Determinants of External Assurance of Sustainability Reporting:

A European Analysis

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Abstract

This study explores the determinants of voluntary external assurance of sustainability reporting in Europe. There is a limited understanding of assurance decisions of sustainability reporting, because it is a relative new practice. Europe is one of the leading regions in this growing type of assurance. The focus is on country- and firm-related factors to explain the choices regarding assurance, assurance provider and level of assurance. In total 3632 observations of 656 firms among 19 European countries are studied over a period from 2009 till 2014.

It is hypothesized that firms in weaker legal systems and stakeholder-oriented countries are more likely to choose for assurance. Furthermore, environmental and social performance are expected to negatively influence the decision to assure sustainability reports. Consistent with the hypotheses firms in countries with a weaker legal system and in stakeholder-oriented countries are more likely to choose for assurance. In contrast to what was expected, environmentally and socially better performing firms are more likely to have their reports voluntarily assured. Additionally, the hypotheses are tested for the type of assurance provider and the level of assurance provided. To conclude, this research provides suggestions for further research in the field of assurance of sustainability reporting.

Keywords: *sustainability reporting, external assurance, assurance provider, level of assurance, stakeholders*

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1   Introduction

At the end of 2015 it became clear that Volkswagen Group had been cheating with emission tests for diesel engines since 2009 (Oldenkamp et al., 2016). This resulted in excessive on-road emissions of nitrogen oxides compared to the legal standards. More transparency could have prevented this scandal from happening. Customers, investors, and other stakeholders are increasingly demanding more transparency from firms about sustainability information (PwC, 2014). While sustainability reporting is criticized for its lack transparency, external assurance of sustainability reporting may provide stakeholders with increased confidence in the firm's sustainability information (Peters & Romi, 2015). External assurance refers to 'activities designed to result in published conclusions on the quality of the report and the information (whether it be qualitative or quantitative) contained within it' (GRI, 2013, p.13). However, the voluntary nature of assurance on sustainability reporting causes problems, because companies may choose for assurance to increase confidence regardless the quality (Junior et al., 2014). Therefore, the assurance process itself needs to be transparent to increase the transparency of sustainability reporting.

Since the 1990s, sustainability reporting has become a topic of great interest in business (Hahn & Kühnen, 2013). Organizations deal with a varied group of stakeholders (e.g., customers, employees, creditors, public authorities) in which each group has different economic, environmental, and social interests which determine the success of an organization. Sustainability reporting is an important way to respond to these demands of stakeholders. By disclosing voluntary sustainability information companies try to increase transparency.

An important reason to provide external assurance of sustainability reports is to provide transparency and credibility to stakeholders. The credibility of sustainability information can be questioned without assurance. A firm's need to enhance credibility through assurance can be seen as a function of firm-, industry-, and country-related factors (Simnett et al., 2009). Independent verifications of sustainability management processes and disclosures are intended to increase the robustness, accuracy and trustworthiness of the disclosed information (GRI, 2013, p.6).

Some accounting research focused on the question why organizations have their sustainability reports voluntarily assured (e.g. Simnett et al., 2009, Kolk & Perego, 2010). However, research in this area is still limited, because mandatory assurance of financial reporting got most focus (Simnett et al., 2009). Next to that, assurance of sustainability

reporting is a relatively new practice. Nevertheless, it is growing, like sustainability reporting itself (Simnett et al., 2009; Hahn & Kühnen, 2013; KPMG, 2013).

The number of external assured reports is high in Europe (Kolk & Perego, 2010) compared to the United States (Casey & Grenier, 2015; Simnett et al., 2009). This can be due to restrictions of attestation standards on the auditing profession from providing assurance of sustainability reporting in the United States (Simnett et al., 2009). However, this does not explain why sustainability reporting is not verified by other assurance providers than accounting firms, like consultancy firms.

The aim of this research is to explore the determinants of external assurance decisions of sustainability reporting in Europe. This study investigates the choice for assurance, the choice of assurance provider and the choice of level of assurance. To achieve this objective this research focuses on several firm- and country-related factors. This research builds on the work of Simnett et al. (2009). They investigate the need of companies to enhance credibility through assurance of sustainability reports. By looking at an international sample they aim to develop an understanding of the rising international market for assurance services on stand-alone sustainability reports.

Previous studies ignored the importance of environmental and social performance. However, these constructs seem to be important aspects of companies with respect to assurance of sustainability reports. Furthermore, the main focus is on Europe, while previous studies focused only on the United States (e.g. Peters & Romi, 2015; Casey & Grenier, 2015) or on a worldwide sample (e.g. Simnett et al., 2009). Therefore, this study contributes to sustainability reporting literature by offering comprehensive empirical research of assurance of sustainability reporting in Europe. Descriptive research (how it is used) on assurance could be used in the future to develop normative theory (how it should be used) (Margolis & Walsh, 2003).

Environmental and social performance of companies becomes more and more important for the public. The aim of assurance is to offer credibility and transparency to them. Insights of this study are in particular relevant for the users of sustainability reports and international assurance standard setters. Insights into assurance of sustainability reporting lead to a better understanding for the users of reports of the information provided. At this moment disclosing environmental and social information is voluntary. However, in line with increasing attention on sustainability, a mandatory set of standards or guidelines with respect to sustainability reporting and assurance may be developed in the future. The insights of this study can be used by international assurance standard setters.

This research focuses on the 100 largest companies (N100) per country in 19 countries across Europe (see appendix A) over the period of 2009 till 2014. This selection is based on the countries included in KPMGs survey of sustainability reporting (KPMG, 2015). The archival method is appropriate to investigate the market characteristics influencing the choices regarding assurance, assurance provider and level of assurance (Cohen & Simnett, 2015).

The focus in this research is on stand-alone sustainability reports or equivalent nonfinancial reports and integrated reports. Integrated reports are annual reports including a sustainability report or sustainability section. In this study stand-alone sustainability reports and integrated reports are both referred to as sustainability reports. In line with previous research by Simnett et al. (2009) reports that are not intended for the public are excluded. Some reports are intended to be used internally or to meet certain requirements of specific outside stakeholders and are, therefore, not of public interest.

On country-level, it is hypothesized that firms in weaker legal systems and stakeholder-oriented countries are more likely to choose for assurance. On firm-level, environmental and social performance are expected to be negatively related to the decision to assure sustainability reports. Additionally, these relations are tested for the choices regarding the assurance provider and the level of assurance. The findings support the expectations that firms in countries with a weaker legal system and in stakeholder-oriented countries are more likely to choose for assurance. However, in contrast to what was expected, environmentally and socially better performing firms are more likely to have their reports voluntarily assured. Looking at the assurance provider, the results show that firms in stronger legal systems and stakeholder-oriented countries are more likely to choose for an auditing firm as assurance provider. Next to that, firms with a lower environmental performance are more likely to choose an auditing firm as assurance provider. The negative relationship between environmental performance and the choice for an auditing firm as assurance provider supports the expectations. Finally, firms in stakeholder countries are more likely to choose for a high level of assurance.

This research consists of five chapters. The next section (chapter 2) provides a literature review on the demand for voluntary external assurance which results in several hypotheses. Chapter 3 discusses the research method. Subsequently, the results are shown in chapter 4. Finally, chapter 5 includes a conclusion of the findings, a discussion of the results, limitations of this study and opportunities for further research.

2   Literature review and development of hypotheses

The aim of the literature review is to compare, combine and contrast current theories and ideas in the field of sustainability reporting and assurance. This chapter addresses literature about country- and firm-related factors for assurance of sustainability reporting. First of all, section 2.1 focuses on the demand for voluntary external assurance of sustainability reporting. Next to that, section 2.2 is about the choice between assurance providers. After that, section 2.3 deals with differences in the levels of assurance provided. Finally, section 2.4 includes the development of hypotheses regarding the determinants of assurance of sustainability reporting: legal environment, environmental performance and social performance.

2.1   Assurance of sustainability reporting

Sustainability reporting and external assurance of these reports are growing (Simnett et al., 2009). This growth can be seen as a response to both stakeholders concerned with social and environmental performance, and investors that rely on the information as an indicator of underlying corporate risks and future performance (Kolk & Perego, 2010). External assurance of sustainability reporting has become a standard business practice, like sustainability reporting itself (KPMG, 2013, p.11). In 2013 more than a half (59%) of the world's 250 largest companies had their sustainability report assured.

A small number of studies to date investigated the determinants of external assurance of sustainability reports, because of the voluntary nature of assurance of sustainability reporting (e.g. Simnett et al., 2009; Kolk & Perego, 2010; Casey & Grenier, 2015; Peters & Romi, 2015). In contrast, assurance of financial reports, which is mandatory, got most focus in previous literature (Simnett et al., 2009). Research on financial statement audits are relevant for assurance of sustainability reports. However, some attributes of sustainability reporting engagements are unique (Cohen & Simnet, 2015, p.65). First of all, the existence of a competitive market. Secondly, the diversity of the subject matter examined. Thirdly, the lack of analytic rigor that arises in double-entry system. Many aspects of sustainability reporting do not have this rigor. Finally, the relative lack of well-developed criteria.

Theory and empirical evidence suggest in different ways how assurance of sustainability reporting may be valuable. First of all, assurance increases recognition, trust and credibility (GRI, 2013). Sustainability assurance can be seen as 'the demand for reliable and credible information from management, for managing the company's environmental and social

risks, and from stakeholders who want assurance that the report truly represents the company's efforts and achievements' (KPMG/UvA, 2002, p.18). It can provide more confidence to stakeholders, because it shows the seriousness of the reporter towards the sustainability report (GRI, 2013). Secondly, it reduces information quality risk. When assurance is provided it is more likely for stakeholders to rely on the information included in the sustainability report. Moreover, when the information is seen as more credible it increases the value of reporting. Furthermore, assurance improves firm reputation which makes it easier to acquire resources (Casey & Grenier, 2015). Next to that, it improves stakeholder communication and can be seen as a tool to signal greater management ability (GRI, 2013; Peters & Romi, 2015). Finally, sustainability reporting and assurance can serve as a basis for a dialogue with stakeholders which could lead to mutual understanding (GRI, 2013).

External assurance is particularly important for positive information, which is the main part of sustainability reports, while negative information is seen as credible even without assurance (Casey & Grenier, 2015). Leaving positive information unassured can be perceived as greenwashing, which is the manipulation of the circulation of information by firms to mislead the public (Lyon & Maxwell, 2011). On the contrary, firms would not release more negative information than necessary.

Critical remarks have been raised over external assurance of sustainability reporting. First of all, the independence of assurers can be questioned, although this is one of the main factors which determine the quality of assurance provided (Ball et al., 2000b). Usually the reporter itself determines the conditions under which assurance is provided rather than the stakeholders of the organization (Ball et al., 2000b, O'Dwyer & Owen, 2005; Smith et al., 2011). In this way management can influence the assurance process. Assurance by external third parties should be a way to add credibility to sustainability reporting, but this influence of management can form a threat when it leads to a lack of relevance and completeness of sustainability reporting (Casey & Grenier, 2015). More stakeholder participation would increase the relevance and independence of the assurance provided because it would reduce the bias of management influence.

Furthermore, other aspects may threaten the credibility of sustainability information (Smith et al., 2011). First of all, because of the voluntary nature of sustainability reporting and assurance there is no benchmark for assurers to build on. Secondly, there is a variety in guidelines on sustainability reporting and assurance which differs in scope and level of assurance. Thirdly, there is a variety in assurance providers themselves.

The Sustainability Reporting Guidelines of the Global Reporting Initiative (GRI, 2015), which offer a framework for sustainability reporting, have been an important way to improve the quality of sustainability reports (Kolk & Perego, 2010). The G3 guidelines addressed the issue of assurance of sustainability reports for the first time (Ballou et al., 2006). The newest G4 reporting guidelines added new disclosure standards, for example with respect to governance, ethics and integrity. Assurance can be provided on the comprehensive report or a subject matter area (Cohen & Simnett, 2015). The assurance reports mainly refer to the assurance standard ISAE 3000, *Assurance Engagements Other than Audits and Reviews of Historical Financial Information*, or its national alternative (Kolk & Perego, 2010, p.184). Another assurance standard which plays an important role is the AA1000 Assurance Standard. Dando and Swift (2003) argue that there is a need for a universal assurance standard of sustainability reporting. This will overcome the diversity in assurance of sustainability reporting as is the case nowadays.

2.2 Sustainability reporting assurance providers

There is a wide range of available providers for assurance of sustainability reports (Perego & Kolk, 2012; O'Dwyer, 2011; Peters & Romi, 2015). In most studies, differences in quality of assurance services provided have been based on differences between the use of Big N audit firms and non-Big N audit firms (Simnett et al., 2009). Big N firms are assumed to be less likely to behave opportunistically compared to non-Big N firms. This is due to their economies of scale and greater capacity to invest in new technologies. Furthermore, due to their size the fee is not expected to influence the independence of the audit firms, because the litigation and reputational costs outweigh the benefits (Simnett et al., 2009, p.941). It is important to understand that this distinction between accounting firms is relevant when the law provides monopolistic rights for these firms to conduct the audit of financial statements (Simnett et al., 2009).

