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**The effect of bonus compensation on the difference between non-GAAP financial measures and
GAAP financial measures in Europe**

Author: Dennis Beemsterboer

Student number: 415108

Supervisor: Erkens, M.H.R.

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Abstract

This thesis examines for European firms the relation between bonus compensation of the highest executive and the difference between the main non-GAAP financial measure and the relevant GAAP financial measure that are reported in the firm's annual earnings press release. Additionally, the impact of the issue of the ESMA guidance on non-GAAP financial measures is investigated for three subjects: 1) the % of firms reporting non-GAAP financial measures, 2) the % of firms providing a reconciliation, and 3) the relation between bonus compensation and the difference between the non-GAAP financial measure and the GAAP financial measure. Results show that % of firms reporting a non-GAAP financial measure increased slightly after the implementation of ESMA, but the increase is insignificant. The % of firms providing a reconciliation changed not significantly after the issue of the ESMA guidance. Furthermore, there is no evidence for the relation between bonus compensation and the difference between the non-GAAP financial measure and the GAAP financial measure. Additionally, there is no evidence for an impact of the ESMA guidance on the relation between bonus compensation and the difference between the non-GAAP financial measure and the GAAP financial measure. This thesis provides some early evidence of the effect of ESMA on reporting non-GAAP financial measures and bonus compensation.

Keywords: non-GAAP financial measures; GAAP financial measures; bonus compensation; ESMA; alternative performance measures; reconciliation; Europe

1. Introduction

Public firms are required to present their financial performance of the past year in an annual report. For this report, there are international guidelines, such as International Financial Reporting Standards (IFRS), or local guidelines, such as the United States Generally Accepted Accounting Principles (US GAAP). Before publishing the annual report, firms commonly issue a press release to present their fiscal year results. In these documents, a firm can deliver voluntary additional information to their stakeholders, such as non-GAAP financial measures, which are also known as street earnings or pro forma earnings. In Europe (EU), these measures are commonly known as alternative performance measures (APMs). The European Securities and Markets Authority (ESMA), who provide guidance for disclosing APMs, defines an APM as follows: “a financial measure of historical or future financial performance, financial position, or cash flows, other than a financial measure defined or specified in the applicable financial reporting framework” (ESMA 2015). So, if a firm reports a financial measure which is adjusted for one or more line item(s) from a financial measure defined in the applicable financial reporting framework, this financial measure is classified as an APM (ESMA 2017a). Examples are: operating earnings, and earnings before one-time charges and earnings before interest, taxes, depreciation and amortization (EBITDA). IFRS does not provide an explicit definition of measures such as earnings before taxes (EBT), earnings before interest and taxes (EBIT), earnings before interest, taxes and depreciation (EBITD) and EBITDA. Therefore, these measures are considered as APMs. APMs are mostly derived from the financial statements by adding or subtracting amounts presented in the financial statements (ESMA 2015). The European term APMs refers to measures comparable to those defined as non-GAAP measures by the Security Exchange Commission (SEC), which is the US counterpart of the ESMA (Barboutis and Nagayets 2017). The reporting of APMs has several advantages. For example, managers of a firm may believe that a non-GAAP financial measure may reflect the financial performance of the firm in a better way. Non-GAAP measures can improve financial analysis by excluding the effects of items that do not contribute to an understanding of historical or future trends of earnings or cash flows (EY 2016; Kabureck 2017). However, there is also criticism on the use of APMs. Kabureck (2017) mentioned that non-GAAP measures can be used to perfume the pig. Take for example Twitter, that reported in fiscal year 2014 a GAAP loss of \$578 million, but a non-GAAP net income of \$101 million and an even higher adjusted EBITDA profit of almost \$301 million. The chairman of the Financial Accounting Standards Board (FASB) addressed that the composition of non-GAAP measures may not be clear, making it difficult for investors to interpret these measures (Golden 2017). This problem also leads to less comparability of APMs between firms (EY 2016).

There is a difference in non-GAAP financial reporting between the US and Europe. In the US, non-GAAP financial reporting is regulated after the issuance of Regulation G in 2003 and amendments to Regulation S-K (Young 2014; Barboutis and Nagayets 2017). In contrast, the reporting of APMs is not regulated in Europe. The predecessor of the ESMA, the Committee of European Securities

Regulators (CESR) issued a recommendation on APMs in 2005 (Isidro and Marques 2015). In 2016, the ESMA issued a new guideline for APMs, which replaced the CESR recommendation. This new guideline tries to increase the usefulness and transparency of APMs. Because there are no strict rules for APMs in the accounting standards, the composition of the APMs may not be the same for all firms. The ESMA guidelines can achieve their goals because nearly all EU national competent authorities adopt to the ESMA guidelines (Barboutis and Nagayets 2017). There is much consistency between the regulation in the US and the ESMA guidelines. Due to more experience non-GAAP financial reporting is more developed in the US than in Europe (Barboutis and Nagayets 2017). An example is the implementation of US regulation on non-GAAP financial measures in the beginning of the 21st century, causing the US regulation to have more guidance on specific topics relating to non-GAAP financial measures when compared to EU. Because the non-GAAP financial measures are regulated in an early stage, most literature use US samples.

Prior research on non-GAAP reporting shows that there has been an increase in non-GAAP reporting. Black et al. (2017a) show that for S&P 500 firms the frequency of non-GAAP reporting has increased in all sectors between 2009 and 2014. They also find that these firms are excluding more items from their non-GAAP calculations and that the magnitude of the exclusions has increased during this period. For European firms, where non-GAAP reporting is not regulated, there is much less research. Isidro and Marques (2015) show that a majority (79.5%) of firms in all major European countries report at least one non-GAAP metric in their earnings releases during 2003 – 2007. The most recent period investigating non-GAAP reporting in Europe is until 2012. Aubert and Grudnitski (2014) show for a sample of 5896 firms that in Europe pro forma disclosures has increased from 1331 in 2005 to 2249 in 2012. To the best of my knowledge, no other research on non-GAAP reporting in EU exists for a more recent period.

Prior research also investigates incentives for managers to report non-GAAP financial measures. For example, the compensation of the manager may depend on a particular non-GAAP financial measure or the manager tries to influence the stock price which can be beneficial for managers' stock options. Black et al. (2017b) show that there is a positive association between non-GAAP performance measures in managers compensation contracts and reporting non-GAAP measures in earnings announcements. This result is based on a sample in the US, given that they used S&P firms during 2009 – 2015. Isidro and Marques (2013) investigated the effect of stock compensation of board members on voluntary non-GAAP disclosures. Based on a sample of press releases from the 500 largest European firms for the period 2003 – 2005, they show that if directors' compensation is linked to the market performance of the firm, there is a higher probability of non-GAAP earnings disclosures.

As there is barely literature focusing on non-GAAP financial reporting in Europe and the relation with executive compensation for European firms, this research tries to fill this gap. Also, to the best of my knowledge, no research has investigated the effect of the ESMA guidelines for non-GAAP reporting. Analyzing non-GAAP financial reporting in Europe can provide important insights because

firms in Europe can behave different from firms in the US due to the fact that non-GAAP financial reporting is regulated in the US, but not in Europe. Marques (2017) suggests that future research could focus on the effect of the ESMA guidelines on disclosure of non-GAAP financial measures. Therefore, the research question is as follows:

Does the issuance of the ESMA guidelines impact the relation between bonus compensation and the difference in value between the non-GAAP financial measure and the GAAP financial measure ?

To provide an answer to this research question, earnings press releases for a random sample of 200 large European listed firms during 2014-2017 are investigated. This research looks at the earnings press release of a firm rather than the annual report. An earnings press release is issued before the publication of the annual report and therefore contains valuable information about the previous year performance of the firm. Mahoney and Lewis stated in their 2004 work (as cited in Davis et al. 2012, p.845) that earnings press releases are “the major news event of the season for many firms as well as investors, analysts, financial media, and the market.” The annual report can contain valuable information for stakeholders but contains much information that does not necessary relate to financial reporting. For example, the annual report can contain information about risk prevention and management, corporate control, and corporate social responsibility. Earnings press release are (mostly) shorter in terms of pages than annual reports because the earnings press release are (almost) only related to financial information. This makes the investigation of annual earnings press releases more suitable than the annual reports, considering the research is focused on non-GAAP financial measures. For each annual earnings press release the main non-GAAP financial measure is chosen and checked if a reconciliation is provided to the relevant GAAP financial measure. To estimate the relation between bonus compensation and the difference between the main non-GAAP financial measure and the relevant GAAP financial measure an Ordinary Least Squares (OLS) regression is used.

The results of this thesis can be separated in four parts. First of all, the results show that almost all annual earnings press releases contained a non-GAAP financial measure. Of the 660 annual earnings press releases that are investigated, only five contained no non-GAAP financial measure. One firm did not report a non-GAAP financial measure in all their annual earnings press releases and one firm did not report a non-GAAP financial measure in their annual earnings press release in 2014. Therefore, a slight increase in the % of firms reporting a non-GAAP financial measure is visible. Secondly, the results show that the % of firms providing a reconciliation did not increase after the issue of the ESMA guidance, as expected by the implementation of the ESMA guidance. The ESMA guidance states that firms should provide a reconciliation when reporting a non-GAAP financial measure. However, the decrease is not statistically significant. Third, the results provide no evidence on the relation between bonus compensation and the difference between the non-GAAP financial measure and the relevant GAAP financial measure. The regressions show no statistically significant coefficients for bonus

compensation. Fourth, the results shows that the issue of the ESMA guidance has no impact on the relation between bonus compensation and the difference between the non-GAAP financial measure and the relevant GAAP financial measure. The coefficients of the interaction effect show no significance. Therefore, the issue of the ESMA guidance does not affect the relation between bonus compensation and the difference between the main non-GAAP financial measure and the relevant GAAP financial measure.

This thesis contributes to the existing literature by providing early evidence of the impact of the ESMA guidelines. The only paper about the implications of the ESMA guidelines on APMs is conducted by Magli et al. (2017). However, this paper investigates by using a survey if firms expect a possible impact of the issue of the ESMA guidelines on APMs. Also, this thesis provides some specific evidence on the relation between bonus compensation and non-GAAP financial reporting. Prior literature looked at short-term compensation or stock compensation. Furthermore, prior research looks at the possibility of reporting a non-GAAP financial measure, whereas this thesis looks at the difference between the non-GAAP financial measure and the GAAP financial measure. The results show that the ESMA guidance did not have an impact on the % of firms reporting a reconciliation. However, providing a reconciliation is one of the requirements in the ESMA guidelines. So, this finding is interesting for the ESMA, because their guidance does not lead to more firms providing a reconciliation. Also, the results suggests that bonus compensation received by the executive does not lead to a higher difference between the main non-GAAP financial measure and the relevant GAAP financial measure. This finding can be interesting for firms when they set the compensation for the executive.

The remainder of this thesis proceeds as follows. Section 2 describes the regulation on APM reporting in Europe and the relation between executive compensation and APM reporting. Section 3 provides the development of the hypothesis. Section 4 describes the research method. Section 5 provides the result of the research. Section 6 provides a conclusion on the research question, limitations of the research and suggestions for future research.

2. Theoretical background

2.1 Regulation on non-GAAP reporting

In 2002, the International Organization of Securities Commissions (IOSCO) issued its warnings about the reporting of APMs (IOSCO 2002). The IOSCO addresses the positive side of the use of APMs, namely that APMs can help investors to understand the financial performance of the firm better. But the IOSCO has concerns about APMs when they are not adequately defined and presented. The use of APMs does not contribute to the comparison of financial statements between firms. Also, if the composition of an APM is not clear, it can mislead investors. The IOSCO (2002 p.2) clearly states that: “Issuers, investors and other users of financial information are cautioned to use care when presenting and interpreting non-GAAP results measures”.

Therefore, the SEC issued in 2003 Regulation G and amendments to Item 10(e) of Regulation S-K for the disclosure of non-GAAP financial measures by firms reporting under US regulation (Barboutis and Nagayets 2017). Regulation G adopts for all public disclosures, such as the quarterly and annual reports, but also for press releases and conference calls. However, it is forbidden for US firms to present non-GAAP financial measures in the audited financial statements (Young 2014). For example, the management of the firm is not allowed to present EBITDA in their income statement but is allowed to present it in the management discussion if it complies with regulation. Under Regulation G firms are required when reporting a non-GAAP financial measure to present the most comparable GAAP financial measure with a reconciliation between the non-GAAP financial measure and GAAP financial measure (Young 2014; Barboutis and Nagayets 2017). The amendments to Regulation S-K provide additional requirements for reporting non-GAAP financial measures in all SEC filings after complying with the requirements of Regulation G. Under Regulation S-K a firm is required to disclose the reasons for presenting a non-GAAP financial measure, the additional purposes of the non-GAAP financial measure by management, and make sure that the comparable GAAP financial measure is presented in an equal or more prominent way than the non-GAAP financial measure (Young 2014; Barboutis and Nagayets 2017).

In Europe, the CESR issued in 2005 their recommendation for reporting APMs. The goal of the CESR recommendations was to guide firms to report APMs in a way that is useful for investors (CESR 2005). The CESR addressed the problem of the implementation of IFRS in Europe for the reporting of APMs. Under IFRS, there is no strict format for disclosing the financial statements. Only some line items, like revenue and net profit, should be presented in the financial statements (CESR 2005). This makes it easier for firms to disclose APMs in their financial statements, but the firms must consider that the APMs are relevant for reflecting the performance of the firm. The CESR recommendations apply to all reporting that includes financial information, except when the firm issues a prospectus. The CESR made the following recommendations: 1) respect the four IFRS principles (understandability, relevance, reliability and comparability) in every situation reporting financial information including APMs, 2) provide a definition and calculation of the reported APMs, 3) if possible, provide APMs in appearance of the relevant GAAP measures, including a reconciliation of the APM to the relevant GAAP measure, 4) when reporting an APM, the firm should report the previous year's APM as well, 5) the firm should present APMs consistently over time, but when the firm changes the composition of the APM, it should be explained, 6) do not present APMs in more prominence than the related GAAP measures, and 7) the issuer of the APMs should explain why the APMs are reported and the internal purpose of the APMs (CESR 2005). Note that these are recommendations for reporting APMs, so firms are not forced to comply with the CESR recommendations.

In 2016, the ESMA issued guidance for reporting of APMs, which became effective on July 3rd, 2016, thereby replacing the CESR recommendations (ESMA 2015). The guidance is applicable for firms that have their securities traded on a regulated market (for example, firms listed on the CAC40) or are

required to publish regulated information. When looking at the annual reports that firms provide, the ESMA guidelines do not apply to APMs disclosed in the financial statements but do apply to other sections such as the management report. But what if a firm discloses an APM in their management report and in their financial statements? Does the ESMA guidelines only apply to the APM reported in the management report? The answer is no. All financial measures that are not defined in the applicable financial reporting framework are in the scope of the ESMA guideline. It is thereby not relevant if the APM is also reported in the financial statements (ESMA 2017a). So, for example, if a firm reports EBITDA in their management report and the financial statements, the ESMA guideline applies to both disclosures.

