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IFRS 15 impact on accrual-based earnings management

- A comparison among European countries.

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Abstract

Earnings quality refers to the usefulness of financial information, where high quality is beneficial for investors and other stakeholders. Earnings quality decreases when managers engage in earnings management, i.e., manipulating the firm's financial performance. Earnings management has been studied by academics and consists of accruals-based earnings management and real earnings management, whereas this study is based on accruals-based earnings management. In 2018 IASB introduced their new framework IFRS 15, and we investigated whether the introduction has reduced accrual-based earnings management in 30 European countries. Using the Dechow and Dichev (2002) model, mapping cash flow into working capital, we use a sample consisting of 3,304 firms, and 16,495 observations stretching from 2015 until 2020. We further investigate the implementation of IFRS 15 by controlling for industry and country effects. We find that accrual-based earnings management has increased since the introduction of IFRS 15 on the pooled sample, signalling a decrease in earnings quality. However, we find no significant result that the introduction of IFRS 15 has affected any specific industries or countries more. This could indicate that IFRS 15 has not been a driving force in mitigating accrual-based earnings management.

Keywords: *Accrual-based earnings management, earnings quality, IFRS 15, regulation, revenue.*

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1.Introduction

Managers who control the financial reporting process within firms can alter the presented information, often benefiting themselves. Managing the financial performance lowers the usefulness of the information, hence lowering the earnings quality. Over the last decades, large accounting scandals have involved managers within organizations who manipulated their financial performance and deceived their shareholders. One of the largest accounting scandals involving manipulation of financial performance is Enron. The management used accounting techniques to deceive investors and shareholders, hid large amounts of debt, and used unethical valuation judgments while recording transactions (Healy & Palepu, 2003). Despite the managers in Enron making illegal alterations to the firm's assets, managers have the means and incentives for managing firms' earnings on their own or for the organization's benefit. Managers can benefit from maximizing bonus incentives (Healy, 1985), increasing stock prices before selling options (Bergstresser & Philippon, 2006), or meeting investors' expectations (Graham et al., 2005).

One common method of managing financial information in such a manner is earnings management, which includes a broad range of business and accounting decisions from managers and accounting practitioners. Earnings management occurs when preparers of financial reports use judgment while preparing and presenting financial information (Schipper, 1989). Accruals-based earnings management is one common method of earnings management, where managers use discretionary accruals to alter the financial appearance while estimating revenues, expenses, and asset values. Discretionary accruals refer to the type of accrual that is manageable, and managers often select them due to the accounting flexibility they provide (Healy, 1985). Managers actively manage financial decisions using discretionary accruals and often act opportunistically to improve financial performance and provide misleading financial reports. Earnings smoothing, cold-baths, and cookie jar reserves are discretionary accruals used by managers to alter the financial performance that sometimes can yield positive results for an organization (Dechow et al., 2010; Healy & Wahlen, 1999). Therefore, it is important that the financial reporting quality is high to avoid misleading stakeholders and keep the earnings quality high.

Listed firms must use the global financial reporting standard IFRS, ensuring transparency and comparability while ensuring high quality (IFRS, n.d.). The International Accounting Standards Board (IASB) has been focusing on the fundamental qualitative characteristics of these standards, which are relevance and faithful representation (IFRS, 2018). The stakeholders, such as investors,

governments, and the general public, are prioritized when designing new regulations. IFRS 15 was implemented in 2018, effectively replacing the previous IAS 11 and IAS 18 (IFRS, n.d.). The changes in IFRS 15, in comparison with IAS 11 and IAS 18, are primarily the definitions of revenues from contracts with customers and clarification on how to recognize revenues (IFRS, n.d.). However, as new regulations appear, it is essential to identify whether the new standards affect the outcome of unwanted behavior such as earnings management. The effect of new regulations should improve the practical application of accounting for professionals, improve the transparency of the financial information from organizations, and reduce unethical practices.

1.1 Motivation for the study

Earnings management has been researched for many decades and is often examined in organizations without considering changes in accounting standards. Several models have been used to detect earnings management (Healy, 1985; DeAngelo, 1986; Jones, 1991, Dechow et al., 1995), examining different types of accruals, e.g., lagged and discretionary accruals. Other models have explored real earnings management (Roychowdhury, 2006). Detecting accruals-based earnings management implies that managers use discretionary accruals to manage earnings in a way that does not represent the true financial performance. This study uses the terms abnormal and discretionary accruals interchangeably since this is normal practice among academics within accruals-based earnings management (Dechow et al., 2010). Most accruals-based models examine how managers use discretionary accruals, why, and to what extent. If the discretionary accruals are used too extensively, there are risks of managers deceiving investors and other stakeholders. Although there are many studies on how to detect earnings management, the effects and motivation behind earnings management, and the outcome of earnings management, fewer studies have examined the effects regulations had on earnings management. Tutino et al. (2019) examined the effect of IFRS 15 in Italy and discovered that specific industries were more prone to earnings management under the new regulations. These industries have more long-term contracts and therefore it is more difficult to estimate future revenues. The effects of new regulations should therefore be examined in order to examine the outcome and if opportunistic behavior can be reduced through new accounting standards. The lack of recent studies focusing on the effect of new regulations provides a gap in the literature, where earnings quality and the use of earnings management should be examined, and the impact of new regulations to examine the effectiveness.

1.2 Purpose of the study/research question

This study aims to examine whether IFRS 15 has had any effect on the earnings quality amongst European listed companies by examining accruals-based earnings management. Building upon previous research, models, and theories, this report uses a discretionary accruals model by Dechow and Dichev (2002), hereafter referred to DD model, to examine the impact of IFRS 15 on earnings quality by measuring the use of earnings management. Using listed organizations in Europe, this study examines if there have been any changes in earnings management after the implementation of IFRS 15. By doing so, the report aims to answer the following research questions:

- Has the implementation of IFRS 15 affected the earnings quality amongst listed firms in Europe?
- Has any specific country or industry been more affected by IFRS 15?

2. Previous research

This section will start by explaining earnings quality, and critical aspects of earnings quality. Then earnings management will be described, including essential concepts related to earnings management and how and why it occurs. This will explain managerial incentives, which will provide an understanding of the motivators behind earnings management. Continuing, the basics of IAS and IFRS will be explained, leading to the new IFRS 15 standard and the practical implications on accounting.

2.1 Earnings quality

High-quality earnings refer to a financial report that contains useful information, is faithfully represented, and is not misleading, incomplete, or contains errors (CFA, n.d.). Runesson et al. (2018) argue that earnings quality will differ in the following hierarchy: accounting standard followed, choice of accounting method, and the judgments made by the managers. In addition, unintentional errors, suboptimal accounting choices, and intentional manipulation will ultimately lead to lower quality of earnings. However, there are various definitions of high-quality earnings; Dechow, Ge, and Schrand (2010) define earnings quality as follows:

> "*Higher quality earnings provide more information about the features of a firm's financial performance that are relevant to a specific decision made by a specific decision-maker.*" (p.344).

Moreover, Dechow and Schrand (2004) define earnings quality as:

> "*We define earnings to be of high quality when the earnings number accurately annuitizes the intrinsic value of the firm*" (p.5).

Dechow et al. (2010) analyzed over 300 studies on the characteristics of earnings, and their findings are of great dispersion. They state that their definition of earnings quality is conditional, and the definition alone is meaningless if not certain conditions are fulfilled:

1. Earnings quality depends on the decision usefulness of the information; more precisely, earnings quality can only be defined under a particular situation in a specific decision model. The reason for this might be that various stakeholders may have contrasting views about what high-quality earnings encapsulate.
2. High quality refers to how informative the reported earnings are about the company's financial performance; some of these aspects are difficult to observe.
3. Earnings quality depends on both the financial performance of the firm but also on the capability of the accounting system to measure performance.

In addition, there is no ideal way of measuring earnings quality; it all depends on the situation (Dechow et al., 2010). Dichev et al. (2013) constructed a survey based on the findings in previous literature reviews (Dechow et al., 2010; Dechow & Schrand, 2004) where they interviewed 558 chief financial officers (CFOs). Their results suggest that the CFOs do not support the conditional nature of earnings quality which is supported by accounting researchers. The CFOs viewpoint is that high quality of earnings consists of earnings that are predictable, reliable and sustainable. Regardless of the professionals' and the academics' contrasting viewpoints about the specifics of high-quality earnings, both parties agree that reported earnings are considered of high quality when they reflect the true economic performance of the firm.

2.1.1 Measuring earnings quality

Since the researchers' view regarding earnings quality depends on the context, researchers have developed numerous methods to measure earnings quality. No method fits all; Dechow et al. (2010) extensive study state that properties of earnings are explanatory for earnings management and that accruals quality is dependent on normal and abnormal accruals. Properties of earnings refer to how an earnings number acts in relation to itself and other relevant accounting measures,

e.g., balance sheet items and cash flows (Runesson et al., 2018). Since earnings quality cannot be directly observable, researchers have used proxies to determine the level of earnings quality. The proxies used within this research field are the following: earnings persistence, abnormal/discretionary accruals, earnings smoothness, earnings timeliness, and target beating (Dechow et al., 2010). The abnormal accruals models are the most extensively used proxy within earnings quality research (Christensen et al., 2021; DeFond, 2010; Dechow et al., 2010). According to Dechow et al. (2010), these proxies are used to measure and describe earnings quality.

2.1.2 Accruals Quality

In accounting research, accruals are grouped into two categories, namely, discretionary/abnormal and non-discretionary/normal accruals. Non-discretionary accruals are those accruals that come from the firm's performance and are considered standard practice. Discretionary accruals are accruals that are deemed to capture misstatements induced by the utilization of the accounting rules or earnings management (Dechow et al., 2010). They use the terms discretionary accruals and abnormal accruals indifferently, referring to accruals that can be managed. Dechow et al. (2010) further state that most of the literature within the field views discretionary accruals as lowering the decision usefulness no matter if it originates from unintentional errors or intentional errors. They further state that firms with higher levels of normal accruals also tend to have higher levels of discretionary accruals, less persistent earnings, are subjected to more SEC filings, and have poorer internal control. Dechow and Dichev (2002) find that firm characteristics such as earnings volatility and accruals can be used as instruments for accruals quality. They also find a positive relationship between accruals quality and earnings persistence. Francis et al. (2005) found that lower accrual quality resulted in higher cost of debt and equity due to the poor financial information that lower accrual quality incurs. By having lower quality of accruals, investors expected a higher risk premium. Teoh et al. (1998) found a similar conclusion where income-increasing accruals increased stock prices and valuations inflated.