However, the market for assurance of sustainability reports is unregulated, and, therefore, has other assurance providers to take into account as well. For this reason, Simnett et al. (2009) make a distinction between members of the auditing profession and other assurance providers. The auditing profession is expected to have a better assurance quality because of their well-developed standards, a body of ethics and independence requirements, as well as quality control mechanisms to help ensure a high quality of assurance provided. Specific accounting standards ensure that the assurance engagement is not accepted when the audit firm does not have the required expertise. It also has its established history and

reputational capital that is widely known. Altogether, this increases public confidence in the competency and legitimacy of the auditing profession as high-quality assurance providers. However, assurance by the auditing profession has higher costs compared to other assurance providers. Therefore, client firms consider the costs versus the benefits in their choice for an assurance provider.

Perego and Kolk (2012) examine if different assurance providers are associated with different levels of assurance quality. They make a distinction between four categories: accounting firms, specialists (both broader and specialist consultants), certification bodies and others (including academic institutions, non-governmental organizations, stakeholder panels, and individual auditors) in line with the categories of CorporateRegister (2008). The relative number of assurance provided by the first three groups is declining over the period of 1999 till 2008, while the 'others' gain proportion (Perego & Kolk, 2012). It is noteworthy that the proportion of assurance statements by specialists decreased from 38.9% in 1999 to 13.4% in 2008.

There is evidence that the quality of assurance is highly dependent on the type of assurance provider (Perego & Kolk, 2012). Accounting firms and certification bodies provide higher quality with respect to items concerning the reporting format and procedures followed in the assurance process. In contrast, specialists and certification bodies are more elaborate and informative when it comes to formulating a recommendation and providing positive assurance (Perego & Kolk, 2012, p.184). Accounting firms are hesitant to draw clear conclusions due to the uncertainty around sustainability assurance. Furthermore, on average they show a lack of transparency in the assurance engagement, mainly with respect to reporting on completeness and responsiveness. They limit the extent of services to negative assurance opinions (Peters & Romi, 2015, p.167). In contrast, consultants and other third-parties tend to report positive assurance opinions and focus more on value of the organization.

Peters and Romi (2015) make a distinction between three groups: professional accountants, consultants, and internal auditors. In favour of professional accountants is the fact that they are subject to independence and professional conduct requirement, and their work is guided by professional standards (Peters & Romi, 2015). These factors positively influence the quality of assurance services. However, associated with this higher quality are the higher costs to the assurance purchaser. Therefore, an alternative is to engage third-party sustainability consultants to provide assurance (Simnett et al., 2009). Although this group might have more expertise in the subject matter, they do not have the benefits of professional accountants as mentioned before. The group of internal auditors are another important source of assurance

services, which consists of individuals within the corporate governance framework of a firm (Peters & Romi, 2015). They have the possibility to add credibility to sustainability reports and to provide this at lower costs compared to the external assurance providers. However, this group is ignored in this study, because the focus is on external assurance.

Until the mid-2000s the global market for assurance was divided into a wide range of providers like non-governmental organizations, engineering consultancies, management consultancies and the Big Four accounting firms (Deloitte, EY, KPMG and PwC) (O'Dwyer, 2011). More recently, the three main types of assurance providers are Big Four accounting firms, certification bodies, and specialist consultancies, covering a market share of 89% (CorporateRegister, 2008, p.34).

Based on the prior discussion, assurance providers from the auditing profession are expected to provide the best quality. Therefore, firms which are more likely to choose for assurance are also more likely to choose for an assurance provider from the auditing profession to enhance the credibility of their information.

2.3   Levels of assurance

In theory it is possible to provide an almost unlimited number of levels of assurance on different types of engagements (Mock et al., 2007; Hasan et al., 2005). However, in practice this would make it difficult to readers of the assurance statement to interpret the level of assurance. Therefore, as part of the principles of the International Auditing and Assurance Standards Board (IAASB), all external verification activities should mention the level of assurance to reduce the gap between the reader's perception of the reliability of the verification and the actual effectiveness of it (Manetti & Becatti, 2009). There are two levels of assurance, based on the characteristics of the subject matter and investigation implemented: limited assurance and reasonable assurance.

The assurance level indicates the extent and depth of work undertaken by the assurance provider (GRI, 2013). Therefore, it is linked to a degree of confidence the assurance statement should give to the users of the assurance report. For limited assurance the nature, timing and extent of procedures for collecting sufficient evidence are less relative to reasonable assurance (Eilifsen et al., 2014, p.669). Therefore, limited assurance can be regarded as the relative cheaper and lower level of assurance.

In reasonable assurance engagements the conclusion is expressed in a positive form. Positive statements include phrases like 'fairly stated in all material aspects' and 'are free from material misstatements', which indicate a high level of assurance (Mock et al., 2007). In

contrast, in limited assurance engagements the conclusion is expressed in a negative form. Limited assurance statements have phrases like: 'nothing has come to our attention'.

In the stakeholders' interest it is important to take the expectation gap of assurance into account. This means there are different beliefs about the assurers' duties and responsibilities and the messages in the assurance report (Green & Li, 2011, p.150) It relates directly to uncertainties about the purpose, value, nature and effect of assurance (Humphrey et al., 1992). Epstein and Geiger (1994) draw attention to the differences between investors and the auditor in perceptions about assurance provided regarding the audit of financial statements. Most investors believe the audit of financial statements should provide absolute assurance with respect to detecting material misstatements as a result of error and fraud. However, in the perception of the audit profession the audit should only provide reasonable assurance.

Green and Li (2011) find that this expectation gap not only exists in assurance of financial information, but also in assurance of non-financial information. Generally, the assurers perceived a lower level of responsibility for the report and the credibility of assurance to be higher, compared to preparers and shareholders. The uncertainty regarding the collection and reporting of emissions shows the importance of independent assurance to add credibility to the reported information. Results show differences between assurers, preparers and shareholders about the responsibilities of the assurers and management, and in relation to the assurers' objectivity. Roebuck et al. (2000) find that the perception of the level of assurance is high for historical compared with prospective reports, but no difference was found regarding the description of work performed.

To bridge the expectation gap related to assurance it is important that assurers are aware of the stakeholders' perceptions. In general, it is important that sustainability reporting preparers, users and assurers come to a shared view about the level of assurance provided in an assurance engagement on sustainability reporting. Previous studies support the idea that positive assurance statements are perceived to have the highest level of assurance, while negative statements have the lowest (Hasan et al., 2003; Mock et al., 2007). However, the difference between limited and reasonable levels of assurance is not well understood by users (Hasan et al., 2005).

Sustainability reporting is a difficult subject to investigate for external assurance due to its combination of qualitative and quantitative information (Manetti & Becatti, 2009). Furthermore, it implies processes which are difficult to investigate like the involvement of stakeholders and embedding opinions of these stakeholders. There is no agreement on which information can and should be assured at reasonable level (Ballou et al., 2006). Concerns exist

about which performance and reporting standards the auditors should use. Some national standards on assurance, like in the Netherlands and Germany, mention a limited level of assurance for qualitative information and a reasonable level for quantitative information (Manetti & Becatti, 2009).

Next to that, cost-benefit considerations play a role in the decision to choose for reasonable or limited assurance (Hasan et al., 2005). The difficulty of collecting enough and appropriate evidence to provide reasonable assurance results in high costs of the assurance engagement compared to limited assurance. Therefore, a firm would outweigh the benefits of increased users' confidence of sustainability reporting against the costs of choosing for a higher level of assurance. Assurance of environmental performance is most commonly provided at limited level (Hasan et al., 2005, p.92). However, the expectation is that firms which are more likely to choose for assurance are also more likely to choose for a high level of assurance, because it is of higher quality.

2.4   Development of hypotheses

An increasing number of companies disclose environmental and social information in sustainability reports to show their commitment to these types of information and to be accountable to their stakeholders (Kolk, 2003; Perego & Kolk, 2012). Variation exists in both the provision and assurance of sustainability reports between countries (Simnett et al., 2009).

Studies show that companies in Europe and Japan are most likely to produce assured sustainability reports (Kolk & Perego, 2010). On the contrary, assurance in the United States is far below the international levels (Casey & Grenier, 2015; Peters & Romi, 2015). Previous studies attribute this lag to less aggressive pressure from regulatory entities for sustainability reporting, heightened litigation risk, and questionable benefits (Kolk & Perego, 2010; Casey & Grenier, 2015; Peters & Romi, 2015). These factors reduce the probability that the benefits of assurance outweigh the costs. This is partly due to restrictions of attestation standards on the accounting profession from providing assurance of sustainability reporting in the United States (Simnett et al., 2009). However, this does not explain why sustainability reporting is not verified by other assurance providers than accounting firms.

Furthermore, Chen and Bouvain (2009) find that assurance of sustainability reporting is most frequently used in the United Kingdom, while it was least frequently used in the United States. They contribute this to different perceptions on the importance of sustainability reporting or specific parts of sustainability between countries. Finally, Casey and Grenier (2015) find three factors explaining the lacking amount of assurance in the United States. First

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of all, regulatory oversight functions as a substitute form to enhance credibility. Secondly, strict bank monitoring of highly leveraged firms suppresses the demand for assurance. Thirdly, it is attributed to the hesitation or ineffective marketing of the accounting firms.

2.4.1 *Legal environment*

It is reasonable that the quality of the legal environment influences the provision of assurance services (Kolk & Perego, 2010). In this context the distinction between countries with weak and strong legal systems is often made. On the one hand, it can be argued that countries with stronger legal systems are more likely to assure their sustainability reports. This could be due to the fact that the credibility of assurance is perceived as low by the public in countries with a weak legal system (Simnett et al., 2009). Then benefits do not outweigh the costs. According to the complement view assurance is seen as of higher quality in those countries with stronger legal systems and of lower quality in countries with weaker legal systems (Francis et al., 2011).

On the other hand, it can be argued that firms operating in a weaker legal environment will be more likely to choose for external assurance of sustainability reporting to increase the users' confidence in the credibility of the information (Simnett et al., 2009). In stronger legal systems there are more country-related protection mechanisms in place, which is expected to result in a lower demand for assurance (Choi & Wong, 2007; Simnett et al., 2009).

Kolk and Perego (2010) find that companies in countries with weak legal systems are more likely to assure their sustainability reports. Assurance services in weak legal systems can serve as a substitute for weak country-related institutions. When there is a strong legal system the added value of independent assurance services is limited due to sufficient protection of strong country-related institutions that are in place already. Moreover, low litigation risks in weak legal systems make it more affordable to assure sustainability reporting, because it is more likely that the benefits outweigh the costs. In line with this, Francis et al. (2011) find that assurance services serve as a substitute for weaker legal systems. Assurance can substitute for weak institutions that constrain the contracting process of firms with other parties. In countries with strong legal systems there is less assurance, because the stronger institutions reduce the benefits of assurance. Herda et al. (2014) find that countries with weaker investor protection are more likely to obtain external assurance of sustainability reports, which supports the view of assurance as substitute for weak legal systems. Furthermore, Choi & Wong (2007) state that auditors may serve as a substitute in case of weak legal protection.

Previous studies showed mixed results regarding the relationship between the strength of legal systems and the likelihood to obtain external assurance. However, most findings

support the relation that firms in weak legal systems are more likely to choose for assurance. Therefore, the hypothesis regarding the strength of the legal system is the following:

H1: *Ceteris paribus***, the strength of the legal system is negatively related to likelihood to assure sustainability reports.**

Next to that, the origin of law within a legal system influences the choice to assure. In this respect you can make a distinction between common law and civil law countries. Firms in common law countries are considered to have a more shareholder-oriented corporate governance model, while those in civil law countries have a more stakeholder-oriented model (Simnett et al., 2009; Ball et al., 2000a).

The main purpose of the firm in common law countries is to maximize shareholders' wealth (Kolk & Perego, 2010). The interests of other stakeholders are less emphasized in these countries. This is due to the great influence of the private sector on accounting practices (Ball et al., 2000a). On the contrary, firms in civil law countries are considered to have social responsibilities which go further than only the shareholders' interests. They are expected to deal with the interests of the broader stakeholder groups. In civil law countries there is a relatively strong political influence on accounting practices (Ball et al., 2000a). At national level the establishment and enforcement of national accounting standards by the government involve representation of other parties such as banks and business associations. At firm level the involvement of major stakeholders often leads to a 'stakeholder' governance model.

It is expected that there is a higher demand for assurance in stakeholder-oriented countries compared to shareholder-oriented countries (Kolk & Perego, 2010). This is due to the fact that companies which issue their sustainability reports are assumed to focus on a broader group of stakeholders rather than on shareholders alone. Therefore, they choose for assurance to meet the demands of the stakeholders. Previous studies find support that firms in stakeholder countries are more likely to adopt assurance than firms in shareholder countries (e.g. Simnett et al., 2009; Kolk & Perego, 2010). In line with this argument the hypothesis is:

H2: *Ceteris paribus***, firms in stakeholder-oriented countries are more likely to have their sustainability reports assured rather than firms in shareholder-oriented countries.**

2.4.2   *Social and environmental performance*

To the best of my knowledge, there is no evidence available yet about the relation between social and environmental performance and assurance of sustainability reports. This may be due to the fact that the concepts of social and environmental performance are hard to measure and definitions remain unclear. Social and environmental performance cannot be observed directly and therefore have to be regarded as constructs (Trumpp et al., 2015). This means they must be measured by indicators, because they are defined in conceptual terms. These indicators, or measures, are the observable aspects of the construct.

