FACULTEIT ECONOMIE EN BEDRIJFSKUNDE

THE DETERMINANTS OF INTEGRATED REPORTING IN EUROPE: AN EMPIRICAL STUDY

Word count: 13.385

Margot Meuleman
Student number : 01306781

Promotor/ Supervisor: Prof. dr. Heidi Vander Bauwhede

Masterproef voorgedragen tot het bekomen van de graad van:
Master's Dissertation submitted to obtain the degree of:

Master of Science in Business Engineering

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Foreword

In the following master dissertation, I would like to identify the important determinants of integrated reporting and hope to contribute to the already existing research. Considering the fact that writing a master dissertation is very intensive and time consuming, I was grateful I could write mine about a topic that had my great interest. I would like to express my gratitude to my promotor, Prof. dr. Heidi Vander Bauwhede, to guide me through the process of writing this thesis, to advise and help me with my problems and questions and for her valuable feedback. I would also want to thank assistant Jenjang Sri Lestari for giving me feedback. Furthermore, I would like to thank the University of Ghent for teaching me to think critically and analytically, which was of great importance while writing this master dissertation and which will also help me later in my professional career. Last, I also want to thank my family, friends and boyfriend for their patience, support and encouragement.

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List of abbreviations

BCD: Board Cultural Diversity

CGVS: Corporate Governance: integration/Vision and Strategy

CSR: Corporate Social Responsibility

GICS: Global Industry Classification Standard

GRI: Global Reporting Initiative

IIRC: International Integrated Reporting Council

IR: integrated report

IRS: Integrated Report Score

OLS: Ordinary Least Squares

VIF: Variation Inflation Factor

WLS: Weighted Least Squares

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1. Introduction

People are starting to attach more importance to environmental and social issues since these matters are getting more attention nowadays. Companies are aware of this trend and disclose therefore more non-financial information by means of a sustainability or CSR report. A sustainability report is defined by the GRI as "a report published by a company or organization about the economic, environmental and social impacts caused by its everyday activities. A sustainability report also presents the organization's values and governance model and demonstrates the link between its strategy and its commitment to a sustainable global economy" (GRI, sd). Although a CSR report also discusses the company's impact on the society, it focuses more on the past, whereas a sustainability report has a forward-looking focus (Knowles, 2014). These non-financial types of reports can count many pages, sometimes up to 200 (Cheng, Green, Conradie, Konishi & Romi, 2014). As a result, these reports become very complex and difficult to read since they contain so much information (de Villiers, Rinaldi & Unerman, 2014). Because of the magnitude and complexity of these reports, it is very difficult for the reader to understand the impact on the organization (Cheng, Green, Conradie, Konishi & Romi, 2014). Sustainability and CSR reports do not give insight into how this non-financial information affects the financial figures. Therefore, integrated reporting started emerging. Integrated reporting provides information about the company's financial and non-financial activities and link these two sources of information to each other in one single document (Accountant, 2010; Abeysekera, 2013; Eccles & Saltzman, 2011). According to the IIRC, integrated reporting is "a process founded on integrated thinking that results in a periodic integrated report by an organization about value creation over time and related communications regarding aspects of value creation. An integrated report is a concise communication about how an organization's strategy, governance, performance and prospects, in the context of its external environment, lead to the creation of value in the short, medium and long term" (IIRC, sd). The first integrated report was published in 2002 (Sierra-Garcia, Zorio-Grima & Garcia-Benau, 2015). However, it was not before 2013 – when the International Integrated Reporting Council (IIRC) developed a framework – that the concept started to gain recognition (de Villiers, Rinaldi & Unerman, 2014). However, few companies disclose an integrated report. This can mainly be explained by the fact that companies are unfamiliar with this kind of reporting practice, that there is little known about the benefits and costs and that it is not obligated. This study will try to explain which companies are more likely

to disclose an integrated report by investigating the determinants that can influence this decision.

There are a lot of studies that examine the determinants of different types of voluntary reporting, such as sustainability, CSR and other types of non-financial reporting. Although integrated reporting is a type of voluntary reporting in Europe, the studies concerning this concept are much more limited for the reasons stated above. In 2016, there existed 44 empirical studies (Velte & Stawinoga, 2017). From these 44 empirical studies, there are approximately nine studies that test the determinants that influence the decision to publish an integrated report or have an impact on the degree of quality of integrated reports. Other studies mainly focus on the consequences of integrated reporting. The lack of studies dealing with the determinants of integrated reporting, has led to the following research question: *"What are the determinants that influence the degree of integrated reporting?"*.

This study will contribute to the research in multiple ways. First, it hopes to provide a decisive answer to whether the variables, for which previous studies were inconclusive, affect integrated reporting. Second, this study will combine firm characteristics, board characteristics and corporate governance characteristics. Third, it will examine whether the market risk, a variable whose influence on integrated reporting has not been examined before, has an impact on integrated reporting. Furthermore, all the previous studies have a sample containing companies from all over the world. It is already proven that there are differences between countries (Frias-Aceituno, Rodriguez-Ariza & Garcia-Sanchez, 2013a; 2014), so it is also possible that there are differences between continents due to other regulations, another mindset, etc. This will be the first study that only investigates the determinants in European countries. Next, this study will measure the degree of integrated reporting with the help of the CGVS variable from the DataStream ASSET 4 Database[1], whereas previous studies used more subjective methods. Last, this study is based on more recent data. While the range of years for the other studies lies between 2008 and 2013, this study's results will be based on data from 2016.

The rest of this master dissertation is organized as follows. The next section represents prior research and some background information regarding integrated reporting. Section 3 will explain the reasoning behind the direction and structure of the hypotheses. Section 4 continues with

[1] Part of Thomson Reuters

describing the research methodology. This includes information about the sample, the dependent variable, the control variables, the proxies used for the independent variables and the method used to measure the causal relationships between dependent and independent variables. The fifth section describes the descriptive and empirical results. Section 6 will explain the performed sensitivity analyses. Section 7 discusses the limitations this study has encountered and ideas for future research. Finally, this study will end with the formation of a conclusion.

2. Literature study

2.1 Prior empirical research

Since integrated reporting is a relatively new concept and is voluntary in Europe, the amount of research regarding this subject is rather scarce. Velte & Stawinoga (2017) listed all the empirical studies that were already performed and this showed indeed a need to further research the determinants of integrated reporting.

The biggest contribution to the research concerning the determinants of integrated reporting was provided by the Spanish researchers Frias-Aceituno, Rodriguez-Ariza and Garia-Sanchez. They performed not less than four different studies in 2013 and 2014. Their first study in 2013 examined country-specific determinants based on a worldwide sample consisting of 750 companies for the period 2008-2010. Their main findings were that companies located in strictly enforced regulated countries and companies located in civil law countries are more likely to publish an integrated report. However, this second finding was not supported by Jensen & Berg (2012), who found no significant relationship between the country and the likelihood of integrated reporting. Jensen and Berg's study (2012) aimed to explain why companies may opt for integrated reporting as an alternative for traditional sustainability reporting. Another study of Frias-Aceituno, Rodriguez-Ariza and Garcia-Sanchez (2013b) aimed to investigate which role the board of a company has on the adoption of integrated reporting. They argued that the board, since it has a responsibility toward stakeholders and aim to reduce information asymmetries between the managers and stakeholders, can influence the decision to disclose an integrated report. They only found a significant impact of board size and the board diversity, in terms of the amount of women on the board, on integrated reporting. They (2013c) also argue that stakeholders from different countries respect other values because of their different cultures. Therefore, they examined whether the five cultural dimensions of Hofstede - individualism/collectivism, masculinity/femininity, tolerance/aversion to uncertainty, power

distance and long/short-term orientation - influence the decision to publish an integrated report. Finally, their last study dates from 2014 and examined the effect of several firm characteristics on integrated reporting based on data from 2008, 2009 and 2010 of 1590 companies from all over the world. Sierra-Garcia, Zorio-Grima & Garcia-Benau (2015) tried to identify determinants of integrated reporting and examined whether the same determinants could explain the disclosure of a CSR report. Their study was based on a large sample of 7144 worlwide companies. Based on 309 observations, Lai, Melloni & Stacchezzini (2016) tried to explain, starting from the legitimation theory, which determinants have an impact on integrated reporting. Churet & Eccles (2014) investigated the relationships between on the one hand financial performance, overall quality management and integrated thinking and on the other side integrated reporting. However, the causality of these relationships is not always clear. Melloni (2015) investigated determinants as size, profitability and membership in industry together with the length of an integrated report. A limitation of this study is that he did not measure the impact of these determinants on integrated reporting, but on the disclosure of the intellectual capital, which comprises only three of the six capitals an integrated report should include.

Most of the other empirical studies reverse the causality and use integrated reporting as the independent variable to study the impact it has on the long-term investor base (Serafeim, 2015), market value of equity (Mervelskemper & Streit, 2015), on the firm's performance and value (Barth, Cahan, Cheng & Venter, 2016; Lee & Yeo, 2016), etc.

2.2 Background information

Given the definitions above, it is clear that there are some important aspects that differentiates an integrated report from a normal financial or non-financial report.

First, an integrated report should include both financial and non-financial information about the company's activities in one document. Moreover, this information should be linked together to offer a more holistic approach (Katsikas, Rossi & Orelli, 2016). The non-financial performance can contain environmental, social and governance information (Eccles & Krzus, 2010). The environmental information describes how the company's activities impact the environment, nature, society, etc. Social information considers the company's relationships with other stakeholders, such as employees, suppliers, customers, government, etc. "Governance deals with

a company's leadership, executive pay, audits and internal controls, and shareholder rights" (Investopedia, 2017).

Second, the report should include how these discussed activities will lead to the creation of value and this in the short, medium and long term (Kennedy & Perego, 2016). It is important to understand that "value is not created by or within an organization alone" (IIRC, 2013, p. 17). Value is created using all types of resources, so not only by funds, but also by employee's competencies for example. There are three layers of values. The first one is the value measured in a financial report, where most companies focus on. Second, there is the 'shared value', which benefits all stakeholders who are directly linked to the company, such as the employees, customers, suppliers, etc. Last, we have the value created for the society at large. This value is measured by the externalities, both positive and negative, the company generates. These three types of value can have an impact on the total value of an organization and on its profitability. The business model defines how the firm's strategy and processes create value and should therefore be included in the integrated report (EY, 2014).

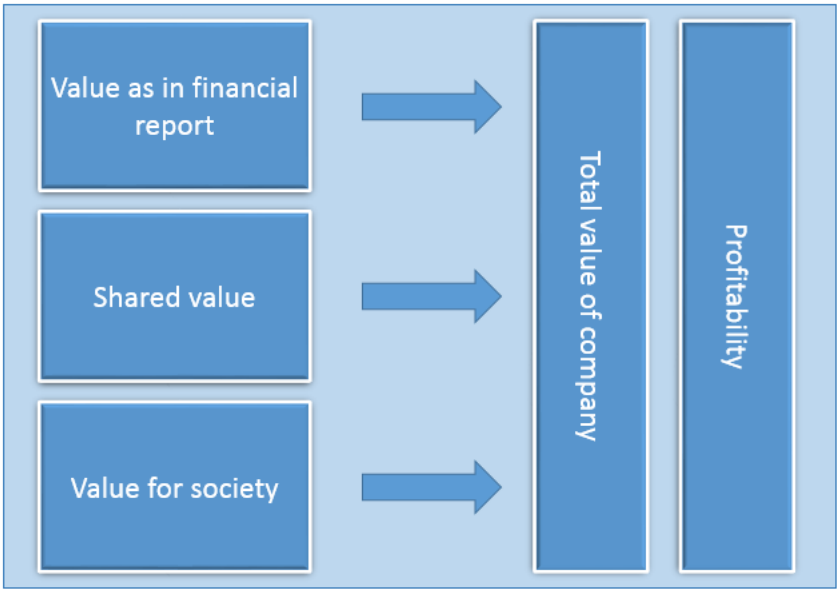

***Figure 1**: Types of values and value creation*

Last, the report should be clear, cohesive, comprehensive, concise and consistent (Accountant, 2010; de Villiers, Rinaldi & Unerman, 2014; IIRC, 2013).