The goal of the ESMA guidance is to increase the usefulness and transparency of reported APMs. Application of the guidance will lead to APMs that are more comparable, reliable and comprehensible for users of the disclosed information. This is also the statement that the ESMA made, a firm should disclose an APM in respect to the usefulness of users' decision-making. Under the ESMA guidance firms are required to disclose how the reported APMs are defined and calculated. How APMs are defined and calculated should be consistent over time (ESMA 2015). The APMs should have an appropriate label based on their content and should not confuse the users. For example, if the APM does not include depreciation and amortization expenses, this should be clear from the title of the APM. When reporting an APM, there should be a reconciliation of the APM to the most directly reconcilable line item in the financial statements, thereby separately identifying and explaining the material reconciling items (ESMA 2015). The reconciliations of the APMs from the financial statements should be clear for the user, perhaps by providing guidance. When the APM is not derived from the financial statements, for example when the firm provides forecasts, the firm should provide an explanation of the consistency of the APM in accordance with the applied financial reporting framework. Also, the firm providing APMs should explain why the firm believes that the APM is useful. The explanations allow the users to assess their relevance and reliability of the APMs (ESMA 2015). Besides that, comparatives of previous periods should be presented when reporting an APM. The comparatives should also be presented with a reconciliation of the APM. When a comparative cannot be presented by the firm, it should give an explanation why the comparative cannot be disclosed. When a firm decides to change the definition of an APM, the firm should do three things: 1) explain what is changed, 2) explain the reason for the change, and 3) provide restated comparative figures. A firm can decide to stop reporting an APM. In this case, the firm should provide an explanation for this decision. A firm can instead of not reporting the APM anymore, replace it with another APM that fulfills the same objective. In this case, the firm should provide an explanation why the new APM is a better measure for the objective than the old APM. Summarizing, the ESMA guidance states that when a firm provides an APM, it should give a reconciliation of the APM and the reason for reporting the APM. When the firm changes the composition of an APM or changes its reporting decisions, it should provide an explanation for the change.

National competent authorities are required by Article 16(3) of the ESMA to inform the ESMA about their decision to (intend to) comply with the ESMA guidance on APMs (ESMA 2017b). If a national competent authority decides to not (or does not intend to) comply with the ESMA guidance on APMs, it should provide reasons for this decision. Nowadays, all national competent authorities have informed the ESMA about their decision to comply the ESMA guidance on APMs¹. However, before the ESMA guidelines on APMs became effective, national competent authorities may have already issued guidance for non-GAAP reporting. For example, in France, the Autorite des Marchés Financiers (AMF) prohibited to report a non-GAAP number without a reconciliation. However, this guidance did not lead to less discretion in non-GAAP numbers (Aubert 2010). By investigating earnings announcements of French firms during 1996 – 2006, Aubert (2010) shows that APMs are higher than the GAAP measure in almost 80% of the investigated earnings announcements. Also, APMs are used to cover up bad news that would have been reported under the GAAP number. In September 2017, the AMF reminds issuers of APMs to seven statements for non-GAAP reporting (Autorité des Marchés Financiers 2017). These statements are similar to the guidance provided by the ESMA. The seven statements are as follows: 1) state that APMs have no common definition under IFRS and are therefore not comparable across firms, 2) make sure the name of the APM differs significant from the GAAP measures, 3) state the usefulness of the disclosed APMs to investors and state the internal use of the APMs, 4) comparable GAAP measures should be presented in more prominence, 5) provide a reconciliation of the APM with the comparable GAAP measure(s), 6) make sure that items are not labeled as non-recurring where in fact the occurred in the previous two years or is intended to occur in the coming two years, and 7) disclose the APM consistently over time, but if the firm recomposes an APM, it should provide the reason for the recomposition. So, where non-GAAP financial measures are regulated for firms reporting under US regulation, for European firms there are only recommendations for reporting no-GAAP financial measures. However, the recommendations of the ESMA are comparable to the regulation in the US (Barboutis and Nagayets 2017). When presenting a non-GAAP financial measure, it should have a reconciliation, be presented with a comparable GAAP financial measure, it should not be presented in a more prominent way, management should state reasons for the disclosure of the non-GAAP financial measure, and management should state the reasons if the non-GAAP financial measure is internally used. But there are some remarkable differences between US regulation and ESMA guidelines. First of all, in the US there is regulation, but in Europe it is a recommendation. Secondly, Young (2014) notes that under IFRS it is allowed to present non-GAAP earnings in the audited financial statements, where this is forbidden under US regulation.

¹:the ESMA compliance table for APM guidelines is published on April 21, 2017. Denmark intended to apply by July 1, 2017. Croatia intended to apply December 31, 2017.

2.2 Management compensation and non-GAAP reporting

Managers of firms can receive different types of compensation. Most compensation contracts include four basic elements: 1) base salary, 2) bonus tied to firm performance, 3) stock options, and 4) long-term incentive plans (Murphy 1999). So, the management compensation contract contains a constant (predetermined) part, the base salary, and a variable part, namely the bonus, stock options and long-term incentive plan. A firm can use different performance measures for the bonus compensation. Murphy (1999) looked at the annual incentive plans of 177 large US firms. Most firms do not rely on one single performance measure. 90% of the firms rely on a financial measure related to accounting profit, such as net income or EBIT. Bonuses do not only depend on the dollar-value, the profit per share (EPS) is also important as a performance measure for bonuses. The financial performance measures firms use do not always have to be measures based on the financial statements, like GAAP financial measures. The firm performance can be based on an earnings measure which is adjusted, such as non-GAAP financial measures. This is a common practice for S&P 500 firms during 2010 – 2013 (Curtis et al. 2017). Almost 3 out of 4 firms (74%) uses a non-GAAP measure as performance measure for the bonus compensation. In almost half of the cases a firm uses EPS as performance measures, but in 79% of these cases the EPS is adjusted. Firms make most adjustments for restructuring (42%), acquisitions (37%), and gains and losses on asset sales (28%). Thus, firms can use non-GAAP financial measures as measurement for performance in their bonus compensation contract.

Black et al. (2014) investigate the relation between chief executive officer (CEO) compensation contracts and non-GAAP disclosures in quarterly press releases using a sample from 1998 to 2006. They look at the short-term and long-term horizon of the compensation contracts. The short-term of the compensation contract is linked to the base salary and the bonus compensation, which take place within one year. The long-term of compensation contracts can be related to long-term incentive plans. This includes firm performance measured over a longer time-period, e.g. three-to-five-year performance. Managers may rely less on short-term performance if the manager also receives long-term performance plans, instead of only short-term performance plans. In line with this, the results show that when investigating the long-term horizon of the compensation contract, managers are less likely to report potentially misleading non-GAAP measures (Black et al. 2014).

Black et al. (2017b) investigate if the internal use of non-GAAP financial measures in compensation contracting is related to the external reporting of these measures. For a sample of S&P 1500 firms during 2009 – 2015, there is a positive association between non-GAAP earnings in compensation contracting and external reporting of non-GAAP earnings in earnings announcements. The use of non-GAAP earnings in performance evaluation leads to an increase of 10 - 20% in the probability of external reporting of non-GAAP earnings (Black et al. 2017b). Black et al. (2017b) also look at the different incentives of a compensation contract, namely short-term, long-term and shareholder alignment. Short-term incentives can be achieved by including bonus pay in the compensation contract. Long-term incentives can be created by including long-term plan incentives.

Alignment with shareholders can be accomplished by providing stock compensation. However, because a manager receives the components of the compensation contract at the same time, it is difficult to isolate the effect of one part of the compensation contract. Black et al. (2017b) look at the association of non-GAAP reporting and the relation of short-term versus long-term incentives. Regressing long-term incentives on the change of reporting non-GAAP earnings, the results show there is an association between long-term incentives and the change of reporting non-GAAP information. However, when a manager receives long-term incentives in their compensation contract, there is no association with meeting or beating analysts' earnings benchmarks.

For Europe, Isidro and Marques (2013) investigated the effect of stock compensation of board members on voluntary non-GAAP disclosures. Based on a sample of press releases from the 500 largest European firms for the period 2003 – 2005, they show that if directors' compensation is linked to the market performance of the firm, there is a higher probability of non-GAAP earnings disclosures. Besides that, Isidro and Marques (2013) show that this result is mitigated when there is an efficient board of directors. When a firm has an efficient board of directors, the likelihood of reporting non-GAAP financial measures decreases, there is less emphasis on non-GAAP financial measures in the press release, and probability that the firm provide a reconciliation is higher. So, management compensation has an impact on the decision of managers to report non-GAAP financial measures. There is a vast amount of literature on non-GAAP reporting, (mostly) focusing on samples in the US. Black et al. (2017a) show that during 2009 – 2014 non-GAAP reporting has increased in the US during the sample period and has become commonplace across all sectors. For Europe, Isidro and Marques (2008) show that on average three non-GAAP financial measures per press release are disclosed by the largest European firms during 2003 - 2005. For the same time-period, Isidro and Marques (2013) show the reporting of non-GAAP earnings across industries. In their sample of 805 observations, there was disclosure of non-GAAP earnings in approximately 80% of the cases. Looking at industry classification, the % of non-GAAP earnings disclosure is the lowest for Materials and Electronics (68,48%), the highest for Transportation and Communication (86,61%). A possible reason for differences across industries is that in some industries non-recurring items are more common, making it more interesting for these industries to report non-GAAP financial measures that excludes non-recurring items. Isidro and Marques (2013) show also the emphasis on non-GAAP earnings by industry. There are no surprisingly differences between industries, in all industries there is more emphasis on non-GAAP earnings than GAAP earnings, with Agriculture and Mining showing the lowest percentage (69%). For the firm-observations that report non-GAAP earnings, 66,3% disclose some reconciliation between non-GAAP earnings and GAAP earnings. Here, firms in the industry Materials and Electronics have the lowest % of reconciliation (53,2%), whereas firms in Entertainment and business services have the highest % of reconciliation (84,9%). So, Isidro and Marques (2013) show that there are some differences between industries in non-GAAP earnings reporting, but it is hard to draw conclusions because of the relatively small time-period and low number of observations for some industries (<100 observations).

Expanding the time-period to 2003 – 2007, Isidro and Marques (2015) show that a majority (79.5%) of firms in all major European countries report at least one non-GAAP metric in their earnings releases. Of these firms that report a non-GAAP measure, 60,8% were non-GAAP EPS measures, showing that non-GAAP EPS is commonly used as a non-GAAP financial measure, which is supported by Isidro and Marques (2008). Black et al. (2014) show reported EPS in quarterly press releases for a sample from 1998 to 2006. The mean of non-GAAP EPS (0.302) doubles the mean GAAP EPS (0.146), showing that non-GAAP EPS presents firm performance in a better light, which could be a reason for the manager to present non-GAAP financial measures. Isidro and Marques (2008) also investigate which reasons management provides for disclosing an APM. Only in 35% of the cases when a firm disclosed an APM there was an explanation for the adjustments. Turning to the reconciliation of non-GAAP financial measures, in 47% of the cases the firm did provide a tabular reconciliation, which is a recommendation in the ESMA guidelines (Isidro and Marques, 2015). If the reported non-GAAP financial measures are compared to the GAAP measures, the reported non-GAAP numbers are higher in 92.5 % of the cases. This high number can be explained in two ways. On one hand, firms opportunistically use APMs to present the firm in a better perspective. On the other hand, non-GAAP financial measures commonly exclude non-recurring items, which are in most cases expenses, so excluding non-recurring items will lead to higher earnings numbers. Also, firms do not consistently present non-GAAP financial measures over the years (Isidro and Marques 2015). Only in 30,3% of the cases the firm report non-GAAP financial measures in all sample years. This makes comparison of non-GAAP financial measures over time difficult, something the ESMA guidance tries to stimulate.

Isidro and Marques (2015) show that institutional and economic factors play a role in the reporting of non-GAAP financial measures for the 500 largest European countries. The following four factors were investigated: 1) efficiency of legal and enforcement systems, 2) protection of minority shareholders' rights, 3) financial markets' development, and 4) ease of communication and dissemination of information. Therefore, there is some prior research for Europe focusing on one specific country. To the best of my knowledge, Aubert (2010) is the only paper that investigated the reporting of non-GAAP numbers specifically in France. Firms listed on the NYSE-Euronext Paris already reported non-GAAP numbers during the period 1996 – 2006. During this period, there were 116 disclosures of pro forma measures, spread over 66 firms. Taken that the sample included all French SBF 250 firms, the use of non-GAAP reporting is not widespread. Non-GAAP financial measures were also not consistently reported during the sample period. For example, L'Oréal and Zodiac reported the most non-GAAP financial measures during the period (6), but not consistently (otherwise they would have reported at least 11 times) (Aubert 2010). The adjustments made to the GAAP financial measures were mostly due to goodwill and amortization. In line with this, the mean of pro forma earnings (€689.240.000) is higher than the mean of GAAP earnings (€612.053.000), something which is also shown by Isidro and Marques (2015). Aubert (2010) also looks at the incentives of a firm to report non-GAAP financial measures. Non-GAAP financial measures are mainly used to beat the earnings forecast

of analysts. Of the firms that reported non-GAAP earnings, 89,4% met or beat the forecasts of the analysts, where their GAAP earnings would have beaten the analysts' forecasts in only 18% of the cases. Furthermore, when a firm has negative GAAP earnings it uses non-GAAP earnings to report a profit. This finding is supported by Isidro and Marques (2015), whose sample of European firms includes French firms. For France, there were 229 firm-year observations, of which 40,6% reported non-GAAP financial measures. In almost half of the cases that a non-GAAP financial measure is reported, it is used because GAAP earnings fall short in meeting earnings benchmarks. Hitz (2010) provides some evidence for the motive of using pro forma earnings in quarterly earnings releases by large German firms during 2005 and 2006. Results show that more than a third of the quarterly earnings press releases contained a non-GAAP financial measure and one third of the non-GAAP earnings press releases contained a reconciliation. Also, strategic motives play an important role in reporting non-GAAP financial measures. For the UK, Choi et al. (2007) provide some evidence on non-GAAP financial reporting. They investigated the financial statements of the 500 UK listed firms on non-GAAP EPS for the years 1993/1994, 1996 and 2001. For the 500 observations in years 1993/1994, approximately 40% contained non-GAAP EPS. In 2001, the percentage had increased to more than 70%.