Studies using the issue of environmental performance often do not define and conceptualize it. By using different definitions and measures the empirical results cannot be compared reliably. Trumpp et al. (2015) review sixteen articles of which five articles refer to the definition used in the ISO 14031 standard. ISO describes environmental performance as 'the results of an organization's management of its environmental aspects' (ISO, 1999). Environmental performance literature seems to focus on two dimensions: environmental management performance and environmental operational performance (Trumpp et al., 2015). Firstly, environmental management performance focuses on management principles and activities with regard to the natural environment (Trumpp et al., 2015, p.190). Secondly, environmental operational performance focuses explicitly on the outcomes of a firm's management activities regarding the natural environment. However, many studies do not take these different dimensions into account. Most research focuses solely on the environmental operational performance.

Social performance is another construct which is often not made clear in previous studies. Wood (1991, p.693) defines social performance as 'a business organization's configuration of principles of social responsibility, processes of social responsiveness, and policies, programs, and observable outcomes as they relate to the firm's societal relationships'. His model is among the most-cited works in the field of social performance (Wood, 2010). He offers 'a set of descriptive categorizations of business activity, focusing on the impacts and outcomes for society, stakeholders and the firm' (Wood, 2010, p.50).

The relation between performance and voluntary external assurance can be explained in different ways. Agency theory and signalling theory expect a positive relationship, while legitimacy theory and stakeholder theory suggest a negative relationship between assurance and performance. Chow (1982) was one of the first to look at voluntary assurance. He looks at the voluntary adoption of the audit of financial statements through agency theory. His research focuses on the period when the audit of financial statements was still a voluntary choice. The

agency problems occurs when cooperating parties have different goals (Eisenhardt, 1989). One party (the agent) works on behalf of the other party (the principal). In this situation two problems arise: (1) the goals of the principal and the agent conflict (goal incongruence), and (2) the principal does not know what the agent is doing (information asymmetry). The risk is that the agent acts opportunistically, because of self-interested behaviour. Costs associated with this information problem between the agent and the principal are called agency costs.

Significant evidence is found for the fact that proxies of agency costs like leverage, the extent to which accounting numbers are used in debt covenants, and company size are positively associated with the voluntary adoption of audits (Simnett et al., 2009). From an agency perspective the demand for assurance results from the need to reduce agency costs associated with the information asymmetry and the related loss of control (Kolk & Perego, 2010). The lack of common sustainability reporting standards and the public's inexperience with sustainability reports allows managers to behave opportunistically (Peters & Romi, 2015).

Closely related to agency theory is signalling theory. It suggests that in situations of asymmetric information the firm tries to credibly provide information to other parties (Hahn & Kühnen, 2013). It describes the behaviour of two parties who have access to different information (Connelly et al., 2011). It is hard for outside parties to assess the sustainability performance of firms, so there is an information asymmetry between outside parties and the management of the firm. The firm must choose whether and how to communicate the information, and the public must choose how to interpret the signal (Connelly et al., 2011). Firms signal positive information to the public, while negative information will not be signalled, because individuals make their decisions based on the available information to them. Assurance can add credibility to positive information, because otherwise it could be seen as a way to mislead the public.

Assume there is a distinction between high-performing firms and low-performing firms. For high-performing firms it is beneficial to signal their true performance (Connelly et al., 2011). By doing this they can distinguish themselves from the low-performing firms. On the other side, the low-performing firms would be worse off by showing their true low performance. Therefore, outside parties would know that the firms who signal their information are the high-performing firms. An important remark is that the outside parties do not know which information is not shown by the firm. Nevertheless, the more positive information about the firm is announced, the better the environmental and social performance is expected to be by the outside parties.

Firms voluntary disclose sustainability information to decrease the information asymmetry. However, users of this information may not trust it. To convince its stakeholders of the reliability of their information they can opt for assurance, since it enhances credibility of sustainability reports (Simnett, et al., 2009). This further reduces the information asymmetry between the firm and the outside parties. In line with the argument about disclosing the information you could say that assurance of the sustainability report is a signal of good social and environmental performance. In line with this, Clarkson et al. (2008) find support for the positive relationship between environmental performance and the level of discretionary environmental disclosures. Furthermore, Casey and Grenier (2015) find that sustainability strengths increase the demand for assurance, because information of poor performing firms is already credible without assurance.

However, sustainability concerns also increase the demand for assurance (Casey & Grenier, 2015). Under legitimacy theory, firms operate in a way to match the social values of their actions and the norms of acceptable behaviour of the society as a whole (Dowling & Pfeffer, 1975, p.122). When these two match there is organizational legitimacy. On the contrary, when there is no link the organization faces a threat. Casey and Grenier (2015) state that firms operate under a social contract with society and obtain assurance of sustainability reports to manage the threats to continuance of the 'contract'. It is important to know which groups of stakeholders represent the greatest legitimacy threats to the firm. For example, customers could form a threat through their demand for products or suppliers could form a threat through their access to resources for the firm.

Lindblom (1994) suggests four strategies for firms seeking legitimacy (Gray et al., 1995, p.54). Firstly, firms can try to educate and inform the public about changes in organizational performance and activities. This strategy is a response to recognized performance failure of the firm. Secondly, firms may try to change the perceptions of the public, without changing their actual behaviour. This strategy is chosen when the firm faces differences between the firm's actions and the perceptions of the public. Thirdly, firms may try to manipulate perceptions by shifting public attention away of negative issues. An example is when highly polluting firms choose to only talk about their good environmental performance. Finally, firms may try to change expectations of its performance. This takes place when a firm believes that the expectations of the public are unrealistic or incorrect.

These four strategies show it is important how the firm is perceived by society to be legitimate, rather than how the firm actually performs. The firm may be seen as legitimate, although its actual actions are not in line with widely acceptable norms and values. Legitimacy

can be seen as a perception in that it is a reaction of the public to the organization as they see it (Suchman, 1995). Therefore, a firm which deviates from the norms of acceptable behaviour can still be legitimate as long as it remains unnoticed. Furthermore, legitimacy can be maintained when the differentiation from the norms are viewed as unique. Finally, companies can deviate from individuals' values, but still be legitimate because there is no public disapproval.

Stakeholder theory sees companies as part of a broader system in which they affect, and are affected by, other stakeholders groups (Freeman, 1984; Smith et al., 2011). This theory puts the firm at the centre. The management of the organization should focus on their strategy to continue the success of the firm (Gray et al., 1995). The firm requires support of its stakeholders to continue existence. Stakeholder theory focuses on two core questions (Freeman, 1994). Firstly, what is the purpose of the firm? This can help the firm to determine its stakeholders and to determine what brings them together. Secondly, which responsibilities does management have to its stakeholders? This helps the firm to determine how to do business to get approval of its stakeholders to continue the business.

Freeman (1984) defines a stakeholder as 'any group or individual who can affect or is affected by the achievement of the firm's objectives'. These include customers, employees, creditors, public authorities, etc. The major objective of firms is to balance the conflicting demands of its stakeholders (Roberts, 1992). Management must assess the importance of meeting stakeholder demands to achieve the strategic objectives of the firm. The more powerful the stakeholders are, the more the firm should adapt to them.

Sustainability reporting can be seen as a way to ensure support of stakeholder groups that are essential for a firm to survive (Casey & Grenier, 2015; Gray et al., 1995). Many companies face pressure to give stakeholders confidence over sustainability reporting, which can be fulfilled by assurance (KPMG, 2013, p,11). Otherwise the credibility of sustainability reporting may be questioned by the stakeholders, which would form a threat for continuing doing business.

Firms whose environmental legitimacy is threatened make soft claims in their sustainability report (Clarkson et al., 2008). In this way they may try to mislead public perceptions about their real environmental performance. It does not necessarily have to mean that environmental and social performance of the firm is good when sustainability reports are issued. Rather it aims to create a good image about the sustainability performance of the firm to continue the social contract with society, which could be a false view.

In line with this, assurance of sustainability reports could also create some false view. This is clearly shown by the Volkswagen fraud of 2015. It became clear that Volkswagen Group had been cheating with emission tests for diesel engines since 2009 (Oldenkamp et al., 2016). This resulted in exceedance of legal standards on on-road emissions of nitrogen oxides. However, they got assurance on their sustainability information. Therefore, it is important for the users of assurance statements to take the scope and level of assurance into account.

Empirical research regarding sustainability reporting and performance focuses mainly on the question why firms produce sustainability reports rather than why firms decide to purchase assurance. Clarkson et al. (2011) find that environmental disclosures are positively related to emissions of Australian firms. This supports a negative relationship between environmental performance and assurance, because emissions are an inverse measure of good environmental performance. The negative relationship is also supported by Cho and Patten (2007) whose results show that companies use disclosures as a legitimizing tool. They make a distinction between non-monetary and monetary disclosures within environmental sensitive industries and non-environmental sensitive industries. The results for non-monetary disclosures in the non-sensitive group are in line with the legitimacy theory, while there was no relation found for the sensitive group. Furthermore, the monetary disclosures in the sensitive group were higher for poor performing firms than for good performing firms. The negative relationship between firm performance and disclosures supports the argument that the level of disclosures is dependent on the exposure of a company to its environment (Patten, 2002).

Based on the prior discussion the expectation is that firms with poor environmental and social performance are more likely to choose for assurance of sustainability reporting. Therefore, the hypotheses are:

> **H3:** *Ceteris paribus*, **environmental performance is negatively related to assurance of sustainability reporting.**
>
> **H4:** *Ceteris paribus*, **social performance is negatively related to assurance of sustainability reporting.**

3 Research method

3.1 Sample

The sample in this study consists of the 100 largest publicly-listed companies (N100) in 19 countries across Europe (see appendix A) over a period of 2009 till 2014. The period ends in 2014, because sustainability reports for 2015 are not yet available. This selection is based on the countries included in KPMGs survey of sustainability reporting (KPMG, 2015). They investigate sustainability reporting and assurance in the 100 largest companies in 45 countries worldwide. Therefore, the choice for the 100 largest companies is in line with this survey. The selection of the largest companies within countries is based on sales in 2014 from the Thomson One database. Only European countries are selected, because the aim of this research is to investigate the demand for assurance in Europe.

The archival method is appropriate to study the market characteristics influencing the decisions for assurance, the assurance provider and the level of assurance (Cohen & Simnett, 2015, p.64). Data per company about assurance, the assurance provider and the level of assurance are collected from the Sustainability Disclosure Database of the Global Reporting Initiative (http://database.globalreporting.org/). Additionally, company websites are visited when the database does not include the relevant information. When sustainability reports are not available in the database as well as on the company's website the assumption is made that the company has not issued sustainability reports.

To obtain the required financial information the Global Compustat database is used. Next to that, data regarding the environmental and social performance of companies is collected from the Asset4 ESG database which is available through Datastream. Regarding the legal environment data is collected from the World Bank database and from The World Factbook (2016).

The original sample includes 100 firms from 19 countries in the period from 2009 till 2014 resulting in a total of 11,400 observations. Due to limitations regarding the collection of financial information and sustainability performance, the whole sample eventually includes 3632 observations of 656 firms among 19 countries.

3.2 Econometric model

Hypotheses are tested using two sets of logistic regression models, which are similar to research by Simnett et al. (2009) and Casey and Grenier (2015). First of all, the logistic regression model

fits, because it can test a dependent variable which is categorical. This is the case for the variables of the decisions whether to purchase assurance or not, whether to choose an audit firm as assurance provider or not, and whether to provide a high level of assurance or not (see table 1). The focus in this study is on four stages. First, it provides some background information on the determinants for sustainability reporting. Second, it tests for the firms which issue sustainability reports or integrated reports, whether they decide to assure. Third, for the firms who choose to assure, whether they choose a provider from the auditing profession. Additionally, it investigates whether firms choose for reasonable assurance or not.

Two models are made to test the four dependent variables, due to multicollinearity between the variables of environmental performance and social performance (see appendix B). Model one includes the environmental performance variable, while model two includes the social performance variable. Therefore, the following two models are tested (for more information about the variables, see table 1 and appendix C):

(1) $$SR_{it}/AST_{it}/APR_{it}/LEVEL_{it} = \alpha + \beta_1 LEG_j + \beta_2 STR_j + \beta_3 ENVP_{it} + \beta_4 SIZE_{it} + \beta_5 LEV_{it} + \beta_6 ROA_{it} + \beta_7 INDUSTRY_i$$

(2) $$SR_{it}/AST_{it}/APR_{it}/LEVEL_{it} = \alpha + \beta_1 LEG_j + \beta_2 STR_j + \beta_3 SOCP_{it} + \beta_4 SIZE_{it} + \beta_5 LEV_{it} + \beta_6 ROA_{it} + \beta_7 INDUSTRY_i$$

3.3   Measurement of variables

The logistic regression models are used to focus on four interrelated decisions. Step one offers some background information and focuses on the whole sample. The dependent variable (SR) includes 1 if a stand-alone or integrated report is issued or 0 if this is not the case. Step two includes a subsample of firms that have a sustainability report or integrated report, and the dependent variable (AST) equals value 1 if it includes an assurance statement or 0 if it does not. Step three includes those firms that have their sustainability reports assured, and the dependent variable (APR) equals 1 if the assurance provider is an audit firm or 0 if another party provides assurance. Additionally, step four also includes only those firms that have their sustainability reports assured. The level of assurance (LEVEL) equals 1 if the level of assurance provided is high or 0 if it is considered low.

The models consist of two independent variables on country-level and two on firm-level. On country-level, STR measures the quality of the legal environment of a country. The quality of the legal environment can be measured by 'Rule of Law', which is developed by the

World Bank (Kaufmann et al., 2011). It captures perceptions of 'the extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence' (Kaufmann et al., 2011, p.223).

