

OTDK-dolgozat

2025

**EÖTVÖS LÓRÁND TUDOMÁNYEGYETEM
GAZDASÁGTUDOMÁNYI KAR**



**ESG SZAMÁLYTALANSÁGOK EREDMÉNYMENEDZSMENTRE
GYAKOROLT HATÁSÁNAK ELEMZÉSE OLASZ ÉS NÉMET CÉGEK
MINTÁJÁN**

**THE EFFECT OF ESG CONTROVERSIES ON EARNINGS
MANAGEMENT: EVIDENCE FROM THE GERMAN AND ITALIAN
STOCK EXCHANGE**

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Kézirat lezárásának dátuma: 2024. 12. 16.

Summary (Executive summary/Abstract)

The goal of this paper is to see whether ESG controversies influence the use of earnings management in firms listed on the German and Italian stock exchange, and whether the ESG performance moderates this relationship. A detailed literature review about earnings management and the ESG controversy score's effect on the firm value describes the thought process behind the assumption that ESG controversies give rise to earnings manipulation. With data from 153 listed firms collected from Refinitiv Eikon database for the time period 2018-2022, the research question was answered using a fixed effect model which also accounted for the fact that firms with different ESG performance might react differently to being involved in a controversy. The hypothesis about the controversies' effect on earnings manipulation was partially accepted. When considering the ESG performance and the countries' effect, the results show that if the companies' ESG performance is relatively low, they use income decreasing manipulation to worsen their earnings to make the next year's performance seem better. However, the effect was not found to be significant for firms performing well in terms of ESG. This could possibly mean that they have a better reputation, the stakeholders put more trust in them, so they do not need to resort to earnings manipulation methods to compensate for the negative effects of controversies. To make well informed financial decisions considering non-financial data, such as being involved in an ESG controversy, plays a crucial role. While there have been number of research on ESG's effect on earnings management, up to my knowledge the effect of controversies has not been examined yet. By closing this research gap, the results could encourage investors and auditors to especially watch out for firms which have been involved in ESG related controversies.

Table of Contents

1. INTRODUCTION.....	1
2. LITERATURE REVIEW.....	3
2.1. DEFINITION OF EARNINGS MANAGEMENT.....	3
2.2. MOTIVATIONS BEHIND EARNINGS MANAGEMENT.....	4
2.3. TYPES OF EARNINGS MANAGEMENT	5
2.3.1. <i>Accrual Earnings Management</i>	6
2.3.2. <i>Real Earnings Management</i>	7
2.4. TYPICAL METHODS OF EARNINGS MANAGEMENT	7
2.5. MODELS USED TO DETECT EARNINGS MANAGEMENT	8
2.6. ENVIRONMENTAL, SOCIAL, GOVERNANCE (ESG).....	10
2.6.1. <i>ESG controversy</i>	11
2.6.2. <i>ESG controversy and firm value</i>	11
3. DATA, HYPOTHESES, AND METHODOLOGY	13
3.1. HYPOTHESIS DEVELOPMENT.....	13
3.2. SAMPLE SELECTION AND DATA COLLECTION	15
3.3. VARIABLES USED	16
3.3.1. <i>Measuring Earnings Management</i>	16
3.3.2. <i>ESG Score and Controversy score</i>	17
3.3.3. <i>Control variables</i>	17
3.4. METHODOLOGY	19
4. RESULTS AND DISCUSSION.....	22
4.1. DESCRIPTIVE STATISTICS.....	22
4.2. REGRESSION RESULTS	24
5. CONCLUSION.....	29
REFERENCE LIST.....	31
APPENDIX/APPENDICES	37
APPENDIX 1. POINT ESTIMATES AND CONFIDENCE INTERVALS FOR $G=0$	37
APPENDIX 2. POINT ESTIMATES AND CONFIDENCE INTERVALS FOR $G=1$	39

Table of Tables

<i>Table 1: Data cleaning steps and their effect on firm-year observations</i>	<i>15</i>
<i>Table 2: Variables used</i>	<i>18</i>
<i>Table 3: Descriptive statistics</i>	<i>22</i>
<i>Table 4: GDP growth.....</i>	<i>22</i>
<i>Table 5: Model summary</i>	<i>24</i>

Table of Figures

<i>Figure 1: The hypothesis system illustrated following Nirino et al. (2021)</i>	<i>14</i>
<i>Figure 2: Pearson correlation matrix.....</i>	<i>23</i>
<i>Figure 3: Marginal effect of CON on DACC where GCON=0.....</i>	<i>26</i>
<i>Figure 4: Marginal effect of CON on DACC where GCON=1.....</i>	<i>26</i>

1. Introduction

Financial reports are of key importance for businesses as they are channels for the companies to document and communicate their financial performance. For stakeholders, the quality of these financial reports is crucial in order to make well-informed decisions about their investments. In addition to this, non-financial performance indicators, combined with the financial reports, can help the decision process, signalling which firm has more potential in the long run. An indicator for non-financial performance is the ESG score of the firms, indicating how they perform in the environmental (E), social (S) and governance (G) fields. This score has become widely used in the field of business by investors and shareholders, especially in the European Union, where there have been different regulations and constraints developed concerning the ESG performance and disclosure (Redondo Alamillos & de Mariz, 2022).

However, the efficient decision-making process could be undermined by the fact that companies and their managers could have incentives to alter the profits via different methods in order to make the company and its performance more appealing to the public. The managers could engage in earnings management in order to manipulate the earnings of the company, thus making it harder for stakeholders to make the most efficient decisions. This way, earnings management relates to the financial reporting of the firm.

There have been a great number of studies that focus on how the firms' ESG performance impacts the use of earnings management, some of which (Adeneye et al., 2023; Kolsi et al., 2023; Velte, 2019) also account for the fact that firms do not perform the same way in the different pillars of ESG. However, there is a lack of research concerning the effect of a particular field of the ESG rating on earnings management, which is the controversy score. The controversy score reflects the involvement of companies in scandals related to the fields covered by the ESG scoring system. As defined by the London Stock Exchange Group (2023) and Thomson Reuters (2017) the controversy score reflects any scandal that the company was involved in based on 23 controversy categories gaining data from the media while also accounting for the size of the corporations, which could affect the media coverage of these scandals.

This research aims to establish a relationship between the ESG controversy score and the earnings management of the firms using data from two European countries, namely Germany

and Italy, with differing corporate governance styles. The chosen time period includes the years affected by the Covid-19 pandemic, the effect of which will also be accounted for. The research is conducted on data from German and Italian non-financial firms listed on the stock exchange for a 5-year time period, 2018-2022. The data necessary is obtained from Refinitiv Eikon database, which includes the financial figures needed for the modified Jones model measuring the estimates for earnings management, the control variables such as the leverage of the firm or the return on assets, and the ESG score, ESG controversy score as the non-financial performance indicators provided by the database.

To measure earnings management, there have been several models, for example the Jones model, the modified Jones model, Kothari model etc., developed. In this research the modified Jones model will be used as it is considered to give the best estimation of the possible manipulated earnings (Dechow et al., 1995). The model is based on the assumption that there is a part of a firm's accruals that the management can influence (Dechow, 1994). In order to investigate the relationship between earnings management and the ESG controversy score (as a dummy variable) a fixed effect model is used which is a regression model applicable on panel data.

The first part of the research, the literature review, is focusing on the definition, motivation, and possible methods of earnings management, while also discussing the models developed to measure it. The literature review as well as the hypothesis development chapter discusses the thought process behind the possible connection between earnings management and the ESG controversy score. This is followed up by the data collected for the research, naming the variables included in the model, the hypotheses and the methodology used to analyse the data. The main part is composed of the results and the analysis of the regression results based on the hypotheses developed, comparing them to the findings of other studies. The closing part, the Conclusion chapter includes the most important findings of the research.

While there have been a great number of studies concerning the connection between ESG scores and earnings management, to my knowledge to this day there has not been any research done on the effect of ESG controversies could exert on earnings management. This research can serve as a means of closing this research gap. Future research could build on estimating the real earnings management used by firms and examining its relationship ESG controversies, because in this paper only the accrual earnings management was examined.

2. Literature review

2.1. Definition of Earnings Management

The quality of financial statements is an important aspect for both investors and other users, such as banks, suppliers, or market analysts, of financial statements in making informed decisions. Financial statements must follow certain standards and offer a true and fair view of the organization's activities and financial situation. However, the quality aspect of these reports could be undermined by the different ways managers manipulate the earnings of a company to provide either a better or worse picture of the organization.

A possible definition for earnings management (EM) determined by Healy and Wahlen (1999, p. 368) "earnings management occurs when managers use judgment in financial reporting and in structuring transactions to alter financial reports to either mislead some stakeholders about the underlying economic performance of the company or to influence contractual outcomes that depend on reported accounting numbers". These alterations, however, do not come hand in hand with the violation of accounting standards. This is what distinguishes earnings management from fraud, although there is a thin line between the two concepts.

The main difference, as addition to fraud being intentionally deceptive, lies with the generally accepted accounting principles (GAAP): fraud violates the GAAP, while earnings management is within of the GAAP (Erickson et al., 2006). This meaning, fraud entails some kind of violation of the accounting standards. Violations could include falsifying figures, forging documents, and purposefully ignoring the relevant accounting standards.

Although being different concepts, there exists a relationship between earnings management and fraud. After a while earnings management starts becoming less flexible, this could lead to managers engaging in fraud in order to produce similar outcomes as with the help of EM (Perols & Lougee, 2011). There have been studies proving that there is a strong positive relationship between the two methods. It has been proven that companies engaging in earnings management in the preceding years are especially likely to commit fraud in order to meet the expectations created based on the altered earnings.