The disadvantage of some findings is that they investigate a sample period before or including the implementation of IFRS in 2005 in Europe. The implementation of IFRS on non-GAAP reporting has not explicitly been investigated, but Isidro and Marques (2015) show for their sample that non-GAAP reporting has decreased during 2005 but increased in the years after the implementation of IFRS. Hitz (2010) shows that the mandatory adopters of IFRS are more likely to report non-GAAP financial measures. The goal of the implementation of IFRS was to increase the transparency and comparability of financial reporting. However, IFRS provides no strict guidance of presenting the financial statements, providing discretion for managers to present APMs in the financial statements. Also, the one-size-fits-all principle of IFRS does not fit all firms, therefore managers may want to disclose an APM that is more representative of their financial performance than GAAP measures (Young 2014). Young (2014) describes the two views that exist on reporting financial performance. One group favors the idea that net income represents the effect of all changes in shareholders equity. The other group favors the idea that current earnings can predict sustainable performance, which should not be disturbed by non-recurring items. APMs can be placed in the latter group. For example, GAAP measures do not present the core earnings of a firm in a representative way due to high non-recurring expenses, therefore understating the core earnings. An APM that excludes non-recurring line items may be the solution. Therefore, it is interesting to see how market participants value non-GAAP financial measures. Many researches have investigated this question, but all concluded that investors value non-GAAP financial measures as relevant (Black et al. 2017a).

3. Hypothesis development

3.1 Hypothesis 1

Most of the research on non-GAAP financial reporting in Europe is about the frequency of firms reporting a non-GAAP financial measure. Almost all papers that focused on the European setting, investigate samples before 2012. Isidro and Marques (2013) show for a sample of the 500 largest European firms the reporting of non-GAAP earnings during 2003-2005. There is an increase in non-GAAP disclosures over the three years (from 173 to 251), but also an increase in year-observations (from 214 to 317). Looking at the % of firms disclosing non-GAAP earnings, it remains almost stable over the three years. In 2003, 80,8% (173/214) of the firms reported non-GAAP earnings. In 2004, 81,4% (223/227) of the firms reported non-GAAP earnings. In 2005, 79,2% (251/317) of the firms reported non-GAAP earnings. Isidro and Marques (2015) show, based on the 500 largest European firms, that between 2003 and 2007 the % of firms reporting non-GAAP earnings has been almost stable. In 2003 61% of the firms reported non-GAAP earnings, which slightly decreased to 60.4% in 2004. The % of firms reporting non-GAAP earnings significantly decreased in 2005 to 54.7%, perhaps due to the implementation of IFRS and/or the CESR recommendation in 2005. After 2005, the % of firms reporting non-GAAP earnings increased again (61.1% in 2006, 66.8% in 2007). Aubert and Grudnitski (2014) show for a sample of 5896 firms that pro forma disclosures in Europe have increased during 2005 - 2012. In 2005, there were 1331 pro forma disclosures in Europe. This number increased to 2249 in 2012. For the US there is more recent research on the frequency of firms reporting non-GAAP financial measures. Black et al. (2017a) show that during 2009 - 2014 in the US non-GAAP reporting has increased during the sample period and has become commonplace across all sectors. Recent research by Coleman and Erickson (2017) showed that 96% of the S&P 500 firms reported a non-GAAP earnings measure in their results over the fourth quarter of 2016. The research in US has shown it has become common practice for firms to report non-GAAP financial measures. Therefore, hypothesis 1 is as follows:

H1: the % of firms reporting a non-GAAP financial measure in their annual earnings press release increased during 2014 – 2017

3.2 Hypothesis 2

Prior research has investigated the reconciliation of non-GAAP financial measures. Aubert (2010) shows that during 1996 – 2006 reconciliations are rare for French firms, even when the AMF prohibits reporting pro forma measures without a reconciliation. Isidro and Marques (2013) show for a sample of large European firms that 66,3% of the firms disclosed some reconciliation between non-GAAP earnings and GAAP earnings during 2003-2005. Besides that, Isidro and Marques (2013) show that reconciliations differ across industries. Isidro and Marques (2015) show for a sample of major firms

in Europe during 2003 – 2007 that approximately almost half (47%) of the firms presented a tabular reconciliation. The new ESMA guidance states that firms should provide a reconciliation between a non-GAAP financial measure and a relevant GAAP financial measure. So, under the new ESMA guidelines, one can expect that more firms provide reconciliations of their non-GAAP financial measures to the relevant GAAP financial measure.

H2: the % of reconciliations provided in the annual earnings press release increased after the implementation of the ESMA guidelines

3.3 Hypothesis 3

Cotter et al. (2011) present in their paper an overview of the theories for voluntary disclosures. The most popular theories to explain voluntary disclosures are agency theory, signaling theory, proprietary cost theory, political economy theory, stakeholder theory and legitimacy theory. These six theories can be grouped in two groups. The latter three theories can be grouped as ‘socio-political theories’ because they all suggest that social and/or political factors influence voluntary disclosures. The former three theories have in common that they focus on wealth maximalization as incentive to voluntary disclosures. The reporting of non-GAAP financial measures can be linked to these theories. First, agency theory describes the relation between a principal (shareholders) and an agent (managers). Between the principal and agent exists information asymmetry, which can be diminished when the managers provide voluntary additional information, like non-GAAP financial measures. Second, signaling theory describes that information asymmetry can be reduced by the party with more information signaling it to others (Cotter et al. 2011). A manager can signal his information advantage to others by providing additional voluntary disclosures. Shetata (2014) adds that managers can give a signal to the market that their firm is better than their rivals. For example, if a non-GAAP financial measure shows high core earnings relative to their rivals, a manager can decide to signal this to the market by additional voluntary disclosure of that measure. Third, political economy theory describes that firms provide additional information to please particular stakeholders (for example, the government), by seeking support of the stakeholders or obey to the pressure stakeholders place on the firm (Cotter et al. 2011). For example, stakeholders, like investors, put pressure on the firm to provide them non-GAAP financial measures. Fourth, stakeholder theory says that firms have incentives to voluntarily disclose additional information to stakeholders to convince them that the firm is complying with their requirements (Cotter et al. 2011). This theory is about the moral actions managers take. If the stakeholders have the perception that it is morally accepted to disclose non-GAAP financial measures, the managers of the firms should disclose the measures. A fifth theory on voluntary disclosure that can be related to non-GAAP financial measures is capital need theory, as described by Shehata (2014). The capital need theory says that voluntary disclosures can help the firm to obtain capital at a lower cost. For example, the non-GAAP financial measure free cash flow shows the remaining cash after spending

money on maintaining or expanding its asset base. When a firm has a high free cash flow, investors can be surer that they receive their money back and therefore require a lower interest rate.

The other two theories described in Cotter et al. (2011) on voluntary disclosure, proprietary cost theory and legitimacy theory, cannot be related to a firm voluntarily disclosing non-GAAP financial measures. The proprietary cost theory differs from the other theories because proprietary cost theory says that a manager will not disclose voluntary additional information because the manager believes the information contains proprietary information (Cotter et al. 2011). Disclosing this proprietary information can harm the firm. For example, if a non-GAAP financial measure presents the core earnings of the firm, the manager may not disclose the non-GAAP financial measure if the manager believes disclosing the core earnings will harm the firm. Legitimacy theory has to do with the firm operating according to the 'social contract' between the firm and the society (Cotter et al. 2011). However, firms can comply with this 'social contract' by disclosing social and environmental disclosures. Non-GAAP financial measures are part of the financial disclosures, so legitimacy theory is not relevant as a theory on voluntarily disclosing non-GAAP financial measures.

The above discussed theories are for firms to disclose voluntary additional information. But there are also incentives for managers. As discussed in section 2, the compensation contract of a manager consists of different parts. Black et al. (2014) show that the constitution of the compensation contracts has an effect on the reporting of non-GAAP financial measures. When a compensation contract consists of a long-term performance plan, managers are less likely to report non-GAAP financial measures. Thus, when a compensation contract consists of a short-term performance plan, the manager is more likely to report a non-GAAP financial measure. Curtis et al. (2017) show for a sample of S&P 500 firms that 74% of the firms used an adjusted performance measure for bonus compensation during 2010 – 2013. The most frequently used performance measure was EPS, which is used in 42% of the 1195 earnings performance measures in annual bonus compensation contracts. However, in almost 4 out of 5 reported EPS, the measure was adjusted. Black et al. (2017b) looked at a sample of S&P 1500 between 2009 and 2015 at the internal use of non-GAAP financial measures and the external reporting of non-GAAP financial measures. There is a positive association between the use of non-GAAP earnings in compensation contracts and the change that the managers report non-GAAP financial measures externally. So, Curtis et al. (2017) and Black et al. (2017b) show that the composition of the compensation contract (short-term versus long-term) matters for managers in reporting non-GAAP financial measures. Part of the compensation contract for managers can consist of stock options. Managers may receive stock options to align their incentives with that of the shareholders. Isidro and Marques (2013) focus specifically on the relation of management compensation and market performance of the firm. Managers may influence the market by reporting non-GAAP financial measures, which are in most cases higher than the GAAP measures. Black et al. (2014) show that the mean of non-GAAP EPS (0.302) doubles the mean GAAP EPS (0.146) in quarterly press releases for a sample from 1998 to 2006. This finding is supported by French firms that reported higher APMs than the GAAP measure in

almost 80% of the investigated earnings announcements (Aubert 2010). Isidro and Marques (2013) show that a positive relation exists between non-GAAP financial reporting and managers who receive all or a part of its compensation in stock and option grants. Prior research focuses on the use of non-GAAP financial measures and management compensation. However, little research has been performed on whether the difference between the non-GAAP financial measure and the relevant GAAP financial measure is greater when the management receives bonus compensation. This is based on findings that reported non-GAAP financial measures are higher than their GAAP equivalents (Aubert 2010; Black et al. 2014) and the finding that managers provide more non-GAAP financial measures when their compensation contract consist of a short-term incentive plan, of which bonus compensation is a part (Black et al. 2014). A higher difference between the non-GAAP financial measure and the GAAP financial measure can indicate that the manager reported the non-GAAP financial measure to receive a bonus. Based on this, hypothesis 3 is as follows.

H3: the difference between the main non-GAAP financial measure and the equivalent GAAP financial measure is greater when the executive receives bonus compensation

3.4 Hypothesis 4

On July 3rd, 2016 the ESMA guidance became effective, which is adopted by all competent national authorities related to the ESMA. The goal of the ESMA guidelines is to increase the comparability, reliability and/or comprehensibility of APMs (ESMA 2015). The ESMA guidance states that when a firm provides an APM, it should give a reconciliation of the APM and the reason for reporting the APM. When the firm changes the composition of an APM or change its reporting decisions, it should provide an explanation for the change. For the US, Zhang and Zheng (2011) show that the reconciliation of non-GAAP financial measures matters. When a firm has a higher reconciliation quality, there is less mispricing of the stock price. This finding is tested in Europe by Aubert and Grudnitski (2014), who also show that reconciliations are important in reducing mispricing of the stock price. The ESMA guidelines state that non-GAAP financial measures should have a reconciliation to their GAAP equivalent and therefore one can expect that after the ESMA guidelines there is less mispricing of the stock price. Therefore, the expectation is that managers uses non-GAAP financial measures less opportunistically to influence the stock price in their favor. This can lower the difference between the non-GAAP financial measure and the GAAP financial measure. Additionally, the EMSA guidelines state that the firm providing APMs should explain why the firm believes that the APM is useful and provide comparatives of previous periods. The explanations allow the users to assess their relevance and reliability of the APMs, which can result is a reducing mispricing. However, these results are related to stock prices and therefore cannot be linked to bonus compensation.

To the best of my knowledge, there is currently only one published paper that describes the ESMA guidelines and investigates the expected effects of the implementation of these guidelines. Magli

et al. (2017) investigate this by a survey send to all listed Italian industrial firms (around 300 firms) during the first three months of 2016. The response rate was 10%. The respondents expected four main changes: 1) clear indication of the used APMs and its components, 2) reconciliation between APMs and GAAP measures, 3) APMs are not disclosed with more prominence than GAAP measures, and 4) coherent APMs over time (Magli et al. 2017). Remarkably, the ESMA guidelines provide many new requirements, but none of the respondents expect a ‘high’ impact of the ESMA guidelines. 64% of the respondents expects a ‘low’ impact and 36% expects a ‘medium’ impact (Magli et al. 2017). When looking at these results, one has to consider the relatively small sample size (only 30 respondents). Magli et al. (2017) notice that only two respondents have arranged a team that investigates compliance with the ESMA guidelines. Magli et al. (2017) provide two possible reasons for the expected ‘low’ and ‘medium’ impact: 1) firms will delay the application of the ESMA guidelines, and 2) firms are unwilling to make the change. Because the expectations on the impact of the ESMA guidelines are mixed, hypothesis 4 is as follows:

H4: the issuance of the ESMA guidelines does not affect the relation between bonus compensation and the difference between the non-GAAP financial measure and the GAAP financial measure

4. Research design and sample selection

4.1 Research design

To test the hypotheses, non-GAAP financial data has to be hand-collected. At first, a variable indicating the reporting of a non-GAAP financial measure is created. *NG_YES_NO* is a dummy variable indicating whether a firm did report a non-GAAP financial measure in their earnings press release during a specific year. *NG_YES_NO=1* indicates that the firm did report a non-GAAP financial measure in their earnings press release. *NG_YES_NO=0* means that the firm did not report a non-GAAP financial measure in their earnings press release. Under IFRS only some line items, like revenue and net profit, should be presented in the financial statements (CESR 2005). Therefore, all financial measures other than net income or basic/diluted EPS are considered as non-GAAP. If a firm reports a non-GAAP financial measure, the most important non-GAAP financial measure, indicated by *NG_MAIN_METRIC*, is chosen from all non-GAAP financial measures reported. The main non-GAAP financial measure is chosen by a combination of four characteristics: 1) the prominence of the non-GAAP financial measure (presented in the headlines or not), 2) the emphasis on the non-GAAP financial measure (for example, addressed by the CEO), 3) if a reconciliation is provided, and 4) if the non-GAAP financial measure is used for segment reporting. The value of the most important non-GAAP financial measure is presented by the variable *NG_MAIN_METRIC_VALUE*. For each main non-GAAP financial measure, an equivalent GAAP financial measure is chosen. For non-GAAP financial measures that are not presented on a share basis, like EBITDA, EBIT and EBT, net income is the relevant GAAP equivalent. For non-GAAP financial measures presented on a share basis, such as adjusted basic/diluted EPS, basic/diluted

EPS is the relevant GAAP equivalent. The GAAP equivalent of the main non-GAAP financial measure is indicated by the variable *NG_GAAP_EQUIVALENT*. The value of the GAAP equivalent is presented by the variable *NG_EQUIVALENT_VALUE*. Because the GAAP equivalent is either net income or basic/diluted EPS, the variable *EPS* indicates if the firm has basic/diluted EPS as relevant GAAP measure. This variable is necessary to separate the observations when looking at the value of the non-GAAP financial measures and GAAP financial measures. Basic/diluted EPS is presented in euro/pound/dollar, whereas net income, EBITDA, EBIT, etc. is presented in million euro/pound/dollar). At last, *NG_RECONCILIATION* is a dummy variable indicating if the firm presents a reconciliation between the main non-GAAP financial measure and the equivalent GAAP measure. The ESMA guidance states that a reconciliation must be provided if a firm reports a non-GAAP financial measure. *NG_RECONCILIATION=1* indicates that the firm did present a reconciliation between the main non-GAAP financial measure and the equivalent GAAP measure. *NG_RECONCILIATION=0* means that the firm did not provide a reconciliation. If a firm did present a reconciliation, the variable *NG_RECONCILIATION_FROM_TO* shows how the reconciliation goes from the top line to the bottom line. A reconciliation can be provided as a separate reconciliation or provided by the income statement. Take for example a reconciliation between EBITDA (non-GAAP) and net income (GAAP). A separate reconciliation starts with EBITDA and goes to net income (EBITDA; net income). EBITDA can also be presented in the income statement as a line item/subtotal, and therefore the reconciliation goes from revenue to net income (revenue; net income). To test if the % of firms presenting a reconciliation when reporting a non-GAAP financial measure increased after the implementation of the ESMA guidelines, the dummy variable *ESMA* is created. *ESMA=1* indicates that the press release is issued after or on the effective date (July 3, 2016) of the ESMA guidelines. *ESMA=0* indicates that the press release is issued before the effective date.