Firms in common law countries are considered to be more shareholder-oriented, while firms in civil law countries are considered to be more stakeholder-oriented (Ball et al., 2000a; Simnett et al., 2009). Therefore, LEG measures the legal origin of a country and equals 1 for civil law countries and 0 for common law countries. The legal origin of countries are similar with Simnett et al. (2009), which is based on La Porta et al. (1997). The law system of countries which are not included in these studies are collected from The World Factbook (2016).

On firm-level ENVP measures the environmental performance of a firm in a specific year. Previous studies faced difficulties applying measures of environmental performance across a diverse sample of firms from a range of industries where the nature of environmental impact varies considerably (Brammer & Pavelin, 2006; Patten, 2002). In this research the focus is on an environmental pillar score from the Asset4 ESG database in Datastream. It measures 'a company's impact on living and non-living natural systems, including the air, land and water, as well as complete ecosystems. It reflects how well a company uses best management practices to avoid environmental risks and capitalize on environmental opportunities in order to generate long term shareholder value' (Thomson Reuters, 2016b). This pillar score includes the categories resource reduction, emission reduction and product innovation. The performance pillars are based on more than 250 key performance indicators (Thomson Reuters, 2016a).

SOCP measures the social performance of a firm in a specific year. Social performance has been neglected in previous research on sustainability reporting and assurance. Therefore, no reliable measure has been found yet. In this research a social pillar score of the Asset4 ESG database in Datastream is used, similar to the environmental pillar score to measure environmental performance. It measures 'a company's capacity to generate trust and loyalty with its workforce, customers and society, through its use of best management practices. It is a reflection of the company's reputation and the health of its license to operate, which are key factors in determining its ability to generate long term shareholder value' (Thomson Reuters, 2016b). The social performance pillar is based on the following categories: employment quality, health and safety, training and develop, diversity, human rights, community, and product responsibility (Thomson Reuters, 2016a).

Based on previous research, several firm-related and industry-related control variables are included in the model. Size and leverage, as a reflection of agency costs, are positively

associated with the voluntary demand for assurance (Simnett et al., 2009, p.942). First of all, SIZE measures the size of a company which can be calculated by the natural logarithm of revenues. Company size is related to corporate visibility to stakeholders (Patten, 2002; Brammer & Pavelin, 2006). Larger companies are more willing to disclose information voluntary due to visibility concerns, compared to smaller companies. Credibility to society will be enhanced through assurance. Secondly, LEV is about the leverage of the firm as measured by its ratio of total debt to total assets. Finally, the model includes the profitability of the firm as measured by the return on assets (ROA).

Next to that, environmental sensitive industries are included as control variables. Previous studies have shown that there is an industry link between environmental and social risks experienced by companies and the level of environmental and social disclosures (Simnett et al., 2009). Firms in industries having a greater environmental or social impact are more exposed to environmental or social risks and will have a greater need to manage these risks by purchasing assurance to increase user confidence in the credibility of the information contained in the sustainability reports they produce.

Similar to Cho and Patten (2007) and Peters and Romi (2015), the following industries (INDUSTRY), including two-digit SIC codes, are more likely to obtain assurance due to their social and environmental sensitivity: mining = 10, oil exploration = 13, paper = 26, chemical and allied products = 28, petroleum refining = 29, metals = 33 (metals) and utilities = 49.

As outlined under section 2.4.2 there is no agreement on the way to measure environmental and social performance of firms. Therefore, in the robustness checks ENVP and SOCP are replaced by other measures of environmental and social performance. ENER focuses on reducing environmental emissions in the production and operational processes. 'It reflects a company's capacity to reduce air emissions (greenhouse gases, F-gases, ozone-depleting substances, NOx and SOx, etc.), waste, hazardous waste, water discharges, spills or its impact on biodiversity and to partner with environmental organisations to reduce the environmental impact of the company in the local or broader community' (Thomson Reuters, 2016b). Next to that, SOCO is an alternative measure for social performance. It focuses on the dimension of the company's reputation within society. 'It reflects a company's capacity to maintain its license to operate by being a good citizen (donations of cash, goods or staff time, etc.), protecting public health (avoidance of industrial accidents, etc.) and respecting business ethics (avoiding bribery and corruption, etc.)' (Thomson Reuters, 2016b).

Table 1: Variable definitions

Variable (acronym)	Definition (source)	Hypothesis (sign)
Dependent variables		
Sustainability Reporting (SR)	Indicator variable equals 1 if a stand-alone sustainability report or integrated report for firm i in year t is issued, and 0 otherwise.	N/A
Sustainability assurance statement (AST)	Indicator variable equals 1 if a sustainability report for firm i in year t includes an assurance statement, and 0 otherwise.	N/A
Sustainability assurance provider (APR)	Indicator variable equals 1 if the assurance provider for firm i in year t is an audit firm, and 0 otherwise.	N/A
Level of Assurance (LEVEL)	Indicator variable equals 1 if the level of assurance for firm i in year t is reasonable or a combination of limited and reasonable, and 0 otherwise.	N/A
Independent variables		
Strength of the legal system (STR)	Strength of country j's legal environment measured by the Rule of Law Index (The World Bank).	H1 (-)
Legal Origin (LEG)	Indicator variable equals 1 for civil law country j, and 0 for common law countries (La Porta et al., 1997; The World Factbook, 2016).	H2 (+)
Environmental Performance (ENVP)	Environmental performance of firm i in year t based on the pillar score in the Asset4 ESG database (Datastream).	H3 (-)
Social Performance (SOCP)	Social performance of firm i in year t based on the pillar score in the Asset4 ESG database (Datastream).	H4 (-)

Control variables		
Firm Size (SIZE)	Natural log of revenues of firm i in year t (Compustat).	N/A
Leverage (LEV)	Leverage of firm i in year t measured by its ratio of total debt to total assets (Compustat).	N/A
Profitability (ROA)	Profitability of firm i in year t measured by its return on assets (Compustat).	N/A
Sensitive industries (INDUSTRY)	Indicator variable equals 1 if firm i is in the mining sector, oil exploration sector, paper sector, chemical and allied products sector, petroleum refining sector, metals sector or utilities sector, and 0 otherwise (Cho & Patten, 2007; Peters & Romi, 2015)	N/A
Robustness check		
Environmental performance (ENER)	Environmental performance of firm i in year t based on the commitment and effectiveness towards emission reductions (Datastream).	H3 (-)
Social performance (SOCO)	Social performance of firm i in year t based on the commitment and effectiveness towards maintaining the firm's reputation (Datastream).	H4 (-)

4   Results

4.1   Descriptive results

The first part of the models is tested among the whole sample of 3632 observation (for an overview, see figure 1). The biggest countries in this sample are the U.K. (549 observations) and France (442 observations) (see table 2, panel A). In total 2536 sustainability reports where provided over the period of 2009 till 2014 among the 19 countries. This amount consists of 1772 stand-alone sustainability reports and 764 integrated reports (see table 2, panel B). Under panel C (table 2) you can see a growth in both the sustainability reporting rate (reports as percentage of observations) and the assurance rate (assurance as percentage of sustainability reports) over the period of 2009 till 2014. Finally, panel D (table 2) shows the largest sensitive industries in the sample are those of chemical and allied products (294 observations) and utilities (223 observations), while non-sensitive industries contain 2731 observations. It is remarkable that there are low assurance rates in the oil exploration sector (32.50%) and the petroleum refining sector (30.56%).

The second part of both models discusses the demand for assurance of sustainability reporting. Figure 1 shows a firm chose for assurance in 1360 cases. For the firms who do not choose for sustainability reporting it is logically not possible to have assurance.

Thirdly, the assurance provider is investigated. A distinction is made between assurance providers from the auditing profession and other assurance providers. Assurance is also regarded as provided by an auditing firm when assurance was provided by several assurance providers of which at least one firm was an auditing firm. Seven observations were excluded, because of incomplete data regarding the assurance provider. Therefore, the subsample consists of 1353 observations. Assurance was provided by an auditing firm in 1105 of the cases and 248 times by another assurance provider.

Finally, the models serve to investigate the level of assurance provided. The level of assurance provided is considered high when reasonable assurance or a combination of reasonable and limited assurance is provided. The other cases are viewed as a low level of assurance. The level of assurance could not be found in 93 cases, of which seven were already excluded because the assurance provider could neither be found. This results in a subsample of 1267 observations (1062 providers from the auditing profession and 205 otherwise) to test the fourth part of the models. The auditing firms provided a high level of assurance 154 times, while this was observed 42 times for other assurance providers. Therefore, in total a high level

of assurance was provided in 196 cases, while a low level of assurance was provided 1071 times.

4.2 Multivariate results

The main emphasis in this study is on the assurance decisions, as outlined earlier. An analysis of the factors associated with the decision to issue stand-alone sustainability reports or integrated reports is provided as some background information. After this background on sustainability reporting, the second part discusses the decision to assure. Part three investigates the choice of the assurance provider of firms among Europe. Finally, the fourth part discusses the choice of the level of assurance. Table 3 contains both the first model, including environmental performance, and the second model, including social performance.

Figure 1: Decision tree[1]

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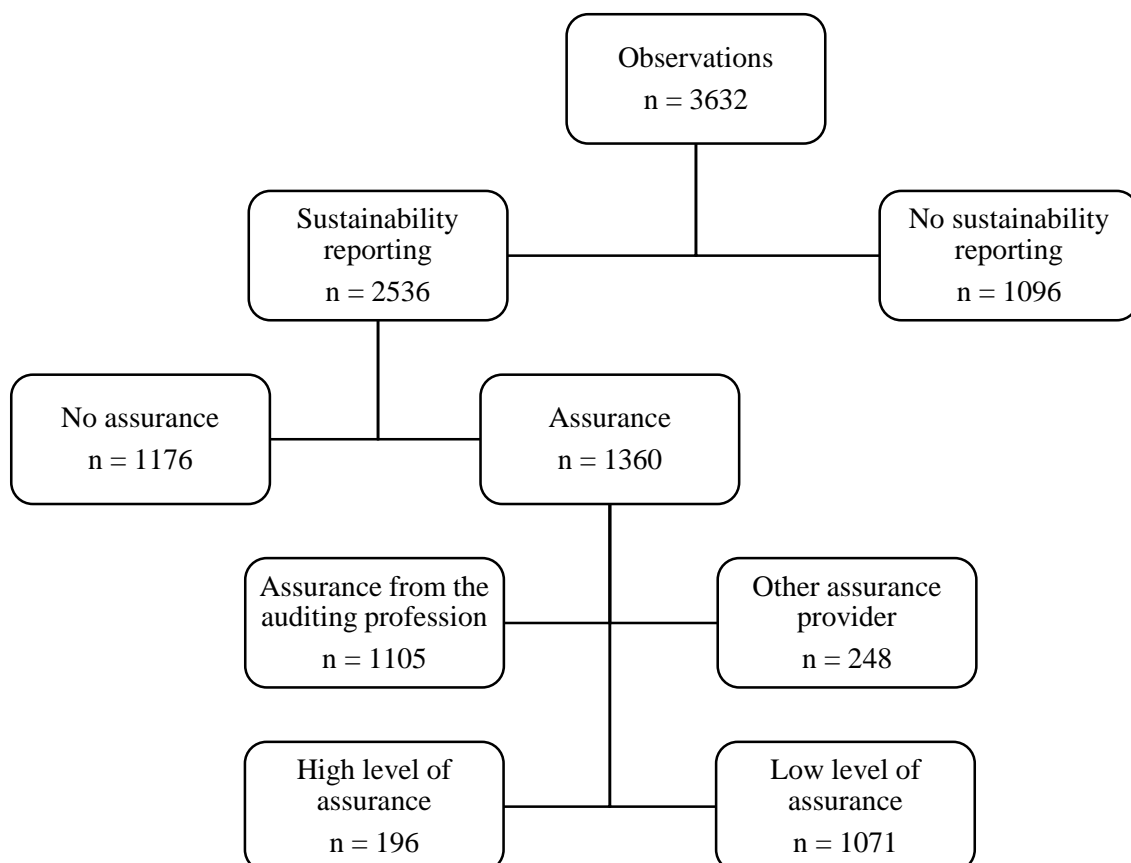
[1] Assurance providers (1105+248=1353) and levels of assurance (196+1071=1267) are not equal to the total number of assurance provided (1360) because of missing values, as outlined in section 4.1.

4.2.1 Background on decision to produce sustainability reports

The results for model 1 show that the legal strength of a country is negatively related to the choice to produce stand-alone sustainability reports or integrated reports ($z = -3.15$, $p < 0.01$, two-tailed) (see table 3). Furthermore, larger companies ($z = 6.99$, $p < 0.01$, two-tailed) and environmentally better performing firms ($z = 21.02$, $p < 0.01$, two-tailed) are more likely to produce sustainability reports. For the model including social performance the results show socially better performing ($z = 23.34$, $p < 0.01$, two-tailed) and larger firms ($z = 3.99$, $p < 0.01$, two-tailed) are more likely to issue sustainability reports, but the effect of legal strength is no longer significant.