2.2. Motivations behind Earnings Management

As the definition of earnings management have been discussed, we should take a look at why managers would employ such practices. We have to explore what circumstances would lead to managers managing the company's earnings, showing a slightly different picture of the company in the financial reports than reality.

As Fields et al. (2001) noted, there has to be some kind of advantage that stems from using earnings management, otherwise it would not be logical for the management to employ such methods. There has to be a motive for the executives, moreover, there has to be such an environment which enables the use of earnings management. In case of the investors, if there is information asymmetry between them and the firm, it is more likely that there will be under- or overinvestment (Shen et al., 2015).

Different external users of financial reports use reports for different financial decisions. For example, investors decide based on the financial statements whether to invest in a company or not, or financial institutions such as banks could determine based on them to provide loans for the company or not. Furthermore, bonuses rewarded to executives that are tied to the company's performance can also provide a basis for executives using earnings management methods.

Research have shown that meeting benchmarks are crucial to the organization, these benchmarks could be earnings of the previous year's last quarter, the estimations, and forecasts of market analysts or the expectations and criteria for different contracts, such as loan agreements. However, meeting these specifications sometimes would not occur if it would not have been for earnings management.

In the research of Graham et al. (2005), interviewing up to 400 executives, it has been concluded that the importance of meeting the earnings benchmarks has several reasons. By meeting these benchmarks, the company can make itself look better in the eyes of the stakeholders. This would mean better prospects for the company in terms of trade. The results of the survey showed what CFOs value the stock price, the relationship with the stakeholders, employee bonuses, external image of both the organization and the management, and the bond covenants the highest.

CEO-s can me motivated to manage earnings in order to maximize their annual bonuses. In Matsunaga and Park's (2001) research it has been proven that the bonuses of CEO-s in firms where there have been losses reported for more than two quarters have been significantly

decreased. To avoid reporting losses which could result in a decrease in benefits to the CEO, earnings management practices might be employed.

However, the interviews conducted by Graham et al. (2005) showed how most managers put their careers before getting rewards in the short run. The managers involved in this research expressed their concerns over their external image, and how they might be viewed as less competent if they do not meet the thresholds. To maintain a favourable image managers might have to manage the company's earnings.

Failing to meet benchmarks do not only affect the managers, but the firm as a whole. Graham et al. (2005) pointed out that if the performance of the firm does not live up to the expectations of the public, it can potentially make people outside the company think, that there can be severe underlying reasons for it. This will make them unsure about the company's future and whether it is worth investing in the firm.

The value of stock price for example is meaningful not only for the potential investors, who as research have shown prefer smoother stock prices, but also already existing shareholders and managers. In a research by Teoh et al. (1998b), it has been proven that firms going public for the first time usually report higher earnings in order to raise the stock price, which is preferred in an initial public offering (IPO) process. The research found however, that these reported earnings are not sustainable, and after the IPO, the firm's profits are much less compared to the period before the process.

Linda Elizabeth DeAngelo's (1988) research gives us insight into how managers use accounting measures during proxy contests. The incumbent managers will manage earnings in order to increase the stock prices pre-contest. This will make them appear in a more favourable light and leave a narrow room for dissidents to prove their disapproval of the current management. In a similar way, if dissidents are elected, they usually manage the company's earnings to be worse than previous years to prove their precedents' inefficiency.

2.3. Types of earnings management

Earnings management has two distinct methods, Accrual Earnings Management (AEM) and Real Earnings Management (REM). Both AEM and REM are used as ways to manipulate financial reporting, however they employ inherently different methodologies.

There have been researches whether there is a trade-off between the two methods, or they are used in a complementary way. As Li (2019) found researching 1,089 non-financial firms

from the U.S., there is a complementary relationship between AEM and REM. Furthermore, Zang (2012) found that there is a substitution between the types of EM, as firms that used REM during the year are likely to adjust their earnings using AEM methods. Zang concludes that when trying to detect earnings management, researchers should not only focus on AEM, but REM as well, and that even though the usage of AEM can be restricted by high quality auditing, it can lead to firms resorting to REM as a way to manipulate their earnings.

2.3.1. Accrual Earnings Management

The executives can capitalize off of the flexibility of the general accounting standards to make their earnings better or worse (Li, 2019).

As the name suggests, AEM is a method of earnings management in which managers manage the earnings by manipulating the accruals without cash flow consequences, such as delaying asset write-offs (Roychowdhury, 2006). Managers can have influence over both current and long-term accruals, so they are able to adjust them in order to alter the earnings. (Teoh et al., 1998a) The adjustment is only in the accounting choices and do not concern the real activities. These adjustments could also concern the depreciation of an asset, provisions for bad and doubtful debt, or inventory valuation; for example to manage their earnings firms can switch from using straight line depreciation to using reducing balance method and vice versa (Healy & Wahlen, 1999). In the same manner, firms may choose to change their inventory valuation method, for example if they used first-in, first out method, but decide to use last-in, last-out method to increase or decrease their profits for the year (Healy & Wahlen, 1999).

Total accruals, which are used in detecting earnings management, can be divided into 2 subsets, namely discretionary (DA) and non-discretionary accruals (NDA); discretionary accruals being those accruals, which the management has influence over, while non-discretionary accruals cannot be controlled by the management (Höglund, 2012). Earnings management detection models, such as the Jones model and the modified Jones model, use the NDA and DA to detect possible signs of EM (Dechow et al., 1995; Jones, 1991). However, we cannot be entirely sure whether there were EM methods used as there could be other events that could have influenced the earnings of a firm.

The use of accrual earnings management is limited, mainly because of the aspects pointed out by Zang (2012): the auditors and the firm's past accounting choices. Research shows that firms under high-quality audit firms are less likely to manage their earnings due to the auditors' scrutiny.

2.3.2. Real Earnings Management

What differentiates REM from AEM is the fact that it does affect real activities and cash flows, thus the value of the firm. Roychowdhury (2006, p. 337) defines REM as “real activities manipulation as departures from normal operational practices, motivated by managers’ desire to mislead at least some stakeholders into believing certain financial reporting goals have been met in the normal course of operations”. This involves for example cutting expenses, such as marketing or research and development expenses.

In the research of Baber et al.(1991), they examined firms from 1975-1987 with R&D expenses that are greater than 1 percent of the firms’ income. The research found that if both investing in research and development or not yields to higher income than the benchmark, executives will nevertheless decide to invest in R&D, same goes for if the income would not reach the benchmark no matter what. However, if accepting the expenses would yield to a lower income, managers would rather refrain from spending on R&D.

Another example for REM is channel stuffing. A company engages in channel stuffing when they sell an unusually large number of products to other firms in comparison to other quarters (Dechow et al., 1995). Firms can implement strategies such as providing more favourable terms of payment or various discounts to motivate their customers to purchase more products. This will result in higher income for the company in the short run as it will boost their sales, but in the long run this practice will lead to customers purchasing less items in the upcoming years.

Research shows (Enomoto et al., 2015; Graham et al., 2005) that executives are more likely to engage in real earnings management techniques than accrual based ones, as auditors can more easily detect the use of AEM.

2.4. Typical methods of earnings management

As the chairman of the Securities and Exchange Commission Arthur Levitt (1988) established in his speech, both financially well off and struggling firms can resort to „cookie jar reserves” and „big bath charges” to reach their goals.

„Cookie jar reserves” implies, that firms earning above the established thresholds would put the excess profit aside in order to use them in quarters when they do not meet those thresholds, thus smoothing out the volatility of the earnings. This will give the impression of

consistent earnings, which is more attractive to investors and would make analysts' reports about the firm more favourable.

These reserves could either come from recognizing revenues or expenses or changing the firm's inventory valuation. The firms could refrain from recognizing revenues in better years by recording allowances and reversing those allowances to bump up the earnings. Recognizing expenses would entail creating larger than needed reserves for future expenses such as provisions for bad debt, then reversing those allowances in years where the firm's performance worsens.

Well-known companies, such as Microsoft or Dell has been using this method as reported by the SEC. Intel Corporation paid Dell for not using Intel's rival's products. Dell used this sum to smooth out their earnings, however they failed to inform their investors neither about this nor about their declining performance after they have used up the money received (U.S. Securities and Exchange Commission, 2010).

„Big bath charges” on the other hand try to make the forthcoming periods look more efficient by recording a significant loss. As opposed to the cookie jar method, which is typically used for several periods, this measure is only used once. Big bath accounting can take the form of „exceptionally large negative discretionally accruals” or „one-time, large write-offs” in a case of restructuring (Hope & Wang, 2018, p. 33).

According to Moore (1973) the big bath method could be detected in several cases of management changes. After new management has been elected, they have an incentive to use big bath in order to make the prior years' income less desirable compared to the following years' income. This will make it seem like the recently elected executives are better at managing the firm.

2.5. Models used to detect earnings management

Managers can have a variety of reasons to use earnings management methods, however detecting the use of manipulation is not always easy. There could be warning signs regarding the issue, but we can never be sure about the intentions behind the unusual courses of action. Even if we cannot be sure if the managers have employed earnings management methods, there have been models developed to detect if there is a possibility of EM being used.

A common way to detect EM is the use of accruals. Accruals can be divided into discretionary and non-discretionary accruals: the managers can control the discretionary part of accruals, which they can use to manipulate the earnings (Dechow, 1994).