The first integrated report was published by Novozymes in 2002 (Sierra-Garcia, Zorio-Grima & Garcia-Benau, 2015). This Danish company is a world leader in the production of enzymes and

microorganisms (Novozymes, sd). Not much later in 2004, Novo Nordisk, a pharmaceutical company that is very innovative in diabetes and demerged in 2000 from Novozymes (Novo Nordisk, 2015; Eccles & Serafeim, 2014), also published an integrated report (Sierra-Garcia, Zorio-Grima & Garcia-Benau, 2015). Another pioneer of integrated reporting is Philips (Eccles & Saltzman, 2011). Philips is a Dutch company, founded in 1891, that wants to innovate in health care, consumer lifestyle and lighting. Their first integrated report was published in 2008 and since then, they have published one every year (Philips, sd).

Currently, the number of companies disclosing an integrated report is rather limited. This can partly be explained by the fact that there is no legislation around disclosing an integrated report. The only country where it obligatory to publish an integrated report is South-Africa (Eccles & Saltzman, 2011). In March 2010, the King Report on Corporate Governance made it mandatory to publish an integrated report for companies listed on the Johannes Stock Exchange (Eccles & Saltzman, 2011; de Villiers, Rinaldi & Unerman, 2014). Although South-Africa is the only country where integrated reporting is obliged, governments are realizing that publishing non-financial information is important. Therefore, they are reinforcing the law about this kind of information. The European Commission voted a law about non-financial reporting in December 2014, which obliges large public entities with more than 500 employees to "disclose relevant and useful information on their policies, main risks and outcomes relating to at least: environmental matters, social and employee aspects, respects for human rights, anticorruption and bribery issues and diversity in their board of directors" (European Commission, 2016b). Although this is a step in the right direction, these reports still do not explain how this information is linked to financial information. Nevertheless, it shows that countries are becoming more aware of the importance of non-financial information.

A big milestone in the global acceptance of integrated reporting was the foundation of the International Integrated Reporting Council (IIRC) by the Global Reporting Initiative (GRI) and the Prince's Accounting for Sustainability Project (A4S) in 2010 (de Villiers, Rinaldi & Unerman, 2014). This organ, consisting of regulators, investors, companies, standard setters, the accounting profession and NGOs, wants to work toward more integrated reporting, in which the communication about value creation in the short, medium and long term is most important (IIRC, sd a). They wanted to achieve a globally accepted framework for integrated reporting. In 2011, the IIRC launched their two years during Pilot Program. This program gave participating

companies the chance to test the framework, exchange knowledge and share experiences about the emerging concept of integrated reporting. Some major global companies were part of this program, such as The Coca Cola Company, Volvo Group, Deloitte, etc. (IIRC, 2011) The feedback of the companies helped the IIRC to further develop and adapt a user-friendly framework. Creating real-life cases and testimonials about the benefits of integrated reporting participating companies experienced could help convince other companies to disclose information according to this new corporate reporting practice as well (IIRC, 2011). Their definitive version was released in December 2013. Thanks to the foundation of this organ and the development of a proper framework, integrated reporting gained prominence (de Villiers, Rinaldi & Unerman, 2014). According to the IIRC, the integrated report should include the organizational overview and external environment, governance, business model, risks and opportunities, strategy and resource allocation, performance, outlook, basis of preparation and presentation and in doing so, takes account in general reporting guidance (IIRC, 2013). A company should also mention which resources are used as inputs to their business activities (Cheng, Green, Conradie, Konishi & Romi, 2014). The IIRC defines six types of resources, which they call 'capitals': financial, human, manufactured, intellectual, natural and social & relationship capital. The report should explain how these six capitals integrate with the business model and how they create value. The created value can again be one or more of the six capitals. The figure below shows clearly the relationship between the capitals and value creation.

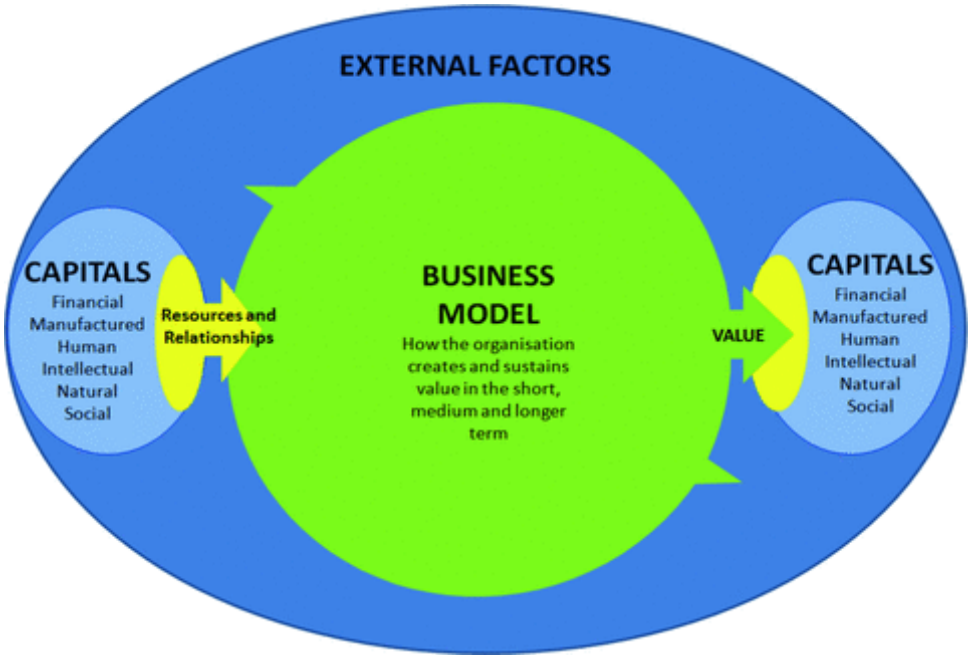

***Figure 2**: Capital, business model and value creation (Adams & Simnett , 2011)*

As with all concepts, integrated reporting has advantages and disadvantages. Table 1 sums up the costs and benefits which will be explained in what follows.

Table 1: *Advantages and disadvantages of integrated reporting*

Advantages	Disadvantages
Better understanding of value creation	Transparency
Better decision making	Time and effort
Managing regulatory risk	Cost
Collaboration between departments	
Better relationships with stakeholders	

One of the aims of integrated reporting is to explain how the company creates value in the short, medium and long term (IIRC, sd a). By working intensively on the preparation of such a report, the company will have a better understanding in the entire value creation process.

A better understanding in value creation can lead to better decision making, which is the second advantage (IIRC & Black Sun, 2014). The IIRC and Black Sun (2014) argue that management who is better informed and understand the value creation process will possibly make some changes in strategy, resource allocation and management systems. This in turn can lead to changes in the process and quality of decision making (Cheng, Green, Conradie, Konishi & Romi, 2014). When both the management and the board understand how value is created, they will go into dialogue, which can lead to more engagement of the management and again in better decision making (IIRC & Black Sun, 2014).

Third, integrated reporting can also lead to a better management of regulatory risk (Eccles & Armbrester, 2011). As mentioned above, the only country where it is currently mandatory to publish an integrated report is South-Africa (Eccles & Saltzman, 2011; de Villiers, Rinaldi & Unerman, 2014). However, since the European Commission has reinforced the regulation of non-financial reporting (European Commission, 2016b), making integrated reporting can be the next step. Some companies want to be prepared for this possibility and be ready to easily implement this reporting practice (Eccles & Armbrester, 2011).

Preparing an integrated report requires a lot of collaboration between different departments in the company. When departments work intensively together, they will finally understand how the

different departments create value and affect other parts of the organization. This will result in more appreciation and respect for other departments (IIRC & Black Sun, 2014; Krzus, 2011).

Last, publishing an integrated report can also improve the relationship between the company and its stakeholders. By sharing voluntarily integrated information, the confidence and trust that the shareholders have in the company can improve (Eccles & Armbrester, 2011). Due to the financial crisis, the Internet and social media, companies are asked to be more transparent and an integrated report meets this demand (Abeysekera, 2013). By being transparent, stakeholders can also see the efforts the company makes to be sustainable, which can have a positive impact on the relationship.

This transparency, in terms of an integrated report, can also be a disadvantage. When a company is transparent, and it fails to meet its set targets, everyone is aware of this. This can have a negative impact on the company's stock price and reputation (Eccles & Armbrester, 2011).

The second disadvantage is the fact that it is quite time consuming (Eccles & Armbrester, 2011). The collaboration between departments was quoted as an advantage. However, the communication between different departments also takes a lot of time. Furthermore, the time that the people working in these departments cannot spend on their 'normal' job, is an opportunity cost (Eccles & Armbrester, 2011).

Although there is not much information available on how much it would cost to produce an integrated report, it is obvious that it is not cheap (Depoers, 2000). There is not only the cost of gathering and processing the data, but also the cost of the use of this information, for example paying the employees preparing the report (Frias-Aceituno, Rodriguez-Ariza & Garcia-Sanchez, 2014).

3. Hypothesis development

3.1 Market risk

The risk of a company can be decomposed into two elements: the systematic risk and the unsystematic risk. The unsystematic risk, also known as diversifiable or specific risk, is very specific for a company. When composing an enough diversified portfolio with securities from different sectors, this risk can significantly be reduced (Investopedia, 2018c). In contrast, the systematic risk, also known as market risk, depends on the entire market, is unpredictable and cannot be mitigated through diversification (Investopedia, 2018c). This paper expects that

companies will disclose more integrated information when their market risk is low for a few reasons. First, by disclosing more social responsibility information, the company can be seen as less risky. McGuire, Sundgren & Schneeweis (1988) found evidence that employee productivity and a firm's access to capital increase when a company gives attention to social responsibility activities. These social responsible activities and information regarding them can lead to the fact that stakeholders see the company as better managed and less risky (Roberts, 1992). Since social information is a type of information that is considered part of integrated information, and that this argument also makes sense for the other types of information required in an integrated report, one can argue that the argument also applies to integrated reporting. Second, a low measure of systematic risk implies a more stable pattern of stock market returns (Roberts, 1992). When a company is less sensitive to market shocks, i.e. everything goes as anticipated, they will probably want to share this positive information with all the stakeholders. In contrast, companies with a high systematic risk have a more unstable performance. As a consequence, it is possible that they lack the resources and money to prepare and publish an integrated report (Cormier & Magnan, 2004).