Similar studies of Casey and Grenier (2015) and Simnett et al. (2009) also find that larger companies are more likely to issue sustainability reports. In contrast to the findings, they also find that highly leveraged firms are more likely to produce sustainability reports. Next to that, Simnett et al. (2009) also investigate the strength of the legal system and the legal origin of countries. Unlike Simnett et al. (2009), this study does not find that firms in stakeholder countries are more likely to choose for sustainability reporting. Furthermore, opposed to this study they find a positive relationship for the legal strength of countries. This could be due to differences in the sample period. Simnett et al. (2009) study sustainability reporting over a period of 2002 till 2004. The effect of legal strength decreases over this period and is negative, but insignificant, in the year 2004. This could be due to a greater acceptance of assurance of sustainability reporting (Simnett et al., 2009). Continuance of this trend could explain the difference in results.

4.2.2 Decision to purchase voluntary external assurance

The second part and onwards contain an investigation of the aim of this research. These parts examine the assurance decisions into detail. For the control variables only SIZE supports the expectations that larger companies are more likely to have assurance ($z = 9.65$, $p < 0.01$, two-tailed). Firms in countries with weaker legal systems are more likely to choose for assurance ($z = -5.22$, $p < 0.01$, two-tailed), which is consistent with H1. Furthermore, consistent with H2, firms in civil law countries ($z = 3.85 < 0.01$, two-tailed) are more likely to assure their sustainability reports. Finally, H3 is rejected because environmental performance ($z = 11.28$, $p < 0.01$, two-tailed) is positively related to the choice to assure.

Similar results are found for the model including social performance. Larger companies ($z = 9.53$, $p < 0.01$, two-tailed) are more likely to choose for assurance. The negative relationship between the legal strength ($z = -3.21$, $p < 0.01$, two-tailed) and the decision to

assure supports H1. Next to that, in line with H2, the model shows that firms in stakeholder countries are more likely to choose for assurance ($z = 3.92$, $p < 0.01$). However, the negative relationship between social performance and assurance of H4 is rejected, because a positive relationship ($z = 11.85$, $p < 0.01$, two-tailed) is found.

In contrast to the findings of Simnett et al. (2009), the results show that firms in weaker legal systems are more likely to choose for assurance. This is the case because assurance serves as a substitute for weaker legal institutions (Kolk & Perego, 2010; Herda et al., 2014, Francis et al., 2011). Firms in stakeholder-oriented countries are more likely to choose for assurance, which is in accordance with previous studies of Kolk and Perego (2010) and Simnett et al. (2009). The effect of firm size is in line with studies of Casey and Grenier (2015) and Simnett et al. (2009). Unlike Simnett et al. (2009), profitability does not influence the choice for assurance.

4.2.3   Choice of assurance provider

The third part of both models discusses the choice of assurance provider. The first model shows larger firms ($z = 4.45$, $p < 0.01$, two-tailed), higher leveraged firms ($z = 2.60$, $p < 0.01$, two-tailed) and firms with a lower return on assets ($z = -1.72$, $p < 0.10$, two-tailed) are more likely to choose for assurance from an auditing firm. Opposite to H1, there is a positive relationship ($z = 3.72$, $p < 0.01$, two-tailed) between the legal strength of the country in which the firm operates and the decision to choose an assurance provider from the auditing profession. Stakeholder countries ($z = 8.76$, $p < 0.01$, two-tailed) are more likely to choose for assurance from an auditing firm, as is expected under H2. Finally, the lower the environmental performance ($z = -2.90$, $p < 0.01$, two-tailed) of the firm, the more likely they are to choose for an assurance provider from the auditing profession, which supports H3.

For the model including social performance the results show that larger firms ($z = 3.98$, $p < 0.01$, two-tailed), higher leveraged firms ($z = 2.46$, $p < 0.05$, two-tailed) and firms with a lower return on assets ($z = -1.67$, $p < 0.10$, two-tailed) are more likely to choose for a provider from the auditing profession. Furthermore, firms in countries with a stronger legal system ($z = 3.06$, $p < 0.01$, two-tailed) and in stakeholder-oriented countries ($z = 8.55$, $p < 0.01$, two-tailed) are more likely to choose for an assurance provider from the auditing profession. These results reject H1 and support H2. There is no support for the relation between social performance and the decision to choose an assurance provider from the auditing profession (H4).

Table 2: Descriptive statistics

Panel A: Country

Country	Observations	Sustainability Reporting	Assurance	Reports/Observations (%)	Assurance/Reports (%)	Legal Origin	Legal Score (Average)
Belgium	148	94	34	63.51%	36.17%	STAKEHOLDER	1.41
Switzerland	312	182	59	58.33%	32.42%	STAKEHOLDER	1.81
Czech Republic	18	17	0	94.44%	0.00%	STAKEHOLDER	1.00
Germany	344	222	123	64.53%	55.41%	STAKEHOLDER	1.66
Denmark	148	128	41	86.49%	32.03%	STAKEHOLDER	1.93
Spain	232	185	145	79.74%	78.38%	STAKEHOLDER	1.07
Finland	144	123	68	85.42%	55.28%	STAKEHOLDER	1.98
France	422	317	210	75.12%	66.25%	STAKEHOLDER	1.45
U.K.	549	446	211	81.24%	47.31%	SHAREHOLDER	1.73
Greece	95	65	37	68.42%	56.92%	STAKEHOLDER	0.49
Hungary	23	23	18	100.00%	78.26%	STAKEHOLDER	0.65
Ireland	76	11	3	14.47%	27.27%	SHAREHOLDER	1.75
Italy	257	175	130	68.09%	74.29%	STAKEHOLDER	0.37
Netherlands	183	127	90	69.40%	70.87%	STAKEHOLDER	1.84
Norway	108	61	34	56.48%	55.74%	STAKEHOLDER	1.94
Poland	131	47	20	35.88%	42.55%	STAKEHOLDER	0.73
Portugal	62	33	23	53.23%	69.70%	STAKEHOLDER	1.05
Russia	144	97	36	67.36%	37.11%	STAKEHOLDER	-0.76
Sweden	236	183	78	77.54%	42.62%	STAKEHOLDER	1.96
Total	3632	2536	1360	69.82%	53.63%		

Table 2: Descriptive statistics (CONTINUED)

Panel B: Type of Report

Type of Report	Frequency	Percentage	Assurance	Assurance/Reports (%)
Stand-alone Sustainability Report	1772	69.87%	984	55.53%
Integrated Report	764	30.13%	376	49.21%
Total	2536	100.00%	1360	53.63%

Panel C: Year

Year	Observations	Sustainability Reporting	Assurance	Reports/Observations (%)	Assurance/Reports (%)
2014	645	513	295	79.53%	57.50%
2013	637	482	276	75.67%	57.26%
2012	620	438	240	70.65%	54.79%
2011	604	413	217	68.38%	52.54%
2010	591	375	181	63.45%	48.27%
2009	535	315	151	58.88%	47.94%
Total	3632	2536	1360	69.82%	53.63%

Panel D: Industries

Industry	Observations	Sustainability Reporting	Assurance	Reports/Observations (%)	Assurance/Reports (%)
Mining	53	40	29	75.47%	72.50%
Oil exploration	82	40	13	48.78%	32.50%
Paper	53	47	38	88.68%	80.85%
Chemical and allied products	294	219	132	74.49%	60.27%
Petroleum refining	84	78	56	92.86%	71.79%
Metals	112	72	22	64.29%	30.56%
Utilities	223	171	129	76.68%	75.44%
Others	2731	1869	941	68.44%	50.35%
Total	3632	2536	1360	69.82%	53.63%

Table 3: Results from each part of the logistic models

	Part 1: Reporting n = 3632		Part 2: Assurance n = 2536		Part 3: Provider n = 1353		Part 4: Level n = 1267	
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Intercept	-3.471	-3.302	-5.937	-6.674	-2.369	-2.769	-3.980	-4.348
	(-9.71)***	(-9.23)***	(-14.34)***	(-15.33)***	(-3,18)***	(-3.62)***	(-4.82)***	(-4.85)***
STR	-0.228	-0.090	-0.445	-0.260	0.525	0.412	0.050	0.036
	(-3.15)***	(-1.23)	(-5.22)***	(-3.21)***	(3.72)***	(3.06)***	(0.33)	(0.24)
LEG	0.070	0.075	0.465	0.475	1.692	1.641	0.859	0.843
	(0.59)	(0.62)	(3.85)***	(3.92)***	(8.76)***	(8.55)***	(2.86)***	(2.81)***
ENVP	0.037	N/A	0.033	N/A	-0.020	N/A	-0.001	N/A
	(21.02)***		(11.28)***		(-2.90)***		(-0.16)	
SOCP	N/A	0.046	N/A	0.039	N/A	-0.009	N/A	0.005
		(23.34)***		(11.85)***		(-1.43)		(0.75)
SIZE	0.260	0.157	0.405	0.400	0.309	0.272	0.126	0.111
	(6.99)***	(3.99)***	(9.65)***	(9.53)***	(4.45)***	(3.98)***	(1.71)*	(1.54)
LEV	-0.076	-0.326	0.002	-0.000	1.103	1.031	0.289	0.281
	(-0.33)	(-1.43)	(0.01)	(-0.00)	(2.60)***	(2.46)**	(0.59)	(0.57)
ROA	0.785	0.040	-0.009	-0.048	-0.369	-0.334	-0.399	-0.396
	(1.32)	(0.14)	(-0.05)	(-0.37)	(-1.72)*	(-1.67)*	(-0.83)	(-0.82)
Control Industries	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

*, **, *** Significantly different from zero at the α = 0.10, 0.05, and 0.01 levels, respectively, for two-tailed tests. For variable definitions, see table 1.

Previous studies regarding the choice of assurance provider is conducted by Simnett et al. (2009). They find bigger firms and firms in stakeholder-oriented countries are more likely to choose for assurance, similar to this study. In contrast, they find a negative relationship for the legal strength of countries. Furthermore, they find that lower leveraged firms are more likely to choose an auditing firm as assurance provider. However, leverage as a proxy of agency costs is expected to be positively associated with the demand for assurance (Simnett et al., 2009). When firms see auditing firms as of higher quality compared to other providers, audit firms may be better in reducing the information asymmetry between the firm and the public. Therefore, it is expected that higher leveraged firms are more likely to choose for an assurance provider from the auditing profession.

4.2.4 Choice of level of assurance

The final part of the models examines the choice between a high and low level of assurance of sustainability reporting. The first model shows larger companies are more likely to choose for a high level of assurance ($z = 1.71$, $p < 0.10$, two-tailed). Next to that, firms in stakeholder countries are more likely to have their sustainability reports highly assured ($z = 2.86$, $p < 0.01$, two-tailed). The model including social performance also shows firms in stakeholder countries are more likely to choose for assurance ($z = 2.81$, $p < 0.01$, two-tailed). These results support H2. No significant results are found for the legal origin (H1), environmental performance (H3) and social performance (H4). To the best of my knowledge, no previous studies focused on the determinants of the level of assurance of sustainability reporting.

4.3   Comparison within Europe

To get a better understanding of assurance in Europe this section discusses different European regions into more detail. Europe is divided into four regions: Northern Europe (Denmark, Finland, Ireland, Norway, Sweden and the U.K.), Eastern Europe (Czech Republic, Hungary, Poland and Russia), Southern Europe (Greece, Italy, Portugal and Spain) and Western Europe (Belgium, France, Germany, Switzerland and the Netherlands) (United Nations Statistics Division, 2013). The legal origin factor is only included for Northern Europe, because the other regions only include stakeholder-oriented countries. There is no comparison made with previous studies, because, to the best of my knowledge, this is the first study to focus on different regions within Europe. Furthermore, this section only provides an additional analysis.

4.3.1 Background on decision to produce sustainability reports

Some small differences are visible within Europe regarding the choice to produce sustainability reports (table 4). In Northern Europe larger companies (z = 6.81, p < 0.01, two-tailed) and environmentally better performing companies (z = 8.78, p < 0.01, two-tailed) are more likely to issue a stand-alone sustainability report or integrated report in the first model. Next to that, there is a positive effect of stakeholder countries (z = 1.87, p < 0.10, two-tailed) on the decision to report on sustainability. The second model shows similar results for the legal origin (z = 1.84, p < 0.10, two-tailed) and firm size (z = 4.56, p < 0.01, two-tailed). Furthermore, socially better performing firms (z = 10.93, p < 0.01, two-tailed) are more likely to produce a sustainability report.

For Eastern European countries larger firms are more likely to choose for sustainability reporting in both model one (z = 4.00, p < 0.01, two-tailed) and model two (z = 3.62, p < 0.01, two-tailed). Furthermore sustainability reporting is negatively related to the leverage of firms (z = -2.00, p < 0.05, two-tailed; z = -2.07, p < 0.05, two-tailed). Finally, there is a strong effect of environmental (z = 6.75, p < 0.01, two-tailed) and social performance (z = 8.08, p < 0.01, two-tailed) visible.

In Southern Europe firms in countries with weak legal systems (z = -1.83, p < 0.10, two-tailed; z = -1.91, p < 0.10, two-tailed) are more likely to choose for sustainability reporting. Next to that, environmental performance (z = 9.45, p < 0.01, two-tailed) and social performance (z = 10.03, p < 0.01, two-tailed) show a positive effect. Finally, higher leveraged firms are more likely to choose for sustainability reporting under the first (z = 1.70, p < 0.10, two-tailed) and second model (z = 2.44, p < 0.05, two-tailed).