The most commonly used model is the Jones model. The Jones model is a linear regression model used for estimating the discretionary accruals using time series data. Jones estimated the discretionary portion of not just one accrual account, but the total accrual of the whole firm to get a closer estimate of the manipulation (Jones, 1991). The model describes the total accruals as the changes in revenues and the property, plant, and equipment (PPE). It includes PPE as a means to control the depreciation and amortisation.

$$\frac{TACC_t}{TA_{t-1}} = \beta_0 \frac{1}{TA_{t-1}} + \beta_1 \frac{\Delta REV_t}{TA_{t-1}} + \beta_2 \frac{PPE_t}{TA_{t-1}} + \varepsilon_t \quad (1)$$

Where TA_{t-1} is the total assets in year t-1, $TACC_t$ is the total accruals in year t, ΔREV_t is the revenue of year t minus the revenues of year t-1 and PPE_t is the gross property, plant and equipment in year t. ε is the error term. After computing the coefficients, the non-discretionary accruals can be calculated, which subtracted from the total accruals will yield the discretionary accruals. However, as Jones (1991) noted, this model assumes that the revenues are not subjected to the management's control, which is not entirely correct. The management can in fact influence revenues as well.

Dechow et al. (1995) modified the Jones model to make up for its shortcoming and tested both models on the same dataset. In the modified Jones model, the revenues are adjusted with the changes in accounts receivables between year t-1 and t, this is based on the assumption, that managers can more easily manipulate credit sales compared to cash sales (Dechow et al., 1995). The research has proven that the modified Jones model is more successful in detecting EM than the original Jones model.

Kothari et al. (2005) has further modified the Jones model and the modified Jones model. Contrary to the other modified model, where the assumption was that there is a period in which the management did not manage accounts receivables, it assumes that all changes in receivables are due to the use of EM. It also incorporates a performance matching variable, the return on assets in year t (ROA_t) to control for the effect of the firm's performance on the discretionary accruals (Kothari et al., 2005).

$$\frac{TACC_t}{TA_{t-1}} = \beta_0 \frac{1}{TA_{t-1}} + \beta_1 \frac{\Delta REV_t - \Delta REC_t}{TA_{t-1}} + \beta_2 \frac{PPE_t}{TA_{t-1}} + \beta_3 \frac{ROA_t}{TA_{t-1}} + \varepsilon_t \quad (2)$$

The above-mentioned models all build on linear regression. However, there are cases, in which there is a non-linear relationship between the dependent and independent variables. Moreover, using linear regression models require assumptions of strong or strict exogeneity, no multicollinearity, homoscedasticity, and no autocorrelation to arrive at a correct assumption . (Wooldridge, 2016). In cases where these conditions are not fulfilled, the use of neural networks can be a solution. Neural networks do not require linear relationships between the dependent and independent variables and are not sensitive for outliers as linear regression is. Despite these advantages, correctly defined linear models can give just as good results, and are easier to use than neural networks (Höglund, 2012).

2.6. Environmental, Social, Governance (ESG)

In order to gain the trust of investors, it is not enough for the firms to focus the financial performance alone (Brinette et al., 2023). Environmental, Social, Governance also known as ESG is a scoring system developed to make distinctions between companies based on the three areas indicated in the name of the system. As environmental and social responsibility has become a widely discussed and highly valued aspect over time, it has also become a topic of discussion in the world of business. The disclosure of these metrics could serve as key information in addition to financial figures to stakeholders when making investment decisions.

The relationship between earnings management and ESG has been a widely debated topic in the last few years, with more and more studies and research being published trying to explore the link between the two. These studies focus on the influence the two practices have on each other: if the usage of one would constrain the usage of the other or if they come hand in hand. The results of these studies are ambiguous. Some report a negative relationship (Adeneye et al., 2023; Grimaldi et al., 2020; Kolsi et al., 2023; Nagy et al., 2022; Pathak & Gupta, 2022) attributing it to the fact that maintaining a good image is a part of the motivations behind becoming more environmentally and socially responsible, which is inconsistent with the use of earnings manipulation. These firms usually want to create a good relationship with the stakeholders while bearing the growth prospects in mind. (Chih et al., 2008) As for a positive relationship, research argues (Borralho et al., 2022; Gargouri et al., 2010), that those who engage in earnings altering methods, need to compensate for the lack of quality reporting. They rely on the fact that companies with higher ESG scores are deemed more trustworthy in the eyes of the public. So, all in all, there are numerous studies focusing on the ESG scores' impact

on the use of earnings management. However, there is one pillar, which is up to my knowledge not yet dealt with in relation to earnings manipulation, which is the ESG controversy score.

2.6.1. ESG controversy

The above-mentioned studies focus on the firms' involvement in practices, that align with the behaviour described in the ESG scoring system. However, firms do not only engage in actions that make investors view them in a positive light. They can be involved in so called controversies, that go against what the ESG approach stands for. To measure these actions, the ESG controversy score was developed.

According to the London Stock Exchange Group (2023) and Thomson Reuters (2017) the controversy score, serving as another pillar of the ESG scoring system, reflects the controversies the companies were involved in and got attention from the media, as the information gathered for the scoring is compiled from the media itself. Examples for these scandals, as provided by the above mentioned scoring companies, involve among others employee strikes, human rights violations, copyright infringement and controversies regarding environmental regulations. According to their scoring guide, ESG controversy scores can take up values between 0 and 100. 100 meaning the company is free of controversy and deducting points for different scandals while also taking firm size into account as bigger firms' scandals usually have more media reach.

2.6.2. ESG controversy and firm value

But what could be the consequence of being involved in an ESG controversy? There have been number of research (Aouadi & Marsat, 2018; Brinette et al., 2023; Mendiratta et al., 2023; Nirino et al., 2021; Passos & Campos-Rasera, 2023; Wu et al., 2023) establishing the fact that being involved in such scandals can have a significant effect on the value of the firms and their financial performance.

Clément et al. (2022) argued that ESG scores are indicators of growth opportunities and they can stimulate investment. At the same time, the negative ESG news will also not go unnoticed, they will alter the investors' view of the companies involved and will ultimately cause damage to the companies' reputation (Bang et al., 2023; Brinette et al., 2023; Passos & Campos-Rasera, 2023). This could also lead to drastic measures from the investors, such as boycotts, according to Kölbel et al. (2017). Bang et al. (2023) explained how the investors will expect a decrease in firm value, while also highlighting that the legal actions and fines imposed

due to a breach of regulations could affect the profitability of the firms adversely. In addition to this, Wu et al. (2023) stated firms involved in controversies are less likely to be able to use their resources in an efficient manner.

According to research done by Passos & Campos-Rasera (2023), researching firms from 61 countries in the time period 2002-2020, ESG controversies have a negative effect on the firm value. They argue that the credibility of these firms declines and investors will view the firms in an adverse light which could in turn affect the firms' value.

In contrast to the above-mentioned studies Aouadi and Marsat (2018) found a significant positive relationship between controversy and firm value using a sample of 4312 firms worldwide from 2002 to 2011, rejecting their hypothesis of a negative relationship. They explained the unexpected result by the fact that even negative news about the firms can increase the entities' value as a result of becoming more visible to investors.

3. Data, hypotheses, and methodology

3.1. Hypothesis development

As highlighted in the literature review, number of studies have been published (Aouadi & Marsat, 2018; Brinette et al., 2024; Mendiratta et al., 2023; Nirino et al., 2021; Passos & Campos-Rasera, 2023; Wu et al., 2023) establishing the connection between being involved in an ESG related controversy and the firm value. These researchers describe the relationship between the two as a consequence of deterioration in reputation and costs associated with violations of obligations and laws. At the same time, the topic of firm value is also relevant in the field of earnings management.

As firms want to show themselves in a positive light to the various stakeholders, they can have the incentive to use earnings management as a means to increase the value of the firms in the short run (Ibrani et al., 2019). In their research Jiraporn et al. (2008) investigated the connection between earnings management and the value of the firms. Using the modified Jones model as a proxy for discretionary accruals and using Tobin's q as a measure for the firm value, they found a positive relationship, meaning the firms will make use of the earnings manipulation tactics when they want to increase their value.

Based on these results, it could be speculated that the field of controversies and earnings management could tie into each other. ESG controversies caught up by the media can put the involved firms in the spotlight, shaping the investors' views about them, which could cause the value of these firms to be affected. In turn, the possible negative or positive changes in value could give an incentive to managers to engage in earnings management practices, hence the first part of the first hypothesis.

H1a: There is an association between ESG controversies and earnings management.

In case the relationship between the ESG controversy score and the variable measuring earnings management does exist, the second part of the first hypothesis tries to explain the direction of it. The majority of the studies about firm value and controversies which this research builds on (Brinette et al. (2023) and Nirino et al. (2021), among others) state that controversies negatively affect the firms' value. Following the results Jiraporn et al. (2008), there could be an incentive for firms to balance out the loss of value by managing their earnings upwards. Meaning, if news about a firm being involved in an ESG related scandal come out

which will potentially lower its value, the managers will likely be motivated to use earnings management techniques to balance this effect out.

H1b: When firms engage in activities leading to ESG related controversies they are likely to manage their earnings upwards.

As Brinette et al. (2023) emphasised a good ESG score could mitigate the loss of trust that could be a result of controversies worsening the companies' valuation. The companies could make use of the visibility the controversies bring to them and grab the opportunity to mitigate the negative impact of the loss of trust and the deterioration of reputation (Aouadi & Marsat, 2018). This would lead to the assumption that a good ESG performance could mitigate the effects of controversy, therefore also reducing the reliance on earnings manipulating methods when the ESG scores are sufficiently high.