No studies have been found that investigate the relationship between the market risk and integrated reporting. However, multiple studies have examined the effect of market risk on voluntarily non-financial information. Trotman & Bradley (1981) and Firth (1984) found no significant association between the market risk and the amount of non-financially voluntary information. Roberts (1992) and Spicer (1978) found a negative association between the market risk and disclosure of non-financial information. A positive relationship was found by Cormier & Magnan (2003). Given the arguments above, the following hypothesis is suggested:

H_1: *There is a negative association between the systematic risk (a.k.a. market risk) and the degree of integrated reporting, ceteris paribus.*

3.2 Ownership structure

A more dispersed ownership structure means that there are more shares that can be publicly traded. This implies that the shares are divided over a lot of smaller investors. The shareholders and the managers do not necessarily have the same goals. Therefore, managers do not always handle in the best interest of the shareholders, which can lead to conflicts. When a shareholder only owns a very small part of the company, he/she does not have a lot of power and authority

over the managers (Brammer & Pavelin, 2006). The shareholder has no idea what the managers are doing, what decisions the managers make and whether those decisions are decisions he/she would support. The shareholders only have access to information which is put to their disposal in public reports by the managers. These reports are the only means by which the shareholders can monitor the managers' activities (Gamerschlag, Möller & Verbeeten, 2011). So, a dispersed ownership structure implicates information asymmetries which need to be reduced (Hahn & Kühnen, 2013). To reduce these information asymmetries and agency costs, the company can decide to publish voluntarily financial and non-financial information about the decisions made by the agents, issues within the company, etc. (Depoers, 2000) By publishing this information, the managers can prove they handle in the best interest of the shareholders (Chau & Gray , 2002). When this information is integrated, it also tells how the different information types create value, which is very important for shareholders. In contrast, when there would only be a few shareholders, they each have more power and authority. With this power, they are able to acquire information directly from the managers (Gamerschlag, Möller & Verbeeten, 2011). So, the dominating shareholders do not need published reports to obtain the information they want (Jensen & Berg, 2012; Hahn & Kühnen, 2013). Therefore, the company does not consider it necessary to disclose voluntarily financial and non-financial information.

A significantly positive association was found between dispersed ownership structure and non-financial information disclosure by Cormier & Magnan (2003), Gamerschlag, Möller & Verbeeten (2011), Chau & Gray (2002) and Brammer & Pavelin (2006). However, Donnelly & Mulcahy (2008) found no significant relationship. Concerning the relationship between a dispersed ownership structure and integrated reporting, Jensen and Berg (2012) found a positive one. Taken into account the arguments above and the studies already done, the following hypothesis is formulated:

H_2: *There is a positive association between a more dispersed ownership structure and the degree of integrated reporting, ceteris paribus.*

3.3 Debt

Companies that borrow money have more stakeholders to please, since their stakeholders also include creditors (Ahmad, Hassan & Mohammad, 2003). A higher degree of financial leverage within the company can lead to more agency costs (Ahmed & Courtis, 1999) since there can be conflicts between shareholders and debtholders (Depoers, 2000). It is already mentioned before

that disclosing voluntary or integrated information can help to reduce these agency costs (Depoers, 2000). More debt also increases the default risk, i.e. the risk that the company cannot repay the principal amount or the interests to the lender. The inability to pay back its loan to the lender can sometimes lead to the bankruptcy of the firm. This affects all the stakeholders since investors can lose their investment, employees can lose their job, suppliers can lose significantly revenues, etc. In order to monitor the company and therefore reduce the credit risk the lender faces, the lender can request the company to publish extra information in their reports (Lai, Melloni & Stacchezzini, 2016). A company does not necessarily borrow money because it faces liquidity or solvency problems. It is also possible that the company does not have the money for a project or investment they believe will render in the future. If this is the case, this should be carefully explained to the stakeholders to prevent them from thinking that the company has severe problems and to explain them how borrowing money can help create future value. Disclosing integrated information can help the company to elaborate on this.

Ahmed & Courtis (1999) and Broberg, Tagesson & Collin (2010) found an econometrically significantly positive effect of the debt ratio on voluntary disclosure. Eng & Mak (2003) found a significantly negative relationship between the financial leverage and the amount of voluntary information. Finally, no statistical relationship was found by Depoers (2000) and Ahmad, Hassan & Mohammad (2003). Concerning integrated reporting, Lai, Melloni & Stacchezzini (2016) found no statistically significant relationship. However, considering the arguments above and the results of the studies examining the impact of debt on voluntary disclosure, the following is hypothesized:

H_3*: There is a positive association between the amount of debt and the degree of integrated reporting, ceteris paribus.*

3.4 Board size

An integrated report consists of different types of information. It should include the traditional financial information, but also environmental, social and governmental information. Referring to the IIRC, there are six capitals which need to be discussed in an integrated report: in the first place the financial capital, but also the human, manufactured, intellectual, natural and social & relationship capitals (IIRC, 2013). Discussing each one of these capitals requires a distinctive knowledge about the concerned subject. It is rare that one person has an enough extensive and

accurate knowledge to discuss all these different types of information. Thus, preparing and monitoring the preparation of an integrated report requires people with different kind of knowledge and extraordinary insights in the needed matter (Frias-Aceituno, Rodriguez-Ariza & Garia-Sanchez, 2013b). The likelihood of a board consisting of people with a diversified knowledge increases when the board is larger. These diversified board members will be necessary to supervise the preparation of more integrated information. Specifically, the relationship between board size and integrated reporting is studied by Frias-Aceituno, Rodriguez-Ariza & Garia-Sanchez (2013b) who found a significantly positive effect. Given the discussed arguments and the results of previous studies, the following hypothesis is formulated:

H_4 : *There is a positive association between the size of the board and the degree of integrated reporting, ceteris paribus.*

3.5 Gender diversity in the board

In October 2010, the fraction of women on the board was on average 11,9% in the largest European companies. This increased to 23,3% in April 2016 (European Commission, 2016a). Although this is a significant increase, it is still rather low. The increase can be explained by a change in thinking. The gender gap is gradually decreasing, the "glass ceiling" is falling. Another explanation would be the adoption of the gender gap quota. The European Commission proposed a directive that the board should consist of at least 40% of non-executives of the under-represented sex (Kratsa-Tsagaropoulou, Regner & Urtasun, sd). Although it is still a proposal, the fact that governments and the European Commission attach importance to this matter have led to an increase in the inclusion of women on the board. Including women on the board can enhance the company to publish more voluntarily integrated information. First, women can bring new resources, such as skills, knowledge and experiences to the board (Brammer, Millington & Pavelin, 2009). This is because female board members are more likely to have experience in other domains than the business live (Bear, Rahman & Post, 2010). They think differently compared to men, have another focus and they have a different work ethic and different perspectives due to their role of mother and wife (Frias-Aceituno, Rodriguez-Ariza & Garia-Sanchez, 2013b). They are more sensitive and more empathic; thus, they can better put them in the position of other people. This sensitivity and the participative communication style of women (Daily & Dalton, 1980) do not only lead to better communication between the board members, but also causes women to have a better relationship with all the stakeholders of the company (Bear, Rahman &

Post, 2010). Women want to keep the stakeholders posted and give them information about what is happening in the company. Therefore, women are more transparent than men, especially concerning sustainability information (Frias-Aceituno, Rodriguez-Ariza & Garia-Sanchez, 2013b). Men on the other hand are more focused on achieving success and a lot of earnings (Frias-Aceituno, Rodriguez-Ariza & García-Sánchez, 2013c). Consequently, they will probably want to disclose mainly the economic information to show their excellent work to the rest of the world. An appropriate mix of men and women can thus result in more integrated information. Furthermore, including a sufficient amount of women on the board of directors can prove that the company takes into account minority groups. This can send a signal to the stakeholders that the company attaches importance to more non-financial and ethical issues (Bear, Rahman & Post, 2010). Reporting on this can improve the company's reputation.

Frias-Aceituno, Rodriguez-Ariza & Garcia-Sanchez performed two studies in which the effect of gender diversity in the board on integrated reporting was tested. In their 2013b study, they found that gender diversity has a significantly positive impact on the disclosure of integrated business information. Their other study (2013c) provided evidence that companies situated in countries with an elevated level of feminism are more likely to produce an integrated report. Due to the arguments above and the results of previous studies, the following is hypothesized:

H_5: *There is a positive association between the number of women on the board and the degree of integrated reporting, ceteris paribus.*

4. Research methodology

4.1 Sample

Investors and stakeholders have more access to data from listed companies since listed firms are required to publish more information because they are owned by the public. Working with private firms would result in a smaller sample and less determinants included since the availability of data would be limited. Therefore, the sample consists of European firms that were listed on the Eurostoxx 600 at December 31, 2016. Other studies use older data which could still be influenced by the financial crisis of 2008. For this study, the year 2016 was chosen since this is the most recent year data was available for and because the impact of the financial crisis is no longer sensible. The Eurostoxx 600 is an index derived from the Eurostoxx 1800 and was retrieved from the Thomson Reuters Eikon database. The index represents small, medium and large

capitalization companies from 17 different European countries: Austria, Belgium, the Czech Republic, Denmark, Finland, France, Germany, the Republic of Ireland, Italy, Luxembourg, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom (STOXX Europe 600, 2018). The market capitalization of the companies lies between the broad range of €1.421.804.422,28 and €218.541.744.593,10. Next to the 17 different countries, the companies are active in all the 11 sectors and the 24 different industry groups, based on the GICS[2] division. This all ensures a diversified sample. Some companies had missing values and were for this reason removed from the sample (see Table 2). It was especially difficult to find all the necessary information for the companies which were listed on the Eurostoxx 600 at December 31, 2016 but were no longer listed at the time the information was searched for and thus became private in this time gap. Although the Eikon database provides historical data for a lot of variables, it does not provide historical data on beta, the measure for market risk. Companies whose headquarters were not situated in Europe, were also removed from the sample. Eventually, the sample consisted of observations from 524 different companies. When critically looking at the data set, some outliers were detected. Because of the fact that an outlier cannot only change the result from his variable, but also can change the outcome of other variables due to correlation, the extreme outliers were removed from the sample. To limit the selection bias and because deviations are always possible, the mild outliers were not removed. In this study, the boxplot method was applied to detect outliers. A value is considered an extreme outlier when it deviates more than 3 times the interquartile range from quartile 1 or 3 (Seo, 2006). Since it is not always easy to determine which point belongs to which company on the boxplot, the upper and lower values were calculated mathematically.

- Lower value = QUARTILE 1 – 3 * IRQ
- Upper value = QUARTILE 3 + 3 * IRQ

where QUARTILE 1 = the median of the lower half of the data set

QUARTILE 3 = the median of the upper half of te data set

IRQ = Interquartile Range

[2] "The Global Industry Classification Standard - GICS is a standardized classification system used to sort business entities by sector and industry groups", developed by Morgan Stanley Capital International (MSCI) and Standard & Poor's (Investopedia, 2018b).

Values below the lower value and values above the upper value are considered extreme outliers. Removing the extreme outliers decreased our sample to 498 companies. Since the data set contains eleven variables, there is a total of 5478 observations. All data regarding the variables was gathered from the Thomson Reuters databases Eikon and DataStream. These databases rely not only on information disclosure, both public as private, from the company, but also on hundreds of partners and sources to collect their data (Thomson Reuters, sd; de Villiers, Venter & Hsiao, 2017).