High-quality accruals reflect normal accruals caused by the actual firm performance, and low-quality refers to abnormal accruals caused by earnings management or intentional/unintentional measurement errors (Dechow et al., 2010). Many researchers (Healy, 1985; DeAngelo, 1986; Jones, 1991, Dechow et al., 1995; Dechow & Dichev, 2002; Francis et al., 2005) have created models which measure the use of accruals. The basis for the accruals model is the attempt to

identify high-quality accruals and low-quality accruals. The models within the abnormal accruals approach have some standard features:

1. The dependent variable will capture the effect of the total and existing accruals in the company at a given time.
2. Independent variables consist of accounting items and should affect the size of total accruals.
3. The model's residuals capture the regression model's unexplained variation in existing accruals, and the size of the residuals is viewed as the variance of abnormal accruals. (Runesson et al., 2018)

The main element of the models is that they aim to measure the use of discretionary accruals and explain how they affect firms. Many researchers agree that extensive use of discretionary accruals has a negative effect on accruals quality (Dechow et al., 2010; DeFond, 2010; Dechow & Schrand, 2004; Schipper, 1989).

2.2 Earnings management

Earnings with low quality contain less useful information for stakeholders, and if the financial information does not represent an organization's actual performance, the quality of the earnings decreases (Runesson et al., 2018). Managers who engage in earnings management aim to manipulate different aspects of financial performance, which is why earnings management is associated with lower earnings quality. Earnings management has been a subject of interest for researchers, accounting practitioners, and regulators for a long time. The definition of earnings management differs between academics, but Healy and Wahlen (1999) defined the term as:

> "*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.*" (Healy & Wahlen, 1999, p. 368)

Further clarifying earnings management, Schipper (1989) described it as "*disclosure management*" (p.92), where managerial judgment affects the external financial reporting process for personal gains. Healy (1985) discusses earnings management as a method for managers to improve performance for bonus schemes and Jones (1991) means that earnings management contains

accounting choices to manipulate reported earnings. The consensus among academics considers earnings management to be manipulative and often used for personal gains.

Although the general definition of earnings management may vary, a consensus is that earnings management provides managers and providers of financial information with the means of personal gains for either the organization or the managers themselves or to change the appearance of the financial results (Jones, 1991; Dechow et al., 1995; DeAngelo, 1986; Burgstahler et al., 2006; Ball et al., 2000). Dechow and Dichev (2002) describe earnings management as a method to deceive stakeholders that ultimately leads to lower earnings quality. The lower earnings quality results in the usefulness and informativeness of the earnings decreasing, and it becomes harder to understand the underlying financial events for external stakeholders.

Earnings can be managed by individual(s) with the influence of an organization, e.g., managers, who have the tools and motivation to alter the financial performance of an organization. Healy (1985) examined if managerial compensations affected the accounting decisions in organizations and the reasons behind it. Bonuses as a type of compensation, stock- or performance-based, is a common type of additional compensation that depends on the performance of an organization. Discretionary accruals played a significant role in how managers presented the financial performance to investors. Compensation incentives with an upper limit resulted in earnings smoothing and income-increasing accruals when there was not a limit. Therefore, managers could use discretionary accruals depending on how they would maximize their profit. Bergstresser and Philippon (2006) also examined the relationship between discretionary accruals and compensations, where managers inflated earnings to increase share prices before they sold their shares. Using discretionary accruals, managers could alter the financial performance and plan boosted earnings, which resulted in personal gain. Graham et al. (2005) surveyed and interviewed CFOs in the US, where they examined the motivations behind earnings management. There was a fear of not meeting outside expectations, which could affect stock prices, cost of capital, personal careers, and negative responses from stakeholders. Managers had a positive approach to earnings smoothing, which lowered the earnings volatility and meant that investors would consider the organization less risky while investing. In the survey, Graham et al. (2005) found that earnings, revenues, cash flows, and free cash flows are the most important measures to report according to the CFOs. By using discretionary accruals, managers were willing to engage in earnings management to meet the expectations, where they were willing to sacrifice long-term success. Skinner and Sloan (2002) examined the outcome of missing expectations and performing

below the expectations, where underperforming had a larger effect than meeting the higher expectations, where the increase was minor. Missing expectations for growth stocks triggered a more prominent reaction than value stocks. However, high expectations for organizations could provide managers with incentives to engage in earnings management to avoid underperforming. Thus, the fear of negative performance may give preparers and managers the incentive to manipulate financial results in their favour. Merton (1987) argues that investors demand a risk premium due to the lack of information, which could be the price for information asymmetry. Merton (1987) explains that information asymmetry can be reduced through voluntary disclosures, which reduces investor expectations and also counteract deceitful earnings management.

Tutino et al. (2019) examined 88 Italian companies in different industries. Their findings were that the telecommunications industry was the most affected by IFRS 15, while the utilities sector was not as affected. However, this study did not include other sectors, which leaves a gap for overall comparison. Napier and Stadler (2020) came to a similar conclusion when they analyzed 50 European companies for the effect of IFRS 15. Their findings also showed that telecommunications were the most affected by IFRS 15 due to the changes in recognition of revenue from contracts. The use of discretionary accruals can be more prominent in specific settings, such as industries, which allows companies to engage in earnings management more freely. However, while examining the relationship between agency costs and earnings management, Jiraporn et al. (2008) find that higher agency costs do not reduce earnings management. Francis et al. (2011) describe how the use of audit firms and litigation costs might counteract the use of accrual management.

The reasons behind earnings management are not only malicious but also to smoothen financial results over time (Gaver et al., 1995). Smoother earnings can create predictability and lower volatility, which can benefit managers, better satisfy shareholders' expectations and provide more persistent earnings over time (Gaver et al., 1995). Gaver et al. (1995) mean that this could contradict the previous findings from Healy (1985), where managers use accruals to maximize their bonuses and state that earnings smoothing is used to increase earnings when the performance is poor. A possible explanation for this is that earnings smoothing could stabilize volatile earnings, which is why managers rationalize earnings management as a strategy. They can ensure that they have persistent earnings and avoid increased expectations when the earnings are better than expected.

Bergstresser and Philippon (2006) describe how CEOs act in their own interest, often due to stock and options in the organization. This could be due to weak governance due to a separation of ownership and management in organizations (Bergstresser & Philippon, 2006).

2.2.1 Types of earnings management

Earnings management consists of two types of actions; discretionary accruals and real earnings management (Braam et al., 2015). The distinction between the two types of earnings management is that discretionary accruals use accounting practices to modify the appearance of financial performance, whereas real earnings management refers to more practical business decisions (DeAngelo, 1986; Braam et al., 2015).

Real earnings management uses operational decision-making to mislead stakeholders to meet goals. Roychowdhury (2006) describes this type of manipulation as "*departures from normal operations*" (p. 337), where managers aim to make operational decisions that benefit an organization short-term, where the decisions might not be beneficial to the organizational success in the future. Gunny (2005) explains that these sacrifices may be costly as organizations may experience declines in future performance due to sub-optimal operational decisions. Schipper (1989) describes the difficulties in detecting real earnings management, as operational decisions might not be easy to detect. The operational activities by managers, such as R&D expenditures and investments, can be considered necessary decisions and not made with manipulative intent. Other operational decisions are companies purposefully selling discounted goods and lowering the average cost of goods by altering production capacities (Braam et al., 2015). Gunny (2005) discusses the risks of real earnings management, where investors may not be aware of how these operational decisions will affect future stock prices, as the short-term performance might not reflect the long-term performance due to the use of real earnings management.

Accruals-based earnings management is based on the use of discretionary accruals, which rely on the judgment of management. The use of discretionary accruals affects cash flows and the timing in which earnings are reported (Healy, 1985). The usage of discretionary accruals includes organizations recognizing or deferring revenues, writing down assets, capitalizing or expense certain costs, accounting estimates, and changes in accounting methods (DeAngelo, 1986). Discretionary accruals are assumed to indicate forms of manipulation, which is why earnings management often is examined by measuring the use of discretionary accruals (Schipper, 1989). The use of discretionary accruals might result in difficulties in determining whether there are

forms of manipulations in the financial statements, which is why high-quality financial reporting is deemed necessary (Dechow & Schrand, 2004). Burghstahler et al. (2006) included audit quality as a factor in determining earnings management but could not establish if this has any visible effect on earnings management among public firms. Dechow et al. (2010) describe the role of auditors as constraining income-increasing discretionary accruals due to the nature of auditors in the process. The role of auditing may therefore act as a deterrent for earnings management. Graham et al. (2005) mean that managers often choose between real earnings management and accruals-based earnings management depending on the context. Some managers believe that the risk of litigation is too high when using accruals-based earnings management if detected and therefore engage in costly real earnings management. The differences between the two types of earnings management have resulted in researchers examining different components which exist separately in either real earnings management or accruals-based earnings management.

2.2.2 Risks and scandals in earnings management

Earnings management consists of changing accounting methods or using the available guidelines maliciously, which sometimes can be illegal. However, earnings management could also be considered legal but unethical, and it is essential to recognize that financial markets often react to organizations that mislead stakeholders. Many scandals have used permitted accounting practices with devious intent, resulting in losses once discovered by stakeholders. Many of these organizations have been fined by governments, such as the US's security and exchange commission (SEC).

Many large accounting scandals have used accounting methods to boost revenues, which mislead investors. The responsibility for the accounting ultimately falls on those responsible for the financial statements, such as managers and audit firms. In the Enron and WorldCom cases, the audit firm Arthur Andersen suffered massive losses. They were found guilty of signing inaccurate financial statements, which led to losing their license and suffering hefty fines. The outcome of management manipulating financial results can have enormous consequences for organizations and their stakeholders. Enron boosted its revenues while hiding bad debt using a subsidiary called Special Acquisition Corporations (SPAC), which allowed them to hide assets and debt (Time, 2021). WorldCom inflated the value of its assets and inflated its revenues (CFI, n.d.). Xerox overstated its revenues by approximately $2 billion (The Guardian, 2002).

Forbes (2020) describes how researchers found that managers may be willing to engage in earnings management, where revenues could be boosted, faked, or they could delay recognizing expenses. The difference between fraud and overestimation is apparent, and managers who manipulate earnings risk engaging in illegal fraud.

3.Regulatory context and hypothesis development

The IASB is an international non-profit organization that works to create and improve accounting rules on a global scale (IFRS, n.d.). The organization was founded in 1973 under IASC as a collaboration between professional accounting practitioners globally, becoming IASB in 2001, with the goal to:

> "[..] *Develop a single set of high-quality, understandable, enforceable and globally accepted accounting and sustainability disclosure standards—IFRS Standards—and to promote and facilitate adoption of the standards*." (IFRS, n.d.).

The foundation combines the International Accounting Standards Board (IASB) and International Sustainability Standards Board (ISSB) to provide accounting and sustainability-related rules that protect investors and other stakeholders. By setting accounting standards that prioritize transparency and reliable financial information, the IASB aims to create stability and comparability on a global scale. (IFRS, n.d.)

The IASB's previous standards were named International Accounting Standard (IAS). They were used until the foundation started the new IFRS standard, replacing the previous standards. IFRS 1 was issued in 2003 and replaced the previous IAS standard.

The IAS and IFRS standards are principle-based accounting systems, which differ from rule-based accounting systems. Gary Kabureck (IFRS, 2016), a member of the IASB board, wrote an article describing his personal philosophy on rule-based and principle-based accounting systems. He describes principle-based systems as superior. Kabureck describes how detailed rules in accounting might not fully cover everything and that professional judgment is needed where the rules cannot cover.