H2: In the presence of ESG controversies, the companies' ESG performance moderates the effect ESG controversies exert on the use of earnings management.

Following a figure by Nirino et al. (2021, Figure 1) these hypotheses were illustrated in Figure 1.

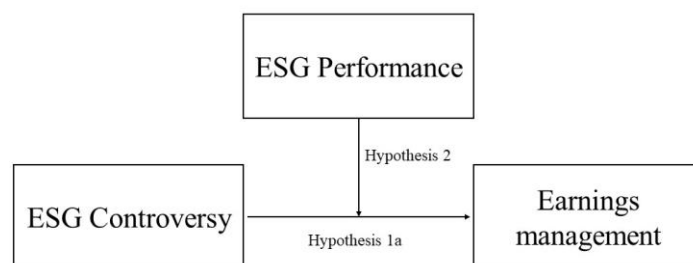


Figure 1: The hypothesis system illustrated following Nirino et al. (2021)

Research by Agnese et al. (2023) showed, that there exists a relationship between ESG controversies and corporate governance of the firms. They found that with a strong corporate governance, the firms can somewhat control the company's involvement in ESG controversies. Weimer and Pape (1999) summarizing the corporate governance systems established that different countries have different corporate governance styles. They state that Germany employs a Germanic system of corporate governance, which is characterized by a two-tier board system and the preference of long-term economic relationships in contrast to Italy, which

belongs to the Latin system of corporate governance with a one-tier board system. The countries making up these sample were chosen based on these studies to see whether being listed in one country or another, the involvement in different corporate governance systems, make a difference.

H3: In the presence of ESG controversies, the firms' country of exchange moderates the impact ESG controversies have on the use of earnings management.

3.2. Sample Selection and Data Collection

This research aims to discover the relationship between earnings management and the firm's involvement in ESG controversies through data from firms from two European countries, Germany, and Italy.

The data necessary was collected from the Refinitiv Eikon database and the World Development Indicators database. The initial sample consisted of 211 non-financial German and Italian companies, these firms had at least 3 years' worth of ESG data available for the years 2018-2022, yielding 1055 firm-year observations. In some cases, where the lagged values of the variables were used such as the return on assets, data from 2017 were also collected. The necessary calculations such as the lagging of the particular variables and the calculation of ratios (such as the return on assets ratio) were done using Microsoft Excel and the conversion of data into panel structure was done by using the IBM SPSS software.

From this initial sample, those observations were filtered out which had missing financial data that would have been needed to calculate the total and the discretionary accruals according to the modified Jones model. This led to having 753 firm-year observations. As the next step, the distributions of the variables were examined graphically and then winsorized to get more reliable estimates (Lassoued & Khanchel, 2021; Yan et al., 2022). Based on the boxplot of the variables MTB and GROWTH, where there have been outliers signalling unusual data observations, 1-1% were removed from the ends of the distributions. The winsorization was done with Microsoft Excel. To run the regression model, further observations were excluded due to missing data in the GROWTH control variable and missing ESG scores. The final sample is an unbalanced panel data with 672 firm-year observations, 153 cross-sectional units: 99 firms listed on the German and 54 firms listed on the Italian stock exchange. How these steps affected the number of firm-year observations is summarised in Table 1.

Table 1: Data cleaning steps and their effect on firm-year observations

Steps	Germany	Italy	Total
Initial sample	6320	2300	8620
After removing financial firms	2905	1725	4630
After removing firms without ESG data for 2018	750	320	1070
After filtering out observations with missing data needed for calculating EM proxy	488	265	753
After removing outliers through winsorization	460	248	708
After removing observations with missing ESG data and data for control variables	441	231	672

3.3. Variables used

Following the collection of financial and non-financial data as described above, these data were used to build the regression model. To give a more transparent view Table 2 summarises the variables used.

3.3.1. Measuring Earnings Management

To estimate the possible value of earnings management used by the firms the modified Jones model is used, which is one of the most commonly used estimation models. As a measure, the discretionary accruals are needed, which are accruals that can be subject to the manipulation of the managers (Dechow, 1994). The total accruals are calculated for the firms with the help of the assets of the firm, the revenue and the property, plant, and equipment (PPE). The discretionary accruals we are interested in are the residuals. The modified Jones model developed by Dechow et al. (1994):

$$\frac{TACC_t}{TA_{t-1}} = \beta_0 \frac{1}{TA_{t-1}} + \beta_1 \frac{\Delta REV_t - \Delta REC_t}{TA_{t-1}} + \beta_2 \frac{PPE_t}{TA_{t-1}} + \varepsilon_t \quad (3)$$

Where TA_{t-1} is year t-1's total assets, $TACC_t$ is the total accruals in year t, ΔREV_t is the revenue of year t minus the revenues of year t-1, ΔREC_t is the receivables in year t minus the receivables in year t-1, PPE_t is the gross property, plant, and equipment in year t. ε is the error term.

The total accruals are computed as follows:

$$TACC_t = \Delta REC_t + \Delta INV_t - \Delta CL_t + (\Delta TD_t - \Delta LTD_t) - \text{Depreciation} \quad (4)$$

Where ΔREC_t are the receivables for year t , ΔINV_t is the inventory for year t , ΔCL_t is the current liabilities for year t , and $(\Delta TD_t - \Delta LTD_t)$ is the difference between year t 's total and long-term debt as a measure for the short-term debt.

Linear regressions were performed to calculate the earnings management proxies, which are the residuals we get when estimating the accruals using the modified Jones model. To get more accurate estimates for the modified Jones model, separate regressions were performed for every country each year. This resulted in 12 linear regression models, the residuals of which are the discretionary accruals. The linear regressions were done using the IBM SPSS software.

3.3.2. ESG Score and Controversy score

The firm's ESG scores are obtained from the Refinitiv Eikon database. The ESG scores found in this database range from 0 to 100, with 100 being the maximum score obtainable.

The ESG controversy score following prior research (Aouadi & Marsat, 2018; Brinette et al., 2023) is a dummy variable. Based on the scoring system the controversy score has a value between 0 to 100, with 100 signalling that the firm was not involved in any controversy. The dummy variable is 1 if the score is below 100 meaning they were involved in a scandal, otherwise it is 0.

3.3.3. Control variables

Due to endogeneity concerns, that is the correlation between the independent variables and the error term in the regression model, control variables should be included (Grimaldi et al., 2020). These variables, including the dependent variable and variable of interest, are summarized in Table 2, including their measurement, category and expected sign.

Based on Dechow et al. (1995), there should be a control variable for the profitability of the firm, as the firm's operational performance could correlate with the measurement error. Thus, the last year's return on assets (ROA), which is the last year's net income divided by last year's total assets, is included following Lassoued and Khanchel (2021).

Board gender diversity, which is the percentage of female board members, were also included in the model, as other research has shown (see e.g. (Adeneye et al., 2023; Githaiga et al., 2022) that firms with more female board members tend to have stronger corporate governance measures and are less likely to adjust their earnings. To measure this variable, the values were multiplied by 100, so it can take on values between 0 to 100, 0 meaning no female board members.

The leverage of the firms was also applied by Adeneye et al. (2023) and Velte (Velte, 2019), as firms with higher leverage can be more likely to be imposed to scrutiny, while high leverage firms also could have the incentive to manage their earnings to avoid volatility as not to breach any financial covenant.

Market-to-book (MTB) ratio was included following Borralho et al. (2022) and Velte (2019) as lower MTB companies are more sensitive to earnings volatility.

A great number of research (Gonçalves et al., 2021; Kothari et al., 2005; Lassoued & Khanchel, 2021; Velte, 2019) also include the growth of the firms as control variable. As prior research show, firms that have the potential to growth may want to raise more capital for investments, which could motivate these firms to use earnings management to make the company appeal to these stakeholders.

Following Lassoued & Khanchel (2021), as a country level variable, to control for the fact that the firms can be operating in two different countries, the GDP growth (GDPGROWTH) was used as a control variable.

Table 2: Variables used

Variable name	Abbreviation	Measurement	Category	Expected sign
Discretionary accruals	DACC	Estimated with modified Jones model	Dependent variable	
controversy score	CON	Indicator of involvement in ESG controversy. Takes 1 if involved in a controversy that year, otherwise 0.	Variable of interest	+
ESG score	ESG	Aggregate ESG score	Variable of interest	-
Board gender diversity	BOARDGENDIV	Percentage of female board members	Control variable	-

Leverage	Leverage	Long term debt divided by total assets	Control variable	?
Last year ROA	ROA	Last year's net income divided by last year's total assets	Control variable	?
Market-to-book ratio	MTB	Market capitalization divided by total equity	Control variable	-
Firm's growth	GROWTH	Percentage change in sales	Control variable	+
GDP-growth	GDPGROWTH	GDP-growth of the countries	Control variable	+

Explanation: The expected sign column represents the expectations about the effect of the specific variables have on earnings management. The “+” sign represents a positive, the “-” sign a negative, while a “?” represents an ambiguous relationship following prior research.

3.4. Methodology

To assess whether the hypotheses developed reflect reality equation 5 was used,

$$\begin{aligned}
DACC_{it} = & \beta_0 + \beta_1 CON_{it} + \beta_2 ESG_{it} + \beta_3 ESGXCON_{it} + \beta_4 GXCON_{it} \\
& \beta_5 BOARDGENDIV_{it} + \beta_6 Leverage_{it} + \beta_7 ROA_{it} + \beta_8 MTB_{it} + \beta_9 GROWTH_{it} \\
& + \beta_{10} GDPGROWTH_{it} + \gamma_1 dt_2 + \gamma_2 dt_3 \\
& + \gamma_3 dt_4 + \gamma_4 dt_5 + \varepsilon_{it}
\end{aligned} \tag{5}$$

in which i indicates the firms and t indicated the years and ε denotes the error term. The ESGXCON variable denotes an interaction term between the CON dummy variable and the ESG variable, which serves as a means to assess the truth of the second hypothesis.