***Table 2**: Sample selection table*

	Number of companies
Stoxx Europe 600 list at February 1, 2018	600
- companies that were listed in 2017 and January 2018, but not in 2016	43
+ companies that were no longer listed in 2017, but were listed in 2016	43
= all companies listed at STOXX Europe at December 31, 2016	**600**
- companies whose headquarters were not situated in Europe	10
- companies for which there were missing values	66
= companies for which all data was available	**524**
- companies for whom extreme outliers were detected	26
= companies in end sample	**498**

4.2 Dependent variable

Most previous studies (Frias-Aceituno, Rodriguez-Ariza & Garcia-Sanchez, 2013a, 2013b, 2013c, 2014) determined whether a report was considered an integrated report by critically reviewing its content. This method is subjective since everyone interprets the content and requirements differently. Sierra-Garcia, Zorio-Grima & Garcia-Benau (2015) used the GRI database to check whether the company published an integrated report. Since companies voluntarily send their reports to the GRI (Sierra-Garcia, Zorio-Grima & Garcia-Benau, 2015), this method is not appropriate for a predetermined fixed sample. Other studies (Barth, Cahan, Chen & Venter, 2016) use the score EY gives on a company's integrated reporting practice. However, this score can only be used when the sample consists of listed South-African firms since these are the only firms EY gives a score. In this study, the dependent variable is the degree of integrated reporting and will

be measured by the ASSET4 DataStream item 'CGVS'. CGVS is defined by the Thomson Reuters ASSET4 Database as "a company's management commitment and effectiveness towards the creation of an overarching vision and strategy integrating financial and extra-financial aspects. It reflects a company's capacity to convincingly show and communicate that it integrates the economic (financial), social and environmental dimensions into its day-to-day decision-making processes" (Thomson Reuters, sd; Serafeim, 2015). This score takes values between 0 and 100 and is composed of 12 sub-scores, of which four driver and eight outcome scores. Examples of driver scores are the degree of objectives the company sets to achieve its integrated strategy and how elaborate the policy is on maintaining an overarching vision and strategy regarding the integration of financial and non-financial information. Outcomes include the degree of engagement with stakeholders, the inclusion of integrated financial and non-financial information in the report and how this integrated information is linked to the challenges and opportunities the company faces (Thomson Reuters, sd; Serafeim, 2015). These examples are the components which are most in line with the requirements proposed by the IIRC. A complete overview of all the components of CGVS, representing the degree of integrated reporting, can be found in Appendix 1. In this study, there will be referred to the CGVS measure as the Integrated Reporting Score (IRS). Table 3 shows the descriptive statistics of the dependent variable IRS. The standard deviation of 21,02 and the broad range of 12,76 to 95,66 show that there are large variations in the score. Since integrated reporting is not yet a widespread practice and not much companies disclose an integrated report, the mean of 81,63 is surprisingly high. This can be explained by the incomplete list of components from which the CGVS measure is composed. The requirements which need to be fulfilled to call an annual report an integrated report according to the IIRC are much more extensive. A complete list of these requirements can be found in appendix 2. Therefore, I am aware that the measure I use is too indefinite. De Villiers, Venter & Hsiao (2017) argue that the CGVS score is more a measure for integrated thinking. However, the relationship between integrated thinking and integrated reporting is a strong one (Churet & Eccles, 2014) and the IIRC states that integrated thinking is the base for integrated reporting. Although this proxy is not ideal, it was chosen since it is less subjective than looking at each report individually and decide whether it can be considered an integrated report. It is also less time consuming, so a bigger sample could be composed. Serafeim was the first and until now the only researcher who has used the CGVS measure to determine the adoption of integrated reporting (Serafeim, 2015). His mean of 39 was much lower than the obtained mean in this study. One

plausible reason for this is that he studied integrated reporting in the United States. It is possible that there are differences between the practices of integrated reporting in different continents. Another explanation would be the period his research took place. His period analyzed was 2002-2012, when integrated reporting was not yet a well-known concept and when the IIRC's framework did not exist yet. In contrast, in 2016, companies were already more familiar with integrated reporting.

***Table 3**: Descriptive statistics dependent variable IRS*

	Mean	Median	Min	Max	Std. Dev.
IRS	81,62763	91,955	12,76	95,66	21,02101

4.3 Control variables

There will be five control variables included in this study: company size, profitability, growth opportunities, country and industry. These variables have often been used as independent or control variables in several studies examining the impact of determinants on the disclosure of non-financial reporting. Moreover, they have already been used as control variables in studies investigating the relationship between the determinants and integrated reporting by Frias-Aceituno, Rodriguez-Ariza & Garcia-Sanchez (2013a, 2013b, 2013c).

4.3.1 Company size

Big companies have some characteristics, which small companies do not have, that can enhance the possibility of disclosing an integrated report. First, large companies need more funds, which are provided by different investors (Frias-Aceituno, Rodriguez-Ariza & Garcia-Sanchez, 2014). Consequently, the agency problem rises and the need to disclose integrated information increases. Donnelly & Mulcahy (2008) argue that publishing additionally voluntary information can result in more trust and confidence from the investors and in more liquidity, which can lead to easier access to outside financing (Donnelly & Mulcahy, 2008). Second, large businesses are more visible to the public since they get more media attention (Gamerschlag, Möller & Verbeeten, 2011) and have a greater influence on society and environment. For this reason, people expect them to disclose a sufficient amount of financial and non-financial information to justify their actions that potentially have an impact on them. Furthermore, larger businesses are also more closely monitored by governments and regulatory authorities compared to smaller

businesses (Donnelly & Mulcahy, 2008). Donnelly & Mulcahy (2008, p. 420) argue that "better reporting will tend to lessen the undesired pressures from governments and authorities". Companies may want to disclose voluntarily financial and non-financial information to prove that their actions are legitimate (Brammer & Pavelin, 2006). Finally, they have more employees in comparison with smaller firms with whom they need to maintain good relations. In general, it can be concluded that large firms have more stakeholders to satisfy, which all are interested in diverse types of information and how these information types can create value. Therefore, it can be interesting to disclose an integrated report since it covers a wide area of topics. The size of the company is measured by the total reported assets. The natural logarithm was taken to avoid working with large numbers and to avoid skewness and kurtosis. All amounts were converted to euros to easily compare them.

Most researchers have included this variable in their study and they almost unanimously found that the size of the company has a positive influence on both voluntary and integrated reporting. Regarding integrated reporting, Frias-Aceituno, Rodriguez-Ariza & Garcia-Sanchez (2013a, 2013b, 2013c, 2014) found this expected positive association. However, Lai, Melloni & Stacchezzini (2016) found no statistically significant impact of size on integrated reporting.

4.3.2 Profitability

As mentioned above, there is not yet a lot of information about the cost of preparing an integrated report. However, it is known that it is not cheap (Depoers, 2000). The correct information needs to be gathered and the company needs to pay people for the time they are spending on the preparation of the integrated report (Frias-Aceituno, Rodriguez-Ariza & Garcia-Sanchez, 2014). A more profitable firm has more resources it can spend on disclosing such a report. The signaling theory states that profitable firms would like to share this positive information with their stakeholders and therefore disclose more integrated information (Watson, Shrives & Marston, 2002). They would like to explain how they created this profitability (Gamerschlag, Möller & Verbeeten, 2011). Gamerschlag, Möller & Verbeeten (2011) argue that just like large firms, profitable companies are also more prone to political costs. Consequently, they may want to prove that they earned these profits honestly, without committing fraud or harming the society. Profitability is measured using the profitability ratio 'return on assets', calculated by dividing the net income through the average total assets. Brammer & Pavelin (2006) and Eng & Mak (2003) found no significant relationship between profitability and voluntarily non-

financial information. The same results were obtained by Lai, Melloni & Stacchezzini (2016) with regard to the relationship between profitability and integrated reporting. However, Frias-Aceituno, Rodriguez-Ariza & Garcia-Sanchez (2013a, 2013c, 2014) found that the profitability and disclosure of an integrated report are positively associated at the 10% significance level. Since the results are quite divided, it is interesting to include this variable in the study.

4.3.3 Growth opportunities

Growth opportunities are measured by the price to book value ratio of equity. A ratio higher than 1 means that the company is overvalued and a ratio lower than 1 indicates that the company is undervalued. The main explanation of a high ratio stems from the fact that investors are convinced of a healthy profit structure in the future (Frias-Aceituno, Rodriguez-Ariza & Garcia-Sanchez, 2013a) and are therefore willing to pay a premium for the company's stocks and shares. They believe they will earn their investment back in the future (Investopedia, 2018a). This positive future profit forecast can implicate more future investments and more decisions that will have to be taken. This can then result in more information asymmetries, which can be solved by disclosing integrated information. Disclosing an integrated report can help the investors to decide whether to invest in the company in the near future, thereby giving them an idea about the potential future incomes (Hahn & Kühnen, 2013). Fast growing companies also face a lot of challenges and opportunities which need to be addressed. Frias-Aceituno, Rodriguez-Ariza & Garia-Sanchez (2013b) found a significant positive association. The same researchers (2013a, 2013c, 2014) failed to find a significant relationship between growth opportunities and integrated reporting.

4.3.4 Country

Anglo-Saxon countries operate in a common law legal system, whereas Germanic and Latin countries operate in a civil law legal system (Frias-Aceituno, Rodriguez-Ariza & Garcia-Sanchez, 2013a; Weimer & Pape, 1999). Jensen & Berg (2012) argue that the political influence in common law countries is lower than in civil law countries and that these countries are more focused on the shareholders. Shareholder-oriented companies aim to make a profit to reassure and to be able to pay dividends to the shareholders. Since their focus is on the financials of the company, they will attach foremost importance to the disclosure of financial information and in a less extent to the disclosure of other types of information. On the other hand, in civil law countries political systems have more influence and the government intervenes more in economic activity

(Jensen & Berg, 2012). They are more stakeholder-oriented and view a company as an economic entity with multiple participants, such as customers, employees, management, suppliers, lenders, etc. (Frias-Aceituno, Rodriguez-Ariza & Garcia-Sanchez, 2013a; Weimer & Pape, 1999). The only difference between Germanic and Latin countries is that in Germanic countries, employees are not allowed to contribute a lot in the management of a firm (Frias-Aceituno, Rodriguez-Ariza & Garia-Sanchez, 2013b; Weimer & Pape, 1999). Stakeholder-oriented civil law countries can benefit from disclosing an integrated report since this information is directed to stakeholders. The dummy variable 'country' is coded 0 when the company is situated in a common law country and 1 when the company is situated in a civil law country. Table 4 shows the division of the countries according to Weimer & Pape (1999) and Frias-Aceituno, Rodriguez-Ariza & Garcia-Sanchez (2013a).

Table 4: *Division of countries into common and civil law countries*

Common law	**Civil law**	
Anglo-Saxon countries	**Germanic countries**	**Latin countries**
United Kingdom	Germany	France
Republic of Ireland	The Netherlands	Italy
	Switzerland	Spain
	Sweden	Belgium
	Austria	Portugal
	Denmark	
	Norway	
	Finland	
	Luxembourg	

Jensen & Berg (2012) found no significant association between the type of country and integrated reporting. However, Frias-Aceituno, Rodriguez-Ariza & Garcia-Sanchez (2013a) found that companies located in civil law countries are more likely to disclose an integrated report. Considering the arguments above, this study predicts that companies located in civil law countries will disclose a higher degree of integrated reporting.

4.3.5 Sector

Companies within the same sector are likely to have similar reporting practices (Ahmad, Hassan & Mohammad, 2003; Frias-Aceituno, Rodriguez-Ariza & Garcia-Sanchez, 2013a). Some sectors

have a bigger impact on the environment and the society (Melloni, 2015). As a result, these sectors are more closely monitored by the government and by the public. Therefore, the company will feel the need to justify its actions and produce more information. There are 11 sectors in the GICS division, from which three are considered 'sensitive', namely the energy, materials and utilities sectors. The sensitive sectors were determined using previous studies from Garcia, Mendes-Da-Silva & Orsato (2017) and Richardson & Welker (2001). Table 7 shows that there are 18 companies in the energy sector, 49 in the materials sector and 22 in the utilities sector, good for a total of 89 companies. The dummy variable will take the value 1 for the companies operating in these three sensitive sectors. The remaining 409 companies from the other 8 sectors will be coded as 0.

Although Ahmad, Hassan & Mohammad (2003) and Melloni (2015) found no statistically significant relationship between the presence in a sensitive sector and volantarily non-financial information, this paper predicts that being a member of a sensitive industry positively influences the degree of integrated reporting.

4.4 Independent variables

This section will provide an overview of the proxies used to measure the independent variables. All the data concerning the independent variables were retrieved from the Thomson Reuters Eikon Database. A cross check between the data from Eikon and the equivalent data in the annual report was performed for a few companies and no significant differences were found.

Market risk is measured using the CAPM beta. Beta is a measure for how much an individual stock fluctuates compared to the market. A beta of 1 indicates that when the market fluctuates, the stock of a company fluctuates just as much. When a company has a beta smaller than one, their stocks will fluctuate less than the market. A beta higher than 1 means that the individual stock moves more compared to the market. A negative beta indicates that the company's stock fluctuates in the opposite direction from the market.