Hypothesis 1 and hypothesis 2 can be investigated using the hand-collected sample. Hypothesis 1 can be tested using the mean of *NG_YES_NO* for each year. If the mean of *NG_YES_NO* increases over time, this indicates that there are more annual earnings press releases containing a non-GAAP financial measure. Hypothesis 2 can be tested using the mean of *NG_RECONCILIATION* for each year and the variable *ESMA*. The percentage of earnings press releases containing a reconciliation can be presented before *ESMA* and after *ESMA*. Using t-tests the results of hypothesis 1 and hypothesis 2 can be tested for significance. To test hypotheses 3 and 4, data from other sources has to be added to the hand-collected data. Data regarding executive compensation for non-American firms can be found using Compustat and choosing capital IQ - people intelligence. The database compensation summary provides data about executive compensation. In particular, this thesis looks at the compensation of the executive with the highest professional rank (1=high) within a firm². The variable *BONUS_COMPENSATION* indicates if the executive received bonus compensation during the year, based on ctype 2 in Capital IQ.

²: the variable *prorank* in Compustat capital IQ - people intelligence gives the ranking of the professional at the organization.

This thesis takes the assumption that the bonus compensation is related to the main non-GAAP financial measure. Adjusted performance measures are commonly used for bonus compensation for S&P 500 firms (Curtis et al. 2017). Some observations in Compustat capital IQ - people intelligence contained a negative or missing value for *ctype2* and are therefore deleted. The difference between the non-GAAP financial measure and the GAAP financial measure, *NG_GAAP_DIFFERENCE*, is measured in two ways. First, the difference is calculated in absolute terms, which is represented by *NG_GAAP_DIFFERENCE_ABS*. This variable is calculated by subtracting the value of the equivalent GAAP financial measure from the value of the main non-GAAP financial measure. So, $NG_GAAP_DIFFERENCE_ABS > 0$ indicates that the value of the main non-GAAP financial measure is higher than the equivalent GAAP financial measure. Second, the difference is measured in relative terms, shown by the variable *NG_GAAP_DIFFERENCE_REL*. This variable is calculated as follows: $NG_GAAP_DIFFERENCE_REL = NG_GAAP_DIFFERENCE_ABS / \text{absolute value of } NG_EQUIVALENT_VALUE$. The absolute value of the GAAP financial measure is used to take negative values into account. $NG_GAAP_DIFFERENCE_REL > 0$ indicates that the value of the main non-GAAP financial measure is higher than the value of the equivalent GAAP financial measure. A higher value for *NG_GAAP_DIFFERENCE_REL* indicates that the non-GAAP financial measure differs more relative to the GAAP financial measure. The difference between the non-GAAP financial measure and the relevant GAAP financial measure is measured in absolute and relative terms to take into account the value of the GAAP financial measure. Take for example company A and B. Company A reports a main non-GAAP financial measure of €100 million and a GAAP financial measure of €80 million. The absolute difference is €20 million, where the relative difference is 0.25. Company B reports a main non-GAAP financial measure of €30 million and a GAAP financial measure of €20 million. The absolute difference is €10 million, and the relative difference is 0.5. So, Company A has a higher absolute difference, but company B has a higher relative difference. Therefore, results are presented for the difference in absolute terms and relative terms as this difference in absolute and relative values can have an influence on the outcome of the research question.

An additional test is conducted to take the amount of bonus compensation into account. In the additional test bonus compensation is proxied in two ways. First bonus compensation is measured by generating *BONUS_VALUE* that is based on the value of *ctype2* in Compustat capital IQ - people intelligence. Second, the variable *SHORT_TERM_VALUE* contains the value of short-term compensation that the executive received during the year, which is based on *ctype16* in Compustat capital-IQ people intelligence. Short-term compensation contains the salary and the bonus. One should note that these variables are proxies for bonus compensation, because it is assumed that the bonus/short-term compensation is related to the main non-GAAP financial measure.

Based on prior research, control variables are added. Isidro and Marques (2008) show that disclosure of non-GAAP financial measures depends on characteristics of the firm. Therefore, some firm characteristics are added to the sample. The variable *SIZE* controls for the size of the firm, which

is measured by the logarithm of total assets. The predicted sign for *SIZE* is positive, because a bigger firm can probably make more adjustments to non-GAAP financial measures. For example, when a firm has higher depreciation and amortization costs and EBITDA as most important non-GAAP financial measure, the difference between the non-GAAP financial measure and the GAAP financial measure is higher. The performance of the firm, *PERFORMANCE*, is proxied by the ratio market capitalization / shareholders' funds, taken from Amadeus. A value for *PERFORMANCE* greater than one indicates that the market overvalues the firms, whereas a value lower than one for *PERFORMANCE* shows that the market undervalues the firm. If the market overvalues the firm, this can be seen as good performance of the firm. The predicted sign for *PERFORMANCE* is negative, based on the assumption that when a firm is undervalued by the market (which indicates bad performance), the firm is willing to provide high non-GAAP financial measures, and therefore the difference between the non-GAAP and GAAP financial measures is higher when the firm has a bad performance. The leverage of the firm, *LEVERAGE*, is measured by the debt-to-assets. The predicted sign for *LEVERAGE* is positive, because firms with more debt may have more interest costs. These costs are excluded from some non-GAAP financial measures, like EBIT and EBITDA. Also, some external firm characteristics are added. The variable *COUNTRY* represents the country in which the firm is located, and *INDUSTRY* indicates in which industry the firm operates, based on the Standard Industrial Classification (SIC) code. Because Isidro and Marques (2008) show that these variables have a positive effect on non-GAAP reporting, dummy variables relating to *COUNTRY* and *INDUSTRY* are added. Based on Isidro and Marques (2013) five control variables are added. The ratio of intangibles-to-assets, *INTANGIBLES*, influences the decision to report non-GAAP financial measures. The predicted sign for *INTANGIBLES* is positive. When a firm has more intangible assets, the firm has probably more amortization expenses, and therefore can exclude these expenses from non-GAAP financial measures like EBIT and EBITDA. The variable, *SPECIAL_ITEMS*, is a dummy variable indicating whether the firm reported an amount as special items. *SPECIAL_ITEMS=1* indicates that the firm reported an (negative or positive) amount as special item, 0 means otherwise. *SPECIAL_ITEMS* has a positive predicted sign. Firms can adjust for the special items in calculating the non-GAAP financial measure and therefore the difference between the non-GAAP financial measure and the GAAP financial measure is higher. A variable indicating earnings variability, *VARIABILITY*, is added based on prior research. *VARIABILITY* is calculated as the firm's standard deviation of return of assets (ROA) over the previous three years, in line with Isidro and Marques (2013; 2015). The ROA is calculated by dividing earnings before extraordinary items by average total assets. The predicted sign for *VARIABILITY* is positive. Take for example a firm with high earnings in year 1, and low earnings in the following year. Using non-GAAP financial measures, the firm can report consistent (high) earnings. The difference between non-GAAP and GAAP will be low in year 1, but high in year 2. Also, a firm can present a non-GAAP financial measure to avoid reporting a GAAP loss. *AVOID_LOSS=1* indicates that the firm reported a positive main non-GAAP financial measure and a negative equivalent GAAP financial measure. *AVOID_LOSS=0* indicates otherwise. *AVOID_LOSS* has a positive predicted sign,

based on findings of Isidro and Marques (2013). At last, Isidro and Marques (2013) use consensus beating, *BEATING*, which is an indicator variable coded one when the main non-GAAP financial measure meet or beat the mean analysts' consensus forecast when the equivalent GAAP financial measure does not. *BEATING=0* means otherwise. This variable is generated by obtaining from I/B/E/S the latest analyst consensus forecast available for a fiscal year. The predicted sign for *BEATING* is positive. Firms want to meet the benchmarks stated by analysts and therefore make more adjustments to the non-GAAP financial measures. Besides these control variables, Isidro and Marques (2013) control for the number of analysts following the firm. In line with Aubert (2010), the variable *ANALYSTS* captures the number of analysts that contributed to the latest analyst consensus forecast for a fiscal year. No prediction is made for this variable, because it is unknown what the effect is on the difference between the non-GAAP financial measure and the GAAP financial measure. Based on Isidro and Marques (2015), *GROWTH* is added, which is measured by the three-year average growth in sales. The predicted sign for *GROWTH* is positive, because when a firm is growing rapidly, it typically reported a loss during a year. Non-GAAP financial measures can present the firm performance in a better light by adjusting for some non-recurring expenses. For example, some firms reported non-GAAP financial measures that excluded the costs related to the IPO. This thesis also adds a control for research and development (R&D) expenses, which have a great change of being excluded from non-GAAP financial measures, because firms can interpret these expenses as non-recurring. The variable *R&D* is measured by dividing R&D expenses by total assets. The predicted sign is positive, because when a firm has higher R&D expenses, it can exclude these from the non-GAAP financial measure and therefore show a higher difference between the non-GAAP financial measure and the GAAP financial measure.

Besides these controls for firm characteristics and controls related to analysts, controls related to compensation are added. Black et al. (2014) show that when the compensation contract of managers contains a long-term horizon, there is less reporting of potentially misleading non-GAAP measures. Therefore, the dummy variable *LONG_TERM* indicates whether the executive received long-term performance compensation (based on *ctype17* in Capital IQ). The predicted sign for *LONG_TERM* is negative, in line with Black et al. (2014). Also, a control variable for the age of the executive is added to the sample. When the executive is relatively young, it may be willing to provide higher non-GAAP financial measures to show that they are better than the others. Young executives may want to prove to the market that they are good executives. Therefore, the predicted sign for *AGE* is negative. Also, age may play a role in receiving bonus compensation, for example older executives have a higher change of receiving a bonus based on their previous experience. The age of the executive is proxied by the performing the following calculation in the Capital IQ – people intelligence: $age = \text{fiscal year} - \text{year born (of the executive)}$. So, the proxy for age does not take the month and day on which the fiscal year ends and the exact date of birth of the executive into account.

At last, three control variables related to corporate governance are added to the equations. Based on Isidro and Marques (2008, 2013) the percentage of institutional ownership, *INSTITUTIONAL*, and

the percentage of insider ownership, *INSIDER*, are added as control variables. Data about ownership provided by Amadeus shows the type of shareholders with their percentage of shares held. Amadeus considered the following types: bank (B); financial firm (F); insurance firm (A); industrial firms (C); mutual & pension fund/nominee/trust/trustee (E); foundation/research institute (J); public authorities, states, governments (S); one or more known individuals or families (I); employees/managers/directors (M); self-ownership (H); public (Z); unnamed private shareholders, aggregated (D); and other unnamed shareholders, aggregated (L). Of these shareholder types, the following three types are considered to be part of institutional ownership: 1) financial firms (F), 2) insurance firms (A), and 3) mutual & pension fund/nominee/trust/trustee (E). Insider ownership contains the following type: employees/managers/directors (M). When obtaining the ownership data from Amadeus, no time period could be selected. Therefore, this thesis assumes that the ownership structure remains the same during the sample period. Based on Isidro and Marques (2013) the predicted sign for *INSTITUTIONAL* and *INSIDER* is negative because their research shows significant negative coefficients for these variables. The third control variable related to corporate governance is the independence of the board (*BOARD*). Frankel et al. (2011) show that firms with less board independence are more likely to exclude recurring items from non-GAAP financial measures. This suggest that when a firm has a low board independence, the difference between the non-GAAP financial measure and the relevant GAAP financial measures is higher. So, the predicted sign for *BOARD* is negative because firms with more board independence are predicted to show a lower difference between the non-GAAP financial measure and the GAAP financial measure. In line with Frankel et al. (2011) *BOARD* is measured as the percentage of board members who are independent. Data for *BOARD* is taken from BoardEx. When collecting data from BoardEx, no time period could be chosen. Therefore, this thesis assumes that the board composition remained the same during the sample period.

Hypothesis 3 and hypothesis 4 are tested by estimating an OLS regression where the standard errors are clustered. Also, dummies for year, country, and industry type are added. Regressions are made using the two proxies for the difference between the non-GAAP financial measure and the GAAP financial measure. To test hypothesis 3 the following equation is estimated:

$$\begin{aligned}
 NG_GAAP_DIFFERENCE_t = & \beta_0 + \beta_1 BONUS_COMPENSATION + \beta_2 SIZE + & (1) \\
 & \beta_3 PERFORMANCE + \beta_4 LEVERAGE + \beta_5 INTANGIBLES + \beta_6 SPECIAL_ITEMS + \\
 & \beta_7 VARIABILITY + \beta_8 AVOID_LOSS + \beta_9 BEATING + \beta_{10} ANALYSTS + \beta_{11} GROWTH + \beta_{12} R\&D + \\
 & \beta_{13} LONG_TERM + \beta_{14} AGE + \beta_{15} INSTITUTIONAL + \beta_{16} INSIDER + \beta_{17} BOARD + \mathcal{E}
 \end{aligned}$$

In equation 1, β_1 is the coefficient of interest. Based on hypothesis 3, β_1 expected to be positive. Prior research by Black et al. (2014) shows that the constitution of the compensation contracts has an effect on the reporting of non-GAAP financial measures. When a compensation contract consists a short-term performance plan, of which the bonus is part of, the manager is more likely to report a non-GAAP

financial measure. Also, as shown by Aubert (2010) and Black et al. (2014), reported non-GAAP financial measures are higher than their GAAP equivalents.