The GCON variable denotes an interaction between the CON variable and a dummy variable (G) signalling whether the firm is in Germany or not. As the model is a fixed effect model, variables constant over time cannot be added to the model. (Wooldridge, 2016). This way, country dummies cannot be added to the model, however the countries' effect is already

accounted for by the model (Wooldridge, 2016). The marginal effect it has on the earnings management proxy cannot be estimated. From this interaction term alone, we can see the direction of the moderating effect of being listed on the German stock exchange when there is a controversy. This interaction term will also be accounted for when calculating the marginal effect controversies can have on earnings management, to see whether it matters that the firms are listed on the German stock exchange or not in this relationship.

Year dummies were also included in the model following other studies (Borralho et al., 2022; Gonçalves et al., 2021; Kolsi et al., 2023; Pathak & Gupta, 2022). Just as control variables were used to tackle the endogeneity issues, year dummies were also included as the discretionary accrual values can vary over time (Gonçalves et al., 2021). The dummies represent the period of 2019-2020, 2019 denoted by *dt_2* and 2022 denoted by *dt_5*, 2018 being the reference year.

As mentioned before, the data used for this research is panel data. Panel data are a combination of cross-sectional and time series data, meaning the same entities are observed over a time period (Wooldridge, 2016). This research uses an unbalanced dataset, as some of the entities do not have every financial or non-financial data needed for some of the years in the time period chosen, however the statistical applications usually account for this and estimate the regression accordingly (Brooks, 2014).

To estimate models on panel data two models can be used, the fixed and the random effects model. The difference in which lies in the unobserved factors as in contrary to the fixed effect model, the random effect model assumes that the effects which we did not account for are not correlated with the explanatory variables (Brooks, 2014; Wooldridge, 2016). The Hausmann test was used to assess which model is fitting for the data. As the p-value of the test turned out to be relatively small (around 0.0003) the null hypothesis of the test was rejected, hence the random effect model would give biased and inconsistent estimates. So, the regression was estimated using a fixed effects model.

After estimating the regression model, the concerns about autocorrelation, heteroskedasticity, and multicollinearity were assessed as they are important aspects to consider to obtain accurate predictions (Passos & Campos-Rasera, 2023; Wu et al., 2023).

As provided by the statistical software used (gretl), the autocorrelation was tested with the Wooldridge test for autocorrelation. The null hypothesis states that there is no first-order

autocorrelation. As the p-value is well above the threshold of 5%, there is no first-order correlation in the model.

To test for heteroskedasticity, the Wald test for heteroskedasticity was used. The null hypothesis states that the model is homoscedastic, meaning that the variance of the error term is constant, however, for this model the p-value is about 0, meaning that the null hypothesis is rejected, and the variance of the error term is not constant (Wooldridge, 2016). To assess the heteroskedasticity issue, robust standard errors were used in the model as used in prior research as well (Aouadi & Marsat, 2018; Passos & Campos-Rasera, 2023; Wu et al., 2023).

When testing for multicollinearity, the issue arises that VIF-factors can only be estimated for OLS models. So, for this reason, an LSDV model with the same independent variables was also used, which is also a way to estimate the fixed effects model, it gives the same coefficients. For the LSDV model, the VIF-factors can be estimated, and as the model includes the same independent variables as the fixed effect model, it could give us an idea about the multicollinearity between the variables. When calculating these values, there were 3 independent variables where the VIF factors were relatively high. These were the ESGXCON interaction term and its separate components, the ESG and the CON variable. However, it has to be noted, that the VIF values for these variables are bound to exceed the threshold of 10 as the variables and their product are all included in the model at the same time (Andersson et al., 2014). This will cause the standard errors to be inflated, but it will not cause the estimations to become biased (Brambor et al., 2006). The values of the other variables did not exceed this threshold.

4. Results and Discussion

4.1. Descriptive statistics

Table 3 summarizes the statistics of the financial and non-financial data used in the model, both the dependent and independent variables. As we can see in the table, the mean value of the DACC earnings management proxy is positive, meaning that on average, the firms engage in income increasing earnings management.

The ESG scores range from 9.5979 to 94.2379, with a mean value of 58.6213. As the minimum and maximum value is -0.2285 and 94.2279 respectively, it has a relatively wide range with a standard deviation of 18.4498. The mean of the board gender diversity variable is 30.3085 meaning that out of 100 board members about 30 are female on average. Based on the descriptive statistics, there are firms, in which there are no female board members, and in the observation with the highest percentage of female board members, the percentage of the female board members was 60%.

Regarding the controversy dummy, out of the 672 firm-year observations there 119 instances of controversy, which is around 17.7% of the firm-year observations.

As seen in Table 4 which is about the GDP, the country level control variable, in 2020 the GDP growth rates were relatively low compared to the preceding years as a result of the COVID-19 pandemic in both countries.

Table 3: Descriptive statistics

	Mean	Standard Deviation	Minimum	Maximum
DACC	0,000312	0,057207	-0,228525	0,216720
ESG	58,621376	18,449842	9,597928	94,227958
BOARDGENDIV	30,308514	13,548065	0	60
Leverage	0,213963	0,139312	0	0,592746
ROA	0,040825	0,055125	-0,249847	0,340077
MTB	2,848341	3,179030	0,029988	26,533194
GROWTH	8,574266	17,942306	-38,751499	91,597834
GDPGROWTH	0,828846	3,759895	-8,974192	8,313760

Table 4: GDP growth

	2018	2019	2020	2021	2022
Germany	0,981233	1,075472	-3,82677	3,16382	1,806209
Italy	0,925811	0,483198	-8,97419	8,31376	3,724549

Correlations										
		Leverage	ROA	MTB	GROWTH	ESG	CONTROVER SY1	BOARDGEND IV	GDPGROWTH H	DACC
Leverage	Pearson Correlation	1	-,110**	,012	-,084*	,114**	,040	,034	-,042	-,114**
	Sig. (2-tailed)		,004	,753	,030	,003	,303	,378	,278	,003
	N	672	672	672	672	672	672	672	672	672
ROA	Pearson Correlation	-,110**	1	,290**	-,094*	-,031	-,090*	,013	-,069	,097*
	Sig. (2-tailed)	,004		<,001	,015	,429	,019	,730	,075	,012
	N	672	672	672	672	672	672	672	672	672
MTB	Pearson Correlation	,012	,290**	1	,088*	-,058	-,089*	,036	,026	-,084*
	Sig. (2-tailed)	,753	<,001		,023	,133	,021	,350	,509	,029
	N	672	672	672	672	672	672	672	672	672
GROWTH	Pearson Correlation	-,084*	-,094*	,088*	1	,023	,044	-,011	,420**	,214**
	Sig. (2-tailed)	,030	,015	,023		,544	,257	,780	<,001	<,001
	N	672	672	672	672	672	672	672	672	672
ESG	Pearson Correlation	,114**	-,031	-,058	,023	1	,389**	,416**	,042	,057
	Sig. (2-tailed)	,003	,429	,133	,544		<,001	<,001	,280	,143
	N	672	672	672	672	672	672	672	672	672
CONTROVERSY1	Pearson Correlation	,040	-,090*	-,089*	,044	,389**	1	,106**	,037	-,006
	Sig. (2-tailed)	,303	,019	,021	,257	<,001		,006	,336	,869
	N	672	672	672	672	672	672	672	672	672
BOARDGENDIV	Pearson Correlation	,034	,013	,036	-,011	,416**	,106**	1	,064	-,016
	Sig. (2-tailed)	,378	,730	,350	,780	<,001	,006		,097	,688
	N	672	672	672	672	672	672	672	672	672
GDPGROWTH	Pearson Correlation	-,042	-,069	,026	,420**	,042	,037	,064	1	,087*
	Sig. (2-tailed)	,278	,075	,509	<,001	,280	,336	,097		,024
	N	672	672	672	672	672	672	672	672	672
DACC	Pearson Correlation	-,114**	,097*	-,084*	,214**	,057	-,006	-,016	,087*	1
	Sig. (2-tailed)	,003	,012	,029	<,001	,143	,869	,688	,024	
	N	672	672	672	672	672	672	672	672	672

** . Correlation is significant at the 0.01 level (2-tailed).

* . Correlation is significant at the 0.05 level (2-tailed).

Figure 2: Pearson correlation matrix

Figure 2 represents the Pearson correlation matrix showing us the correlation between the variables used in the model. The figure shows a positive correlation between the earnings management proxy and ROA (0.097), GROWTH (0.214), ESG (0.057) and GDPGROWTH (0.087). According to the figure, there is a negative relationship between the proxy and leverage (-0.114), MTB (-0.084), CON (0.006) and BOARDGENDIV (0.016). Only based on this figure, there is no connection between the DACC and the controversy dummy, however, there could be other factors affecting this relationship, so judging only from this value alone would not be correct (Aouadi & Marsat, 2018). There is a strong correlation between ESG and the controversy dummy and between ESG and BOARDGENIV, which are not surprising considering ESG controversies are concerning the ESG fields and board gender diversity is part of the governance pillar of the ESG score.

All in all, the values presented here do not exceed the threshold of 0.8 and are relatively small, meaning if we use these variables together in the regression model, multicollinearity will likely not be a concern (Brooks, 2014; Pathak & Gupta, 2022).