Ownership structure is represented by the free float percentage. This is the percentage of shares that can publicly be traded, and thus are not owned by institutional investors.

The *degree of debt* will be measured by dividing the amount of debt by the total assets. The debt consists of both long-term as short-term debt and the assets contain tangible assets as well as intangible assets.

Board size is measured by the number of board members at the end of the fiscal year.

Board gender diversity is measured by the percentage of women who have a seat in the board.

Table 5 provides an overview of the different independent and control variables, their expected signs and the proxies for the variables.

***Table 5:** Overview hypotheses, signs and proxies*

Variable	Predicted sign	Proxy	Abbreviation proxy
Integrated Reporting Score	/	Integrated Reporting Score	IRS
Market Risk	-	Beta	BETA
Ownership Concentration	+	Percentage free float	FREEFLOAT
Leverage	+	Debt ratio: debt/total assets	DEBT
Size of the board	+	Number of directors in board	BSIZE
Gender Diversity	+	Percentage of women on the board	WOMEN
Company Size	+	Natural logarithm of total assets	FSIZE
Profitability	+	Return on assets	ROA
Growth opportunities	+	Price to book value of equity	PTB
Country	+	Dummy variable country: 1 if civil law country; 0 if common law country	DCOUNTRY
Sector	+	Dummy variable sector: 1 if sensitive sector; 0 otherwise	DSECTOR

4.5 Analytical model

The aim of this paper is to find out which determinants have an impact on the degree of integrated reporting. These determinants are independent variables and IRS is considered the dependent variable. To test the causal relationships between the dependent and independent variables, a regression will be performed. Since there are multiple independent variables, a multiple linear regression seems to be appropriate. This regression is also known as an ordinary least squares (OLS) regression. However, there are certain conditions the data need to satisfy before an OLS regression can be applied.

First, the dependent variable must be quantitative and continuous. This condition is fulfilled since our dependent variable is continuous with values ranging between 0 and 100.

Second, there should be a linear relationship between the dependent and independent variables (Albert, 2016). By looking at the scatterplot (Pal, 2017), it can be concluded that this assumption is satisfied (Appendix 3).

Third, the mean value of the error term should be zero. Moreover, the error term should be normally distributed (Albert, 2016). The mean of the error terms is $2{,}08 * 10^{-15}$, which can be assumed to be equal to zero. With a standard deviation close to 1 (0,99), it can be assumed that the error term follows a normal distribution. Appendix 4.1 shows a distribution which is similar to the normal one. Nevertheless, there is quite a big tail at the left side. Although the PP-plot (Appendix 4.2) shows that there are deviations from the normal line, these deviations remain quite close this 45° line. This all considered, one can assume that the error term is normally distributed.

Next, the data should be homoscedastic (Albert, 2016; Hayes & Cai, 2007). First, a visual test is performed by means of a scatterplot (Hayes & Cai, 2007). The scatterplot in Appendix 3 shows that the residuals are randomly scattered at the left side. However, when moving more to the right, the data points come together at a point. Therefore, it can be concluded that the residuals are not randomly distributed and there is a considerable possibility that our data is heteroskedastic. To statistically test this, the Breusch-Pagan-Godfrey test was performed (Appendix 5). The null hypothesis states that there is no heteroscedasticity, thus that there is homoscedasticity, meaning that the variances of the error terms are equal. The alternative hypothesis states that there is heteroscedasticity (Williams, 2015). As can be seen in Appendix 5, the p-value smaller than 0,01 indicates that the alternative hypothesis of heteroscedasticity is accepted. While performing the regression, this will need to be taken into account and a correction will need to be performed.

Last, there should be no multicollinearity between the independent variables (Albert, 2016; Hayes & Cai, 2007; Statistics Solutions, 2018). To check whether this condition is fulfilled, the correlation matrix should be computed. This can be done by using the Pearson or the Spearman correlations. The Pearson correlations give a better estimate for linear relationships but have more conditions which need to be satisfied. Pal (2017) describes the conditions that must be met in order to analyze the Pearson correlations. First, each company needs to have values for all the variables. The second condition states that there should be no outliers since they can skew the results. Although the extreme outliers are removed from the data set, there are still some mild

outliers. Furthermore, the data should be linear and homoscedastic. As proved above, the latter assumption is violated. Last, all variables should be normally distributed. This is tested using the Kolmogorov-Smirnov test and the Shapiro-Wilk test (Appendix 6). For all variables and for both tests, the p-values are smaller than 0,01, leading to the rejection of the null hypothesis that predicted that the variables would be normally distributed. Since not all requirements to perform the Pearson correlations are met, the correlations need to be measured using Spearman. All Spearman correlations are below 0,61, which is not that high (Table 9). Therefore, it can be supported that there is no multicollinearity between the variables. Another way to detect multicollinearity is by analyzing the Variance Inflation Factors. The VIF explains with which factor the variance of a variable is larger than when there would be absolutely no correlation (Allison, 2012). The minimum value of VIF is 1 and there is no maximum value (Allison, 2012). It is assumed that a VIF below 10 indicates no problems regarding multicollinearity (Statistics Solutions, 2018). The lower the VIFs, the less likely that variables are correlated. In this model, all VIFs are below 2,5 (Appendix 7), which indicates no problems regarding multicollinearity.

To conclude, all conditions are met except the homoscedasticity condition. This will need to be taken into account while estimating the OLS regression. There exist several ways to correct the regression equation for heteroscedasticity, such as WLS or the transformation of the dependent variable. However, these methods have as disadvantage that they require knowledge about the functional form of heteroscedasticity (Hayes & Cai, 2007). Therefore, heteroscedasticity will be corrected using a heteroscedasticity-consistent standard error estimator, more specifically the Huber-White standard error estimator. The use of Huber-White will not change the coefficients. Nevertheless, it will slightly change the standard error terms and therefore also the test statistics and the p-values (Williams, 2015).

The hypotheses will be tested by estimating following regression equation, corrected by Hubert-White:

$$IRS = \beta_0 + \beta_1 BETA + \beta_2 FREEFLOAT + \beta_3 DEBT + \beta_4 BSIZE + \beta_5 WOMEN + \beta_6 FSIZE + \beta_7 ROA + \beta_8 PTB + \beta_9 DCOUNTRY + \beta_{10} DSECTOR + \varepsilon \quad (1)$$

Where β_0: constant

β_i: regression coefficient

ε: error term

5. Results and discussion

5.1 Descriptive analysis

As can be seen in Table 6, our sample consists of companies situated in 16 different European countries: Austria, Belgium, Denmark, Finland, France, Germany, the Republic of Ireland, Italy, Luxembourg, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom. The original sample also contained two companies from Czech Republic for which not all appropriate data could be collected and were therefore removed from the sample. 127 of the 498 companies, i.e. 25,50%, are located in the United Kingdom. This means that the United Kingdom represents the biggest share in our sample. France and Germany also have a relatively high stake, respectively 14,3% and 12,0%. Luxembourg and Portugal individually have a very low frequency in our sample.

***Table 6**: Frequencies countries of headquarters*

	Frequency	Percent
Austria	8	1,61
Belgium	14	2,81
Denmark	16	3,21
Finland	15	3,01
France	71	14,26
Germany	60	12,05
Republic of Ireland	10	2,01
Italy	22	4,42
Luxembourg	5	1,00
the Netherlands	26	5,22
Norway	10	2,01
Portugal	3	0,60
Spain	28	5,62
Sweden	36	7,23
Switzerland	47	9,44
United Kingdom	127	25,50
Total	498	100,00

Furthermore, the sample represents all the eleven sectors of the GICS division, as can be seen in Table 7. The highest contribution comes from the industrials sector with 101 companies (20,28%), followed by the financial sector (18,47%).

***Table 7**: Frequencies sector*

	Frequency	Percent
Consumer discretionary	68	13,65
Consumer staples	41	8,23
Energy	18	3,61
Financials	92	18,47
Health care	36	7,23
Industrials	101	20,28
Information Technology	25	5,02
Materials	49	9,84
Real estate	26	5,22
Telecommunication Services	20	4,02
Utilities	22	4,42
Total	498	100,00

Table 8 describes the minimum and maximum values, as well as the means, medians, standard deviations and the 25th and 75th percentiles of the independent and control variables. The values of beta range between -0,1737 and 2,2674. A negative beta smaller than 1 indicates that the stocks of the company fluctuate less than the market, but in the opposite direction. The maximum value of the free float proxy is 100%. This means that there is at least one company in the sample that has all its shares outstanding to the public. The minimum value of the debt ratio is 0,00%, which indicates that the company has absolutely no debt and the maximum value is 63,54%. There are also considerable differences in the number of directors on the board. This is mainly due to the fact that the sample consists of small, medium and large capitalization firms and that the size of the company also heavily fluctuates. It is striking that the maximum value of the amount of women on the board is 63,64% and the mean only 28,36%. Some companies do not even have any women on their board of directors. It is clear that women are still the under-represented sex in the board of directors. However, our mean is in line with what the European Commission had calculated: 23,3% (European Commission, 2016a). The reason for the small difference in the mean is the fact that different samples were used. Regarding the profitability of

the firms, there is at least one company that has a negative ROA. The range of the PTB is quite large with values between 0,28279 and 10,25071. Slightly more than one fourth of the companies belong to a civil law country and is coded as 1. Finally, the dummy variable sector takes 89 times the value 1 (17,87%) and 409 times the value 0.

***Table 8**: Descriptives and frequencies independent and control variables*

	Mean	Median	Min	Max	Std. Dev.	Q1	Q3	Obs
Beta	0,919506	0,879582	-0,173723	2,267427	0,382604	0,640483	1,154749	498
FreeFloat	0,800377	0,888080	0,198744	1,000000	0,217956	0,655247	0,990324	498
Debt/TA	0,232535	0,226937	0,000000	0,635437	0,148357	0,122148	0,324425	498
BSIZE	11,40964	11	3	23	3,729386	9	13	498
WOMEN	0,283604	0,285714	0,000000	0,636364	0,115280	0,214286	0,363636	498
FSIZE	10,18557	10,02486	8,737007	12,35393	0,722695	9,687663	10,594625	498
ROA	0,050221	0,044903	-0,135926	0,235985	0,048743	0,017079	0,072890	498
MTB	2,711492	2,295785	0,282790	10,25071	1,937001	1,215396	3,478799	498

		Frequencies	
		Absolute	**Relative (%)**
DCountry	0 = shareholder-oriented	137	27,5%
	1 = stakeholder-oriented	361	72,5%
DSector	0 = non-sensitive sector	89	17,87%
	1 = sensitive sector (energy, materials, utility)	409	82,13%

5.2 Bivariate analysis

The Spearman correlations are calculated in Table 9. In contrast with a regression, a correlation between two variables does not consider the impact of other variables. When analyzing the Spearman correlations, nothing can be concluded regarding the causality of the effect. As mentioned before, the correlations between the independent/control variables are not high.

Looking at the correlations between IRS and the other variables, it is noticed that all independent variables have the expected sign with the exception of the variable 'market risk'. Hypothesis 1 predicted a negative relationship between market risk and the dependent variable IRS. However, Table 9 shows a significantly positive correlation between these two variables at the 1% significance level. Free float and the debt ratio are not significantly correlated with IRS. The two

included board characteristics ‘board size’ and ‘women’ are both significantly positively correlated with IRS at the 1% significance level.

At the same significance level, the control variable ‘size of the company’ has a positive correlation with IRS. ROA and PTB, representing respectively the profitability and the growth opportunities of a firm, are, againts expectations, significantly negatively correlated with IRS. The dummy variable ‘sector’ is positively correlated with IRS at the 1% significance level. Finally, the dummy variable ‘country’ has a positive correlation with IRS, but one which is not significant.