To test hypothesis 4, an interaction effect between *BONUS_COMPENSATION* and *ESMA*, calling *BONUS_COMPENSATION_ESMA* is added to the equation. This variable shows if a firm where the highest executive receives bonus compensation reports a lower/higher difference between the main non-GAAP financial measure and the equivalent GAAP financial measure after the implementation of ESMA. The results are provided by estimating equation 2:

$$\begin{aligned}
 NG_GAAP_DIFFERENCE_t = & \beta_0 + \beta_1 BONUS_COMPENSATION + \beta_2 ESMA + & (2) \\
 & \beta_3 BONUS_COMPENSATION_ESMA + \beta_4 SIZE + \beta_5 PERFORMANCE + \beta_6 LEVERAGE + \\
 & \beta_7 INTANGIBLES + \beta_8 SPECIAL_ITEMS + \beta_9 VARIABILITY + \beta_{10} AVOID_LOSS + \beta_{11} BEATING + \\
 & \beta_{12} ANALYSTS + \beta_{13} GROWTH + \beta_{14} R\&D + \beta_{15} LONG_TERM + \beta_{16} AGE + \beta_{17} INSTITUTIONAL + \\
 & \beta_{18} INSIDER + \beta_{19} BOARD + \mathcal{E}
 \end{aligned}$$

In equation 2, β_3 is the coefficient of interest. Based on hypothesis 4, no prediction for β_3 is made. Prior research shows that reconciliations of non-GAAP financial measures matters (Zhang and Zheng 2011; Aubert and Grudnitski 2014). However, Magli et al. (2017) show in a survey that none of the respondents expect a ‘high’ impact of the ESMA guidelines. 64% of the respondents expect a ‘low’ impact and 36% expect a ‘medium’ impact. Therefore, no prediction is made for the interaction effect.

4.2 Sample selection

To test the hypotheses and provide an answer to the research question, a sample is taken based on six large EU economies: Germany, the United Kingdom, France, Italy, Spain, and the Netherlands. For these six countries, 200 firms with total assets of at least 100 million (EUR) are randomly selected by the thesis supervisor. Of these 200 firms, annual earnings press releases are gathered and evaluated on the presence of non-GAAP financial measures. The press releases can be found on either the investor relation section or on the news section on the website of the firm. For each firm reporting a non-GAAP financial measure, the most important non-GAAP financial measure is chosen and the reason for choosing this measure is provided. According to the ESMA guidance a firm should provide a reconciliation between a non-GAAP financial measure and the relevant GAAP measure. Therefore, the relevant GAAP financial measure is chosen and investigated if a reconciliation is presented between the main non-GAAP financial measure and the equivalent GAAP financial measure. As time period is chosen for four fiscal years, which are 2014, 2015, 2016 and 2017. When a firm has a book year ending in the first five months of the calendar year (January, February, March, April, and May), it is placed in the previous fiscal year. For example, if a firm has a book year ending on 3/31/2017, the corresponding fiscal year is 2016. For firms with a book year ending in the last seven months of the calendar year (June,

July, Augustus, September, October, November, and December), it is placed in the same year. For example, if a firm has a book year ending on 9/30/2017, the corresponding fiscal year is 2017³.

The sample selection is shown in table 1. Firm-year observations are based on the total available observations for a year, including firms missing observations for the full sample period. So, when a firm has only observations for the fiscal years 2014 and 2015, these observations are included in the firm-year sample but excluded from the firm sample. In that way, the firm sample is based on firms that have issued press releases for all fiscal years, and therefore represent a consistent sample. Starting with the random sample of 200 firms, and thus 800 firm-year observations, earnings press releases are gathered from the firm's websites. 46 earnings press releases, spread over thirteen firms, could not be investigated due to the fact the data was not available in English language. For 35 firm-year observations, spread over thirteen firms, the earnings press release could not be found due to an unknown reason. Because some firms that are included in the random sample did an Initial Public Offering (IPO) during the sample period, fifteen firm-year observations, spread over ten firms, are excluded because the earnings press release is not available. One firm completed a merger during the sample period, which excludes three firm-year observations. For some firms with a book year ending in the first five months of the calendar year, the earnings press release has not yet been published. This excludes four firm-year observations, spread over three firms. At last, some earnings press release did not contain a relevant GAAP measure and are excluded from the sample. Therefore, 37 firm-year observations, spread over sixteen firms, are excluded. The final sample after hand-collecting data includes 144 firms and 660 firm-year observations.

To provide an answer for hypothesis 3 and hypothesis 4, data from multiple sources is added to the hand-collected data. First, the five observations that did not report a non-GAAP financial measure in their annual earnings press release are removed. Observations that report their financial information in a currency other than EUR, USD or GBP are removed from the sample, because these currencies are not representative. There is one firm that reported their financial information in the Indian currency, lowering the sample by three observations. Adding financial data from Compustat lowers the sample by twelve observations. Through adding data about compensation from Capital IQ, 318 observations are removed. Adding data from I/B/E/S lowers the sample by 56 observations. By adding data from Amadeus, nine observations are removed. Finally, fourteen observations are removed for which no BoardEx data could be found. For the without EPS sample, observations related to EPS measures are removed from the sample, because the non-GAAP financial measure and the GAAP financial measure have a different unit of measurement⁴. This will lead to a bias when looking at the absolute difference between the non-GAAP financial measure and the relevant GAAP financial measure. However, when looking at the relative difference EPS measures should not cause a bias. The relative difference should take the value of the GAAP financial measure in account.

³: this is in line with Compustat

⁴: EPS measures are presented in Euros/pounds/dollars, whereas the other non-GAAP financial measures and net income is showed in million Euros/pounds/dollars.

Take for example company C and company D. Company C has EBITDA as main non-GAAP financial measure with a value of €60 million. The relevant GAAP financial measure is net income, which shows a value of €40 million. Company D has adjusted basic EPS as main non-GAAP financial measure, which has a value of 4.50. The relevant GAAP financial measure is basic EPS, which shows a value of 3.00. The absolute difference for company C is 20, where company D has an absolute difference of 1.50. However, the relative difference is the same for both companies. Company C has a relative difference of 0.5 and Company D has a relative difference of 0.5. Therefore, the results are presented for a sample including EPS observations and a sample excluding EPS observations as this difference can influence the outcome of the research. Removing EPS related observations lowers the sample by seventeen observations. Summary statistics for the final sample are presented in table 2. For the without EPS sample, only the variables of interest, which are *BONUS_COMPENSATION*, *NG_DIFFERENCE_ABS*, and *NG_DIFFERENCE_REL* are shown. The summary statistics for the control variables using the without EPS sample are similar to the with EPS sample and are not tabulated.

Panel A of table 2 shows summary statistics for the variables used in equation 1 and equation 2. The proxies for the difference between the main non-GAAP financial measure and the relevant GAAP financial measure show that including or excluding EPS observations matters. *NG_DIFFERENCE_ABS* (*with EPS*) has a mean value of 196.55 but excluding EPS observations the mean value of *NG_DIFFERENCE_ABS* is 210.41. For *NG_DIFFERENCE_REL* the mean for the without EPS sample (2.79) is higher than the with EPS sample (2.70). Looking at *BONUS_COMPENSATION*, in more than 80% of the observations the executive receives bonus compensation. For *ESMA*, the mean indicates that 40% of the observations has a source date of the earnings press release before the implementation of ESMA. 60% of the observations has a source date after the implementation of ESMA.

Panel B of table 2 shows the number of observations by country and fiscal year for the with EPS sample and without EPS sample. Almost half of the observations are related to firms domiciled in the UK. Further, approximately one out of four observations are related to a firm domiciled in France. The other countries represent less than 10% of the observations. Looking at the difference in observations between the with EPS sample and without EPS sample, all EPS observations are related to firms domiciled in the UK, which is interesting. A possible explanation is that reporting (adjusted) EPS measures is common practice by firms domiciled in the UK. The amount of observations for each fiscal year is almost equal, except for 2017. This is probably due to the data collection. When collecting compensation data from Capital IQ, data could be collected until November 2017. This means that no compensation data is available for firms with a fiscal year ending December 2017.

Panel C of table 2 shows the number of observations by industry. No observations in the sample are related to the industry classification Agriculture and Bank and are therefore not shown in panel C of table 2. The industry classifications with the most observations are Computers and Retail, representing each more than 10% of the total observations.

Table 3 presents the Pearson correlation matrix for the variables included in the equations. The correlation matrix is based on the with EPS sample. Results for the without EPS sample are almost similar and therefore not tabulated. *BONUS_COMPENSATION* is positively correlated with *NG_GAAP_DIFFERENCE_ABS* and negatively correlated to *NG_GAAP_DIFFERENCE_REL*. The correlation between *BONUS_COMPENSATION* and *NG_GAAP_DIFFERENCE_ABS* is insignificant, whereas the correlation between *BONUS_COMPENSATION* and *NG_GAAP_DIFFERENCE_REL* is significant. The same applies to the correlation of the two measurements for the difference and ESMA. The correlation between *BONUS_COMPENSATION* and *ESMA* is positively and significant.

Table 1
Sample selection

Panel A: sample selection for hypotheses 1 and 2		
	Firm-Years	Firms
Random sample	800	200
Less: observations missing data due to language ¹	(46)	(13)
Less: observations missing data for unknown reason ²	(35)	(13)
Less: observations missing data due to IPO	(15)	(10)
Less: observations missing data due to merger ³	(3)	(1)
Less: observations missing data due to not announced yet	(4)	(3)
Sample after collecting non-GAAP earnings data	697	160
Less: observations missing relevant GAAP measure ⁴	(37)	(16)
Sample after hand-collecting earnings data	660	144
Panel B: sample selection for hypotheses 3 and 4		
	With EPS	Without EPS
Sample after hand-collecting earnings data	660	660
Less: observations reporting no non-GAAP financial measure	(5)	(5)
Less: observations with Indian currency ⁵	(3)	(3)
Less: observations missing Compustat data	(12)	(12)
Less: observations missing Capital IQ data	(318)	(318)
Less: observations missing I/B/E/S data	(56)	(56)
Less: observations missing Amadeus data	(9)	(9)
Less: observations missing BoardEx data	(14)	(14)
Less: observations relating to EPS measures	(0)	(17)
Final sample	243	226

¹: one press release is presented in German, but due to the fact that German and Dutch are somewhat similar, and the researcher did study German in secondary school, this press release is evaluated and therefore included in the sample.

²: earnings press releases could not be found on the website of the firms.

³: one firm was founded by a merger during the sample period.

⁴: some firms did not report a relevant GAAP measure in their press releases.

⁵: one firm uses the Indian currency in reporting financial information. These observations are deleted as the Indian currency is not comparable to EUR, USD or GBP.

Table 2
Summary Statistics

Panel A: summary statistics for variables used in equation 1 and equation 2

Variable	N	Mean	Median	St dev	Min	Max
<i>AGE</i>	243	54.10	54	6.8386	33	72
<i>ANALYSTS</i>	243	7.97	6	6.8631	1	31
<i>AVOID_LOSS</i>	243	0.08	0	0.2754	0	1
<i>BEATING</i>	243	0.56	1	0.4975	0	1
<i>BOARD</i>	243	0.57	0.57	0.1548	0.05	1
<i>BONUS_COMPENSATION (with EPS)</i>	243	0.83	1	0.3753	0	1
<i>BONUS_COMPENSATION (without EPS)</i>	226	0.83	1	0.3748	0	1
<i>EPS</i>	243	0.07	0	0.2556	0	1
<i>ESMA</i>	243	0.40	0	0.4916	0	1
<i>GROWTH</i>	243	0.46	0.04	5.1967	-0.31	80.71
<i>INSIDER</i>	243	1.19	0	5.0888	0	43.6
<i>INSTITUTIONAL</i>	243	42.88	38.37	28.7787	2.24	100
<i>INTANGIBLES</i>	243	0.30	0.26	0.2207	0	0.86
<i>LEVERAGE</i>	243	0.56	0.60	0.1982	0.09	1.16
<i>LONG_TERM</i>	243	0.91	1	0.2875	0	1
<i>NG_DIFFERENCE_ABS (with EPS)</i>	243	196.55	25.90	487.1604	-640	4632
<i>NG_DIFFERENCE_ABS (without EPS)</i>	226	210.41	31.3	502.4466	-640	4632
<i>NG_DIFFERENCE_REL (with EPS)</i>	243	2.51	0.64	7.8343	-1.8	82
<i>NG_DIFFERENCE_REL (without EPS)</i>	226	2.66	0.67	8.1005	-1.8	82
<i>PERFORMANCE</i>	243	1.64	2.21	12.8377	-178.69	12.12
<i>R&D</i>	243	0.02	0.00	0.0444	0	0.31
<i>SIZE</i>	243	7.19	6.73	1.8303	4.47	11.74
<i>SPECIAL_ITEMS</i>	243	0.99	1	0.0905	0	1
<i>VARIABILITY</i>	243	0.02	0.01	0.0395	0.00	0.38

Summary statistics are shown for each variable used in the equations. Definitions of the variables can be found in the appendix. The main variables of interest are shown for both the with EPS sample and without EPS sample. Numbers are rounded at two decimals, except for the standard deviation (St dev).

Panel B: number of observations by country and fiscal year

Country	With EPS		Without EPS		Fiscal year	With EPS		Without EPS	
	N	%	N	%		N	%	N	%
France	64	26.34	64	28.32	2014	64	26.34	60	26.55
Germany	15	6.17	15	6.64	2015	83	34.16	77	34.07
Italy	17	7.00	17	7.52	2016	81	33.33	76	33.63
Netherlands	18	7.41	18	7.96	2017	15	6.17	13	5.75
Spain	9	3.70	9	3.98	Total	243	100.00	226	100.00
UK	120	49.38	103	45.58					
Total	243	100.00	226	100.00					

Panel C: number of observations by industry

Industry	With EPS		Without EPS	
	N	%	N	%
Chemicals	13	5.35	13	5.75
Computers	31	12.76	31	13.72
Drugs	18	7.41	18	7.96
Electrical	4	1.65	4	1.77
Food	23	9.47	19	8.41
Industrial	10	4.12	10	4.42
Mining	12	4.94	12	5.31
Miscellaneous	4	1.65	4	1.77
Miscellaneous Equipment	16	6.58	16	7.08
Refining	8	3.29	8	3.54
Retail	24	9.88	24	10.62
Rubber	16	6.58	16	7.08
Services	28	11.52	20	8.85
Textiles	11	4.53	10	4.42
Transportation	10	4.12	10	4.42
Utilities	15	6.17	11	4.87
Total	243	100.00	226	100.00

Industry classifications are compiled using the following four-digit SIC codes: Agriculture: 0100-0999; Mining: 1000-1299, 1400-1999; Food: 2000-2199; Textiles: 2200-2799; Drugs: 2830-2839, 3840-3851; Chemicals: 2800-2829, 2840-2899; Refining: 1300-1399, 2900-2999; Rubber: 3000-3499; Industrial: 3500-3569, 3580-3659; Electrical: 3660-3669, 3680-3699; Miscellaneous Equipment; 3700-3839, 3852-3999; Computers: 3570-3579, 3670-3769, 7370-7379; Transportation: 4000-4899; Utilities: 4900-4999; Retail: 5000-5999; Banks: 6000-6999; Services: 7000-7369, 7380-8999; Miscellaneous: 9000-9999.