4.2. Regression results

Table 5 represents the result of the fixed effect regression model, using 672 firm-year observations of 153 firms, including the variables of interest, control variables and year dummies as described above.

Table 5: Model summary

	coefficient	std, error	t-ratio	p-value	
intercept	0,026172	0,024225	1,080335	0,281704	
CON	-0,092062	0,041874	-2,198578	0,029420	**
ESG	0,000016	0,000376	0,042932	0,965812	
ESGXCON	0,001206	0,000571	2,111472	0,036368	**
GXCON	-0,011260	0,014334	-0,785553	0,433352	
BOARDGENDIV	-0,000654	0,000321	-2,039126	0,043170	**
Leverage	0,001765	0,037393	0,047190	0,962424	
ROA	-0,038565	0,074174	-0,519934	0,603866	
MTB	-0,001920	0,001804	-1,063900	0,289061	
GROWTH	0,000764	0,000176	4,344749	0,000025	***
GDPGROWTH	-0,003824	0,001278	-2,991468	0,003240	***
dt_2	-0,004233	0,005618	-0,753412	0,452368	
dt_3	-0,030387	0,011180	-2,717931	0,007332	***
dt_4	0,022543	0,009955	2,264616	0,024950	**
dt_5	0,000366	0,007590	0,048196	0,961623	
R-squared	0.509333				

Note: **: $p < 0.5$; ***: $p < 0.01$

When looking at the control variables, the variables GROWTH and GDPGROWTH are significant on a 1% level, while the BOARDGENDIV variables is significant on a 5% level. As expected, the estimate for the GROWTH variable has a positive effect in the dependent variable, while the gender diversity has a negative effect, meaning the more female board members there are, the less the firms manage their earnings.

Another statistically significant variable on a 1% significance level is the year dummy dt_3 for the year 2020. According to the model, there is a significant negative relationship between DACC and dt_3, in comparison to 2018, which is the reference year. This could mean, that during the Covid-19 pandemic, the firms managed their earnings in a negative way compared to before, which could have been a big bath technique. As the stakeholders already expected the firms to incur losses, and especially if the losses are to an extent where upwards earnings management is not enough to compensate, the firms could have decided to use this opportunity to manage their earnings downwards thus making their next year's performance

seem better (Kjærland et al., 2021). In 2021, there is a significant positive effect compared to 2018, meaning after the year most heavily affected by the pandemic the firms wanted to boost their earnings to appeal to the stakeholders, showing they bounced back from the losses of the pandemic.

In the case of CON variable, the interaction terms are needed to assess the significance and effect. Brambor et al. (2006) and Kingsley et al. (2017) established, that in order to know the marginal effect of the variables which are components of interaction terms, we need to calculate further. They also established, that in order to make conclusions about the interaction terms' moderating effect, the standard errors and confidence intervals need to be calculated. Although according to the model the ESGXCON interaction term is statistically significant while GXCON is not, further examination is needed to see, whether the effect CON has on the dependent variable is significant at all the values of the moderating variables.

To assess H2 and H3, the studies of Brambor et al. (2006) and Kingsley et al. (2017) were followed. Although the ESGXCON interaction term is statistically significant, it needs to be examined, whether the marginal effects of controversy on DACC is statistically significant for all the values that the ESG moderating variable can take on (Kingsley et al., 2017). Following the above-mentioned studies, the marginal effect, the standard error, and a 95% confidence interval were calculated to assess the significance. To get the marginal effect, using the coefficients from the model, DACC was differentiated with respect to CON as seen in equation 6.

$$\frac{\partial DACC}{\partial CON} = -0.092062 + 0.001206 \times ESG - 0.011260 \times G \quad (6)$$

For transparency, the results were graphically illustrated. Figures 3 and 4 depict the results, where Figure 3 illustrates the case where the Germany dummy is 0, so when the firms are listed on the Italian, Figure 4 represents the firms which are listed on the German stock exchange. On the x-axis the possible ESG values are listed, the y-axis is the marginal effect. The ESG values range from 9 to 94 in respect to the range of the data (see: Table 3).

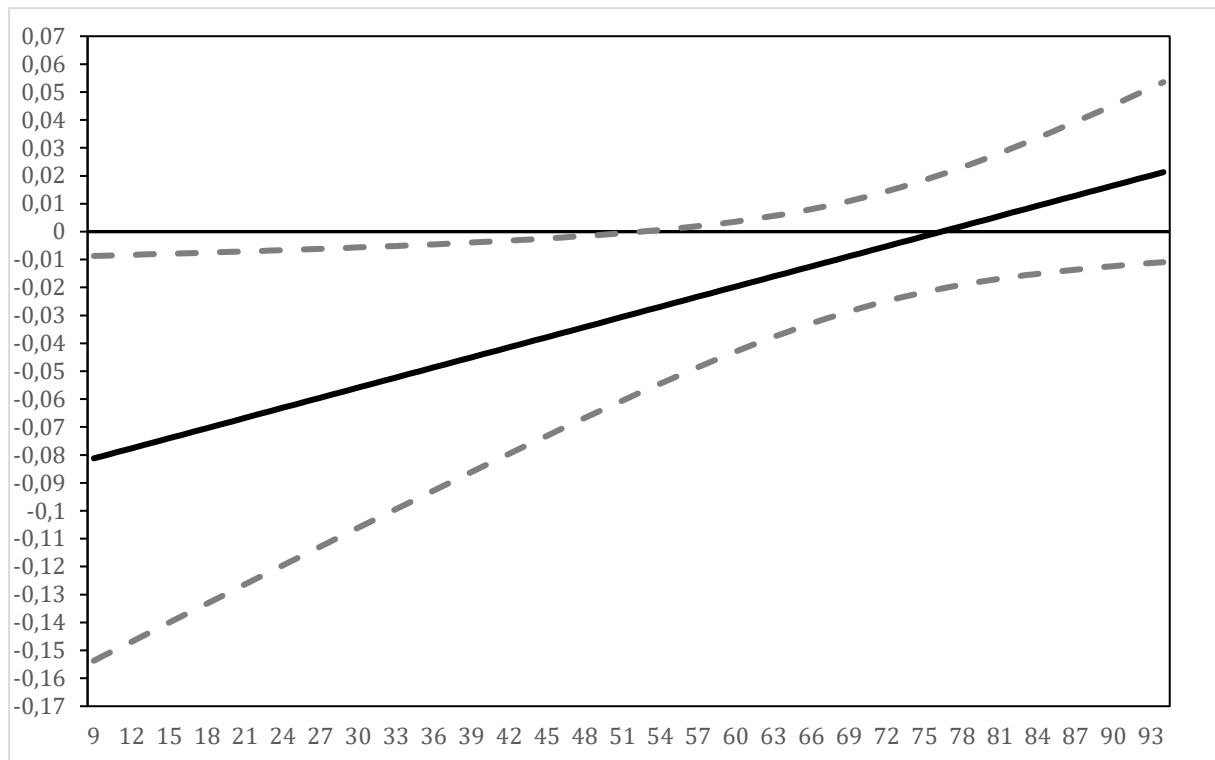


Figure 3: Marginal effect of CON on DACC where GCON=0

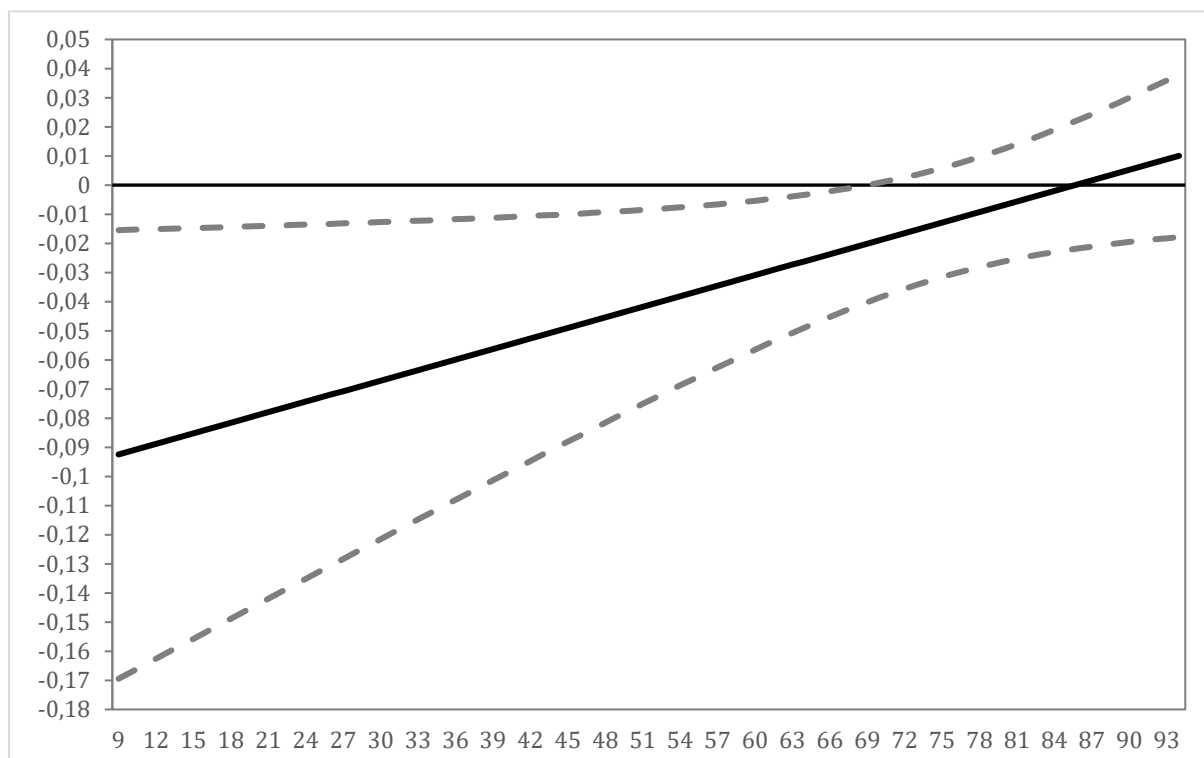


Figure 4: Marginal effect of CON on DACC where GCON=1

The values seen on Figure 3 and Figure 4 including the point estimates, standard errors and the respective confidence intervals can be found in the Appendix section. Appendix 1 containing the G=0 case, while Appendix 2 contains the G=1 case.