***Table 9**: Spearman correlations*

	IRS	BETA	FREE FLOAT	DEBT/TA	BSIZE	WOMEN	FSIZE	ROA	PTB	DCOUNTRY	DSECTOR
IRS	1,000000										
BETA	0,235961*	1,000000									
FREE FLOAT	0,065860	0,092796**	1,000000								
DEBT/TA	0,000635	-0,151324*	-0,003908	1,000000							
BSIZE	0,303760*	0,206503*	-0,152800*	0,033443	1,000000						
WOMEN	0,194778*	-0,006217	-0,090462**	0,020269	0,130000*	1,000000					
FSIZE	0,394380*	0,395533*	-0,003713	0,021965	0,520314*	0,204420*	1,000000				
ROA	-0,129195*	-0,302262*	0,013157	-0,080482***	-0,263948*	-0,025060	-0,564324*	1,000000			
PTB	-0,147297*	-0,356632*	-0,019630	-0,002060	-0,212623*	-0,056051	-0,528419*	0,606144*	1,00000		
DCOUNTRY	0,009884	-0,036518	-0,282895*	0,019925	0,191559*	0,239988*	0,158458*	-0,045010	-0,057694	1,000000	
DSECTOR	0,189754*	0,085624***	-0,028946	0,116360*	-0,035798	-0,038914	0,038081	-0,059483	-0,092807**	0,005680	1,000000

*. Significant at 1%
**. Signficant at 5%
***. Significant at 10%

Included observations: 498

5.3 Multivariate analysis

Table 10 shows the results of regressing both the independent and control variables on the dependent variable IRS using equation 1.

***Table 10**: Regression results*

	Predicted sign	Coefficient	Std. Error	t-Statistic	Prob.
C		-16,19042	15,83202	-1,022638	0,3070
BETA	-	2,420374	2,753328	0,879072	0,3798
FREE FLOAT	+	9,424147	4,602564	2,047586	0,0411
DEBT/TA	+	-4,870028	6,756826	-0,720757	0,4714
BSIZE	+	0,971796	0,272866	3,561437	0,0004
WOMEN	+	30,33929	8,040609	3,773257	0,0002
FSIZE	+	6,553684	1,614490	4,059291	0,0001
ROA	+	8,403303	25,64622	0,327662	0,7433
PTB	+	1,347742	0,557787	2,416229	0,0160
DCOUNTRY	+	-4,611779	2,114916	-2,180597	0,0297
DSECTOR	+	11,21103	1,747157	6,416725	0,0000
R-squared		0,184218			
Adjusted R-squared		0,167467			
F-statistic		10,99731			
Prob(F-statistic)		0,000000			
Prob(Wald F-statistic)		0,000000			

Dependent variable: IRS
Method: Least Squares
White heteroskedasticity-consistent standard errors & covariance
Included observations: 498

The regression model has an adjusted R-squared of 16,75% (Table 10), indicating that the independent variables predict approximately 17% of the variation of the dependent variable (Eisenhauer, 2009). Previous studies regarding integrated reporting have a slightly higher explanatory power, due to another sample, other variables included, etc. The probability of the F-statistic is zero (Table 10), meaning that our model is significant and thus better explains the data than a model with no independent nor control variables.

In contradiction with the negative relationship hypothesis 1 suggested, the market risk, measured by beta, has a positive effect on the dependent variable IRS (Coeff = 2,420374).

However, this effect is statistically not significant (p-value = 0,3798), which leads to the rejection of hypothesis 1. Since the impact of the determinant 'market risk' on integrated reporting has not been examined before, the result cannot be compared to previous studies. However, there were researchers (Trotman & Bradley, 1981; Firth, 1984) who also were unable to detect a statistically significant relationship between market risk and voluntary reporting.

The variable free float has a significantly positive effect on IRS at the 5% significance level, which leads to the acceptance of hypothesis 2. This corresponds with the results of Jensen & Berg (2012). Firms that have a more dispersed ownership structure will be more likely to disclose an integrated report. These firms have more investors who do not have the power to gather the information they want. To reduce these information asymmetries and to satisfy the smaller shareholders, the company will provide more integrated information.

Hypothesis 3 predicted a positive association between the amount of debt and the disclosure of integrated information. However, the results indicate no statistically significant relationship (coeff = -4,870028; p-value = 0,4714) and as a result hypothesis 3 can be rejected. This corresponds with the results of Lai, Melloni & Stacchezzini (2016).

Furthermore, the board size significantly positively (coeff = 0,971796; p-value = 0,0004) affects the degree of integrated reporting at the 1% significance level and therefore hypothesis 4 is accepted. This is as expected and in accordance with the results from Frias-Aceituno, Rodriguez-Ariza & Garia-Sanchez (2013b). The argument that larger boards consist of people with a more diversified knowledge and experience to effectively monitor the prepartion of integrated reports thus makes sense.

The coefficient of WOMEN of 30,33929 and the p-value of WOMEN smaller than 0,01 indicates that hypothesis 5 can be accepted. In line with the results of the studies from Frias-Aceituno, Rodriguez-Ariza & Garcia-Sanchez (2013b, 2013c) and as predicted, it is found that gender diversity has a significantly positive impact on IRS at the 1% significance level.

The control variables firm size, profitability and sector significantly positively affects the dependent variable IRS at the 1% significance level. This indicates that larger firms, more profitable firms and firms operating in sensitive industries are more likely to produce a higher level of integrated reporting. In contradiction with the results of Frias-Aceituno, Rodriguez-Ariza & Garcia-Sanchez (2013a, 2013c, 2014), but in line with their other study (2013b), the profitability

has no significant impact on IRS (coeff = 8,403303; p-value = 0,7433). Last, the dummy variable country has a significant effect on IRS at the 5% significance level, but one which is negative (coeff = -4,611779; p-value = 0,0297), indicating that companies located in common law countries and thus are shareholder-oriented, will disclose more integrated information compared to the stakeholder-oriented civil law countries. This contradicts with what was predicted and with the results of Frias-Aceituno, Rodriguez-Ariza & Garcia-Sanchez (2013a). An argument for the obtained negative relationship could be that civil law countries have more stricter regulations than common law countries (Jensen & Berg, 2012). It is possible that this is embedded in the company's culture. As a result, companies in civil law countries may limit themselves to what is mandatory, while companies in common law countries are more creative and are more open to publish non-obligatory reports, such as an integrated one.

Table 11 compares the coefficients from the performed regression to the standardized coefficients. To determine which variables are most important, one should look at the standardized coefficients from variables that were significantly different (marked in green).

***Table 11**: Standardized coefficients*

	Coefficient	Standardized Coefficient
C	-16,19042	-1,29E-24
BETA	2,420374	0,044053
FREE FLOAT	9,424147	0,097714
DEBT/TA	-4,870028	-0,034371
BSIZE	0,971796	0,172409
WOMEN	30,33929	0,166382
FSIZE	6,553684	0,225313
ROA	8,403303	0,019485
PTB	1,347742	0,124189
DCOUNTRY	-4,611779	-0,098070
DSECTOR	11,21103	0,204529

Included observations: 498

The reason why regression coefficients cannot be compared stems from the fact that the variables use different measure scales. Standardized coefficients, however, explain how a change of one standard deviation affects the standard deviation of the dependent variable and are thus

no longer dependent on how the variables are measured (Noymer, sd). As a result, the absolute values of the standardized coefficients can be used to determine which independent/control variable has the biggest impact on IRS. The size of the company is the most important determinant with a standardized coefficient of 0,225313. The second most important variable is the sector (0,204529), followed by board size (0,172409), board gender diversity (0,166382), growth opportunities (0,124189), country (-0,098070) and eventually free float (0,097714).

6. Sensitivity analysis

***Table 12**: Sensitivity analysis: ROE instead of ROA*

	Predicted sign	Coefficient	Std. Error	t-Statistic	Prob.
C		-20,69851	14,08398	-1,469650	0,1423
BETA	-	1,798729	2,768827	0,649636	0,5162
FREE FLOAT	+	9,508953	4,674108	2,034389	0,0425
DEBT/TA	+	-2,606036	6,444893	-0,404357	0,6861
BSIZE	+	1,011318	0,277935	3,638691	0,0003
WOMEN	+	33,25348	8,126098	4,092183	0,0001
FSIZE	+	6,934981	1,458145	4,756030	0,0000
ROE	+	-7,454255	13,42721	-0,555160	0,5790
PTB	+	1,749622	0,736315	2,376187	0,0179
DCOUNTRY	+	-5,128774	2,162390	-2,371808	0,0181
DSECTOR	+	11,37569	1,746766	6,512429	0,0000
R-squared		0,195197			
Adjusted R-squared		0,178603			
F-statistic		11,76317			
Prob(F-statistic)		0,000000			
Prob(Wald F-statistic)		0,000000			

Dependent variable: IRS
Method: Least Squares
White heteroskedasticity-consistent standard errors & covariance
Included obervations: 496

6.1 Change proxies

For certain variables, there were different possible proxies. In this section, two of the proxies will be adapted to test whether this has an impact on the results. Starting from the original data

set, the extreme outliers were removed before estimating the regression with the other proxy, ceteris paribus, using the heteroscedasticity-consistent standard error Hubert-White.

6.1.1 ROE instead of ROA

When replacing ROA by ROE, there remain observations for 496 companies. Table 12 shows that there are no significant differences with the primary regression analysis (Table 10).

6.1.2 Debt/TE instead of debt/TA

Another proxy for measuring the financial leverage of a firm is the ratio debt to equity. After removing the outliers, there remain 478 companies in the sample. Replacing debt/assets by debt/equity has two consequences. First, the free float variable is no longer significantly positive at the significance level of 5%, but at the level of 10%. This can be explained by the fact that there were more outliers removed and the sample is thus slightly changed. Second and the most radical change relative to the primary regression results is the fact that the financial leverage, now measured by the debt to equity ratio, becomes significantly at the 5% significance level. Moreover, the relationship is, contrary to our expectations, a negative one. The debt to equity ratio has higher values, with a maximum value of 350%, whereas the maximum value of debt/assets was only 63,5%. Furthermore, there were no observations for companies with a negative equity, which can bias the results. However, a negative relationship can be explained by the fact that debt suppliers can protect themselves against high agency costs by several protection mechanisms, such as collaterals (Broberg, Tagesson & Collin, 2010), thereby reducing the need of disclosing this information. Also, having a high debt ratio can withhold companies from disclosing an integrated report since they are afraid that this information will lead to negative forecasts and will scare potential investors and stakeholders (Watson, Shrives & Marston, 2002).

***Table 13**: Sensitivity analysis: debt/TE instead of debt/TA*

	Predicted sign	Coefficient	Std. Error	t-Statistic	Prob.
C		-30,83600	15,90186	-1,939145	0,0531
BETA	-	1,741792	2,786225	0,625144	0,5322
FREE FLOAT	+	7,486901	4,446269	1,683861	0,0929
DEBT/TA	+	-3,197419	1,514497	-2,111209	0,0353
BSIZE	+	0,980908	0,286147	3,427984	0,0007
WOMEN	+	29,77096	8,080084	3,684487	0,0003
FSIZE	+	8,420066	1,591176	5,291726	0,0000
ROA	+	1,425558	26,17764	0,054457	0,9566
PTB	+	1,437545	0,571708	2,514474	0,0123
DCOUNTRY	+	-4,931029	2,170408	-2,271937	0,0235
DSECTOR	+	11,03056	1,743610	6,326275	0,0000
R-squared		0,195302			
Adjusted R-squared		0,177922			
F-statistic		11,23711			
Prob(F-statistic)		0,000000			
Prob(Wald F-statistic)		0,000000			

Dependent variable: IRS
Method: Least Squares
White heteroskedasticity-consistent standard errors & covariance
Included observations: 478

6.2 Results without removing outliers

To perform the primary regression, the extreme outliers were removed. Although this is a widespread practice in accounting and financial studies, this is not often done in econometrical studies. In this part, we will test whether the extreme outliers had an influence on the results, i.e. whether they were influential observations. This will be done by comparing the results of the regression performed on the data with the outliers still included (Table 14) with the regression results of the data without outliers, i.e. our primary regression results (Table 10). The main difference with the primary regression output is the fact that growth opportunities no longer has a significantly positive impact on the degree of integrated reporting. Second, the significance level of the free float variable changed from the 5% level to the 10% level. Last, the dummy variable country has now a significantly negative relationship with IRS at the 1% significance level instead of the 5% level.