Table 3

Pearson correlation matrix for the with EPS sample

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1: NG_GAAP_DIFFERENCE_ABS	1																			
2: NG_GAAP_DIFFERENCE_REL	0.0650	1																		
3: BONUS_COMPENSATION	0.0310	-0.1982*	1																	
4: ESMA	0.0503	-0.1485*	0.1912*	1																
5: SIZE	0.5545*	0.0404	-0.0128	0.0084	1															
6: PERFORMANCE	0.0218	0.0101	-0.0004	-0.1042	0.0458	1														
7: LEVERAGE	0.2172*	0.0534	-0.0477	-0.0439	0.4354*	-0.1805*	1													
8: INTANGIBLES	0.1005	0.0555	0.0840	0.0644	-0.0738	-0.1691*	-0.1726*	1												
9: SPECIAL_ITEMS	0.0311	0.0215	-0.0410	-0.0180	0.0309	-0.0055	0.0187	0.0234	1											
10: VARIABILITY	-0.1198	-0.0024	-0.0016	-0.0029	-0.2655*	-0.1728*	-0.1855*	0.0594	0.0436	1										
11: AVOID LOSS	0.0014	0.0928	-0.2249*	-0.1241	-0.0297	-0.0101	0.0257	-0.0931	0.0273	0.2341*	1									
12: BEATING	0.0209	0.2048*	-0.0676	0.0533	-0.1487*	0.0614	-0.0521	0.1537*	-0.0808	-0.0328	0.1751*	1								
13: ANALYSTS	0.4646*	-0.0324	0.0847	0.0169	0.8001*	-0.0014	0.3032*	0.0406	0.0528	-0.1492*	-0.1343*	-0.0981	1							
14: GROWTH	0.0109	-0.0127	0.0453	-0.0303	0.0484	-0.0001	-0.0141	0.0785	0.0085	0.0372	-0.0189	0.0556	-0.0064	1						
15: R&D	-0.0961	-0.1217	0.1149	0.0718	-0.1992*	0.0579	-0.3029*	-0.0618	0.0442	0.2029*	-0.0249	-0.1448*	-0.0813	0.0021	1					
16: LONG_TERM	0.0125	-0.2553*	0.3557*	0.0840	0.0125	-0.0029	-0.0011	0.0090	-0.0287	-0.0626	-0.1664*	-0.0199	0.0573	0.0301	-0.0293	1				
17: AGE	0.1263*	0.0713	-0.1368*	0.0090	0.1986*	0.0287	0.1702*	-0.0632	0.0414	-0.1625*	0.0549	-0.1293*	0.0873	-0.0667	-0.1577*	-0.0753	1			
18: INSTITUTIONAL	-0.2358*	0.0542	0.0862	0.1150	-0.3817*	-0.0198	-0.3234*	0.0114	-0.0219	0.0186	-0.1521*	0.1636*	-0.2157*	0.0218	-0.0633	0.1524*	-0.1722*	1		
19: INSIDER	0.1502*	-0.0396	-0.0167	-0.0189	0.3041*	0.0043	0.1538*	-0.0215	0.0213	-0.0621	-0.0370	-0.1019	0.1940*	-0.0221	-0.0805	0.0014	0.2096*	-0.1963*	1	
20: BOARD	-0.0253	-0.0435	0.0387	0.0116	0.0188	-0.0187	-0.1769*	0.1558*	-0.0399	0.2052*	0.0525	0.0468	0.0762	0.1087	0.0750	0.0290	0.0467	0.1331*	-0.1989*	1

The * indicates significance at the 5% level or below. Variables definitions can be found in the appendix. Results for the without EPS sample are similar to the results above and are therefore not tabulated.

5. Empirical results and analysis

5.1 Hypothesis 1

The results for hypothesis 1 are shown in figure 1. Results are presented for firm-year observations and firm observations. When looking at all firm-year observations, only five earnings press releases contained no non-GAAP financial measure. Siemens AG did not report a non-GAAP financial measure in their press release for fiscal year 2014. ASML HOLDING NV did not report a non-GAAP financial measure in their press release for all fiscal years. The five earnings press releases in which no non-GAAP financial measure is reported, are all included in the firm observation sample. Figure 1 shows a slight increase in the % of firms that reported a non-GAAP financial measure in their earnings press release during a fiscal year. For the firm-year sample, in 2014 155 of the 157 observations contained a non-GAAP financial measure. In 2015, 163 out of 164 observations contained a non-GAAP financial measure. For 2016, 171 out of 172 observations contained a non-GAAP financial measure. In 2017, 166 out of 167 observations contained a non-GAAP financial measure. For the year sample, 144 observations are available for each fiscal year. In 2014, 142 of these earnings press releases contained a non-GAAP financial measure. For 2015, 2016 and 2017, 143 earnings press releases contained a non-GAAP financial measure. This is due to Siemens AG, who did not report a non-GAAP financial measure in 2014, but reported a non-GAAP financial measure in 2015, 2016, and 2017. Comparing these findings with the findings of Isidro and Marques (2008), there is an increase. Isidro and Marques show that during 2003 – 2005 approximately 80% of the firms reported non-GAAP earnings. Looking at the 500 largest European firms, Isidro and Marques (2015) show that between 2003 and 2007 the % of firms reporting non-GAAP earnings has been almost stable around 60%. Note however that the firms on which these results are based are not the same in all researches. More in line with the results based on the 2014-2017 sample is the research by Coleman and Erickson (2017) in the US. 96% of the S&P 500 firms reported a non-GAAP earnings measure in their results over the fourth quarter of 2016. Note however that this is based on findings in quarterly earnings releases in the US.

To see if after the ESMA guidance more firms report a non-GAAP financial measure in their earnings press release, a (mean) t-test is conducted. The result can be found in table 4. Panel A presents the t-test for the firm-year observations. Before the ESMA guidance, 99.05% of the earnings press releases contained a non-GAAP financial measure. After the ESMA guidance, 99.42% of the earnings press releases contained a non-GAAP financial measure. This represents an increase of 0.37%. However, this increase is not significant at the 10% level, because the p-value is 0.2910. In panel B, the results for the firm observations sample are presented. Before the ESMA guidance, 98.95% of the earnings press releases contained a non-GAAP financial measure. After the ESMA guidance, 99.31% of the earnings press releases contained a non-GAAP financial measure. This represents an increase of 0.36%. The p-value=0.3214 and therefore the increase is insignificant at the 10% level.

Figure 1: % of firms reporting a non-GAAP financial measure in their annual earnings press release

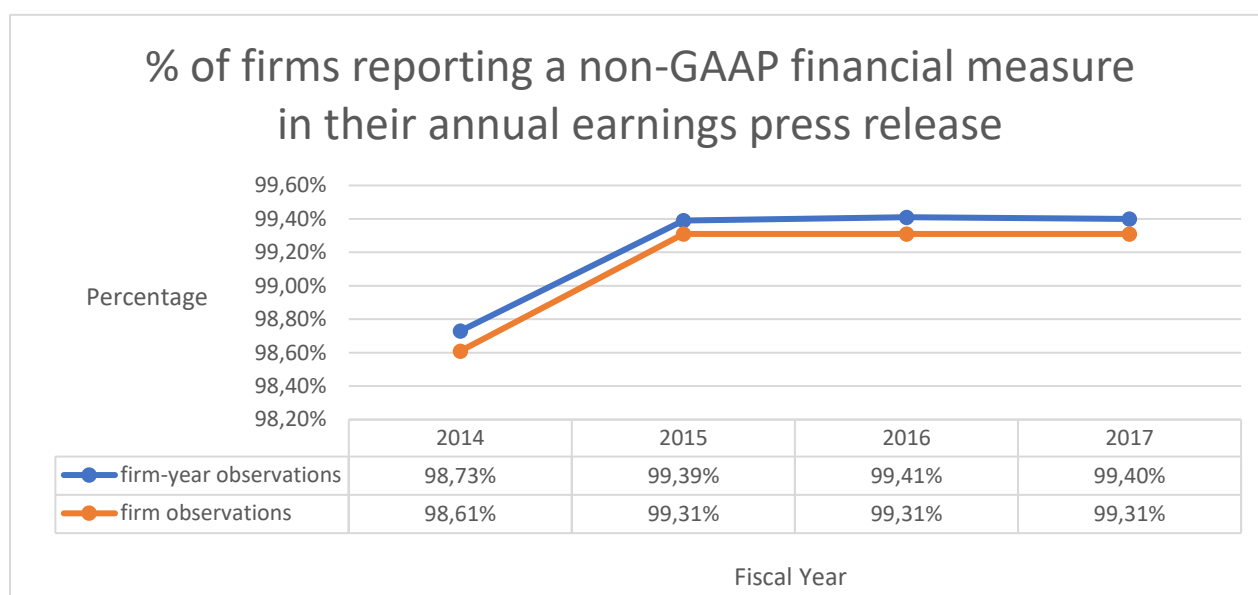


Table 4

T-test for % of firms reporting a non-GAAP financial measure in annual earnings press releases before and after ESMA guidance

Panel A: firm-year observations				
Group	N	Mean	St dev	95% confidence interval
Before ESMA	315	0.9905	0.0973	[0.9797 ; 1.0013]
After ESMA	345	0.9942	0.0760	[0.9862 ; 1.0023]
Total	660	0.9924	0.0868	[0.9858 ; 0.9991]
Difference		-0.0037		[-0.0170 ; 0.0096]
T-value	-0.5508			
Degrees of freedom	658			
P-value (one-sided)	0.2910			
P-value (two-sided)	0.5820			
Panel B: firm observations				
Group	N	Mean	St dev	95% confidence interval
Before ESMA	286	0.9895	0.1021	[0.9776 ; 1.0014]
After ESMA	290	0.9931	0.0829	[0.9835 ; 1.0027]
Total	576	0.9913	0.0928	[0.9837 ; 0.9989]
Difference		-0.0036		[-0.0188 ; 0.0116]
T-value	-0.4641			
Degrees of freedom	574			
P-value (one-sided)	0.3214			
P-value (two-sided)	0.6428			

Variable used is NG_YES_NO. Indicates if the firm presented a non-GAAP financial measure.

The group variable is ESMA. Indicates if the source date of the press release is before or after 3rd July 2016.

Difference is calculated as follows: mean (ESMA=0) – mean (ESMA=1).

Ho: difference = 0. P-value (one-sided) based on Ha: difference < 0.

To conclude the above findings, there is a slight increase in the % of firms that reports a non-GAAP financial measure, however this increase is due to Siemens AG reporting no non-GAAP financial measure in 2014 and reporting a non-GAAP financial measure in 2015, 2016, and 2017. The results of the t-test show that the difference in the % of firms reporting a non-GAAP financial measure before and after the ESMA guidance is insignificant. Hypothesis 1 therefore cannot be statistically confirmed.

5.2 Hypothesis 2

A firm can provide the reconciliation for a non-GAAP financial measure in several ways. Examples of possible reconciliations for EBITDA are provided in Appendix B. If the firm reported EBITDA as line item in the income statement (reconciliation 1 in Appendix B), the reconciliation goes from revenue to net income. This is shown by *NG_RECONCILIATION_FROM_TO* as revenue; net income. A firm can decide to provide a separate reconciliation within the income statement (reconciliation 2 in appendix B) or without the income statement (reconciliation 3 in appendix B). This is presented in *NG_RECONCILIATION_FROM_TO* as EBITDA; net income. The reconciliation for non-GAAP EPS measures can be provided in two ways, which are shown in appendix C. If a firm reported a non-GAAP EPS measure and a reconciliation to GAAP EPS, *NG_RECONCILIATION_FROM_TO* shows non-GAAP EPS; GAAP EPS (reconciliation 1 in appendix C). A firm can also provide a reconciliation for non-GAAP EPS by providing a reconciliation of GAAP net income to non-GAAP net income and providing the number of shares (reconciliation 2 in appendix C). For this reconciliation, *NG_RECONCILIATION_FROM_TO* shows GAAP net income; non-GAAP net income.

Table 5 shows how firms provide a reconciliation for the main non-GAAP financial measure. Of the 660 firm-year observations, 366 (55.45%) observations contained a reconciliation. For the firm observations sample, 324 (56.25%) observations of 576 observations contained a reconciliation the results are separated into three types of reconciliation: 1) separate reconciliation (reconciliation 2 and 3 of appendix B), 2) line item reconciliation (reconciliation 1 of appendix B) and 3) EPS reconciliation (reconciliation 1 and 2 of appendix C). For the firm-year observations sample, for approximately 75% (269/366) of the reconciliations the main non-GAAP financial measure is placed as a line item in the income statement. Nearly 21% (76/366) of the reconciliations provide a separate reconciliation between the main non-GAAP financial measure and the equivalent GAAP financial measure. Almost 6% (21/366) of the reconciliations is related to the EPS measures. The results are nearly identical when looking at the firm observations sample.

The results for hypothesis 2 are presented in table 6. Panel A shows the results using the firm-year observations. Before the implementation of the ESMA guidelines, 177 out of 312 firm-year observations contained a reconciliation between the main non-GAAP financial measure and the GAAP equivalent. After the implementation of the ESMA guidelines, 189 out of 343 firm-year observations contained a reconciliation. The implementation of the ESMA led to a decrease from 56.73% to 55.10%,

representing a decrease of 2.87%. Panel B shows the results for the sample based on firm observations. In the two years before the ESMA guidelines, 161 out of 283 earnings press releases contained a reconciliation between the non-GAAP financial measure and the GAAP financial measure. For the period after the ESMA guidelines, 163 out of 288 earnings press releases contained a reconciliation. This led to a decrease from 56.89% to 56.6%, a decrease of 0.51%. Comparing this result with earlier findings of Isidro and Marques (2013, 2015), these findings are nearly identical. Isidro and Marques (2013) show for a sample of large European firms that 66,3% of the firms disclosed some reconciliation between non-GAAP earnings and GAAP earnings during 2003-2005. For a sample of major firms in Europe during 2003 – 2007, Isidro and Marques (2015) show that approximately almost half (47%) of the firms presented a tabular reconciliation. Take note that the results by Isidro and Marques (2013, 2015) are based on different samples and therefore may not be perfectly comparable. The results presented in table 5 are investigated on significance. The results of the tests are shown in table 7.

Table 5
Presentation of reconciliation

Reconciliation	Firm-year		Firm	
	N	%	N	%
Separate reconciliation ¹	76	20.77	67	20.68
Line item reconciliation ²	269	73.50	236	72.84
EPS reconciliation ³	21	5.74	21	6.48
Total	366	100.00	324	100.00

Firms use different names for revenue. Net sales, sales, turnover, and income are considered as equal and therefore renamed to revenue. Also, firms use different names for net income. Net profit, net result, profit for the year, profit for the period, net earnings, loss for the year, result for the year, loss after tax(ation), loss for the period, and result after taxes are considered equal to net income and are therefore renamed to net income.

