF members hold the title Certified Internal Auditor (CIA)?
MTG	Scale from 1 to 5 where: 1 stands for "does not apply" and 5 for "fully applies"	Please indicate whether preparing high potentials for specialist or leadership positions (through the use of the IAF as a management training ground) is a goal of the IAF?
Stakeholders relationships		
USAGEINT	Scales from 1 to 5 where: 1 if low use and 5 is intense use	In your opinion, how intensively are the results of the IAF's work used from 1 to 5 by the management board?
AC OVRSGHT	1 for "yes" and 0 for "no"	Is the CAE disciplinarily subordinated to the Audit Committee?
Complexity		
IAF SIZE	Natural logarithm of total full time equivalent (FTE) of IAF employees	What is the total number (FTE) of IAF employees?
LIST	1 for "Listed" and 0 for "Not listed"	What is the company's listing status?
FORSALE	Percentage of foreign revenues over total revenues	How much revenue does the company generate abroad?
FINANCE	1 for "Credit and financial institutions including Banks", "Insurance companies", "Pension and social institutions" and 0 for "Non-Financial Industry"	Which industry does the company belong to?
Control variables		
OUTSOURCE	FTE of additional IAF staff capacity	How much additional IAF staff capacity (FTE) do you purchase annually?
GER	1 for "Germany" and 0 otherwise	Where is the firm you work for located?
CH	1 for " Switzerland" and 0 otherwise	
AT	1 for "Austria" and 0 otherwise	
Variables from external sources		
Hourly earnings	= Labor market, Wages and labor costs: median gross hourly earnings, all employees (excluding apprentices) by country (*source: Eurostat*).	
%Employees less2/3	= Labor market wages and labor costs: percentage of employees (excluding apprentices) earning less than two thirds of the median gross hourly earnings by country (*source: Eurostat*).	
Employment protection	Average of indicators for regular contracts (procedural inconveniences, notice and severance pay for no-fault individual dismissals, difficulty of dismissal) and short-term contracts (fixed-term and temporary) by country following Pagano and Volpin (2000). Values increase with the strictness of protection.	