Finally, in Western Europe both environmental performance (z = 13.28, p < 0.01, two-tailed) and social performance (z = 14.11, p < 0.01, two-tailed) have a positive effect on sustainability reporting. Only in model one, larger companies (z = 2.04, p < 0.05, two-tailed) are more likely to report on sustainability.

4.3.2 Decision to purchase voluntary external assurance

The second part of both models investigates the decision of the firm to purchase voluntary external assurance of its sustainability report. In Northern Europe larger companies (z = 8.15, p < 0.01, two-tailed) and lower leveraged firms (z = -3.26, p < 0.01, two-tailed) are more likely to choose for assurance. Next to that, environmentally better performing firms (z = 4.56, p < 0.01, two-tailed) are more likely to choose for external assurance. Under the second model firm

size (z = 7.39, p < 0.01, two-tailed), leverage (z = -3.50, p < 0.01, two-tailed) and return on assets (z = -2.11, p < 0.01, two-tailed) effect the decision to assure. Finally, social performance is positively related to the decision to assure (z = 6.48, p < 0.01, two-tailed).

Within Eastern Europe only environmental performance (z = 2.00, p < 0.05, two-tailed) and social performance (z = 1.77, p < 0.10, two-tailed) positively affect the decision to assure. For Southern European countries several factors affect the assurance decision. Larger companies (z = 2.60, p < 0.01, two-tailed; z = 3.15, p < 0.01, two-tailed) and companies with a lower return on assets (z = -2.04, p < 0.05, two-tailed; z = -2.19, p < 0.05, two-tailed) are more likely to choose for assurance. Furthermore, environmental performance (z = 4.67, p < 0.01, two-tailed) and social performance (z = 4.57, p < 0.01, two-tailed) positively affect the decision to assure sustainability reports.

In Western Europe, larger companies are more likely to choose for assurance (z = 7.04, p < 0.01, two-tailed; z = 7.28, p < 0.01, two-tailed). Next to that, environmentally better performing firms (z = 6.23, p < 0.01, two-tailed) are more likely to choose for assurance. The second model shows a similar effect for social performance (z = 4.86, p < 0.01, two-tailed).

The findings show that legal strength does not influence the decision to assure within different European regions, although the findings for Europe as a whole in the first model (see table 3) show that countries in weak legal systems are more likely to choose for assurance.

4.3.3 Choice of assurance provider

The third part focuses on the decision whether to choose an assurance provider from the auditing profession or another assurance provider. In Northern Europe the legal origin affects the decision to choose an auditing firm as assurance provider (z = 3.48, p < 0.01, two-tailed; z = 3.45, p < 0.01, two-tailed). Furthermore, both models show an effect of the firm size (z = 3.39, p < 0.01, two-tailed; z = 3.07, p < 0.01, two-tailed) and return on assets (z = 2.95, p < 0.01, two-tailed; z = 2.58, p < 0.01, two-tailed) on the decision to choose for an auditing firm. No significant results are found for Eastern Europe.

In Southern Europe, under the first model, larger companies (z = 2.89, p < 0.01, two-tailed) and lower leveraged firms (z = -2.77, p < 0.01, two-tailed) are more likely to choose for an assurance provider from the auditing profession. Next to that, environmentally poor performing firms (z = -2.35, p < 0.05, two-tailed) are more likely to choose for an auditing firm. In model two firm size (z = 2.20, p < 0.05, two-tailed) and return on assets (z = -2.72, p < 0.01, two-tailed) affect the choice of assurance provider.

Table 4: Results from each part of the logistic models (European comparison)

Part 1: Reporting	Northern Europe n = 1225		Eastern Europe n = 280		Southern Europe n = 622		Western Europe n = 1403	
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Intercept	-8.639	-8.376	-6.084	-7.352	-3.232	-3.938	-4.326	-3.485
	(-4.02)***	(-3.76)***	(-4.19)***	(-4.32)***	(-3.69)***	(-4.28)***	(-5.25)***	(-4.25)***
STR	1.661	1.946	0.215	0.436	-0.777	-0.791	0.356	0.200
	(1.42)	(1.60)	(0.88)	(1.61)	(-1.83)*	(-1.91)*	(0.95)	(0.52)
LEG	0.580	0.599	N/A	N/A	N/A	N/A	N/A	N/A
	(1.87)*	(1.84)*						
ENVP	0.029	N/A	0.048	N/A	0.046	N/A	0.042	N/A
	(8.78)***		(6.75)***		(9.45)***		(13.28)***	
SOCP	N/A	0.043	N/A	0.060	N/A	0.052	N/A	0.050
		(10.93)***		(8.08)***		(10.03)***		(14.11)***
SIZE	0.578	0.399	0.670	0.705	0.133	0.070	0.120	-0.015
	(6.81)***	(4.56)***	(4.00)***	(3.62)***	(1.26)	(0.61)	(2.04)**	(-0.23)
LEV	-0.623	-0.688	-1.479	-1.882	1.126	1.727	0.654	0.651
	(-1.47)	(-1.56)	(-2.00)**	(-2.07)**	(1.70)*	(2.44)**	(1.54)	(1.46)
ROA	1.291	-0.446	-0.115	-0.197	-0.298	0.416	1.528	1.129
	(1.29)	(-0.42)	(-0.25)	(-0.72)	(-0.17)	(0.23)	(1.33)	(0.92)
Control industries	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

*, **, *** *Significantly different from zero at the α = 0.10, 0.05, and 0.01 levels, respectively, for two-tailed tests. For variable definitions, see table 1.*

Table 4: Results from each part of the logistic models (European comparison) (CONTINUED)

Part 2: Assurance	Northern Europe n = 929		Eastern Europe n = 176		Southern Europe n = 458		Western Europe n = 940	
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Intercept	-10.387	-11.178	0.449	0.283	-2.955	-3.827	-7.675	-6.531
	(-5.17)***	(-5.44)***	(0.28)	(0.17)	(-2.75)***	(-3.43)***	(-7.36)***	(-6.54)***
STR	1.118	1.203	-0.122	-0.078	0.174	0.164	0.118	-0.132
	(1.08)	(1.14)	(-0.43)	(-0.28)	(0.46)	(0.43)	(0.29)	(-0.33)
LEG	0.179	0.244	N/A	N/A	N/A	N/A	N/A	N/A
	(0.62)	(0.85)						
ENVP	0.028	N/A	0.015	N/A	0.027	N/A	0.041	N/A
	(4.56)***		(2.00)**		(4.67)***		(6.23)***	
SOCP	N/A	0.045	N/A	0.015	N/A	0.029	N/A	0.030
		(6.48)***		(1.77)*		(4.57)***		(4.86)***
SIZE	0.756	0.687	-0.233	-0.237	0.311	0.362	0.510	0.539
	(8.15)***	(7.39)***	(-1.27)	(-1.29)	(2.60)***	(3.15)***	(7.04)***	(7.28)***
LEV	-1.523	-1.661	0.434	0.345	-1.113	-1.011	-0.755	-0.814
	(-3.26)***	(-3.50)***	(0.41)	(0.34)	(-1.39)	(-1.25)	(-1.48)	(-1.62)
ROA	-1.116	-2.574	1.808	1.276	-5.622	-6.318	-0.010	-1.003
	(-0.90)	(-2.11)**	(0.62)	(0.75)	(-2.04)**	(-2.19)**	(-0.01)	(-0.61)
Control industries	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

*, **, *** Significantly different from zero at the α = 0.10, 0.05, and 0.01 levels, respectively, for two-tailed tests. For variable definitions, see table 1.

Table 4: Results from each part of the logistic models (European comparison) (CONTINUED)

Part 3: Provider	Northern Europe n = 421		Eastern Europe n = 62		Southern Europe n = 328		Western Europe n = 478	
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Intercept	-7.338	-7.994	3.466	4.993	0.548	-1.185	16.064	8.430
	(-2.38)**	(-2.61)***	(1.26)	(1.44)	(0.29)	(-0.70)	(4.57)***	(3.48)***
STR	2.141	1.978	0.288	0.196	0.448	0.420	-4.504	-3.961
	(1.37)	(1.27)	(0.56)	(0.39)	(0.92)	(0.87)	(-5.29)***	(-4.85)
LEG	1.583	1.569	N/A	N/A	N/A	N/A	N/A	N/A
	(3.48)***	(3.45)***						
ENVP	-0.015	N/A	-0.022	N/A	-0.047	N/A	-0.115	N/A
	(-1.05)		(-1.26)		(-2.35)**		(-3.38)***	
SOCP	N/A	0.005	N/A	-0.037	N/A	-0.012	N/A	-0.032
		(0.35)		(-1.36)		(-0.88)		(-1.57)
SIZE	0.481	0.416	-0.127	-0.136	0.428	0.311	0.473	0.303
	(3.39)***	(3.07)***	(-0.48)	(-0.50)	(2.89)***	(2.20)**	(3.26)***	(2.09)**
LEV	0.712	0.541	0.864	1.161	1.559	1.398	-0.876	0.148
	(0.99)	(0.76)	(0.37)	(0.51)	(1.47)	(1.36)	(-0.84)	(0.16)
ROA	5.635	5.225	-0.102	-0.096	-12.197	-11.795	-6.162	-2.852
	(2.95)***	(2.58)***	(-0.62)	(-0.59)	(-2.77)***	(-2.72)***	(-2.17)**	(-1.07)
Control industries	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

*, **, *** Significantly different from zero at the α = 0.10, 0.05, and 0.01 levels, respectively, for two-tailed tests. For variable definitions, see table 1.

Table 4: Results from each part of the logistic models (European comparison) (CONTINUED)

Part 4: Level	Northern Europe n = 393		Eastern Europe n = 58		Southern Europe n = 300		Western Europe n = 478	
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Intercept	-4.658	-6.105	4.812	-2.223	-4.178	-4.164	-2.466	-3.016
	(-0.92)	(-1.18)	(1.04)	(-0.41)	(-2.36)**	(-2.19)**	(-1.39)	(-1.82)*
STR	-1.999	-2.161	-0.463	-0.791	1.250	1.270	0.887	0.880
	(-0.80)	(-0.86)	(-0.66)	(-1.14)	(2.41)**	(2.46)**	(1.38)	(1.37)
LEG	1.197	1.247	N/A	N/A	N/A	N/A	N/A	N/A
	(1.63)	(1.70)*						
ENVP	0.006	N/A	-0.020	N/A	0.005	N/A	0.003	N/A
	(0.24)		(-0.87)		(0.43)		(0.19)	
SOCP	N/A	0.27	N/A	0.051	N/A	0.004	N/A	0.014
		(1.06)		(1.02)		(0.27)		(1.02)
SIZE	0.492	0.486	-0.088	-0.016	-0.011	0.001	-0.202	-0.247
	(2.47)**	(2.48)**	(-0.22)	(-0.04)	(-0.07)	(0.01)	(-1.70)*	(-2.04)**
LEV	-0.254	-0.347	-9.326	-7.963	1.032	1.036	1.929	1.983
	(-0.20)	(-0.27)	(-1.87)*	(-1.80)*	(0.74)	(0.74)	(2.34)**	(2.46)**
ROA	0.804	0.049	-1.485	-0.572	-6.055	-6.073	-0.809	-0.963
	(0.28)	(0.02)	(-0.15)	(-0.33)	(-1.17)	(-1.17)	(-0.31)	(-0.38)
Control industries	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

*, **, *** Significantly different from zero at the α = 0.10, 0.05, and 0.01 levels, respectively, for two-tailed tests. For variable definitions, see table 1.

In Western Europe larger companies (z = 3.26, p < 0.01, two-tailed) and companies with a lower return on assets (z = -2.17, p < 0.05, two-tailed) are more likely to choose for an auditing firm in model one. Furthermore, firms in weak legal systems (z = -5.29, p < 0.01, two-tailed) and environmentally poor performing firms (z = -3.38, p < 0.01, two-tailed) are more likely to choose for assurance from an auditing firm. In model two only company size (z = 2.09, p < 0.05, two-tailed) affects the choice of assurance provider. In Western Europe, the negative effect of legal strength on the decision to choose an assurance provider from the auditing profession is opposite to the result for Europe as a whole. However, it supports the expectation that assurance serves as a substitute for weak legal institutions.

4.3.4 Choice of level of assurance

Finally, the models focus on the decision whether to choose for a high or low level of assurance. The results show that in Northern Europe company size (z = 2.47, p < 0.05, two-tailed; z = 2.48, p < 0.05, two-tailed) positively affects the choice for a high level of assurance. Only under model two the results show that firms in stakeholder countries (z = 1.70, p < 0.10, two-tailed) are more likely to choose for a high level of assurance.

In Eastern Europe lower leveraged firms are more likely to choose for a high level of assurance in both model one (z = -1.87, p < 0.10, two-tailed) and model two (z = -1.80, p < 0.10, two-tailed). In Southern Europe the results show that firms in strong legal systems are more likely to choose for a high level of assurance (z = 2.41, p < 0.05, two-tailed; z = 2.46, p < 0.05, two-tailed). This is opposite to the main analysis of Europe, which shows no effect. In Western Europe smaller companies (z = -1.70, p < 0.10, two-tailed; z = -2.04, p < 0.01, two-tailed) and lower leveraged firms (z = 2.34, p < 0.05, two-tailed; z = 2.46, p < 0.05, two-tailed) choose more often for a high level of assurance.