Some firms that reported a non-GAAP EPS metric provide a reconciliation between net income (on which GAAP EPS is based) and the adjusted net income (on which non-GAAP EPS is based), including the number of shares.

¹*Includes reconciliation 2 and reconciliation 3 of appendix B.*

²*Also includes reconciliations starting with trading profit, gross profit, operating expenses and underlying operating profit before JVs and associates and EM & OR restructuring, because these measures were presented as the top line of the reconciliation but not the main non-GAAP financial measure. Includes all reconciliations presented as reconciliation 1 in appendix B.*

³*Includes the two types of reconciliations shown in appendix C.*

Panel A of table 7 presents the result of the (mean) t-test on the % of reconciliations before and after the ESMA guidelines for the firm-year observations sample. The difference in means= 0.0163. The p-value for the difference is 0.3378, and therefore the decrease in the % of firms providing a reconciliation is insignificant at the 10% level. The results for the firm observations sample are presented in panel B. The difference in means is 0.0029 and the p-value for this decrease in means is 0.4719, meaning the decrease is insignificant at the 10% level.

To conclude on the above results for both samples, the % of firms that provide a reconciliation in their earnings press release decreased after the implementation of the ESMA guidelines. This result is not in line with the expectation, because the ESMA guidelines state that when a firm presents a non-GAAP financial measure, it should provide a reconciliation to the equivalent GAAP financial measure.

However, this decrease is insignificant. Because no support for hypothesis 2 is found, hypothesis 2 can be rejected. There is no positive significant difference in the % firms providing a reconciliation after the implementation of the ESMA.

Table 6
Reconciliation and the ESMA guidance

Panel A: firm-year observations			
	Before ESMA	After ESMA	N
No reconciliation	135 (43.27%)	154 (44.90%)	289 (44.12%)
Reconciliation	177 (56.73%)	189 (55.10%)	366 (55.88%)
N	322	343	655
Panel B: firm observations			
	Before ESMA	After ESMA	N
No reconciliation	122 (43.11%)	125 (43.40%)	247 (43.26%)
Reconciliation	161 (56.89%)	163 (56.60%)	324 (56.74%)
N	283	288	571

The observations that did not report a non-GAAP financial measure are excluded from the total observations. Percentages are based on the columns numbers.

The variable used is NG_RECONCILIATION. This variable indicates if the firm provided a reconciliation between the main non-GAAP financial measure and the equivalent GAAP financial measure.

The group variable is ESMA. This variable indicates if the source date of the press release is before or after 3rd July 2016.

Table 7
T-test for % of reconciliations before and after ESMA guidance

Panel A: firm-year observations				
Group	N	Mean	St dev	95% confidence interval
Before ESMA	312	0.5673	0.4962	[0.5120 ; 0.6226]
After ESMA	343	0.5510	0.4981	[0.4981 ; 0.6039]
Total	655	0.5588	0.4969	[0.5207 ; 0.5969]
Difference		0.0163		[-0.0601 ; 0.0927]
T-value	0.4187			
Degrees of freedom	653			
P-value (one-sided)	0.3378			
P-value (two-sided)	0.6756			
Panel B: firm observations				
Group	N	Mean	St dev	95% confidence interval
Before ESMA	283	0.5689	0.4961	[0.5109 ; 0.6270]
After ESMA	288	0.5660	0.4965	[0.5084 ; 0.6236]
Total	571	0.5674	0.4959	[0.5267 ; 0.6082]
Difference		0.0029		[-0.0787 ; 0.0845]
T-value	0.0706			
Degrees of freedom	569			
P-value (one-sided)	0.4059			
P-value (two-sided)	0.8119			

Variable used is NG_RECONCILIATION. The group variable is ESMA, which indicates if the source date of the press release is before or after 3rd July 2016. Difference is calculated as follows: mean (ESMA=0) – mean (ESMA=1). Ho: difference = 0, Ha: difference > 0. Variable used is NG_RECONCILIATION. Indicates if the firm provided a reconciliation between the main non-GAAP financial measure and the equivalent GAAP measure.

5.3 Hypothesis 3

The results for hypothesis 3 are presented in table 8. The difference between the non-GAAP financial measure and the GAAP financial measure is measured in absolute terms (*NG_GAAP_DIFFERENCE_ABS*) and relative terms (*NG_GAAP_DIFFERENCE_REL*). Also, results are presented for the with EPS sample and the without EPS sample. For hypothesis 3, the variable of interest is *BONUS_COMPENSATION*. The predicted sign for the variable of interest is positive. When looking at the absolute difference, in all samples the coefficient of *BONUS_COMPENSATION* is positive, but insignificant. When measuring the difference in relative terms, the coefficient of *BONUS_COMPENSATION* is negative, but insignificant. Therefore, there is no statistical proof that the difference between the non-GAAP financial measure and the equivalent GAAP financial measure is greater when the executive receives bonus compensation. Therefore, hypothesis 3 cannot be accepted. For the control variables, the sign of the coefficients of *SIZE*, *INTANGIBLES*, *SPECIAL_ITEMS*, *VARIABILITY*, *R&D*, *LONG_TERM*, and *INSIDER* is in line with the expected sign when looking overall at the two proxies for the difference and the two samples. For *AGE* a negative sign was predicted, but results show that the sign of *AGE* is positive. A possible reason for the positive sign is that when the executive is older, the change of receiving bonus compensation is higher and therefore also the change of reporting a difference between the non-GAAP financial measure and the equivalent GAAP financial measure. Also, *AVOID_LOSS* has a negative sign in three out of four regressions presented in table 8, where a positive sign was predicted. No possible reason for this finding could be presented.

5.4 Hypothesis 4

Results for hypothesis 4 are presented in table 9. The main variable in table 9 is the interaction effect between *BONUS_COMPENSATION* and *ESMA*, called *BONUS_COMPENSATION_ESMA*. When using the absolute difference between the non-GAAP financial measure and the relevant GAAP financial measure, the coefficient of the main variable is positive. However, the coefficients in both the with EPS sample and without EPS sample are insignificant. For the difference measured in relative terms, the coefficient of the main variable is negative and insignificant for the with EPS sample and without EPS sample. Therefore, the *ESMA* does not have a significant impact on the relation between bonus compensation and the difference between the main non-GAAP financial measure and the relevant GAAP financial measure. Therefore, hypothesis 4 can be accepted. For the control variables, the sign of the coefficients of *SIZE*, *INTANGIBLES*, *SPECIAL_ITEMS*, *VARIABILITY*, *R&D*, *LONG_TERM*, and *INSIDER* is in line with the expected sign when looking overall at the two proxies for the difference and the two samples. For age, a negative sign was predicted, but in all samples the coefficient of *AGE* is positive.

Table 8

Bonus compensation on the difference in value between the non-GAAP and GAAP financial measure

Panel A: Results for equation 1									
NON-GAAP DIFFERENCE		ABSOLUTE				RELATIVE			
Variable	Predicted sign	With EPS		Without EPS		With EPS		Without EPS	
		Coefficient	P-value	Coefficient	P-value	Coefficient	P-value	Coefficient	P-value
<i>CONSTANT</i>		1817.141***	0.004	-1650.424***	0.002	-16.563	0.207	-15.742	0.311
<i>BONUS_COMPENSATION</i>	+	18.440	0.742	24.754	0.671	-1.388	0.523	-2.145	0.368
<i>SIZE</i>	+	110.991*	0.067	53.509	0.226	1.240**	0.017	1.329**	0.024
<i>PERFORMANCE</i>	-	-0.934	0.414	0.422	0.693	-0.023	0.259	-0.026	0.247
<i>LEVERAGE</i>	+	45.120	0.786	17.254	0.923	-0.646	0.875	0.785	0.845
<i>INTANGIBLES</i>	+	184.749	0.325	88.948	0.640	4.414	0.111	5.089*	0.100
<i>SPECIAL_ITEMS</i>	+	149.610	0.235	92.233	0.180	4.010	0.237	4.403	0.222
<i>VARIABILITY</i>	+	67.879	0.885	14.261	0.978	9.732	0.425	8.375	0.502
<i>AVOID_LOSS</i>	+	-26.698	0.725	31.637	0.646	-1.415	0.586	-1.639	0.528
<i>BEATING</i>	+	61.922	0.409	-10.551	0.870	3.076***	0.001	3.248***	0.002
<i>ANALYSTS</i>	?	14.756	0.349	39.120***	0.004	-0.196*	0.084	-0.234	0.131
<i>GROWTH</i>	+	-0.209	0.929	0.674	0.730	-0.069*	0.052	-0.079**	0.036
<i>R&D</i>	+	2221.228**	0.025	1633.588*	0.094	21.674*	0.059	23.478*	0.051
<i>LONG_TERM</i>	-	-125.478	0.110	-162.768**	0.038	-7.678	0.150	-7.395	0.166
<i>AGE</i>	-	9.692**	0.039	10.972**	0.015	0.078	0.676	0.058	0.765
<i>INSTITUTIONAL</i>	-	-1.171	0.486	-4.274**	0.018	0.042	0.128	0.040	0.204
<i>INSIDER</i>	-	-10.812	0.136	-10.527*	0.086	-0.045	0.515	-0.033	0.651
<i>BOARD</i>	-	-324.566	0.176	-237.078	0.235	-0.302	0.941	0.087	0.984
Year dummies		Included		Included		Included		Included	
Industry dummies		Included		Included		Included		Included	
Country dummies		Included		Included		Included		Included	
Total observations		243		226		243		226	
Adjusted R ²		0.422		0.524		0.102		0.104	

OLS regression with clustered standard errors. Coefficients are rounded at three decimals.

*, **, *** indicates significance at the 10%, 5%, and 1% level.

Table 9

Bonus compensation before and after ESMA on the difference in value between the non-GAAP and GAAP financial measure

Panel A: Results for equation 2									
NON-GAAP DIFFERENCE		ABSOLUTE				RELATIVE			
Variable	Predicted sign	With EPS		Without EPS		With EPS		Without EPS	
		Coefficient	P-value	Coefficient	P-value	Coefficient	P-value	Coefficient	P-value
<i>CONSTANT</i>		-2083.899***	0.003	-1936.12***	0.001	-11.147	0.385	-10.662	0.418
<i>BONUS_COMPENSATION</i>	+	1.304	0.984	-5.447	0.938	-1.044	0.671	-1.710	0.515
<i>ESMA</i>	?	219.864*	0.082	195.746**	0.048	-4.476	0.462	-3.835	0.552
<i>BONUS_COMPENSATION_ESMA</i>	?	41.557	0.597	95.478	0.287	-0.829	0.761	-1.257	0.675
<i>SIZE</i>	+	112.950*	0.065	54.349	0.262	1.200**	0.020	1.307**	0.024
<i>PERFORMANCE</i>	-	-1.030	0.372	0.309	0.776	-0.021	0.308	-0.024	0.288
<i>LEVERAGE</i>	+	21.927	0.893	-13.509	0.940	-0.176	0.967	-0.273	0.947
<i>INTANGIBLES</i>	+	185.073	0.326	87.381	0.647	4.407	0.114	5.096	0.103
<i>SPECIAL_ITEMS</i>	+	144.264	0.275	86.141	0.257	4.118	0.246	4.511	0.232
<i>VARIABILITY</i>	+	64.967	0.893	13.570	0.980	9.791	0.427	8.408	0.503
<i>AVOID_LOSS</i>	+	-23.370	0.758	35.502	0.603	-1.482	0.580	-1.707	0.525
<i>BEATING</i>	+	64.370	0.394	-8.099	0.901	3.026***	0.002	3.205***	0.002
<i>ANALYSTS</i>	?	14.911	0.351	39.678***	0.004	-0.199*	0.082	-0.241	0.120
<i>GROWTH</i>	+	-0.189	0.937	0.762	0.704	-0.069*	0.053	-0.080**	0.035
<i>R&D</i>	+	2279.65**	0.023	1690.509*	0.086	20.487*	0.067	22.427*	0.055
<i>LONG_TERM</i>	-	-108.078	0.180	-139.858*	0.077	-8.030	0.150	-7.765	0.164
<i>AGE</i>	-	10.023**	0.039	11.505**	0.014	0.071	0.695	0.049	0.792
<i>INSTITUTIONAL</i>	-	-1.223	0.472	-4.371**	0.017	0.043	0.127	0.041	0.197
<i>INSIDER</i>	-	-10.910	0.139	-10.734*	0.088	-0.043	0.534	-0.030	0.679
<i>BOARD</i>	-	-340.179	0.162	-259.836	0.204	0.014	0.997	0.441	0.916
Year dummies		Included		Included		Included		Included	
Industry dummies		Included		Included		Included		Included	
Country dummies		Included		Included		Included		Included	
Total observations		243		226		243		226	
Adjusted R ²		0.419		0.523		0.097		0.098	

OLS regression with clustered standard errors. Coefficients are rounded at three decimals.

, **, * indicates significance at the 10%, 5%, and 1% level.*

5.5 Additional test

The results presented in table 8 and table 9 use a dummy variable to proxy for bonus compensation. However, the amount of bonus compensation is therefore disregarded. In this additional test, the equations 1 and 2 are regressed using *BONUS_VALUE* and *SHORT_TERM_VALUE* instead of *BONUS_COMPENSATION*. The predicted sign for *BONUS_VALUE* and *SHORT_TERM_VALUE* is positive using the assumption that higher bonuses are achieved by reporting a higher difference between the main non-GAAP financial measure and the relevant GAAP financial measure. The results estimating the relation between bonus compensation and the difference is shown in table 10 using *BONUS_VALUE*. Table 11 looks at the effect of the ESMA guidelines on the relation between bonus compensation and the difference using *BONUS_VALUE*. When using the variable *SHORT_TERM_VALUE* as proxy for the value bonus compensation, similar results are obtained and are therefore not tabulated.

In table 10, when using the absolute difference between the main non-GAAP financial measure and the relevant GAAP financial measure, the coefficient of *BONUS_VALUE* is positive and significant at the 1% level in both the with EPS sample and without EPS sample. However, the coefficient is relatively small and therefore rounded at four decimals instead of three. The coefficient for the main variable is 0.0003 in the with EPS sample and 0.0002 in the without EPS sample. This means that if the executive receives a higher bonus, the difference between the non-GAAP financial measure and the relevant GAAP financial measure is higher. Looking at the without EPS sample, if the executive receives 100.000 more value in bonus compensation, the absolute difference increases with 20 (million), ceteris paribus. For the relative difference, the coefficient of the main variable shows a negative sign for both the with EPS sample and without EPS sample. However, the coefficient is insignificant and very small in both samples.

In table 11, the results for testing equation 2 using *BONUS_VALUE* instead of *BONUS_COMPENSATION*. When using the absolute difference as dependent variable, the value of the bonus compensation is significant positive at the 5% level in the with EPS sample. For the without EPS sample, the coefficient of *BONUS_VALUE* is positive but not significant. For the main variable, which is *BONUS_VALUE_ESMA*, the coefficient has a positive sign in both the with EPS sample and without EPS sample. However, the coefficients are insignificant. Looking at the results when the dependent variable is the relative difference, *BONUS_VALUE* is negative in both samples. For the with EPS sample the coefficient is insignificant, whereas the coefficient is significant at the 10% level in the without EPS sample. The coefficient of the main variable is positive but insignificant in both samples.