Callao and Jarne (2010) investigated the impact of IFRS in European organizations, comparing whether the principle-based system has increased or decreased earnings management. Their findings indicated increased earnings management from the introduction of IFRS and its principle-based system. Countries that previously had rule-based systems increased the use of

discretionary accruals post-IFRS. Therefore, a direct implication could be that principle-based systems contain more discretionary accruals than previous standards. Zéghal et al. (2011) find contradictive evidence while examining the implementation of IFRS in France that IFRS decreased the use of accruals-based earnings management. Organizations with corporate governance and dependency on foreign markets experienced lower levels of earnings management, which could be due to the common law in France. Another reason could be the increased shareholder protection by adding additional higher quality standards (Zéghal et al., 2011). Zéghal et al. (2011) states that there is a disparity between countries while comparing the implementation of IFRS, which could be due to cultural differences, differences from previous standards, or the type of organization that implemented the new standard.

3.1 IFRS 15

In 2002 IFRS launched a project investigating the previous standard on revenues, namely IAS 11 construction contracts and IAS 18 revenues (Deloitte, 2018). The idea was to improve transparency and create a framework for revenue recognition that could prevent previous weaknesses and shortcomings, improve the disclosure quality through enhanced requirements, and improve revenue comparability among industries (Deloitte, 2018). The IASB states that the objective of IFRS 15 is:

> "*The objective of this Standard is to establish the principles that an entity shall apply to report useful information to users of financial statements about the nature, amount, timing and uncertainty of revenue and cash flows arising from a contract with a customer.*" (IFRS, 2021).

In May of 2014, IASB published the finished standard, and it was implemented for annual reports at the beginning of 2017, replacing the previous IAS 11 and IAS 18 (IFRS, n.d.). IFRS 15 Revenue from contracts with customers includes a five-step framework, enabling better recognition of revenue by defining obligations and rights from each party (IFRS, n.d.). By using the framework, organizations should be able to determine when to recognize revenues. The model aims to identify contracts and contain five steps to identify the contract with a customer:

Table 1

IFRS 15 - 5-step framework for revenue recognition

An entity shall account for a contract with a customer that is within the scope of this Standard only when all of the following criteria are met:

a	The parties to the contract have approved the contract (in writing, orally or in accordance with other customary business practices) and are committed to perform their respective obligations;
b	The entity can identify each party's rights regarding the goods or services to be transferred;
c	The entity can identify the payment terms for the goods or services to be transferred;
d	The contract has commercial substance (ie the risk, timing or amount of the entity's future cash flows is expected to change as a result of the contract); and
e	It is probable that the entity will collect the consideration to which it will be entitled in exchange for the goods or services that will be transferred to the customer. In evaluating whether collectability of an amount of consideration is probable, an entity shall consider only the customer's ability and intention to pay that amount of consideration when it is due. The amount of consideration to which the entity will be entitled may be less than the price stated in the contract if the consideration is variable because the entity may offer the customer a price concession (see paragraph 52).

Note. This framework was obtained from IFRS 15 (IFRS, 2021)

Researchers have discussed the implications of IFRS 15. Napier and Stadler (2020) discuss the changes and implementation of IFRS 15, where the changes in recognition of revenues could potentially decrease earnings management. Furthermore, Napier and Stadler (2020) show that there has been an increase in revenue disclosures in financial reports. This means that the users of the financial statements should be able to understand better situations where preparers have

used judgment, accounting changes, or changes in accruals when reporting revenues (Deloitte, 2018). This is one of the intended reasons behind the implementation of IFRS 15. Deloitte (n.d.) explains that organizations with long-term contracts were affected by IFRS 15 since the framework specifies that revenues during the contract period had to be recognized in different stages. The required disclosures for revenue recognition had also been increased, which increased the information in financial statements specifying where the revenues are recognized. Deloitte (2018) describes how IAS previously allowed more flexibility for recognizing revenues, whereas IFRS 15 requires separation of contract obligations and more timely recognition of revenues. While comparing the previous IAS standard and IFRS 15, it becomes clear that the timing of revenue recognition has been more influential. Organizations have to recognize revenues for contracts that reach over a more extended period of time.

3.1.1 Differences between the standards

When comparing the previous IAS 11 and IAS 18 with the newer IFRS 15 standard, there are several aspects to consider. Firstly, IAS 11 and IAS 18 focused separately on construction contracts and revenues, respectively, while IFRS 15 replaced both standards. IFRS 15 has a broader scope, where it effectively applies the same standards to all contracts (IFRS, n.d.), which resulted in the IFRS 15 framework. Furthermore, IAS 18 had more unspecified requirements for revenue recognition. As defined in the IASB Framework, IAS 18 specified that revenues could be recognized when they fulfilled the following criteria:

- "*It is probable that any future economic benefit associated with the item of revenue will flow to the entity, and*
- *The amount of revenue can be measured with reliability*" (IFRS, n.d.; Deloitte, 2018)

Moreover, IAS 18 stated that revenues should be measured at a fair value. The IFRS 15 framework effectively replaced the previous requirements and meant that firms had to identify contracts before recognizing any revenues (IFRS, n.d.). Under IAS 11, construction contracts had to be estimated according to stages of completion (Deloitte, 2014a). The IFRS 15 framework, as seen in Table 1, has specific requirements when it comes to identifying contracts, whereas IAS 18 relies more on estimating the outcome of contracts (Deloitte, 2018). Unless all criteria for contract recognition are fulfilled from the IFRS 15 framework, no contract nor revenue can be recognized. Major changes in the combined IFRS 15 are that firms first identify contracts and can then recognize revenues after meeting the following criteria:

"*When (or as) a performance obligation is satisfied, an entity shall recognise as revenue the amount of the transaction price (which excludes estimates of variable consideration that are constrained in accordance with paragraphs 56–58) that is allocated to that performance obligation.*" (IFRS, n.d.).

Using this definition for revenue recognition, firms still require estimations while recognizing revenues that are recognized at a point in time or over time (Deloitte, 2014b). Deloitte states that specific changes between IAS 18 and IFRS 15 meant that "[..] *revenue recognition from the sale of goods is based primarily on the transfer of risks and rewards. IFRS 15, instead, focuses on when control of those goods has transferred to the customer.*" (Deloitte, 2014b, p.6). Furthermore, Deloitte (2014) states that this expands the estimations and accounting judgment from firms, as "[..] *This may result in revenue being recognized at a different time*" (Deloitte, 2014b, p.6). Furthermore, IFRS 15 uses the term variable consideration, where firms estimate the revenues using the expected value or the most likely amount methods. Additionally, IFRS states that "[..] *an entity shall consider all the information (historical, current and forecast) that is reasonably available to the entity and shall identify a reasonable number of possible consideration amounts.*" (IFRS, n.d., paragraph 54). KPMG (2019a) states that all contracts that do not have a fixed price require estimations on potential constraints.

KPMG (2019b) states that the three most significant impacts of IFRS 15 are: timing of revenue recognition, determination and allocation of the transaction price, and identification of performance obligations. All three driving factors require judgment from firms, where "[..] *The lack of bright lines requires increased judgment.*" (EY, 2019, p.6). Moving towards a more principle-based approach means that firms require judgment from professionals (Carmona & Trombetta, 2008). This affects accounting and auditing, requiring firms to make estimations that require multiple careful considerations of many different aspects. Regarding the new standards, IFRS 15 has increased the required judgment required for firms when recognizing revenues (EY, 2019).

3.2 Hypothesis development

Earnings management is used as a proxy for determining earnings quality, where higher use of discretionary accruals lowers the quality of the earnings. Studies have shown that, under the right conditions, managers conduct earnings management for personal and organizational benefit. According to the set goals from the IASB to examine the effects, IFRS 15 had on earnings quality: faithful representation, relevance, and decision usefulness, measuring earnings management among European firms could indicate the actual impact of the new standard. Few studies has examine the outcome of IFRS 15, which is why it is relevant to broaden the study first

to examine the overall impact, and then compare industries and countries. Tutino et al. (2019) showed that IFRS 15 could impact earnings quality as earnings management was more heavily present in specific industries such as the telecommunications industry, construction, and business services. Under the premise that earnings management is conducted when possible and without legal or public consequences, firms risk lowering their earnings quality using discretionary accruals. Therefore, measuring the levels of discretionary accruals is a measurement of earnings quality (Dechow & Dichew, 2002). Per the IASB, we assume that a new standard improves the current reporting standards, which is why the earnings quality should increase after implementing IFRS 15.

We assume that the expenses associated with the working capital structure have been constant, as we have no reason to believe otherwise due to the changes from IFRS 15. However, we assume that the introduction of IFRS 15 has decreased accrual-based earnings management and increased earnings quality in terms of lesser discretionary accruals. The first hypothesis has been formulated to capture the changes in European firms:

- H0: IFRS 15 has decreased accruals-based earnings management in European firms.
- H1: IFRS 15 has increased accruals-based earnings management in European firms.

The second hypothesis is built upon the expectation that specific industries were more affected by IFRS 15. As previous literature and reports state (Tutino et al., 2019; IFRS, 2014), firms who use long-term contracts would be affected more extensively, aligning with revenue recognition changes under IFRS 15. These industries are construction, telecommunication, and business services (SIC codes 15-17, 48 & 73). Few studies have shown the actual effects IFRS 15 had on these industries, and our assumption is, therefore, that there has been a significant change after the implementation of IFRS 15

Hypothesis 2

- H0-2: There has been a significant change in industry-specific accruals-based earnings management after implementing IFRS 15.
- H1-2: There has not been a significant change in industry-specific accruals-based earnings management after implementing IFRS 15.

Our third and final hypothesis is that we examine on a country-level if accrual-based earnings management has decreased after introducing IFRS 15. Here, we group countries based on their disclosure index ranking; previous research (e.g., Leuz et al., 2003; Lobo & Zhou, 2001) found that countries with lower disclosure index ranking experience more earnings management. A disclosure index includes required information or voluntary information; it can, for example, be annual reports, interim reports, or financial analyst reports (Hassan & Marston, 2019). Hassan and Marston (2019) further state that *"disclosure index is a research instrument to measure the extent of information reported in a particular disclosure vehicle(s) by a particular entity(s) according to a list of selected items of information"* (p.18). We want to examine whether countries with lower disclosure ranking have had less accrual-based earnings management post-IFRS 15. Therefore, we assume that accrual-based earnings management has decreased post-IFRS 15 in countries with lower disclosure rankings.

Hypothesis 3:

- H0-3: There has been a significant decrease in accrual-based earnings management in countries with lower disclosure rankings after introducing IFRS 15.
- H1-3: There has been a significant increase in accrual-based earnings management in countries with lower disclosure rankings after introducing IFRS 15.

4. Methodology

The methodology section for this thesis will explain how the study was done. The section starts by explaining how the data was collected and the criteria for the data sample. The section continues with the research design and then the validity and reliability of the study. This section concludes with an explanation of how to measure accruals and finishes with an explanation of the chosen model for the study.

4.1 Data

This study used a quantitative approach, where secondary data was processed using statistical tools. It was important that the data used in this study was reliable and that the data sample could be used to answer the research questions. The data sample is cross-sectional, using multiple observations for different variables over time.