***Table 14**: Sensitivity analysis: no outliers removed*

	Predicted sign	Coefficient	Std. Error	t-Statistic	Prob.
C		-3,922180	14,60292	-0,268589	0,7884
BETA	-	0,318771	2,712253	0,117530	0,9065
FREE FLOAT	+	8,877137	4,548597	1,951621	0,0515
DEBT/TA	+	-3,598590	6,614243	-0,544067	0,5866
BSIZE	+	0,993506	0,274263	3,622456	0,0003
WOMEN	+	30,90469	8,048969	3,839584	0,0001
FSIZE	+	5,966454	1,569606	3,801243	0,0002
ROA	+	10,41517	17,21519	0,604999	0,5454
PTB	+	-0,088310	0,084384	-1,046519	0,2958
DCOUNTRY	+	-5,660009	2,053456	-2,756334	0,0061
DSECTOR	+	10,70379	1,665044	6,428532	0,0000
R-squared		0,186155			
Adjusted R-squared		0,170291			
F-statistic		11,73415			
Prob(F-statistic)		0,000000			
Prob(Wald F-statistic)		0,000000			

Dependent variable: IRS
Method: Least Squares
White heteroskedasticity-consistent standard errors & covariance
Included obervations: 524

6.3 Board cultural diversity

As already mentioned, not all determinants that possibly can affect the degree of integrated reporting are included in this study. One of the determinants that was excluded from this study because there was not sufficient data to remain a big enough sample is the cultural diversity in the board of directors. However, it is possible that this variable, just like board gender diversity, affects the degree of integrated reporting. People with more diverse cultural backgrounds have different reporting habits (Frias-Aceituno, Rodriguez-Ariza & Garia-Sanchez, 2013b) and have more different insights. When including this variable, a sample of 289 companies is obtained. The cultural diversity within a company's board is measured by the percentage of foreigners, these are board members that have a nationality different from the country where the headquarters are situated. Table 15 indicates that only one quarter of the companies have a

cultural diversity of more than 50%. The maximum value of 1 indicates that there is at least one company that has no board members who have the same nationality as the company.

***Table 15**: Descriptive statistics board cultural diversity*

	Mean	Median	Min	Max	Q1	Q2	Obs
Board cultural diversity	0,351170	0,266667	0,045455	1	0,11111	0,50	289

***Table 16**: Sensitivity analysis: board cultural diversity*

	Predicted sign	Subsample with BCD (A)		Subsample without BCD (B)	
		Coefficient	t-Statistic	Coefficient	t-Statistic
C		-15,32433	-0,758440	-15,36186	-0,756721
BETA	-	-0,729709	-0,215754	-0,735251	-0,218012
FREE FLOAT	+	11,46869	2,030332**	11,47798	2,034834**
DEBT/TA	+	-7,447111	-0,815092	-7,452689	-0,818410
BSIZE	+	0,712205	1,904436***	0,716058	1,990727**
WOMEN	+	44,40435	3,902580*	44,43699	3,857036*
BOARD CULT DIV	+	-0,183981	-0,041719	-	-
FSIZE	+	6,205953	3,180054*	6,199999	3,215464*
ROA	+	-43,09859	-1,117486	-43,24951	-1,145475
PTB	+	3,054098	3,932539*	3,057094	3,934500*
DCOUNTRY	+	-1,710157	-0,612840	-1,738866	-0,621477
DSECTOR	+	10,33736	3,823960*	10,33324	3,857418*
R-squared		0,200767		0,200762	
Adjusted R-squared		0,169029		0,172012	
F-statistic		6,325670		6,983120	
Prob(F-statistic)		0,000000		0,000000	
Prob(Wald F-statistic)		0,000000		0,000000	

*. Significant at 1% level
**. Significant at 5% level
***. Significant at 10% level

Dependent variable: IRS
Method: Least Squares
White heteroskedasticity-consistent standard errors & covariance
Included obervations: 289

When comparing the regression results of the subsample with board cultural diversity included (Table 16, A) and the primary regression results (Table 10), the cultural diversity of board

members has no significant impact on the dependent variable IRS. It can also be noticed that the dummy variable country no longer has a significant relationship with IRS and board size only has a significantly positive impact on IRS at the 10% significance level. However, these changes can be the result of the different samples used. When comparing the primary regression results (Table 10) and the regression results of model B in Table 16, the same differences occur. The dummy variable country has no significant impact on IRS and board size is only significant at the 5% significance level instead of the 1% level.

Therefore, it is more optimal to compare the regression results based on the data from the subsample with board cultural diversity included (Table 16, A) and the regression results using the subsample without inclusion of board cultural diversity (Table 16, B). Table 16 indicates no significant differences and provides no evidence to assume that the board cultural diversity does affect the dependent variable IRS. This in line with the results of Frias-Aceituno, Rodriguez-Ariza & Garia-Sanchez (2013b) who also did not found a significant relationship between the percentage of foreigners on the board and integrated reporting.

7. Limitations and future research

This study has encountered some limitations which one should be aware of before generalizing the obtained results.

The first limitation of this study is the proxy used for measuring the degree of integrated reporting, namely the CGVS measure. This does not comprise all requirements set by the IIRC and is as a result too high. However, this measure was chosen because the other possibility, determining myself whether the report is integrated, is subjective. Since integrated reporting is a relatively new concept and it is not obliged in European countries, there is not yet an objective and conclusive way to determine whether a report is integrated or a score for the adoption/degree of integrated reporting. A possibility for future research is therefore to find such a measure.

Another limitation of this study is the fact that not all determinants that possibly have an impact on the degree of integrated reporting are included. This is due to the fact that not for all determinants appropriate data was found. This inevitably leads to omitted variable bias. Future research can consult multiple databases to have access to more data and therefore include a more complete set of determinants.

Because of the fact that Eikon does not provide data for the variable PTB, representing the growth opportunities of a firm, when the company's equity is negative, these companies have missing values and are therefore removed from the sample. As a result, there will be degradation of the external validity.

This study found no significant relationship between market risk and the degree of integrated reporting. Since this is the first study that investigates this determinant, future research is desirable to find a conclusive result. Composing a sample consisting of more companies, using a more appropriate proxy to measure the integrated reporting score, including other variables can lead to more accurate results.

Last, this study found, against expectations, that companies located in common law countries and thus have a focus on the shareholders will produce more integrated information, whereas Frias-Aceituno, Rodriguez-Ariza & Garcia-Sanchez (2013a) found that companies situated in civil law countries are more llikely to disclose an integrated report. Future research should examine this further to determine a decisive answer.

8. Conclusion

Integrated reporting is a relatively new concept, which is gaining prominence since the creation of a framework provided by the IIRC. However, there is little known about the determinants that influence the degree of integrated reporting. This study has examined various explanatory factors and distinct from previous studies in several ways. First, it included market risk, which impact on integrated reporting was not yet examined. Second, the sample only consisted of European firms, whereas previous studies had a worldwide sample. Next, the dependent variable was the continuous variable CGVS provided by the DataStream ASSET4 Database instead of a dichotomous variable taking the value 1 when the company publishes an integrated report and 0 otherwise. Last, the regression was performed using more recent data from the year 2016. Our sample eventually consisted of 498 companies located in 16 different countries and active in 11 different sectors. The obtained results were mainly in accordance with previous studies regarding integrated reporting. The determinants that positively influence the degree of integrated reporting were ownership dispersion, board size, board gender diversity, the size of the company, the growth opportunities and being active in a sensitive sector. The location of a firm in a civil law country, thus a more stakeholder-oriented country, negatively impacts the degree

of integrated reporting. The new included variable ‘market risk’ had no significant effect on integrated reporting. The same conclusion could be drawn for the profitability of a company. However, in order to generalize these results, one should be aware of the limitations of this study.

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Appendix 1: CGVS components

CGVS	Integration/Vision and Strategy	The integration/vision and strategy category measures a company's management commitment and effectiveness towards the creation of an overarching vision and strategy integrating financial and extra-financial aspects. It reflects a company's capacity to convincingly show and communicate that it integrates the economic (financial), social and environmental dimensions into its day-to-day decision-making processes.
DRIVERS		
CGVSD01S	Score - Vision and Strategy/Policy	Does the company have a policy for maintaining an overarching vision and strategy that integrates financial and extra-financial aspects of its business?
CGVSD02S	Score - Vision and Strategy/Implementation	Does the company describe the implementation of its integrated strategy through a public commitment from a senior management or board member? AND Does the company describe the implementation of its integrated strategy through the establishment of a CSR committee or team?
CGVSD03S	Score - Vision and Strategy/Monitoring	Does the company monitor its integrated strategy through belonging to a specific sustainability index? AND Does the company monitor its integrated strategy through conducting external audits on its reporting?
CGVSD04S	Score - Vision and Strategy/Improvements	Does the company set specific objectives to be achieved on the integrated strategy?
OUTCOMES		
CGVSO01S	Score - Vision and Strategy/Challenges and Opportunities	Does the company report about the challenges or opportunities linked to the integration of financial and extra-financial issues?
CGVSO02S	Score - Vision and Strategy/Integrated Strategy	Does the company integrate financial and extra-financial factors in the management discussion and analysis section of the annual report?
CGVSO03S	Score - Vision and Strategy/Global Compact Signatory	Is the company a signatory of the Global Compact?
CGVSO04S	Score - Vision and Strategy/Stakeholder Engagement	Does the company explain how it engages with its stakeholders?

CGVSO05S	Score - Vision and Strategy/Transparency	Does the company publish a separate CSR/H&S/Sustainability report or publish a section in its annual report on CSR/H&S/Sustainability?
CGVSO06S	Score - Vision and Strategy/GRI Report	Is the company's CSR report published in accordance with the GRI guidelines?
CGVSO07S	Score - Vision and Strategy/Global Reporting	Does the company's extra-financial report take into account of the global activities of the company?
CGVSO08S	Score - Vision and Strategy/CSR Reporting Auditor	Does the company have an external auditor of its CSR/H&S/Sustainability report?