When looking at the figures, it is evident that some of the confidence intervals include 0. Meaning that the effect CON has on DACC does not significantly differ from 0 after a specific ESG score in both cases (Kingsley et al., 2017). When the GXCON variable is 0, the effect is significant for ESG scores ranging from 9 to 52, while when the GXCON variable is 1, the effect is significant for the scores between 9 and 69. This means that the marginal effect CON has on DACC is only statistically significant on a specific range of ESG scores and this range depends on the country of exchange. The ESG scores where the marginal effect is significant is the lower end of the possible values, here the effect on DACC is negative. At these ESG levels, there is a positive moderating effect of ESG. The higher the ESG score is, the higher the moderating effect is. This could signal, that while these companies manage their earnings downwards in case of a controversy, the higher their ESG score is, the less downward earnings management they will use. This could align with the fact that higher ESG firms are more dedicated to keep the trust of shareholders, thus using less earnings manipulation (Pathak & Gupta, 2022). Moreover, a good ESG score could mitigate a loss of trust (Brinette et al., 2023), thus making a company think that their ESG score could compensate for the controversy in a way they won't need to resort to earnings management as much to appeal to stakeholders. However, at the higher ESG levels, because of this moderating effect the marginal effect of CON is no longer significant. This way H2 is accepted, the ESG score does moderate the effect CON has on DACC.

The GXCON interaction term in itself is not significant based on our model. However, as Kingsley et al. (2017) noted, even those interaction terms can have moderating effects on the relationship of the two observed variables, which in the model were not found to be significant. Based on the figures, the marginal effect of CON for German firms shows that they manage their earnings in a negative way to a bigger extent compared to the other firms. The range of ESG scores on which the effect is significant is wider, although it is still not significant for all values. A possible explanation would be, that as Germany has a stricter corporate governance style compared to Italy (Weimer & Pape, 1999), it is likely that the investors would judge an ESG scandal in a stricter way, because a controversy happened even when there is a strict control environment. The firms involved in these scandals would need to redeem themselves the next year and show a more outstanding performance compared to the year affected, even if

they have high ESG scores. It has to be noted however that with the country effect there are many other possible explanations for this phenomenon, such as the country government controls or cultural aspects for example, not just the corporate governance style. However, the country effect does moderate the relationship because of one reason or another, which aligns with the third hypothesis.

Because the model includes interaction terms H1a and H1b can only be assessed while taking the moderating effects into consideration. According to the point estimations, which can be seen on the diagrams and in the Appendix section as well, the effect CON has on DACC is statistically significant and negative for a specific range of ESG values, this range being dependent on the country. However, for sufficiently large ESG scores this effect becomes insignificant because of the moderating effect. This could also be attributable to the fact that high ESG firms have a good and trustworthy image to their stakeholders (Pathak & Gupta, 2022), so they would not evaluate an ESG controversy as something which would jeopardise their reputation to an extent where they have to resort to earnings manipulation. This way hypothesis 1a is partially accepted, on the grounds that the effect of CON on DACC is significant, however not in every case. H1b assumed that the firms use income increasing earnings management in case of a controversy, however for the ESG values where the effect of CON was found to be significant the relationship was negative, thus rejecting the hypothesis. This could also be a big bath technique as seen for the case of *dt_3*. If a company is involved in a controversy, thus it is already viewed in a negative light, they manage their earnings downwards, they will use income decreasing earnings management, because they are already in a bad position in the eyes of the stakeholders and are likely to incur fines related to the controversies resulting in lower earnings for the period (Bang et al., 2023; Hope & Wang, 2018; Passos & Campos-Rasera, 2023). Managing their earnings downward this way can make their next year's performance seem better compared to the year affected (Hope & Wang, 2018).

5. Conclusion

The relationship between earnings management and ESG scores has been a topic of numerous studies to this day. However, up to my knowledge, there is a lack of research done concerning how an ESG controversy can influence the firms to manipulate their earnings. To close this research gap, the aim of this study was to explore whether an ESG controversy will motivate the managers to alter the firm's earnings and in what direction, if this relationship is moderated by the ESG score of the firms, and if being listed on different stock exchanges makes a difference.

The research question was answered with the help of an unbalanced panel data from 2018-2022 including 153 firms listed on the German and Italian stock exchanges. The regression was conducted using a fixed effects model using gretl. The model included interaction terms to examine the moderating effect of ESG scores and the effect of being listed on the German stock exchange. When examining the moderating effect, it was found that the ESG score moderated the relationship between the earnings management proxy and the controversy dummy. This way the second hypothesis about the ESG scores' moderating effect was accepted. When looking at the marginal effect however, there were only a range of ESG scores on which the marginal effect of CON was found to be statistically significant. These values being the lower end of the possible ESG scores. The moderating effect of ESG was positive, meaning that the higher the ESG score, the less downwards earnings management is used. When further examining the marginal effect of controversy, the results have shown that the ESG score range on which the marginal effect is significant is wider in case of the German firms, proving hypothesis 3 which stated that being listed on different stock exchanges could moderate the relationship between DACC and CON.

After taking the marginal effects into account, the model showed that H1a is only partially accepted as CON's effect on DACC was only found to be significant of a specific range of ESG values. Hypothesis 1b stated that in case of a controversy, the firms manage their earnings upwards, however it was rejected. A possible reason for this could be the use of big bath techniques in case of a controversy, using the already affected period to manage the earnings downwards to cause the next period's earnings to seem more attractive to the stakeholders (Hope & Wang, 2018).

This new knowledge on how a scandal could influence the firms to manipulate their financial data could be useful for auditors as well as stakeholders. Knowing the possibility of

firms managing their earnings is beneficial for the stakeholders, such as investors or banks, as they use the earnings to assess the performance for investment decisions and for covenants (Dechow, 1994). The disclosure of financial and non-financial data (such as ESG practices and scores) are closely linked and can both be subject to managerial discretion, so in case of investment decisions looking at both is crucial (Chouaibi & Zouari, 2022; Velte, 2019). Becker et al. (1998) argued following other researches done on the role of auditors in case of earnings management that auditors play a role in detecting earnings management and the auditors' scrutiny can constrain the use of earnings manipulating techniques. This way, knowing that the ESG controversies as non-financial information could give rise to managers using earnings adjusting techniques, when looking at the financial reports of the firms it would be advisable for stakeholders and auditors to examine those companies with increased scrutiny which have been involved in some kind of ESG related scandals.

The data was collected from the Refinitiv Eikon database, including only firms that have been listed on the stock exchange in Germany and Italy, while also having to exclude firms which did not have enough financial and non-financial data available for the time period selected. This being a limitation of only examining companies which are listed on the stock exchanges, excluding those which are not. Another limitation of the study is the sample size. For the period of 2018-2022 the number of firms with enough financial and non-financial data from the two observed exchanges are 153. For further research expanding the scope by examining more countries would be beneficial. Moreover, it has to be noted that different ESG scoring companies use different metrics, so there is no single framework for scoring.

Due to the small amount of country specific variables, a fixed effect regression was used. This way for the country effect, the one of the main terms (G) of the interaction term GXCON could not be included in the model, which could be up to debate. While there is criticism on this matter (Brambor et al., 2006), the fixed effect model itself accounts for the country effects and other effects which are constant in time so excluding the country dummy itself should not cause a problem. The interpretation of the country effect however is also debatable. While it could be a possible explanation that the strength of the governance of different countries could moderate the relationship between DACC and CON, there could be other explanations such as the governance controls and the cultural differences that could cause this effect.