4.1.1 Data collection

The data sample used for the study was secondary data in the form of annual financial reports from 2014 to 2021, containing financial numbers. Using secondary data relies on having good

sources where the data can be trusted and reliable. A possible issue with using this type of data collection is that the lack of control by secondary data usage might infringe the quality of data (Bryman & Bell, 2015). However, since we were researching the quality of the reported earnings within companies, this would arguably be less of a problem. The financial reports were collected through major databases such as Compustat and CapitalIQ, which prevented this problem due to their status as reliable databases. This makes it easier to do comparative and follow-up studies since the study design enables other researchers to collect the same data. In studies that rely on a qualitative approach with interviews or surveys is more difficult to compare the results with other researchers' findings. In addition, the information within the annual reports is regulated by law and by accounting regulatory standards, and these standards limit the interpretations of the information in the annual reports

4.1.2 Data sample

The data sample consists of financial reports from listed firms in Europe between 2014 and 2021. All the firms are affected by Regulation (EC) No 1606/2002, which means that all listed firms need to prepare the financial statement according to IFRS (European Commission, n.d.). All of the companies within the sample have been affected by the introduction of IFRS 15. The entire sample consists of firms in the European Union listed on the European stock market exchange. Financial firms (e.g., banks & investment firms) were excluded, which has previously been done in similar studies (e.g., Coppens & Peek, 2005; Bao & Lewellyn, 2017) due to ownership in other firms and different financial reporting compared to other industries. To examine the effect of IFRS 15, a company needs revenue; hence firms without revenues were also excluded from the sample. Using the DD model, the firm needs a cash flow and assets; therefore, firms with null values were excluded from the sample. These limitations were done to ensure that all the firms within the sample were operating and functioning.

The DD model uses lagged values, which means that the sample had to include a previous year and a future year. Therefore, the data sample had to include 2014 as well as 2021 to be able to predict 2015 and 2020, respectively. However, since many firms had not released their finalized financial statements for 2021, this resulted in fewer observations for 2020. Although this might impact the prediction for 2020, we believe that the use of 2020 will be more beneficial than excluding it. In 2021 there were 1740 observations, which meant that the available data for 2020 was also 1740 observations. The countries used in the data sample were all part of the European Economic Area (EEA), except for the UK, an additional country despite leaving EEA in 2020.

This additional data was deemed necessary because the UK provides a lot of additional observations. The data sample contained 3.304 firms in 30 countries, which resulted in 23.145 data points. Bryman and Bell (2015) state that larger sample size will have a higher likelihood of precision, which is why the sample contains firms in Europe instead of an individual country or a selection of countries. However, larger sample size is also needed if the sample contains heterogeneity. Therefore, a large sample within Europe could be assumed to be homogeneous in terms of accounting methods and incentives for earnings management. Table 2. presents an overview of the sample description.

TABLE 2
Data sample description.

Firm observation before filtering.	24,415
Firms after filtering for min. three consecutive years and removing non-EEA countries.	23,145
Total firms with at min. three consecutive observations.	3,304
Industries included in the sample (2-digit SIC-code).	64
Countries included in the sample.	30
Total observations used in accruals estimation analysis 2015-2017.	8,451
Total observations used in accruals estimation analysis 2018-2020.	8,081
Total observations used in accruals estimation analysis 2015-2020.	16,532
Total observations in high-risk industries	5,521
Total observations in low-disclosure countries	6,575

All data was obtained using CapitalIQ and Compustat.

4.2 Scientific method

4.2.1 Research design

The study has a comparative design, which was deemed the most appropriate since the study had two identical methods to examine two or more contrasting cases (Bryman & Bell, 2015). A comparative design allowed us to compare the outcome of the introduction of IFRS 15. Comparing two or more cases enabled us to establish the circumstances our theory would or would not hold (Bryman & Bell, 2015). A limitation of comparative research designs is that it might be difficult to identify causal effects within the variables.

The model used in this study was the DD model by Dechow and Dichev (2002), since the model is most fitting while examining changes in revenue recognition and disregards other factors such as depreciation and changes in property, plant, and equipment (PP&E). The DD model uses changes in working capital to map past, current, and future operating cash flow to determine the accrual quality. The DD model was first used to get our earnings management proxy, and then we ran several OLS-estimation analyses. After measuring the signs of earnings management in the data sample, an industry and country comparison was conducted. This allowed us to determine if different industries or countries had any differences in how IFRS 15 impacted them.

The analysis of the study was made using the theoretical framework on earnings quality and earnings management. A potential drawback from the existing literature was that earnings management was used for personal or organizational gain, often focusing on the negative and deceitful aspects. Although some literature and previous research explain that earnings management sometimes could be strategic choices made by management (e.g., earnings smoothing to some extent), this was often overshadowed by managerial incentives. Therefore, the analysis attempted to consider all factors since discretionary accruals are allowed in accounting based on IFRS. This aligns with the use of professional judgment, which should reflect faithful representation and relevance (IFRS, n.d.)

4.2.2 Validity and reliability

It was essential to ensure that the data and model used were high quality. Financial reports are presented under the IFRS standard; the data would not change even if a new standard was implemented, ensuring reliability (Bryman & Bell, 2015). Therefore the stability and internal reliability of the data sample can be expected to be high. Using a quantitative approach and financial information from large databases, we consider the reliability of the study to be of high quality.

Examining the validity of the study can be difficult as the concept of earnings quality is subjective. We compared our results to other similar studies to determine the study's validity. Using methods and variables that have been tested, reviewed, and widely used among previous academics and researchers, we believe that the validity of the models could be considered high. Earnings management has been tested for over four decades in different countries using different data and we believe that the models are well suited. The data employed in the study is comparable to the type of data used in previous studies, and therefore have high validity.

4.2.3. Endogeneity issues

Relying on financial information, such as fundamentals, to explain earnings management might exclude factors and/or variables that could be explanatory for the study. Therefore, there is a risk of endogeneity within the sample, which needs to be addressed. Dechow et al. (2010) analyzed different models and methods for examining earnings quality. They state that endogeneity issues related to models measuring discretionary accruals could be related to "[..] *earnings management are joint tests of the theory and the abnormal accrual metric as a proxy for earnings management*." (Dechow et al., 2010, p.351). Using fundamental data to explain earnings management might not be sufficient as other explanatory factors exist. However, due to the complexity of analyzing large organizations, we believe that public listed firms using the same accounting standard created a sizable sample where fundamentals could be compared and further analyzed. As the previous theories and studies consider earnings management to be related to opportunistic behavior, sometimes associated with personal managerial gain, measuring discretionary accruals using the DD model could explain the use of earnings management and the implications of IFRS 15.

4.3 Measuring discretionary accruals for earnings management

Measuring the use of discretionary accruals is one method of detecting earnings management. If discretionary accruals are present, the earnings are assumed to be of lower quality. Measuring the accruals would then also capture the quality of the accruals. Although there are several models to detect and measure earnings management, the accruals-based approach is by far the most heavily used approach to detect earnings management (DeFond, 2010), and it is therefore motivated to use such an approach for comparative reasons.

The first discretionary accruals model developed tries to identify discretionary accruals based on the relationship between the size of total accruals and presumed explanatory components. DeAngelo (1986) and Healy (1985) measured the management's tendency to engage with earnings management with changes in total accruals and total assets. DeAngelo (1986) tested whether the average value of accruals was negative over the period; the test assumes that the average change in non-discretionary accruals is around zero, so a change in total accruals would only depend on a change in non-discretionary accruals. DeAngelo's (1986) approach was that managers undervalued stock price by understating earnings, which lowered the valuated price of stocks.

This approach to measuring management's discretion over earnings was then further developed by Jones (1991), where a regression approach was introduced. The Jones-model is based on

DeAngelo's model, where total accruals were used from a prior period to measure the normal total accruals. In the Jones (1991) model, PP&E and revenue are included to control non-discretionary accrual changes caused by changing circumstances. Total accruals include changes in working capital; the changes in working capital might to some degree be because of changes in revenues. Lastly, revenues are included to control the company's financial environment before the management engagement in earnings manipulations (Jones, 1991).

Dechow et al. (1995) argue that the Jones-model is biased toward zero because the Jones-model views revenue as non-discretionary. This leads to the problem that if the earnings are handled through discretionary revenue, the model will discard the part of the handled earnings from the discretionary accrual proxy. Dechow et al. (1995) adjusted for this issue by taking the changes in revenues by adjusting for changes in accounts receivable during the event period. This means that the modified Jones-model assumes that all changes in accounts receivables in the event period are because of earnings management. This is because it might be easier to conduct discretion of the recognition of accounts receivables than it is over recognition of revenue in cash sales. However, the modified Jones increases the probability of both type I and type II errors since the residuals from the model tends to correlate with the firm performance (Dechow et al., 2010).

Many researchers have tried to develop or improve other models; DeFond (2010) states that "*Competition among models is healthy in terms of moving the literature forward, but most competitors do not survive.*" (p.403). An exemption from this rule is the Dechow and Dichev (2002) and the two extension models developed by McNichols (2002) and Francis et al. 2005.

In the DD model the EM proxy focuses on the change in working capital and is a function of past, current, and future cash flows. The idea behind this approach is that deferred income and/or accrued expenses in a previous period should result in a matching cash collection/payment in the current period, and a deferred income/deferred expense should reverse in the future period (Dechow et al. 2010). They measure accrual quality by the standard deviation of the residuals within the regression. A higher deviation of these residuals means that less of the current accruals have been reversed/collected, indicating poorer earnings quality. The model's R^2 value was higher than the modified Jones model, and an R^2 of 47% was obtained at the firm-specific level (Dechow et al., 2010).

As an attempt to capture long-term accruals, McNichols' (2002) and Francis et al. (2005) extend the DD model by including revenue growth and PP&E as independent variables. This extension allowed them to make assumptions about managerial choices by estimating the accruals prediction by industry-year and by calculating the standard deviation of the residuals for each company in each year based on the value of the residuals in the previous five years (Dechow et al., 2010).

4.3.1 Dechow and Dichev (DD) model

Dechow and Dichev (2002) modified the original Jones-model by mapping cash flows into the accruals, which allowed the model to both capture intentional and unintentional estimating errors. The DD model is mapping short-term accruals under the assumption that they will reverse and shift in the following time period. The opening accrual is created when cash is received, or an expense is paid before the recognition of the sale or expense. A closing accrual is then created when these transactions reverse the initial portion of the accruals. However, when cash flows happen after the recognition of the sale or expense, the management must estimate the amount in the future. If the cash flow recognition differs from the original estimation, there will be an estimation error in the closing accrual. (Dechow & Dichev, 2002)

If the opening and closing accruals do not correspond to the same amount, it is deemed an estimation error and the model treats these as residuals. The standard deviations of the residuals are used to determine whether the accruals are of high or low quality, meaning that a higher standard deviation results in lower accrual quality (Dechow & Dichev, 2002). In a simpler context an accrual can be deemed of high quality when it is quicker converted to cash. To determine the accruals quality, we estimated the following regression:

$$\Delta WC_t = \beta_0 + \beta_1 CFO_{t-1} + \beta_2 CFO_t + \beta_3 CFO_{t+1} + \varepsilon_t \quad (1)$$

ΔWC_t= Change in working capital at time t.