Source : de Villiers, Venter & Hsiao (2017)

Appendix 2: Requirements IR IIRC

Business and organizational model
Definition of corporate goals
Description of activities, markets, products and services
Identification of key factors (intellectual capital, environmental impact, etc.) and key stakeholders
Attitude towards risk

Context, risks and opportunities
Description of/Reference to the commercial, social, environmental and regulatory context
Description of key relations with internal and external stakeholders (needs and expectations)
Description of the main risks and opportunities

Strategic goals and strategies
Definition of the corporate outlook
Risk management regarding key resources and their main relations
Definition/identification of strategic goals
Relating strategies to other elements
Identification of strategies to achieve differentiation/competitive advantage

Corporate governance and remuneration policy
Description of corporate governance
Influence of corporate governance on strategic decisions Influence of corporate governance on executive remuneration

Behaviour-performance and value creation: financial, social and environmental
Identification of key quantitative indicators of performance and risk (KPIs, KRIs)
Identification of results (financial and non-financial)
Comparison of results with past data Comparison of results with future data
Relation between KPIs and strategic goals

Future outlook
Definition/identification of future challenges and opportunities (scenarios)
Reference to the balance of short and long-term interests/goals
Reference to future results/expectations
Description of analysed KPIs and KRIs

Economic efficiency
Added Value, Debt, Economic contribution to community, Employee benefits, Financial expense, Public administration expenses, Result, Revenues, Suppliers and Shareholder retribution

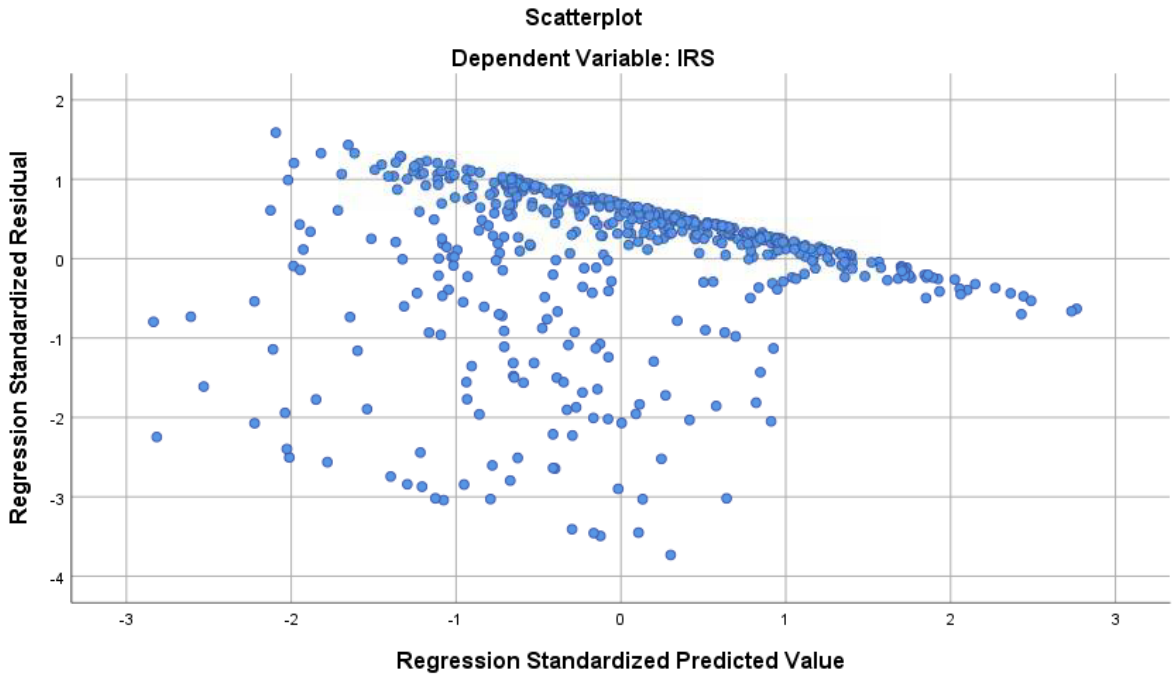
Environmental efficiency
Energy efficiency (Energy consumption and Water consumption)
Polluting reduction (Pollution emissions)
Waste reduction (Waste generation and Waste processed)

Social efficiency

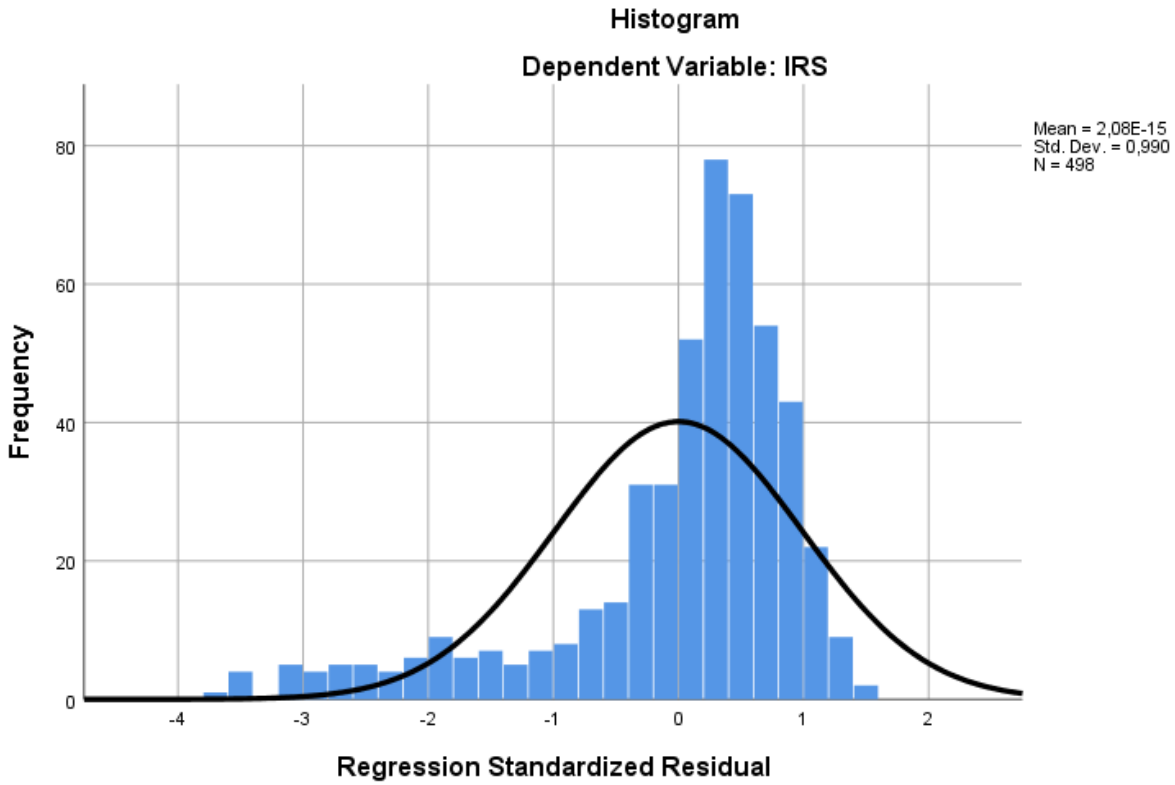
Increase in Human Capital (Absenteeism, Accidents and diseases in the workplace, Employees, Employee turnover, Employee training, Gender diversity, Job stability, Seniority)
Increase in Social Capital (CSR certified suppliers, Locally-based suppliers, Non-compliance with legal regulation concerning customers, Payment period to suppliers)

Source : Frias-Aceituno, Rodriguez-Ariza & Garcia-Sanchez (2013a)

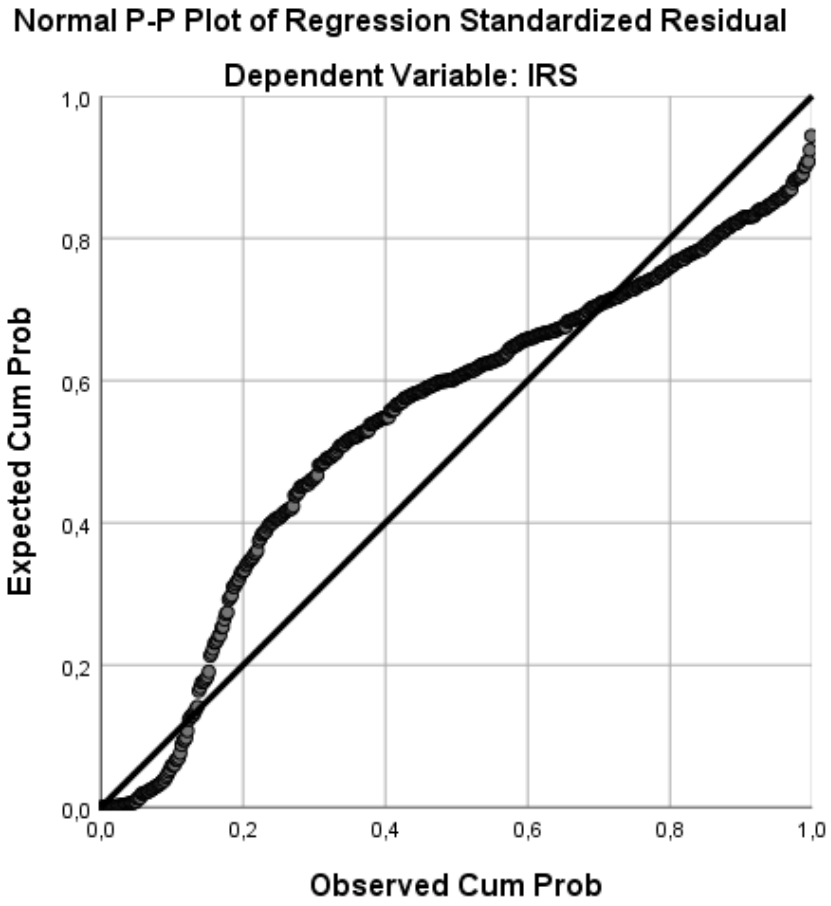
Appendix 3: Scatterplot



Appendix 4.1: Normality error terms (histogram)



Appendix 4.2: Normality error terms (PP-Plot)



Appendix 5: Heteroskedasticity (Breusch-Pagan-Godfrey)

F-statistic	4,426460	Prob. F(10,487)	0,0000
Obs*R-squared	41,49302	Prob. Chi-Square(10)	0,0000
Scaled explained SS	83,21427	Prob. Chi-Square(10)	0,0000

	Coefficient	Std. Error	t-Statistic	Prob.
C	2930,045	621,8601	4,711744	0,0000
BETA	5,890159	97,13643	0,060638	0,9517
FREE FLOAT	-344,1673	157,8192	-2,180769	0,0297
DEBT/TA	76,54534	226,2372	0,338341	0,7353
BSIZE	-17,23759	10,06338	-1,712902	0,0874
WOMEN	-559,6667	290,9025	-1,923898	0,0549
FSIZE	-181,8806	63,05143	-2,884639	0,0041
ROA	-738,8980	892,0119	-0,828350	0,4079
PTB	-35,94442	21,24900	-1,691582	0,0914
DCOUNTRY	113,3167	78,27369	1,447698	0,1483
DSECTOR	-322,6237	85,00685	-3,795267	0,0002

R-squared	0,083319
Adjusted R-squared	0,064496
F-statistic	4,426460
Prob(F-statistic)	0,000006

Dependent Variable: $RESID^2$
Method: Least Squares
Included observations: 498

Appendix 6: Normality of variables

	Kolmogorov-Smirnov(a)			Shapiro-Wilk		
	Statistic	**df**	**Sig.**	**Statistic**	**df**	**Sig.**
IRS	0,279	498	0,000	0,673	498	0,000
Beta	0,055	498	0,001	0,981	498	0,000
Free Float	0,180	498	0,000	0,843	498	0,000
Debt/TA	0,059	498	0,000	0,973	498	0,000
BSIZE	0,128	498	0,000	0,947	498	0,000
WOMEN	0,060	498	0,000	0,991	498	0,005
FSIZE	0,098	498	0,000	0,958	498	0,000
ROA	0,090	498	0,000	0,944	498	0,000
PTB	0,115	498	0,000	0,862	498	0,000
DCountry	0,456	498	0,000	0,558	498	0,000
DSector	0,501	598	0,000	0,465	498	0,000

(a) Lillieforce Significance Correction

Appendix 7: Multicollinearity (Variance Inflation Factors)

	Coefficient Variance	VIF
C	279,5796	NA
BETA	6,821570	1,349057
FREE FLOAT	18,00694	1,155648
DEBT/TA	37,00394	1,100306
BSIZE	0,073216	1,375721
WOMEN	61,18077	1,098432
FSIZE	2,874154	2,027998
ROA	575,2563	1,846426
PTB	0,326435	1,654643
DCOUNTRY	4,429470	1,195753
DSECTOR	5,224298	1,038014