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Appendix/Appendices

Appendix 1. Point estimates and confidence intervals for G=0

ESG score	Point estimate	Standard error	CI_ lower	CI_upper
9	-0.081209	0.036902	-0.153709	-0.008708
10	-0.080003	0.036353	-0.151424	-0.008582
11	-0.078797	0.035804	-0.149140	-0.008454
12	-0.077591	0.035256	-0.146857	-0.008325
13	-0.076385	0.034708	-0.144576	-0.008194
14	-0.075179	0.034162	-0.142296	-0.008062
15	-0.073973	0.033616	-0.140018	-0.007929
16	-0.072767	0.033071	-0.137741	-0.007793
17	-0.071561	0.032527	-0.135466	-0.007656
18	-0.070355	0.031984	-0.133194	-0.007517
19	-0.069149	0.031442	-0.130923	-0.007376
20	-0.067943	0.030901	-0.128654	-0.007233
21	-0.066737	0.030361	-0.126387	-0.007088
22	-0.065532	0.029822	-0.124123	-0.006940
23	-0.064326	0.029285	-0.121861	-0.006790
24	-0.063120	0.028749	-0.119601	-0.006638
25	-0.061914	0.028214	-0.117345	-0.006483
26	-0.060708	0.027680	-0.115091	-0.006325
27	-0.059502	0.027149	-0.112840	-0.006164
28	-0.058296	0.026618	-0.110592	-0.006000
29	-0.057090	0.026090	-0.108348	-0.005832
30	-0.055884	0.025563	-0.106107	-0.005661
31	-0.054678	0.025038	-0.103870	-0.005486
32	-0.053472	0.024516	-0.101637	-0.005307
33	-0.052266	0.023995	-0.099409	-0.005123
34	-0.051060	0.023477	-0.097185	-0.004935
35	-0.049854	0.022962	-0.094966	-0.004742
36	-0.048648	0.022449	-0.092753	-0.004544
37	-0.047442	0.021939	-0.090545	-0.004340
38	-0.046236	0.021432	-0.088343	-0.004130
39	-0.045030	0.020928	-0.086148	-0.003913
40	-0.043824	0.020428	-0.083959	-0.003690
41	-0.042618	0.019932	-0.081778	-0.003459
42	-0.041413	0.019440	-0.079606	-0.003219
43	-0.040207	0.018952	-0.077442	-0.002972
44	-0.039001	0.018469	-0.075287	-0.002714
45	-0.037795	0.017992	-0.073142	-0.002447
46	-0.036589	0.017520	-0.071009	-0.002169
47	-0.035383	0.017053	-0.068887	-0.001878
48	-0.034177	0.016594	-0.066778	-0.001575

49	-0.032971	0.016142	-0.064684	-0.001258
50	-0.031765	0.015697	-0.062604	-0.000926
51	-0.030559	0.015261	-0.060541	-0.000577
52	-0.029353	0.014834	-0.058496	-0.000210
53	-0.028147	0.014417	-0.056471	0.000177
54	-0.026941	0.014011	-0.054467	0.000585
55	-0.025735	0.013616	-0.052486	0.001016
56	-0.024529	0.013235	-0.050531	0.001473
57	-0.023323	0.012867	-0.048603	0.001957
58	-0.022117	0.012515	-0.046706	0.002471
59	-0.020911	0.012180	-0.044841	0.003018
60	-0.019705	0.011862	-0.043011	0.003600
61	-0.018499	0.011564	-0.041220	0.004221
62	-0.017294	0.011288	-0.039470	0.004883
63	-0.016088	0.011033	-0.037764	0.005589
64	-0.014882	0.010803	-0.036106	0.006343
65	-0.013676	0.010599	-0.034499	0.007148
66	-0.012470	0.010422	-0.032946	0.008007
67	-0.011264	0.010274	-0.031449	0.008921
68	-0.010058	0.010156	-0.030011	0.009895
69	-0.008852	0.010069	-0.028634	0.010930
70	-0.007646	0.010014	-0.027320	0.012028
71	-0.006440	0.009991	-0.026069	0.013189
72	-0.005234	0.010001	-0.024882	0.014414
73	-0.004028	0.010043	-0.023760	0.015704
74	-0.002822	0.010118	-0.022700	0.017056
75	-0.001616	0.010224	-0.021702	0.018470
76	-0.000410	0.010360	-0.020764	0.019944
77	0.000796	0.010526	-0.019883	0.021475
78	0.002002	0.010719	-0.019058	0.023061
79	0.003208	0.010939	-0.018284	0.024699
80	0.004414	0.011184	-0.017559	0.026386
81	0.005620	0.011452	-0.016880	0.028119
82	0.006825	0.011742	-0.016243	0.029894
83	0.008031	0.012052	-0.015646	0.031709
84	0.009237	0.012380	-0.015085	0.033560
85	0.010443	0.012726	-0.014558	0.035445
86	0.011649	0.013087	-0.014063	0.037361
87	0.012855	0.013463	-0.013595	0.039306
88	0.014061	0.013852	-0.013154	0.041277
89	0.015267	0.014254	-0.012737	0.043272
90	0.016473	0.014667	-0.012343	0.045289
91	0.017679	0.015090	-0.011968	0.047326
92	0.018885	0.015523	-0.011612	0.049382
93	0.020091	0.015964	-0.011273	0.051455
94	0.021297	0.016413	-0.010950	0.053544

Appendix 2. Point estimates and confidence intervals for G=1

ESG score	Point estimate	Standard error	CI_lower	CI_upper
9	-0.092469	0.039189	-0.169462	-0.015475
10	-0.091263	0.038635	-0.167168	-0.015357
11	-0.090057	0.038082	-0.164875	-0.015238
12	-0.088851	0.037529	-0.162583	-0.015118
13	-0.087645	0.036977	-0.160292	-0.014997
14	-0.086439	0.036425	-0.158003	-0.014875
15	-0.085233	0.035874	-0.155714	-0.014752
16	-0.084027	0.035324	-0.153427	-0.014627
17	-0.082821	0.034774	-0.151141	-0.014501
18	-0.081615	0.034225	-0.148857	-0.014373
19	-0.080409	0.033677	-0.146574	-0.014245
20	-0.079203	0.033130	-0.144292	-0.014114
21	-0.077997	0.032583	-0.142012	-0.013982
22	-0.076791	0.032037	-0.139734	-0.013849
23	-0.075585	0.031492	-0.137458	-0.013713
24	-0.074379	0.030948	-0.135183	-0.013576
25	-0.073173	0.030406	-0.132910	-0.013437
26	-0.071968	0.029864	-0.130640	-0.013295
27	-0.070762	0.029323	-0.128371	-0.013152
28	-0.069556	0.028783	-0.126105	-0.013006
29	-0.068350	0.028245	-0.123841	-0.012858
30	-0.067144	0.027708	-0.121580	-0.012707
31	-0.065938	0.027172	-0.119322	-0.012553
32	-0.064732	0.026638	-0.117067	-0.012397
33	-0.063526	0.026105	-0.114814	-0.012238
34	-0.062320	0.025574	-0.112565	-0.012075
35	-0.061114	0.025045	-0.110319	-0.011909
36	-0.059908	0.024518	-0.108077	-0.011739
37	-0.058702	0.023993	-0.105839	-0.011565
38	-0.057496	0.023469	-0.103606	-0.011387
39	-0.056290	0.022948	-0.101376	-0.011204
40	-0.055084	0.022430	-0.099152	-0.011017
41	-0.053878	0.021914	-0.096932	-0.010824
42	-0.052672	0.021401	-0.094719	-0.010626
43	-0.051466	0.020891	-0.092511	-0.010422
44	-0.050260	0.020385	-0.090309	-0.010212
45	-0.049054	0.019881	-0.088115	-0.009994
46	-0.047849	0.019382	-0.085927	-0.009770
47	-0.046643	0.018886	-0.083748	-0.009537
48	-0.045437	0.018395	-0.081577	-0.009296
49	-0.044231	0.017909	-0.079416	-0.009045
50	-0.043025	0.017428	-0.077265	-0.008785
51	-0.041819	0.016952	-0.075125	-0.008513

52	-0.040613	0.016483	-0.072996	-0.008229
53	-0.039407	0.016020	-0.070881	-0.007933
54	-0.038201	0.015564	-0.068780	-0.007622
55	-0.036995	0.015117	-0.066694	-0.007296
56	-0.035789	0.014677	-0.064625	-0.006953
57	-0.034583	0.014247	-0.062574	-0.006592
58	-0.033377	0.013828	-0.060544	-0.006210
59	-0.032171	0.013419	-0.058535	-0.005807
60	-0.030965	0.013023	-0.056551	-0.005379
61	-0.029759	0.012640	-0.054593	-0.004926
62	-0.028553	0.012272	-0.052664	-0.004443
63	-0.027347	0.011920	-0.050766	-0.003929
64	-0.026141	0.011585	-0.048902	-0.003381
65	-0.024935	0.011269	-0.047076	-0.002795
66	-0.023730	0.010974	-0.045290	-0.002169
67	-0.022524	0.010701	-0.043548	-0.001499
68	-0.021318	0.010453	-0.041854	-0.000781
69	-0.020112	0.010230	-0.040211	-0.000013
70	-0.018906	0.010035	-0.038621	0.000810
71	-0.017700	0.009869	-0.037090	0.001690
72	-0.016494	0.009734	-0.035618	0.002631
73	-0.015288	0.009631	-0.034210	0.003634
74	-0.014082	0.009561	-0.032866	0.004702
75	-0.012876	0.009525	-0.031589	0.005837
76	-0.011670	0.009523	-0.030379	0.007039
77	-0.010464	0.009555	-0.029236	0.008308
78	-0.009258	0.009621	-0.028160	0.009644
79	-0.008052	0.009720	-0.027149	0.011045
80	-0.006846	0.009851	-0.026201	0.012509
81	-0.005640	0.010014	-0.025314	0.014033
82	-0.004434	0.010205	-0.024484	0.015616
83	-0.003228	0.010425	-0.023710	0.017253
84	-0.002022	0.010670	-0.022986	0.018941
85	-0.000816	0.010940	-0.022310	0.020677
86	0.000389	0.011233	-0.021679	0.022458
87	0.001595	0.011546	-0.021089	0.024280
88	0.002801	0.011879	-0.020536	0.026139
89	0.004007	0.012229	-0.020018	0.028033
90	0.005213	0.012595	-0.019532	0.029959
91	0.006419	0.012976	-0.019075	0.031913
92	0.007625	0.013371	-0.018644	0.033895
93	0.008831	0.013778	-0.018238	0.035900
94	0.010037	0.014196	-0.017854	0.037928