CFO_{t-1}= Cash flow from operation at time t.

CFO_t= Cash flow from operation at time t.

CFO_{t+1}= Cash flow from operation at time t+1.

Equation (1) focuses on the matching function of the accruals to the operating cash flows. The change in working capital (WC) from t-1 to t is calculated as changes in accounts receivables + changes in inventory - changes in accounts payables - changes in tax payables + changes in other

net assets. CFO_{t-1} equals deferred income and accrued expenses and CFO_{t+1} equals accrued income and prepaid expenses. In addition, all variables are scaled by average assets. In the DD model the estimation error equals the amount accrued versus the amount actualized. The independent variables are measured with an error-term which suggests that the regression coefficients will be biased towards zero and therefore likely reduce the R^2. (Dechow & Dichev, 2002)

The main complaint researchers bring up with the DD model is that it does not consider long-term accruals, since it does not include the depreciation of PP&E and the goodwill impairment. Some arguments could be made to use either McNichols (2002) and Francis et al. (2005) extended DD model. However, since these models include PP&E and goodwill impairment, it would arguably increase the risk of a type 1 error since they are not relevant to the focus of the study, i.e., examine the impact of IFRS 15 on earnings management on revenues. The DD model allowed us to isolate the effect of the implementation of IFRS 15, which together with comparativity and the model's relatively high explanatory power (Dechow et al., 2010), makes this model the preferable choice.

4.4 Regression model

We conducted a regression analysis to test our hypothesis that earnings management has decreased after introducing IFRS 15. We model *ABS_EM* as a function of other variables that serve as firm characteristics and a dummy variable (*Year*) for prior and past IFRS 15. We conduct five different OLS-regressions to test earnings management against the pooled sample, industry, country, and upward and downward earnings management. Three of these regressions use the absolute value of *EM* as the dependent variable; to test for upward and downward earnings management, we apply the non-absolute value of *EM*. When testing for upward earnings management, i.e., income increasing earnings management, we use residuals with a value greater than 0. To test for downward earnings management, i.e., income decreasing earnings management we use residuals with a value below 0. Upward earnings management could be seen as evidence of overestimation of revenue, and downward earnings management could be seen as earnings smoothing.

To control for factors that might be unobservable, we included fixed effects for year, country, and industry. We included fixed effects for year to control for various elements such as different financial events and other circumstances which may be limited for that year. We included the

fixed effects for industry and country since we want to capture the macroeconomic differences between these countries and industries. Following previous research (e.g., Chen et al., 2008; Thompson, 2011; Benlemlih & Bitar, 2018), we clustered the standard errors at the firm level to prevent potential heteroscedasticity and addressed the possible concern with correlation among observations from the same firm.

Furthermore, in line with Barua et al. (2010), we winsorized all variables by the 1 and 99 percentiles to reduce the potential effect from severe observations and outliers. To address multicollinearity issues, we used a Variance inflation factor-test (VIF-test), which examines if there is multicollinearity within the variables. This is in accordance with previous research (e.g., Yoo et al., 2014; Salehi et al., 2018). A rule of thumb is a VIF-score below 10 (Hair et al., 2010), but other more conservative researchers suggest a threshold of 5 and 3.3 (Kline, 1998; Cenfetelli & Bassellier, 2009). We estimate the accrual-based earnings management in the following regression equation (2):

$$ABS\_EM_{i,t} = \beta_0 + \beta_1 Year_{i,t} + \beta_2 Size_{i,t} + \beta_3 ROA_{i,t} + \beta_4 CFO_{i,t} + \beta_5 RevGrowth_{i,t} + \beta_6 D/E_{i,t} + \beta_7 MB_{i,t} + \beta_8 LossDummy_{i,t} + \beta_9 OPCYCLE_{i,t} + Fixed\ effects + \varepsilon_{i,t} \quad (2)$$

The variables are presented and defined in table 3.

Table 3 – Variable definition

Variables	Definition
Absolute Value EM-proxy. *(ABS_EM)*	The absolute value of the residuals (ABS_EM) from the DD estimation (2002) act as our dependent variable.
EM Proxy *(EM)*	The residuals from the first DD estimation (2002) act as our dependent variable when testing for upwards (EM>=0) or downward (EM<0) earnings management.
Independent Variables	
Dummy Year *(Year)*	The primary variable of interest is *Year*. *Year* is a dummy variable that takes the value of 1 after the introduction of IFRS 15. *We* predict that the introduction of IFRS 15 has decreased earnings management. Therefore, we predict that the coefficient of the Year is negative.
Industry Dummy (*Industry)*	Dummy variable that represent "high-risk" industries. These industries are: construction, telecommunication and business services (SIC codes 15-17, 48 & 73) and are likely to be more affected by the introduction of IFRS 15 compared to others (Tutino et al. 2019; KPMG, 2019b; Deloitte, 2014; PwC, 2014). We therefore expect Industry Dummy to be positive.
Country Dummy	Dummy variable that represent countries with a disclosure rating of 6 or less. Leuz et al., (2003) and Lobo and Zhou (2001) found that countries with lower rating are experiencing higher levels of accrual-based earnings management. We expect a

	positive coefficient of Country Dummy.
Control Variables	
Natural logarithmic of total assets. *(Size)*	The natural logarithmic value of total assets per firm I, for year t. *Size* of the firm has been researched in the accounting theory (Barua et al. 2010). Earlier studies (e.g., Jensen & Meckling, 1976; Watts & Zimmermann, 1986; Pincus & Rajgopal, 2002) suggest that larger firms face more pressure to report more sustainable earnings. In addition, they have sufficient means to use accounting methods that decrease taxable income. Dechow and Dichev (2002) finds a positive relationship between *Size* and accrual quality, and we, therefore, predict a negative coefficient.
Return on Assets *(ROA)*	Return on assets measured as Net Income divided by Total Assets. We included *ROA* to control for firm performance; previous studies (e.g., Dechow & Dichev 2002; Meek et al., 2007) find that substandard performance correlates with lower earnings quality. Therefore, we expect the coefficient of *ROA* to be negative.
Cash flow from operations *(CFO)*	Cash flow from operations scaled by total assets. To control for operating performance, we include *CFO* which have been done in previous research (Barua et al. 2010). We predict a negative coefficient of *CFO*.
Revenue Growth *(RevGrowth)*	Change in revenue per year. Menon and Williams (2004) find a positive relationship between recent revenue growth and the amount of discretionary accruals. We therefore expect a positive coefficient of *RevGrowth*.
Debt to equity ratio *(D/E)*	*D/E* is calculated as long-term debt and short-term debt divided by stockholders equity. DeFond and Jiambalvo (1994) show that managers close to breaking a lending agreement are more likely to engage in earnings management activities to meet the agreement. Barua et al. (2010) found no correlation between *D/E* and accruals-based earnings management. We therefore have no predicition for *D/E*.
Market-to-book ratio *(MB)*	*MB* is measured as Market Capitalization divided by Stockholders Equity. In line with Francis et al. (2008) and Chen et al. (2015) *MB* is used to account for the firm's possible growth. Meek et al. (2007) finds that growing firms are more likely to engage in earnings management activities and we therefore expect a positive coefficient of *MB*.
Firms that have negative earnings. *(LossDummy)*	*LossDummy* is included to see whether firms with negative earnings are more prone to engage in earnings management. Francis et al. (2008) found that negative earnings are correlated with higher levels of accruals. We therefore predict a positive relationship between *ABS_EM* and *LossDummy,* meaning firms that obtain a loss have poorer accruals quality.
Operating Cycle *(OPCYCLE)*	Following Dechow and Dichev (2002), we include *OPCYCLE* to control for the operating cycle. They find a positive relationship between a longer operating cycle and poorer accruals quality; thus, we predict a positive relationship between *ABS_EM* and *OPCYCLE*

4.3.2.1 Measuring the industry- and Country specific

After the main regression, we examined industry and country effects. This was done by creating dummy variables for both the specific industries and the countries. The industry dummy contained industries with the SIC code 15-17. 48 and 73. To explore whether these industries were affected by the IFRS 15, we applied an interaction effect approach. We predict that the interaction term *Year*Industry* will have a negative coefficient. We estimate the specific industry accrual-based earnings management in the following regression equation (3):

$$ABS\_EM_{i,t} = \beta_0 + \beta_1 Year_{i,t} + \beta_2 Industry_{i,t} + \beta_3 Year * Industry_{i,t} + \beta_4 Size_{i,t} + \beta_5 ROA_{i,t} + \beta_6 CFO_{i,t} + \beta_7 RevGrowth_{i,t} + \beta_8 D/E_{i,t} + \beta_9 MB_{i,t} + \beta_{10} LossDummy_{i,t} + \beta_{11} OPCYCLE_{i,t} + Fixed\ effects + \varepsilon_{i,t} \quad (3)$$

We grouped countries according to the Disclosure Index, an index which measures the level of disclosures within countries. Similar studies have found evidence that earnings management is more present in countries with lower disclosure levels (Leuz et al., 2003; Lobo & Zhou, 2001). We used a Dummy variable approach where we created a Dummy variable called *CountryDummy* which contained countries with a Disclosure rating of 6 or less. Furthermore, here we also include an interaction effect between *Year*CountryDummy,* and we predict a negative coefficient and that earnings management will decrease after the introduction of IFRS 15. To capture whether accrual-based earnings management has decrease in countries with lower disclosure ranking, we estimate the following regression equation (4):

$$ABS\_EM_{i,t} = \beta_0 + \beta_1 Year_{i,t} + \beta_2 Country_{i,t} + \beta_3 Year * Country_{i,t} + \beta_4 Size_{i,t} + \beta_5 ROA_{i,t} + \beta_6 CFO_{i,t} + \beta_7 RevGrowth_{i,t} + \beta_8 D/E_{i,t} + \beta_9 MB_{i,t} + \beta_{10} LossDummy_{i,t} + \beta_{11} OPCYCLE_{i,t} + Fixed\ effects + \varepsilon_{i,t} \quad (4)$$

5. Results and analysis

5.1 Measuring Earnings Management

Table 4. presents the descriptive statistics from the study, which was used for comparability to previous research. Using the DD model, the regression model measured the model's residuals, which acts as a proxy for earnings management. As Dechow and Dichev (2002) state, the residuals and the standard deviation of the residuals capture the discretionary accruals. Using findings from Dechow and Dichev (2002), the characteristics of the variables were found to be similar. It is important to recognize certain limitations in comparison to other studies. This study uses financial information in the local currency, which yields certain variables, e.g., total assets, not comparable to other studies in terms of size. However, since each variable was reported in their respective currency, all items that were scaled by their respective firms' total assets provide a comparable ratio. Using lagged values for *CFO*, the study had 16.536 variables *EM* using the DD model.