4.4   Comparison with the United States and Canada

Additionally, the results of the reporting decision and the assurance decisions in Europe are compared with the results for the United States and Canada. These countries are chosen because previous studies showed a low proportion of assurance in the United States and Canada, compared to a high proportion in Europe (Simnett et al., 2009). Appendix D shows an assurance rate (assurance as percentage of sustainability reports) in the United States and Canada of 22.85% and 26.08%, respectively, compared to an average of 53.63% in Europe. However, these two countries show a growth from an assurance rate of 14.49% in 2009 to 32.52% in 2014.

First of all, there are some differences regarding the choice to report on sustainability. Opposite to Europe, more leveraged firms in the United States in Canada are more likely to provide a sustainability report (z = 2.11, p < 0.05, two-tailed; z = 1.72, p < 0.10, two-tailed) in model one and two, respectively (see appendix E). Furthermore, the strength of the legal system (z = 3.79, p < 0.01, two-tailed; z = 2.73, p < 0.01, two-tailed) positively affects the choice for sustainability reporting in both models, while this was only the case for the first model in Europe. Similar to Europe are the effect of environmental performance (z = 14.68, p < 0.01, two-tailed), social performance (z = 14.24, p < 0.01, two-tailed) and firm size (z = 3.28, p < 0.01, two-tailed; z = 3.56, p < 0.01, two-tailed).

In line with the European analysis, environmental performance (z = 3.73, p < 0.01, two-tailed) and social performance (z = 3.25, p < 0.01, two-tailed) positively affect the decision to assure. Furthermore, larger companies (z = 2.46, p < 0.05, two-tailed) are more likely to have their sustainability reports assured in model two. Opposed to Europe, there is no effect for legal strength, in both models, and size, in the first model, in the United States and Canada.

Only environmental performance (z = 2.28, p < 0.05, two-tailed), social performance (z = 2.91, p < 0.01, two-tailed) and size (z = -3.04, p < 0.01, two-tailed; z = 2.53, p < 0.05, two-tailed) affect the decision to choose for an auditing firm as assurance provider. Opposed to Europe, there is a positive relationship between environmental and social performance and the choice of assurance provider. Furthermore, strength of the legal system, leverage and return on assets do not affect the choice for an assurance provider from the auditing profession in the United States and Canada.

Finally, in contrast to European firms, environmental performance (z = -2.71, p < 0.01, two-tailed) and social performance (z = -1.79, p < 0.10, two-tailed) negatively affect the choice for a high level of assurance. Next to that, bigger firms (z = 3.66, p < 0.01, two-tailed; z = 2.83, p < 0.01, two-tailed) and lower leveraged firms (z = -2.94, p < 0.01, two-tailed; z = -2.81, p < 0.01, two-tailed) are more likely to choose for a high level of assurance. Only in the first model firms with a higher return on assets are more likely to choose for a high level of assurance (z = -1.66, p < 0.10, two-tailed).

4.5   Robustness checks

As outlined in section 3.3 the robustness checks include other measures for environmental and social performance. Previous studies did not agree on the way how the constructs of environmental and social performance should be measured (Trumpp et al., 2015). Therefore, this study shows how different measures would affect the regression analysis. First of all,

ENER is tested as an alternative for ENVP in the first model (see appendix F). This modification changes the results of the analysis slightly. For the decision to produce stand-alone sustainability reports or integrated reports the results show that legal strength is no longer related. However, in contrast to the original model, stakeholder countries are more likely to choose for sustainability reporting ($z = 2.65$, $p < 0.01$, two-tailed). Next to that, firm size is no longer related to the choice of the level of assurance.

Secondly, the analysis is conducted using SOCO as the measure for social performance. Results show firms in strong legal systems ($z = 3.75$, $p < 0.01$, two-tailed) and stakeholder countries ($z = 4.27$, $p < 0.01$, two-tailed) are more likely to produce a sustainability report (see appendix E). However, legal strength no longer has an effect on the decision to assure. Furthermore, socially better performing firms ($z = -1.80$, $p < 0.10$, two-tailed) are more likely to choose for an auditing firm as assurance provider. On the other hand, there is no longer an effect of profitability on the choice of assurance provider. Finally, larger firms are more likely to choose for a high level of assurance ($z = 1.70$, $p < 0.10$, two-tailed), while there was no effect in the main analysis in the second model.

A large number of observations in the sample comes from two countries: the U.K. (549 observations; 15.12%) and France (442 observations; 12.17%) (see table 2, panel A). Including dummies for the U.K. and France slightly changes the results (see appendix F). Legal origin becomes significant for the decision to produce sustainability reports ($z = 6.30$, $p < 0.01$, two-tailed; $z = 4.21$, $p < 0.01$, two-tailed). On the contrary, the results regarding legal origin in relation to assurance, assurance provider and level of assurance are no longer significant. This may be due to the fact that Ireland and the U.K. are the only shareholder countries included in the model. Finally, profitability does no longer affect the choice of assurance provider and firm size does no longer influence the choice of the level of assurance.

Next to that, the finance industry has a large 'social footprint' (Simnett et al., 2009; Casey & Grenier, 2015). This industry includes a large part of the whole sample with 888 observations (24.45%). The dummy for finance includes two-digit SIC codes 60 till 67. In model two leverage becomes significant after controlling for the finance industry ($z = 2.19$, $p < 0.05$, two-tailed) (see appendix F). However, leverage is no longer significant in both models for the choice of assurance provider.

Finally, the results are controlled for year effects by including time dummies (see appendix G). Two changes are visible after including time dummies. In the first model the return on assets positively influences the decision to produce a sustainability report ($z = 1.80$,

p < 0.10, two-tailed). However, the return on assets no longer affects the type of assurance provider.

5   Conclusion and discussion

This is the first study, to the best of my knowledge, focusing on external assurance decisions of sustainability reporting in Europe. The aim of this research is to explore the determinants of external assurance of sustainability reporting in Europe. The analysis, using logistic models, consists of: (1) background information on the choice to produce stand-alone sustainability reports or integrated reports; (2) for the firms who report on sustainability, the determinants for the assurance decision; (3) for those that assure, if they choose for an assurance provider from the auditing profession; and (4) if they choose for a high or low level of assurance of their report. In total 3632 observations of 656 firms among 19 European countries are studied over a period from 2009 till 2014.

Two important concepts which are often ignored in previous studies are environmental and social performance. Insights into the assurance practice can inform international assurance standard setters and users of reports about the growing field. The insights can help the users to better understand the quality of reporting and assurance. Furthermore, understanding how assurance is used can help the development of normative theory about how assurance should be used.

It is hypothesized that firms in weaker legal systems and stakeholder-oriented countries are more likely to choose for assurance. Furthermore, environmental and social performance are expected to influence to the decision to assure sustainability reports negatively. The results make clear that firms in countries with a weaker legal system are more likely to choose for assurance (model 1 only). This can be explained by the role of assurance as substitute for weak legal institutions that are present within the country. Next to that, firms in stakeholder countries are more likely to have their sustainability report assured. However, in contrast to what was expected, environmentally and socially better performing firms are more likely to have their reports voluntarily assured. Therefore, agency theory and signalling theory seem to be more useful to explain assurance compared to stakeholder theory and legitimacy theory. Looking at different regions within Europe we find similar results with respect to environmental and social performance.

Regarding the choice of assurance provider, firms in stronger legal systems are more likely to choose for an assurance provider from the auditing profession. This result is opposite to our expectations and to the effect on assurance. However, results change when Europe is split. In Western Europe firms in weaker legal systems are more likely to choose for assurance

from an auditing firm, while no effect is found for the other regions. Similar to the assurance decision, firms in stakeholder countries are more likely to choose an assurance provider from the auditing profession. Next to that, firms with a lower environmental performance are more likely to choose an audit firm as provider. This result is in line with stakeholder theory and legitimacy theory, but in contrast to the findings for assurance.

Finally, this study investigates the determinants for the level of assurance. The results only show an effect of the legal origin on this decision. Firms in stakeholder countries are more likely to choose for a high level of assurance. However, environmental performance, social performance and legal strength do not affect the decision to assure.

Some limitations of this study have to be taken into account. First of all, it can be hard to distinguish annual reports from integrated reports. Most firms report in their annual report on sustainability, but the extent differs. A decision has to be made if the annual report should be seen as an integrated report or not. Furthermore, some firms report in their native language, which causes some difficulties. Reporting in the domestic language could make it difficult for users of the report to interpret the content. This could have implications for the perceived credibility of reporting and assurance. However, this study did not separate English written reports from other languages.

Next to that, attention should be paid to the constructs of environmental and social performance. Researchers deal with similar difficulties as the assurance providers. Especially, qualitative characteristics of social and environmental performance are hard to measure and compare. This could be an explanation for the lack of research on these determinants of assurance. The drawback of using the pillar score as a comprehensive measure of environmental and social performance is the limited data availability. This causes a large sample reduction. However, other proxies of environmental and social performance (e.g. CO_2 emissions) which would be available for a larger sample, have the drawback that they are less accurate in what environmental or social performance are trying to measure.

Future studies could investigate the effect of measuring environmental and social performance using different proxies. Next to that, a more detailed analysis of the scope of an assurance engagement in combination with the level of assurance provided on this scope could add important insights in the growing field of assurance of sustainability reporting. It can be hard, if not impossible, to provide reasonable assurance of an entire sustainability report because of the characteristics of information. Furthermore, some firms choose for assurance of their entire report, while other firms choose to only assure specific sections or indicators. However, in this research the scope of assurance is not taken into account.

Next to that, further research is necessary to determine what influences assurance, the assurance provider and the level of assurance, and why results are mixed in different stages in these different stages. This study discusses the opposing expectations between assurance and sustainability performance of agency theory and signalling theory against stakeholder theory and legitimacy theory. However, the results in different stages of the models do not show conclusive results for one of both sides.

Finally, the drawbacks of assurance need more exploration. Management influence which forms a threat for the quality of assurance is an important issue to investigate further. Future research could try to explain how this threat influences the actual and perceived quality of assurance.

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Appendix A: Countries

This research investigates the 100 largest companies in the following 19 European countries.

Countries		
Belgium	Hungary	Russia
Denmark	Italy	Spain
Czech Republic	Ireland	Sweden
Finland	Netherlands	Switzerland
France	Norway	U.K.
Germany	Poland	
Greece	Portugal	

Appendix B: Correlation matrix

	ENF	LEG	ENVP	SOCP	SIZE	LEV	ROA	ENER	SOCO
STR	1								
LEG	-0.3053***	1							
ENVP	0.1788***	-0.0040	1						
SOCP	0.0734***	0.0438***	0.8080***	1					
SIZE	-0.0038	-0.2541***	0.4248***	0.4231***	1				
LEV	-0.0182	-0.0381***	0.0888***	0.0958***	0.2344***	1			
ROA	-0.0122	0.0016	0.0094	0.0220	0.0668***	-0.0926***	1		
ENER	0.1314***	-0.0360**	0.9022***	0.7745***	0.4038***	0.0707***	0.0103	1	
SOCO	0.0337**	-0.1328***	0.5705***	0.7343***	0.3593***	0.1094***	0.0167	0.5814***	1

*, **, *** Significantly different from zero at the α = 0.10, 0.05, and 0.01 levels, respectively. For variable definitions, see table 1.*

Appendix C: Descriptive statistics

	Observations	Mean	Std. Dev.	Minimum	Maximum	25th percentile	Median	75th percentile
STR	3632	1.403	0.650	-0.821	2.121	1.158	1.645	1.841
LEG	3632	0.828	0.378	0	1	0	1	1
ENVP	3632	69.963	27.730	8.550	94.040	54.725	83.500	91.665
SOCP	3632	71.367	26.865	3.660	97.870	55.605	83.495	92.320
SIZE	3632	8.563	1.445	-0.189	15.102	7.679	8.516	9.480
LEV	3632	0.645	0.210	0.001	1.685	0.511	0.641	0.797
ROA	3632	0.050	0.377	-0.831	20.204	0.006	0.034	0.065
ENER	3632	69.456	28.153	7.370	95.100	51.705	83.645	91.415
SOCO	3632	60.921	29.652	3.160	96.97	36.160	68.480	87.445

Appendix D: Descriptive statistics (U.S. and Canada)

	Observations			Sustainability Reporting			Assurance			Reports/Observations (%)			Assurance/Reports (%)		
Year	U.S.	Canada	Total	U.S.	Canada	Total	U.S.	Canada	Total	U.S.	Canada	Total	U.S.	Canada	Total
2014	88	89	177	69	54	123	22	18	40	78.41%	60.67%	69.49%	31.88%	33.33%	32.52%
2013	87	90	177	65	52	117	19	17	36	74.71%	57.78%	66.10%	29.23%	32.69%	30.77%
2012	85	90	175	58	53	111	14	15	29	68.24%	58.89%	63.43%	24.14%	28.30%	26.13%
2011	85	89	174	57	45	102	10	11	21	67.06%	50.56%	58.62%	17.54%	24.44%	20.59%
2010	84	87	171	50	41	91	7	6	13	59.52%	47.13%	53.22%	14.00%	14.63%	14.29%
2009	83	85	168	38	31	69	5	5	10	45.78%	36.47%	41.07%	13.16%	16.13%	14.49%
Total	512	530	1042	337	276	613	77	72	149	65.82%	52.08%	58.83%	22.85%	26.09%	24.31%

Appendix E: Results from each part of the logistic models (U.S. and Canada)

	Part 1: Reporting n = 1042		Part 2: Assurance n = 613		Part 3: Provider n = 129		Part 4: Level n = 126	
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Intercept	-15.085	-12.539	-10.575	-10.413	11.419	9.085	-17.295	-19.745
	(-5.36)***	(-4.60)***	(-3.07)***	(-3.04)***	(1.27)	(0.98)	(-1.41)	(-1.46)
ENF	4.514	3.123	1.813	1.803	-0.975	-1.397	3.107	4.557
	(3.79)***	(2.73)***	(1.27)	(1.26)	(-0.28)	(-0.38)	(0.64)	(0.92)
LEG	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
ENVP	0.058	N/A	0.038	N/A	0.048	N/A	-0.076	N/A
	(14.68)***		(3.73)***		(2.28)**		(-2.71)***	
SOCP	N/A	0.058	N/A	0.025	N/A	0.055	N/A	-0.034
		(14.24)***		(3.25)***		(2.91)***		(-1.79)*
SIZE	0.341	0.357	0.225	0.341	-1.343	-1.084	2.069	1.669
	(3.28)***	(3.56)***	(1.56)	(2.46)**	(-3.04)***	(-2.53)**	(3.66)***	(2.83)***
LEV	0.999	0.816	0.834	0.841	0.527	0.731	-6.957	-6.520
	(2.11)**	(1.72)*	(1.24)	(1.25)	(0.32)	(0.41)	(-2.94)***	(-2.81)***
ROA	-1.374	-2.295	-0.585	-0.870	-1.130	-2.010	-4.191	-3.668
	(-0.95)	(-1.52)	(-0.35)	(-0.52)	(-0.33)	(-0.56)	(-1.66)*	(-1.55)
Control industries	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

*, **, *** Significantly different from zero at the α = 0.10, 0.05, and 0.01 levels, respectively, for two-tailed tests. For variable definitions, see table 1.