In comparison to Dechow and Dichev (2002), the descriptive statistics have similar characteristics, such as the *CFO* being larger than the changes in *WC*. Since *Accruals* is the

difference between *Prof* minus *CFO*, it is no surprise that *Accruals* is negative. *Prof* being slightly negative could be explained by the scaling of the firms' total assets as some larger companies in the sample experienced losses before extraordinary items and the winsorization. Since the median is positive, this could indicate negative outliers in the sample, which weighs heavily. The earnings before extraordinary items had positive mean and medians, which means that the scaling and winsorization affect *Prof*. However, since the results are minimal, it is of low importance. The EM-variable had a mean of approximately 0, where quantiles 1 and 3 show deviations width of the variable. It is no surprise that discretionary accruals are present, as firms usually use discretionary accruals. However, the standard deviation shows discretionary accruals that are not reversed, which Dechow and Dichev (2002) state shows the adjustments made in opening and closing accruals. The standard deviation of .601 shows that there are markers of adjustments made by firms.

Table 4
Descriptive statistics DD model

Variable	Obs	Mean	Std. Dev.	Q1	Q3
ΔWC	19840	.002	.557	-0.1281	0.045
CFO	23144	.037	.24	0.0097	0.116
CFO t+1	19840	.041	.222	0.0119	0.1171
CFO t-1	19840	.036	.229	0.0099	0.1156
EM	16532	0	.601	-0.1324	0.045
Prof	23144	-.0194	.374	-0.0207	0.0665
Accruals	23144	-.056	.313	-0.0858	-0.0075
Earn	23144	.191	.509	0.0609	0.3623

All variables are winsorized at 1 percent and 99 percent.

Table 5. presents the Pearson correlation between each variable. The correlation between each variable provides similar results to Dechow and Dichev (2002), where earnings before long-term accruals have a strong positive significant correlation of 0,774 (<0,001p). The positive correlation between *CFO* and *WC* is not significant, aligning with Dechow and Dichev (2002). *CFO* correlated strongly with CFO t+1 and CFO t-1, which is expected. The correlation between *WC* and *CFO* had a slight positive correlation but at an insignificant level. This differs from Dechow and Dichev (2002), where there is a negative correlation between these variables at an insignificant level. The insignificance could indicate a weak correlation that could be within the data sample. Accruals had a significant negative correlation with *CFO* and CFO t+1, which is expected. The results from the Pearson correlation align with previous studies (Dechow & Dichev, 2002) and are within reasonable limits. Minor differences could be explained by the data

sample and possible outliers in the sample. However, since the differences are of no significance, there is no reason to question the validity of the data used. The findings show that the proxy for earnings management is present throughout 2015-2020, which is an expected finding shown in previous studies (Dechow & Dichev, 2002; Barua et al., 2010; Tutino et al., 2019).

Table 5
Pearson Correlation Matrix DD model

Variables	Prof	Earn	CFO	ΔWC	CFO t+1	CFO t-1	Earn2	Accruals
Prof	1.000							
Earn	0.774*	1.000						
CFO	0.554*	0.472*	1.000					
ΔWC	0.500*	0.541*	0.010	1.000				
CFO t+1	0.377*	0.273*	0.651*	-0.003	1.000			
CFO t-1	0.402*	0.286*	0.651*	0.030*	0.543*	1.000		
Earn2	0.205*	0.363*	0.286*	0.029*	0.425*	0.218*	1.000	
Accruals	0.770*	0.563*	-0.104*	0.569*	-0.024*	0.013	0.035*	1.000

**** p<0.01, ** p<0.05, * p<0.1*

5.2 Measuring Earnings management before and after IFRS 15

Table 6. presents descriptive statistics over our accruals quality measure (*ABS_EM)* and independent variables. We have divided the sample into prior to and post of the introduction of IFRS 15. The table, therefore, consists of two subsamples, one for the years 2015-2017 and 2018-2020.

TABLE 6
Descriptive Statistics

	2015-2017 N=8451				2018-2020 N=8081				Test for difference between Mean & (Median)
Variables	**Mean**	**Q1**	**Median**	**Q3**	**Mean**	**Q1**	**Median**	**Q3**	**p-values**
ABS EM	0.0875	0.0180	0.0442	0.1006	0.0911	0.0199	0.0474	0.1084	0.0622** (<0.001***)
EM	0.0026	-0.0423	0.0016	0.0462	-0.0048	-0.0515	-0.0017	0.0436	<0.001*** (<0.001***)
Size	5.5355	3.6793	5.2878	7.1903	5.7107	3.8913	5.4612	7.3143	<0.001*** (<0001***)
RoA	-0.0117	-0.01432	0.0324	0.0700	-0.0242	-0.0319	0.0241	0.0615	0.002*** (<0.001***)
CFO	0.0326	0.0090	0.0656	0.1136	0.0358	0.0076	0.0682	0.1201	0.3891 (0.0188)
RevGrowth	0.1740	-0.0159	0.0693	0.1898	0.1453	-0.0630	0.0436	0.1688	0.014** (<0.001***)
D/E	1.439	0.4538	0.9143	1.7530	1.485	0.4512	0.9580	1.8233	<0.2739 (0.0231**)
MB	3.083	0.7705	1.7341	3.4421	3.3370	0.7984	1.6805	3.5422	0.0032*** (0.2830)
LossDummy	0.290	0	0	1	0.3431	0	0	1	<0.001*** (<0.001***)
OPCYCLE	4.9703	4.4886	4.9723	5.4008	4.9847	4.4760	4.9863	5.4435	0.2730 (0.2466)

All variables except for the Size and OPCYCLE are winsorized at 1 percent and 99 percent.

Univariate tests for our quality accruals measure *(ABS_EM)* show that the years 2015-2017 are slightly smaller compared to after the introduction of IFRS 15; both the mean test and the Mann-Whitney test for difference in median show significant differences with p=0.062 and (p= <0.001) respectively. *EM,* our dependent variable when testing for upward and downward earnings management, also shows a significant difference in means p=<0.001 and (p= <0.001). What is notable is that *EM* before 2018 had a value of 0.0026 compared to a negative -0.0048 after the introduction of IFRS 15. These results are in contrast to our hypothesis where we predicted that earnings management should decrease after the introduction of IFRS 15. However, these results are preparatory and are far too early to interpret these results; conclusions can only be drawn later after we have control for more factors in the regression analysis.

Moreover, Table 6. also provides mean and median values for our independent variables and univariates test for difference in mean and median based on the two subsamples. T-test statistics imply that the two groups differ significantly in *Size, MB, RoA,* and *LossDummy*. The Mann-Whitney test to test for differences in median implies that *Size, RoA, RevGrowth, CFO, D/E, and LossDummy* differ between the two subsamples. These results align with previous research (e.g., Barua et al., 2010; Francis et al., 2008; Chen et al., 2015)

Table 7
Pearson Correlation Matrix

Variables	ABS_EM	Year	Industry	Country	Size	ROA	CFO	Rev Growth	D/E	MB	Loss Dummy	OPCYCLE
ABS_EM	1.000											
Year	0.015*	1.000										
Industry	0.075***	-0.012*	1.000									
Country	-0.014*	-0.004	-0.008	1.000								
Size	-0.030***	0.036***	-0.156***	-0.137***	1.000							
ROA	-0.354***	-0.024***	-0.008	0.081***	0.227***	1.000						
CFO	-0.350***	0.006***	0.002	0.056***	0.230***	0.652***	1.000					
RevGrowth	0.183***	-0.024***	0.042***	-0.021***	-0.102***	-0.039***	-0.079***	1.000				
D/E	-0.040***	0.008	0.017***	0.007	0.075***	0.018***	0.028***	-0.038***	1.000			
MB	0.107***	0.023***	0.054***	-0.123***	-0.037***	-0.007	0.001	-0.088***	0.250***	1.000		
LossDummy	0.306***	0.057***	-0.004	-0.060***	-0.290***	-0.496***	-0.384***	0.032***	0.019***	0.008	1.000	
OPCYCLE	0.0052***	0.008	-0.168***	0.048***	-0.045***	-0.115***	-0.182***	-0.006	-0.042***	-0.002***	0.109***	1.000

**** p<0.01, ** p<0.05, * p<0.1*

Table 7. presents a Pearson correlation table. There are several significant correlations between our variables. *ABS_EM* shows a significant($p<0.01$) correlation to all control variables. In addition, *Year* and *Industry* show a small positive correlation with *ABS_EM;* however, *Year* not at the conventional levels. Furthermore, *ABS_EM* and *Country* show a small negative correlation at $p<0.1$. *ROA (*-0,354) and *CFO*(-0.350) have a moderate negative correlation with *ABS_EM*($p<0.01$), in addition *LossDummy* has a moderate positive relationship(0.306) with *ABS_EM.*

Moreover, *LossDummy* and *ROA* show a strong positive correlation (0.652) at $p<0.01$; this could indicate problems with using both *LossDummy* and *ROA* as independent variables in the OLS estimation. *LossDummy* also shows moderate negative correlation with *Size* (-0.290), *CFO* (-0.384), and *ROA* (-0.496), all significant at $p<0.01$.

To test for multicollinearity, we conducted a VIF-test. The highest VIF-score from the test was obtained in *ROA*, which showed a value of 2.48; the mean VIF-scores was 1.40. The value of the VIF-test indicates that there is no problem with multicollinearity since all of these values are far below the accepted thresholds (Hair et al., 2010; Kline, 1998; Cenfetelli & Bassellier, 2009).

TABLE 8
Regression of the absolute value of EM.

		(1)		(2)		(3)	
Dependent Variable		**ABS_EM**		**ABS_EM**		**ABS_EM**	
Variables	**Predicted Sign**	**Coefficient**	**p-value**	**Coefficient**	**p-value**	**Coefficient**	**p-value**
Year	-	0.0090	0.005***	0.0088	0.009***	0.0107	0.003***
Industry	+	-	-	0.0101	0.004***	-	-
Industry*Year	-	-	-	0.0001	0.987	-	-
Country	+	-	-	-	-	-0.0014	0.612
Country*Year	-	-	-	-	-	-0.0023	0.506
Size	-	-0.0099	<0.001***	-0.0099	<0.001***	-0.0086	<0.001***
RoA	-	-0.0671	<0.001***	-0.0688	<0.001***	-0.0696	<0.001***
CFO	-	-0.0864	<0.001***	-0.0846	<0.001***	-0.0919	<0.001***
RevGrowth	+	0.0246	0.004***	0.0251	<0.001***	0.0262	0.004***
D/E	?	-0.0017	0.002***	-0.0017	0.001***	-0.0020	<0.001***
MB	+	0.0015	<0.001***	0.0016	<0.001***	0.0019	<0.001***
LossDummy	+	0.0262	<0.001***	0.0286	<0.001***	0.0281	<0.001***
OPCYCLE	+	0.0009	0.651	-0.0006	0.713	-0.0002	0.902
Constant		0.1578	<0.001***	0.1459	<0.001***	0.1363	<0.001***
Fixed Effects		Industry, Country & Year		Country & Year		Year & Industry	
SE at Firm level		YES		YES		YES	
$Adj.R^2$		23,82%		23.24%		22.99%	
No. of Observations		16,495		16,495		16,495	

(1) = $ABS\_EM_{i,t} = \beta_0 + \beta_1 Year_{i,t} + \beta_2 Size_{i,t} + \beta_3 ROA_{i,t} + \beta_4 CFO_{i,t} + \beta_5 RevGrowth_{i,t} + \beta_6 D/E_{i,t} + \beta_7 MB_{i,t} + \beta_8 LossDummy_{i,t} + \beta_9 OPCYCLE_{i,t} + Fixed\ effects + \varepsilon_{i,t}$

(2) = $ABS\_EM_{i,t} = \beta_0 + \beta_1 Year_{i,t} + \beta_2 Industry_{i,t} + \beta_3 Year * Industry_{i,t} + \beta_4 Size_{i,t} + \beta_5 ROA_{i,t} + \beta_6 CFO_{i,t} + \beta_7 RevGrowth_{i,t} + \beta_8 D/E_{i,t} + \beta_9 MB_{i,t} + \beta_{10} LossDummy_{i,t} + \beta_{11} OPCYCLE_{i,t} + Fixed\ effects + \varepsilon_{i,t}$

(3) = $ABS\_EM_{i,t} = \beta_0 + \beta_1 Year_{i,t} + \beta_2 Country_{i,t} + \beta_3 Year * Country_{i,t} + \beta_4 Size_{i,t} + \beta_5 ROA_{i,t} + \beta_6 CFO_{i,t} + \beta_7 RevGrowth_{i,t} + \beta_8 D/E_{i,t} + \beta_9 MB_{i,t} + \beta_{10} LossDummy_{i,t} + \beta_{11} OPCYCLE_{i,t} + Fixed\ effects + \varepsilon_{i,t}$

All variables except for Size & OPCYCLE are winsorized at 1 percent and 99 percent.

Table 8. presents the results from running the first three regressions. Consistent with prior research (e,g. Dechow & Dichev, 2002; Barua et al., 2010) and in line with our prediction, the coefficient estimates of *Size* and *ROA* are significantly negative in all three regressions at p=<0.001, respectively. This could be viewed as larger firms, and better-performing firms have lower degrees of abnormal accruals. Consistent with Barua et al. (2010), the coefficient of *RevGrowth* is significantly positive in all regressions, advocating that firms with recent revenue

growth are associated with higher levels of abnormal accruals. This is in line with our prediction and could be explained as growing firms tend to have lower-quality in their accruals.

In line with our prediction and consistent with Francis et al. (2008), the coefficient of *LossDummy* is significantly positive in all three models (p=<0.001), meaning that firms with negative earnings have poorer quality of the accruals. Furthermore, in accordance with our prediction, the coefficient of *MB* is significantly positive in all three estimations(p=<0.001), this is in line with previous research (Chen et al., 2015) advocating that firms with higher market-to-book ratios have a higher degree of abnormal accruals. The last two control variables, *D/E* and *CFO*, show a significant negative relationship to the accrual residuals in all three models. This points to the fact that firms with lower *D/E* ratios and higher *CFO* tend to have a lower degree of discretionary accruals. *OPCYCLE* shows, in contrast to Barua et al. (2010), no significant values and no correlation between *OPCYCLE* and the level of discretionary accruals.

Our primary variable of interest, *Year,* shows a significantly positive relationship in all three regressions. This suggests that earnings management has increased and the quality of accruals have decreased after the introduction of IFRS 15. This is in contrast to our prediction and hypothesis that IFRS 15 would have reduced earnings management and improved the levels of discretionary accruals. Therefore, our first hypothesis (H0) is rejected.

Furthermore, *IndustryDummy* shows a significantly positive relationship; this is in line with our prediction and in line with Tutino et al. (2019) that the predicted industries experience higher levels of accruals compared to others. In addition, we ran a second regression where we used the low-risk industries and obtained a significant(p=0.004) negative coefficient. Moreover, the interaction effect Industry**DummyYear* shows no significant relationship toward one another. We can therefore not reject our second hypothesis.

In the last regression, *CountryDummy* and the interaction effect *Year*CountryDummy* show no significant relationship to the dependent variable. The coefficient of the interaction term is, however, negative but the p-value is far from any significant value. We can therefore not reject our third hypothesis.

TABLE 9
Regression for upwards and downward EM.

Dependent Variable	**Upward_EM**		**Downward_EM**	
Variables	**Coefficient**	**p-value**	**Coefficient**	**p-value**
Year	0.0122	0.002***	-0.0036	0.413
Size	-0.0109	<0.001***	0.0074	<0.001***
RoA	0.0312	0.110	0.0950	<0.001***
CFO	-0.126	<0.001***	0.0415	0.010***
RevGrowth	0.0279	<0.001***	-0.0175	<0.001***
D/E	-0.0013	0.074*	0.0014	0.014**
MB	0.0014	<0.001***	-0.0013	<0.001***
LossDummy	0.0356	<0.001***	-0.0276	<0.001***
OPCYCLE	0.0020	0.480	-0.0006	0.732
Constant	0.1605	<0.001***	-0.1157	<0.001***
Fixed Effects	Industry, Country & Year		Industry, Country & Year	
SE at firm level	YES		YES	
$Adj.R^2$	23.07%		27.72%	
No. of Observations	8,253		8,242	

$$EM_{i,t} = \beta_0 + \beta_1 Year_{i,t} + \beta_2 Size_{i,t} + \beta_3 ROA_{i,t} + \beta_4 CFO_{i,t} + \beta_5 RevGrowth_{i,t} + \beta_6 D/E_{i,t} + \beta_7 MB_{i,t} + \beta_8 LossDummy_{i,t} + \beta_9 OPCYCLE_{i,t} + Fixed\ effects + \varepsilon_{i,t}$$

Variable definition:
Upward EM = Testing for when accruals estimation (EM)>=0.
Downward EM = Testing for when accruals estimation (EM)<0.

All variables except for the Size & OPCYCLE are winsorized at 1 percent and 99 percent.

Table 9. presents the result from running tests on upward and downward earnings management. The coefficient for the variable of interest *Year* is significantly positive, indicating that after the introduction of IFRS 15 the revenue side of earnings management has increased. In the upward *EM* regression the coefficients of *MB* and *RevGrowth* are significantly positive. This aligns with previous research (Meek et al., 2007; Menon & Williams, 2004) that firms with higher growth are experiencing lower levels of accruals quality. *LossDummy* is also positively significant, supporting Francis et al. (2008) findings that companies with negative earnings have higher levels of discretionary accruals. Testing for downward *EM,* our main variable of interest, *Year* shows no significant values. The coefficients of *ROA, CFO* and *Size* are significantly positive, indicating that larger firms and better performing firms have higher quality in their discretionary accruals. Furthermore, the coefficients of *RevGrowth, MB* and *LossDummy* are significantly negative; this is

in line with previous research that faster growing firms and firms with negative profit have lower levels of accrual quality (Meek et al. 2007; Menon & Williams, 2004; Francis et al. 2008).

5.3 Robustness Check

To ensure the validity and robustness of our result, we tested the data sample using standard procedures and different sensitivity tests. Relying on previous similar studies (Dechow & Dichev, 2002; Tutino et al., 2019; Barua et al., 2010), we winsorized all the variables at a 1% and 99% level, which removed extreme outliers from the data sample, before running the main regression models. An additional measure of robustness is referred to in section 3.2.2, where larger sample sizes often result in higher validity (Bryman & Bell, 2015). The sample size in this study (n=16,495), which is comparable to other studies (Dechow & Dichev, 2002; Francis et al., 2005). To further ensure that the results from the study were robust with high validity, we conducted three different sensitivity tests.

Firstly, earlier research and reports (Tutino et al., 2019; PWC, 2015; Deloitte, n.d; KPMG, 2019b) identifies certain "high-risk" industries that were expected to be more affected by the introduction of IFRS 15 than others while examining discretionary accruals. We excluded these high risk industries, which was approximately 22% of the sample, and ran an additional test to see if it altered the results. The results showed no changes in the significance, which implied that the high-risk industries did not present large outliers in the sample. In addition to this, the robustness of the model was compared to previous studies (Tutino et al., 2019; Barua et al., 2010; Francis et al., 2005) where similar explanatory variables were used. Secondly, we ran the DD model using the Cooks Distance, which eliminates extreme outliers but also down-weightens observations with abnormal absolute residuals (UCLA, n.d.). We thereafter estimate our main regression again to see whether it affects our results. The findings from this test was that there were no extreme outliers represented in the data sample. To address the issue with the strong association between *LossDummy* and *ROA* we ran two separate regressions excluding one of these variables to see whether it alters the results; the result remained the same. Lastly, we produced a random subsample consisting of approximately 75% of the original sample and re-ran the OLS-estimation multiple times (not posted), to see whether it altered the results. Using a subsample should indicate if there are skews or bias within the larger sample, which was not found during this test. Relying on the results from these tests, we believe that the validity of the study is of high quality.

TABLE 10
Robustness Check.

Dependent Variable	**ABS_EM**		**ABS_EM COOKS D**	
Variables	**Coefficient**	**p-value**	**Coefficient**	**p-value**
Year	0.0072	0.042**	0.0075	0.018**
Size	-0.0095	<0.001***	-0.0097	<0.001***
RoA	-0.0830	<0.001***	-0.0499	0.002***
CFO	-0.0577	0.001***	-0.0664	<0.001***
RevGrowth	0.0022	<0.001***	0.0239	<0.001***
D/E	-0.0011	0.117	-0.0014	0.009***
MB	0.0014	<0.001***	0.0012	<0.001***
LossDummy	0.0233	<0.001***	0.0302	<0.001***
OPCYCLE	0.0029	0.124	0.0022	0.256
Constant	0.1410	<0.001***	0.1456	<0.001***
Fixed Effects	Industry, Country & Year		Industry, Country & Year	
SE at firm level	YES		YES	
$Adj.R^2$	21.76%		20.63%	
No. of Observations	12,635		16,495	

First robustness test consists of a sample without the high-risk industries (SIC 15-17, 48, 73).
Second robustness test consist of the residuals using the Cooks distance estimation.

All variables except for the Size & OPCYCLE are winsorized at 1 percent and 99 percent.

6. Discussion

6.1 Measuring earnings management

Measuring earnings management using the DD model, our findings were similar to previous research (Dechow & Dichev, 2002; Barua et al., 2010; Francis et al., 2005; Tutino et al., 2019), that earnings management was present throughout the entire period in 2015-2020. The DD-model detects errors in cash flow estimations and realizations by measuring the size of the deviations, which was the most appropriate model for examining the changes in revenues from IFRS 15. Discretionary accruals are assumed to be the cause of earnings management, and the proxy for earnings management is due to faulty revenue estimates in the closing accruals (Dechow & Dichev, 2002). The existence of discretionary accruals is no surprise as they may be ordinary practice in certain firms and industries, and distinguishing between poor managerial estimations of cash flows and deceitful or fictitious estimations is a difficult task. Connecting the use of discretionary accruals with previous studies and theories on earnings management relies on

understanding why discretionary accruals affect earnings quality. The use of discretionary accruals means that firms must reverse the accruals at a later period, which implies that under- or overestimating revenues will result in errors while closing the accrual. These additional revenues or lack of revenues will have to be recognized in the financial statements, resulting in discrepancies between the estimated and actual revenues. However, previous studies show that managers are willing to sacrifice long-term performance for short-term earnings as revenues and cash flows are considered essential key factors for investors (Graham et al., 2005). The findings of earnings management in revenues may therefore not be shocking, as managers can use discretionary accruals for short-term performance-boosting, which is captured in the proxy for earnings management in the model. The use of discretionary accruals for earnings smoothing (Healy, 1985) or to maximize the financial performance at one period (Bergstresser & Philippon, 2006) is difficult to identify. It may be when managers recognize revenues earlier or later than what should be expected, but it could also be over- or underestimated revenues during the current period. The estimations would be reversed in the next period, reversing the accrual and managing the earnings. The reasoning for earnings smoothing between different periods is to smoothen the financial performance (Gaver et al., 1995), which lowered earnings volatility and was also recognized as positive for investors (Graham et al., 2005).