Appendix F: Robustness checks

Part 1: Reporting	Main Results		ENER	SOCO	France + UK		Finance	
n = 3632	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Intercept	-3.471	-3.302	-3.854	-4.361	-5.678	-4.936	-3.470	-3.280
	(-9.71)***	(-9.23)***	(-10.85)***	(-12.47)***	(-11.64)***	(-9.92)***	(-9.70)***	(-9.15)***
STR	-0.228	-0.090	-0.106	0.245	-0.223	-0.072	-0.228	-0.081
	(-3.15)***	(-1.23)	(-1.53)	(3.57)***	(-3.05)***	(-0.97)	(-3.15)***	(-1.10)
LEG	0.070	0.075	0.312	0.515	2.287	1.592	0.070	0.053
	(0.59)	(0.62)	(2.65)***	(4.27)***	(6.30)***	(4.41)***	(0.59)	(0.43)
ENVP	0.037	N/A	0.034	N/A	0.038	N/A	0.037	N/A
	(21.02)***		(20.51)***		(20.97)***		(20.83)***	
SOCP	N/A	0.046	N/A	0.033	N/A	0.047	N/A	0.047
		(23.34)***		(21.09)***		(22.81)***		(23.17)***
SIZE	0.260	0.157	0.294	0.329	0.264	0.179	0.259	0.160
	(6.99)***	(3.99)***	(8.02)***	(9.20)***	(6.80)***	(4.39)***	(6.96)***	(4.06)***
LEV	-0.076	-0.326	-0.118	-0.310	-0.086	-0.315	-0.078	-0.562
	(-0.33)	(-1.43)	(-0.51)	(-1.41)	(-0.36)	(-1.37)	(-0.30)	(-2.19)**
ROA	0.785	0.040	0.664	0.080	0.533	0.003	0.784	0.034
	(1.32)	(0.14)	(1.14)	(0.20)	(0.88)	(0.01)	(1.32)	(0.12)
Control Industries	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

*, **, *** Significantly different from zero at the α = 0.10, 0.05, and 0.01 levels, respectively, for two-tailed tests. For variable definitions, see table 1.

Part 2: Assurance	Main Results		ENER	SOCO	France + UK		Finance	
n = 2536	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Intercept	-5.937	-6.674	-6.022	-5.973	-6.698	-7.195	-5.920	-6.650
	(-14.34)***	(-15.33)***	(-14.49)***	(-14.52)***	(-7.36)	(-6.84)***	(-14.25)***	(-15.24)***
STR	-0.445	-0.260	-0.377	-0.110	-0.446	-0.261	-0.441	-0.251
	(-5.22)***	(-3.21)***	(-4.56)***	(-1.41)	(-5.23)***	(-3.22)***	(-5.14)***	(-3.06)***
LEG	0.465	0.475	0.592	0.696	1.242	1.014	0.463	0.473
	(3.85)***	(3.92)***	(4.96)***	(5.84)***	(1.50)	(1.04)	(3.83)***	(3.90)***
ENVP	0.033	N/A	0.030	N/A	0.033	N/A	0.034	N/A
	(11.28)***		(11.25)***		(11.22)***		(11.25)***	
SOCP	N/A	0.039	N/A	0.014	N/A	0.039	N/A	0.039
		(11.85)***		(7.59)***		(11.77)***		(11.85)***
SIZE	0.405	0.400	0.416	0.517	0.403	0.399	0.405	0.400
	(9.65)***	(9.53)***	(9.94)***	(12.87)***	(9.41)***	(9.29)***	(9.66)***	(9.53)***
LEV	0.002	-0.000	0.123	0.051	0.004	0.002	-0.071	-0.125
	(0.01)	(-0.00)	(0.49)	(0.21)	(0.02)	(0.01)	(-0.24)	(-0.42)
ROA	-0.009	-0.048	-0.021	-0.050	-0.009	-0.047	-0.009	-0.048
	(-0.05)	(-0.37)	(-0.13)	(-0.37)	(-0.05)	(-0.36)	(-0.05)	(-0.37)
Control Industries	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

*, **, *** Significantly different from zero at the α = 0.10, 0.05, and 0.01 levels, respectively, for two-tailed tests. For variable definitions, see table 1.

Part 3: Provider	Main Results		ENER	SOCO	France + UK		Finance	
n = 1353	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Intercept	-2.369	-2.769	-2.422	-2.805	12.051	11.749	-2.365	-2.824
	(-3,18)***	(-3.62)***	(-3.22)	(-3.93)***	(0.02)	(0.02)	(-3.18)***	(-3.66)***
STR	0.525	0.412	0.483	0.388	0.469	0.353	0.583	0.484
	(3.72)***	(3.06)***	(3.47)***	(2.89)***	(3.39)***	(2.69)***	(4.05)***	(3.52)***
LEG	1.692	1.641	1.652	1.584	-12.312	-12.458	1.710	1.653
	(8.76)***	(8.55)***	(8.62)***	(8.22)***	(-0.02)	(-0.02)	(8.79)***	(8.58)***
ENVP	-0.020	N/A	-0.016	N/A	-0.021	N/A	-0.018	N/A
	(-2.90)***		(-2.53)**		(-2.97)***		(-2.54)**	
SOCP	N/A	-0.009	N/A	-0.007	N/A	-0.009	N/A	-0.006
		(-1.43)		(-1.80)*		(-1.46)		(-0.91)
SIZE	0.309	0.272	0.290	0.257	0.239	0.203	0.322	0.282
	(4.45)***	(3.98)***	(4.26)***	(3.85)***	(3.46)***	(2.97)***	(4.60)***	(4.11)***
LEV	1.103	1.031	1.011	1.038	1.235	1.150	0.251	0.134
	(2.60)***	(2.46)**	(2.39)***	(2.48)**	(2.91)***	(2.74)***	(0.51)	(0.28)
ROA	-0.369	-0.334	-0.364	-0.317	-0.309	-0.276	-0.386	-0.354
	(-1.72)*	(-1.67)*	(-1.69)*	(-1.64)	(-1.55)	(-1.52)	(-1.72)*	(-1.66)*
Control Industries	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

*, **, *** Significantly different from zero at the α = 0.10, 0.05, and 0.01 levels, respectively, for two-tailed tests. For variable definitions, see table 1.*

Part 4: Level	Main Results		ENER	SOCO	France + UK		Finance	
n = 1267	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Intercept	-3.980	-4.348	-4.311	-4.187	-13.979	-15.804	-4.015	-4.361
	(-4.82)***	(-4.85)***	(-5.02)***	(-5.06)***	(-0.03)	(-0.02)	(-4.85)***	(-4.85)***
STR	0.050	0.036	0.021	0.047	0.017	-0.001	0.025	0.008
	(0.33)	(0.24)	(0.14)	(0.31)	(0.11)	(-0.01)	(0.16)	(0.05)
LEG	0.859	0.843	0.845	0.864	11.108	12.530	0.852	0.835
	(2.86)***	(2.81)***	(2.82)***	(2.88)***	(0.03)	(0.01)	(2.83)***	(2.78)***
ENVP	-0.001	N/A	0.005	N/A	-0.002	N/A	-0.003	N/A
	(-0.16)		(0.81)		(-0.25)		(-0.40)	
SOCP	N/A	0.005	N/A	0.002	N/A	0.005	N/A	0.004
		(0.75)		(0.57)		(0.73)		(0.55)
SIZE	0.126	0.111	0.107	0.120	0.088	0.072	0.123	0.107
	(1.71)*	(1.54)	(1.47)	(1.70)*	(1.17)	(0.96)	(1.68)*	(1.49)
LEV	0.289	0.281	0.327	0.288	0.358	0.351	0.750	0.697
	(0.59)	(0.57)	(0.66)	(0.58)	(0.72)	(0.70)	(1.26)	(1.16)
ROA	-0.399	-0.396	-0.379	-0.404	-0.339	-0.334	-0.381	-0.376
	(-0.83)	(-0.82)	(-0.80)	(-0.83)	(-0.77)	(-0.75)	(-0.82)	(-0.80)
Control Industries	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

*, **, *** Significantly different from zero at the α = 0.10, 0.05, and 0.01 levels, respectively, for two-tailed tests. For variable definitions, see table 1.

Appendix G: Robustness checks: time dummies

	Part 1: Reporting n = 3632		Part 2: Assurance n = 2536		Part 3: Provider n = 1353		Part 4: Level n = 1267	
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Intercept	-4.224	-4.100	-6.449	-7.228	-2.843	-3.297	-4.615	-5.020
	(-11.06)***	(-10.67)***	(-14.59)***	(-15.57)***	(-3.57)***	(-4.05)***	(-5.08)***	(-5.12)***
STR	-0.235	-0.089	-0.463	-0.267	0.518	0.415	0.057	0.045
	(-3.15)***	(-1.18)	(-5.35)***	(-3.25)***	(3.60)***	(3.02)***	(0.37)	(0.30)
LEG	0.067	0.070	0.456	0.467	1.717	1.672	0.861	0.845
	(0.56)	(0.57)	(3.74)***	(3.83)***	(8.80)***	(8.62)***	(2.87)***	(2.82)***
ENVP	0.039	N/A	0.035	N/A	-0.019	N/A	-0.000	N/A
	(21.27)***		(11.66)***		(-2.62)***		(-0.06)	
SOCP	N/A	0.049	N/A	0.041	N/A	-0.007	N/A	0.006
		(23.68)***		(12.28)***		(-1.15)		(0.83)
SIZE	0.251	0.142	0.404	0.400	0.311	0.276	0.127	0.114
	(6.63)***	(3.57)***	(9.57)***	(9.43)***	(4.46)***	(4.02)***	(1.73)*	(1.58)
LEV	-0.004	-0.278	0.009	0.003	1.110	1.047	0.315	0.306
	(-0.02)	(-1.17)	(0.04)	(0.01)	(2.59)***	(2.47)**	(0.64)	(0.62)
ROA	1.100	0.160	0.033	-0.017	-0.331	-0.299	-0.331	-0.328
	(1.80)*	(0.39)	(0.17)	(-0.12)	(-1.61)	(-1.57)	(-0.69)	(-0.67)
Control Industries	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

*, **, *** *Significantly different from zero at the α = 0.10, 0.05, and 0.01 levels, respectively, for two-tailed tests. For variable definitions, see table 1.*

	Part 1: Reporting n = 3632		Part 2: Assurance n = 2536		Part 3: Provider n = 1353		Part 4: Level n = 1267	
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Year								
2010	0.277	0.282	0.081	0.062	-0.131	-0.123	0.507	0.515
	(1.90)*	(1.89)*	(0.47)	(0.37)	(-0.46)	(-0.43)	(1.31)	(1.33)
2011	0.553	0.616	0.315	0.325	0.104	0.126	0.640	0.649
	(3.74)***	(4.05)***	(1.88)*	(1.93)*	(0.37)	(0.45)	(1.76)*	(1.78)*
2012	0.708	0.795	0.399	0.412	0.321	0.355	0.604	0.621
	(4.77)***	(5.17)***	(2.40)**	(2.47)**	(1.15)	(1.27)	(1.68)*	(1.73)*
2013	1.033	1.163	0.604	0.626	0.519	0.549	0.620	0.637
	(6.81)***	(7.36)***	(3.68)***	(3.80)***	(1.87)*	(1.98)**	(1.75)*	(1.80)*
2014	1.389	1.493	0.738	0.752	0.598	0.635	0.492	0.518
	(8.86)***	(9.13)***	(4.54)***	(4.60)***	(2.15)**	(2.29)**	(1.38)	(1.45)

*, **, *** *Significantly different from zero at the $\alpha = 0.10, 0.05,$ and 0.01 levels, respectively, for two-tailed tests.*