Furthermore, Healy (1985) suggests that earnings smoothing could also be used for bonus-maximization, where managers use discretionary accruals to manage the revenues. The use of discretionary accruals could therefore be used as intended in accounting and used for earnings management. The deviations from the revenues are easier to distinguish, as they indicate actual errors while closing the discretionary accruals. The use of discretionary accruals in accounting systems may be more efficient whether firms recognize the actual cash flows or recognize additional profit/loss due to estimation errors compared to real earnings management. If managers used discretionary accruals, this will arguably not affect future performance as real earnings management, e.g., decreasing R&D and investments (Roychowdhury, 2006). However, due to regulations and stakeholder expectations, extensive use of discretionary accruals may send negative signals to investors and debt holders, which could lower the stock price and increase the cost of debt (Graham et al., 2005).

6.2 Implications of IFRS 15

We find that earnings management has increased after the introduction of IFRS 15. Using the DD model, measuring estimation errors for accruals that are not fully reversed, firms show signs

of revenues being either over- or underestimated. KPMG (2022b) stated the importance of estimating revenues for future cash flows, which requires managers to use judgment and additional disclosures to their best ability to estimate the revenues accurately. However, the term variable considerations, referring to, e.g., discounts, means that future estimations may not be realized revenue. If firms' estimated future revenues cannot be fully determined, they cannot be recognized as revenues under IFRS 15 (IFRS, n.d.). In addition, future events that may affect the cash flows will then be considered an estimation error, which is not considered earnings management. Referring to IFRS 15, it becomes apparent that the new standard has increased revenue estimation errors, which could be regarded as an indication of increased earnings management. Willfully over- and underestimating revenues could be used to boost financial performance, which aligns with Bergstresser and Philippon's (2006) findings on earnings inflation, which could also be an unintended effect of IFRS 15. Healy and Wahlen (1999) mention that it is crucial to understand that although earnings management aims to mislead or deceive stakeholders, discretionary accruals are used in accounting that allows firms to recognize revenues when due. The use of discretionary accruals becomes blurred; firms use them to estimate revenues and manipulate earnings. Gaver et al. (1995) state that earnings management is not purely malicious but could also be strategic for the firm. This indicates that earnings management is used for managerial gains and as a strategic tool, under the assumption that firms engage in earnings management when possible for either managerial gains (Graham et al., 2005; Healy, 1985; Ball et al., 2000) or to meet investors' expectations (Skinner & Sloan, 2002). The findings show that IFRS 15 has resulted in more estimation errors, which could be an increase in earnings management or inaccurate revenue estimates. However, as IFRS 15 is a new standard, large audit firms (Deloitte, 2018; KPMG, 2019a; KPMG, 2019b) state that the standard has large requirements for these firms and requires careful consideration to interpret the new framework.

The IASB (2021) states that the main objective of IFRS 15 was to "[..] *remove uncertainty of revenue and cash flows arising from a contract with a customer*. "(IFRS, 2021) where an assumption could be that earnings management would decrease. The framework aims to better prepare managers with the tools on how and when to recognize revenues, which should result in better timeliness for revenue recognition and more accurate predictions. It is also important to notice the changes between probable economic benefit and reliable recognition from IAS 18 (IFRS, n.d.), where IFRS 15 means that revenues should be recognized according to variable considerations. These significant changes in revenue recognition allow managers to use more estimations while recognizing revenues and future cash flows from contracts. Assuming that earnings management

occurs due to devious behavior from managers, this could provide some clarity as to why earnings management increased post-IFRS 15. If the risks associated with earnings management, e.g., litigations or bad publicity (Graham et al., 2005), decrease, managers may become more willing to manage the revenues by using discretionary accruals. Our findings show that higher ROA results in lower usage of discretionary accruals, meaning high performance correlates with high earnings quality, similar to Meek et al. (2007). Larger firms have higher earnings quality and are assumed to use earnings management to a lower extent, aligning with previous studies (Dechow & Dichev, 2002; Barua et al., 2010; Pincus & Rajgopal, 2002).

Furthermore, firms with higher revenue growth and market-to-book ratio show a higher degree of earnings management (Menon & Williams, 2004; Meek et al., 2007), which was also the case for us. This could be because of investors' expectations of high-growth firms. A negative debt-equity correlation between earnings management shows that firms with higher leverage are less willing to engage in earnings management. This could come from the fear of litigation, where debt-holders dislike extensive use of discretionary accruals. Graham et al. (2005) had similar findings; firms with high levels of discretionary accruals had a higher cost of capital. We found that firms use revenue-boosting earnings management, which implies that firms overestimate rather than underestimate their revenues. This could be due to the new standard requiring detailed revenue estimates (EY, 2019) from the firms or firms abusing the new standard to boost their performance further.

Previous studies (Tutino et al., 2019; Napier & Stadler, 2020) expected IFRS 15 to impact specific industries significantly. Due to the large changes in revenue recognition from long-term contracts, firms in telecommunication, construction, and IT-services were suggested to be more heavily affected by IFRS 15. Our findings show that IFRS 15 has had no significant change in the use of earnings management between the industries. These findings imply that the industries could still have lower earnings quality. With the new standard combining the framework with the new requirements for revenue recognition, firms' are now required to use professional judgment and proper estimations for revenue recognition. Whether this results in additional earnings smoothing or later revenue recognition remains uncertain in this study, as the DD model assumes that all accruals are reversed in a timely manner. Assuming that IFRS 15 would improve the earnings quality, countries in Europe with a lower disclosures index ranking were assumed to decrease their earnings management (Leuz et al., 2003; Lobo & Zhou, 2001). However, our findings showed no differences in the use of earnings management post-IFRS 15. This suggests

that earnings management either still persists to a greater extent in these countries or that all countries decreased their earnings quality. If firms are more willing to manipulate earnings or have other incentives for earnings management cannot be determined. Still, as the findings show an increase in earnings management throughout Europe, one inference is that the increase occurred on a similar scale despite differences in local laws and cultures.

7. Conclusion

Managers use earnings management to manipulate financial statements for personal or organizational benefit. Previous studies have shown that managers are willing to sacrifice long-term operational goals for short-term performance. The use of discretionary accruals is a common method for managers to manipulate earnings and has been measured by academics to estimate earnings management within firms. Many studies have shown the prevalence of earnings management, but fewer studies have examined how new standards have affected the use of earnings management. IFRS 15 effectively replaced the previous IAS 11 and IAS 18 standards in 2018, which had significant changes in how firms estimate and recognize revenues from contracts. The implications were that firms had to remodel their previous practices. This study studied whether IFRS 15 has impacted the use of discretionary accruals for earnings management while examining 3,304 publicly listed European firms in 30 countries between 2015-2020, who all use the standards provided by the IASB. Although the set goal of the new standard was to improve the useful information to users, the outcome has been a decrease in earnings quality. The findings show that earnings management has increased among European firms after 2018. This could be due to the extended use of opportunistic behavior from managers or revenue estimation errors. The results show that firms are more likely to overestimate their revenues than the opposite, indicating that managers are willing to benefit from short-term profits over long-term performance. This study examined the differences between industries assuming that specific industries would be affected more by IFRS 15. The findings show no differences post-IFRS, indicating that these industries within telecommunication, IT-services, and construction still conduct earnings management and have low-quality earnings. The third assumption was that earnings management would decrease in countries with low rankings of disclosures due to the harmonization of IFRS 15. The findings showed no differences between the countries other than the overall increase in earnings management in Europe. However, it is crucial to recognize that IFRS 15 is a standard that aims to improve the usefulness of financial information to users. If expertise from accountants and practitioners and additional disclosures enhance firms' financial information, unintentional consequences, e.g., increased earnings management, could be

outweighed by the benefits of the new standard. As the room for estimations increases, firms could use accounting practices more suited for their industry, while managers have more opportunities to engage in earnings management. According to our measures, a direct implication of this has been a decrease in earnings quality, ultimately resulting in lower quality of information for investors and other stakeholders.

7.1 Limitations and future research

This study has shown an increase in earnings management in Europe after introducing IFRS 15, resulting in a decrease in earnings quality. Examining a large set of countries means that unknown variables might affect the study's outcome. Analyzing the outcome of a new study could include unintentional errors that do not reflect neglectful or deceitful behavior but rather errors due to inexperience. The sample contains observations from 2014 to 2021; it would be preferable to examine the effect of the implementation within a longer time frame in future research. The DD model requires future *CFO* to estimate the residuals, and this results in that we only can examine three years of IFRS 15. Even though the sample is large enough, this might affect the study's outcome; a longer time frame would be preferable.

Furthermore, the US GAAP, the equivalent to IFRS 15, ASC 606, was introduced in 2017 (EY, 2021), and it would be interesting to do a similar study to see whether the results differ. This study has not included the possible effects due to COVID-19. These potential effects might have skewed the sample for 2020, where the financial performance of the firms could have been significantly decreased, which affected the data sample. Another potential effect could include an increase in earnings management due to poor global performance. Further examining the impact of COVID-19 could be done separately to investigate specific consequences of the pandemic years.

Previous studies have stated that specific industries relying on long-term contracts had lower quality of earnings and that they would experience significant changes due to IFRS 15. This could not be determined. If this implies that all industries have increased their use of earnings management or that there was no significance is uncertain in this study. One limitation in using this methodology is that it is difficult to examine the specific implications of the new standard. A possible study could examine the specifics, e.g., how contracts have changed in the industries and how this has affected the earnings quality.

This study chose to group countries according to a disclosure ranking, implying that countries with a low rank were more likely to have lower earnings quality. One limitation of grouping by country is that certain countries have very few observations, which might lead to skewed or biased results. Future studies could also investigate if IFRS 15 affects countries based on measures other than disclosure rankings. Porta et al. (1998) group countries based on their origin, which might lead to different results than ours. To broaden the focus further, future research could also include all jurisdictions that have adopted the IFRS. This study examines 30 jurisdictions in Europe, compared to the entire reach of IFRS, which is 90 jurisdictions globally (IFRS, n.d). This extension would lead to more observations but also the possibility to further examine any potential cultural effects from different countries. This could further investigate whether the harmonization of accounting rules has occurred or if other factors may have affected the differences between countries.

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