Table 10

The amount of bonus compensation on the difference in value between the non-GAAP and GAAP financial measure

Panel A: Results for equation 1									
NON-GAAP DIFFERENCE		ABSOLUTE				RELATIVE			
Variable	Predicted sign	With EPS		Without EPS		With EPS		Without EPS	
		Coefficient	P-value	Coefficient	P-value	Coefficient	P-value	Coefficient	P-value
<i>CONSTANT</i>		-1200.059**	0.016	-1146.46***	0.007	-20.442	0.133	-18.481	0.140
<i>BONUS_VALUE</i>	+	0.0003***	0.000	0.0002***	0.002	-1.26e-06	0.126	-1.63e-06	0.140
<i>SIZE</i>	+	54.938	0.285	21.105	0.657	1.545***	0.006	1.659***	0.005
<i>PERFORMANCE</i>	-	-1.250	0.235	0.056	0.953	-0.024	0.246	-0.026	0.243
<i>LEVERAGE</i>	+	-85.837	0.616	-70.010	0.674	-0.301	0.943	-0.459	0.911
<i>INTANGIBLES</i>	+	158.020	0.387	72.446	0.697	4.461	0.109	4.885	0.116
<i>SPECIAL_ITEMS</i>	+	100.786	0.241	67.280	0.246	4.206	0.201	4.573	0.193
<i>VARIABILITY</i>	+	-26.549	0.956	-6.144	0.990	9.798	0.435	8.405	0.502
<i>AVOID_LOSS</i>	+	7.713	0.917	45.150	0.514	-1.368	0.616	-1.478	0.591
<i>BEATING</i>	+	90.000	0.173	25.022	0.676	3.021***	0.001	3.119***	0.002
<i>ANALYSTS</i>	?	11.134	0.497	32.686***	0.008	-0.197*	0.082	-0.205	0.208
<i>GROWTH</i>	+	-1.408	0.502	-0.318	0.866	-0.065*	0.061	-0.072**	0.046
<i>R&D</i>	+	1702.225*	0.099	1340.369	0.196	23.699**	0.047	25.360**	0.040
<i>LONG_TERM</i>	-	-212.790***	0.010	-217.950***	0.006	-7.789	0.116	-7.703	0.121
<i>AGE</i>	-	7.521*	0.084	9.311**	0.029	0.088	0.629	0.075	0.684
<i>INSTITUTIONAL</i>	-	-1.114	0.411	-3.828**	0.015	0.044*	0.090	0.039	0.211
<i>INSIDER</i>	-	-9.221*	0.083	-9.390*	0.053	-0.057	0.389	-0.049	0.471
<i>BOARD</i>	-	-286.931	0.130	-227.005	0.191	-0.620	0.873	-0.294	0.942
Year dummies		Included		Included		Included		Included	
Industry dummies		Included		Included		Included		Included	
Country dummies		Included		Included		Included		Included	
Total observations		243		226		243		226	
Adjusted R ²		0.489		0.557		0.103		0.103	

*OLS regression with clustered standard errors. Coefficients are rounded at three decimals. In some cases, the coefficient for the main variable is displayed with more decimals to get a better understanding. *, **, *** indicates significance at the 10%, 5%, and 1% level.*

Table 11

The amount of bonus compensation before and after ESMA on the difference in value between the non-GAAP and GAAP financial measure

Panel A: Results for equation 2									
NON-GAAP DIFFERENCE		ABSOLUTE				RELATIVE			
Variable	Predicted sign	With EPS		Without EPS		With EPS		Without EPS	
		Coefficient	P-value	Coefficient	P-value	Coefficient	P-value	Coefficient	P-value
<i>CONSTANT</i>		-1319.669**	0.025	-1341.011**	0.011	-14.299	0.238	-14.904	0.220
<i>BONUS_VALUE</i>	+	0.0002**	0.023	0.0001	0.109	-1.35e-06	0.104	-1.70e-06*	0.097
<i>ESMA</i>	?	137.906	0.439	170.706*	0.071	-5.543	0.338	-5.450	0.359
<i>BONUS_VALUE_ESMA</i>	?	0.0002	0.265	0.0002	0.185	4.62e-07	0.677	4.24e-07	0.700
<i>SIZE</i>	+	61.516	0.215	26.566	0.552	1.481***	0.009	1.597***	0.007
<i>PERFORMANCE</i>	-	-1.342	0.212	0.033	0.973	-0.022	0.298	-0.024	0.284
<i>LEVERAGE</i>	+	-114.643	0.489	-103.525	0.521	0.097	0.982	-0.035	0.993
<i>INTANGIBLES</i>	+	160.615	0.372	72.285	0.691	4.426	0.117	4.843*	0.125
<i>SPECIAL_ITEMS</i>	+	70.444	0.370	26.363	0.621	4.249	0.213	4.615	0.204
<i>VARIABILITY</i>	+	-59.195	0.896	-47.177	0.920	9.809	0.439	8.442	0.504
<i>AVOID_LOSS</i>	+	1.150	0.988	38.954	0.583	-1.477	0.599	-1.586	0.576
<i>BEATING</i>	+	89.318	0.170	24.986	0.669	2.955***	0.002	3.072***	0.002
<i>ANALYSTS</i>	?	9.831	0.449	32.015***	0.005	-0.199*	0.086	-0.209	0.207
<i>GROWTH</i>	+	-1.074	0.646	0.143	0.946	-0.064*	0.072	-0.071*	0.053
<i>R&D</i>	+	1686.778	0.111	1299.838	0.223	22.130*	0.055	23.821**	0.045
<i>LONG_TERM</i>	-	-192.398**	0.024	-193.929**	0.016	-8.019	0.113	-7.933	0.118
<i>AGE</i>	-	7.313*	0.087	9.097**	0.029	0.082	0.647	0.068	0.705
<i>INSTITUTIONAL</i>	-	-0.890	0.498	-3.590**	0.016	0.045*	0.093	0.040	0.211
<i>INSIDER</i>	-	-10.239**	0.047	-10.694**	0.021	-0.057	0.392	-0.045	0.476
<i>BOARD</i>	-	-344.850*	0.087	-295.273	0.117	-0.473	0.904	-0.141	0.972
Year dummies		Included		Included		Included		Included	
Industry dummies		Included		Included		Included		Included	
Country dummies		Included		Included		Included		Included	
Total observations		243		226		243		226	
Adjusted R ²		0.499		0.575		0.099		0.097	

OLS regression with clustered standard errors. Coefficients are rounded at three decimals. In some cases, the coefficient for the main variable is displayed with more decimals to get a better understanding. *, **, *** indicates significance at the 10%, 5%, and 1% level.

6. Conclusion

This thesis provides an overview on the effect of the ESMA guidelines on non-GAAP financial reporting in Europe. For a sample of 200 firms spread over six countries (France, Germany, UK, the Netherlands, Spain, and Italy) annual earnings press releases are evaluated for a period of 2014-2017 on the presence of non-GAAP financial measures. The results show that for 660 annual earnings press releases, only five annual earnings press releases contained no non-GAAP financial measure. This leads to the conclusion that the use of non-GAAP financial measures has become common practice by firms in Europe. There was a slight increase in firms reporting non-GAAP financial measures. For the sample containing 660 observations, the % of firms reporting a non-GAAP financial measure increased from 98.73% in 2014 to 99.40% in 2017. For a consistent sample of firms reporting non-GAAP financial measure in all years, the % of firms reporting a non-GAAP financial measure increased from 98.61% in 2014 to 99.31% in 2017. However, the increase in the % of firms reporting a non-GAAP financial measure is not statistically significant. Because there is no regulation for reporting non-GAAP financial measures in Europe, the ESMA issued guidance for reporting non-GAAP financial measures. On 3rd July 2016 the ESMA guidelines issued by the ESMA became effective. The goal of the ESMA guidelines is to enhance the usefulness and transparency of reported APMs. Application of the guidance will lead to APMs that are more comparable, reliable and comprehensible for users of the disclosed information. For example, the ESMA guidelines require that when a firm reports an APM, a reconciliation to the relevant GAAP financial measure should be provided. Thus, after the issuance of ESMA one can expect that the % of firms providing a reconciliation for their non-GAAP financial measures increased. Results in this thesis show that the % of firms providing a reconciliation for the main non-GAAP financial measure slightly decreased. A test on the difference in the % of firms providing a reconciliation shows that the difference is not significant. A possible explanation for the fact that the % of firms providing a reconciliation did not increase after the implementation of the ESMA guidance is that the guidance is not required and therefore firms have to decide by themselves if they apply the ESMA guidance.

Furthermore, the relation between bonus compensation and the difference between the main non-GAAP financial measure and the relevant GAAP financial measure is investigated. After that, the effect of ESMA on this relation is investigated. Bonus compensation is proxied by a dummy variable indicating if the executive received bonus compensation. The difference between the main non-GAAP financial measure and the relevant GAAP financial measure is measured in absolute terms and in relative terms. The results show that the coefficient of bonus compensation is not significant in either of the samples used and therefore this thesis suggests that when the executive receives bonus compensation this does not lead to a higher difference between the main non-GAAP financial measure and the relevant GAAP financial measure. The results including the interaction effect between ESMA and bonus compensation also show insignificant results, suggesting the ESMA guidance has no effect on the

relation between bonus compensation and the difference between the main non-GAAP financial measure and the relevant GAAP financial measure, which provide the answer to the research question.

An additional test that takes the amount of bonus compensation the executive receives into account, shows significant results for the positive coefficient of the amount of bonus compensation when the difference is measured in absolute terms. When the difference is shown in relative terms, the coefficient of the amount of bonus compensation turns negative and insignificant. At last, the results show that the issue of the ESMA guidance did not impact the relation between the amount of bonus compensation and the difference between the non-GAAP financial measure and the relevant GAAP financial measure. Based on the additional test the conclusion is that the amount of bonus compensation has an effect on the absolute difference between the main non-GAAP financial measure and the relevant GAAP financial measure, but not on the relative difference.

This thesis contributes to the existing literature in two ways. Firstly, this thesis provides some recent evidence on firms reporting non-GAAP financial measures in their annual earnings press release. In particular, this thesis contains the period in which the ESMA guidance became effective, which could impact the % of firms reporting non-GAAP financial measures. Also, this thesis examines whether the % of firms providing a reconciliation increased after the implementation of the ESMA guidance. Reconciliations are required by the ESMA guidance and therefore a difference in the % of firms providing a reconciliation can be expected. To the best of my knowledge, this thesis is one of the first in providing evidence whether or not the % of firms providing a reconciliation differs after the implementation of the ESMA guidance. Secondly, this thesis provides evidence specifically related to bonus compensation and non-GAAP financial reporting. Prior research focused on short-term compensation or stock compensation and the decision to report a non-GAAP financial measure. This thesis uses bonus compensation and the difference between the non-GAAP financial measure and the relevant GAAP financial measure instead, because nearly all firms report a non-GAAP financial measure in their annual earnings press release. Additionally, this thesis provides first time evidence for the effect of ESMA on the relation between bonus compensation and the difference between the non-GAAP financial measure.

Besides the contribution, this thesis has some limitations. First of all, this thesis is based on the assumption that the bonus compensation is based on the non-GAAP financial measure, which may not always be the case. Secondly, this thesis uses a small sample containing six countries, and therefore some countries lack observations in the sample. For example, Spain, Germany, Italy, and the Netherlands all have less than twenty observations in the final sample. In contrast to this, firms from the UK are over presented as they account for almost 50% of the observations. Thirdly, the lack of observations relating to fiscal year 2017 is a limitation. This is due to the data collection of the compensation data, where no data is available for firms with a book year ending in December 2017.

There are some suggestions for future research. Firstly, a more extensive research on bonus compensation and non-GAAP financial measures can be conducted. This thesis takes the assumption

that the bonus compensation is linked to reporting the main non-GAAP financial measure. A research that looks explicit to which measures the bonus compensation is linked can provide a better research. Therefore the compensation scheme of the executive has to be evaluated. Secondly, a more extensive research on the effect of ESMA can be conducted. This thesis has some low amount of observations for 2017, and therefore a low amount of observations for the after ESMA period. Thirdly, a research can be conducted investigating if stock compensation is related to the difference between the main non-GAAP financial measure and the GAAP financial measure. Prior research investigated CEO stock compensation in relation to reporting non-GAAP financial measures. However, the effect of CEO stock compensation on the difference between the main non-GAAP financial measure and the GAAP financial measure has not yet been investigated.

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8. List of abbreviations

AMF	Autorite des Marchés Financiers
APM	Alternative Performance Measure
CEO	Chief Executive Officer
CESR	Committee of European Securities Regulators
DiD	Difference-in-Difference
EBT	Earnings before taxes
EBIT	Earnings before interest and taxes
EBITD	Earnings before interest, taxes and depreciation
EBITDA	Earnings before interest, taxes, depreciation and amortization
EPS	Earnings per share
ESMA	European Securities and Markets Authority
EU	Europe
FASB	Financial Accounting Standards Board
GAAP	General Accepted Accounting Principals
IFRS	International Financial Reporting Standards
IOSCO	International Organization of Securities Commissions
IPO	Initial Public Offering
NG	Non-GAAP
OLS	Ordinary Least Squares
ROA	Return on Assets
R&D	Research and Development
SIC	Standard Industrial Classification
SEC	Security and Exchange Commission
UK	United Kingdom
US	United States

9. Appendix

Appendix A

Variable definitions

Variable	Definition	Source
<i>AGE</i>	The age of the executive, proxied by the calculation : age = fiscal year – year born. <i>AGE</i> does not take into account the month and day on which the fiscal year ends and the exact date of birth of the executive	Capital IQ- people intelligence
<i>ANALYSTS</i>	The number of analysts that contributed to the latest analyst consensus forecast for a fiscal year	I/B/E/S
<i>AVOID_LOSS</i>	Dummy variable indicating whether the firm reported a negative main GAAP financial measure and a positive main non-GAAP financial measure. <i>AVOID_LOSS=1</i> indicates that the firm reported a positive main non-GAAP financial measure and a negative equivalent GAAP financial measure. <i>AVOID_LOSS=0</i> indicates otherwise	Hand-collected
<i>BEATING</i>	Dummy variable indicating whether the main non-GAAP financial measure meet or beat the mean analysts' consensus forecast when the equivalent GAAP financial measure does not. <i>BEATING=1</i> indicates that the main non-GAAP financial measure meet or beat the mean analyst consensus forecast when the equivalent GAAP financial measure does not. <i>BEATING=0</i> means otherwise	I/B/E/S
<i>BOARD</i>	Measure of the independence of the board. Calculated by the percentage of board members who are independent. A higher percentage indicates higher board independence	BoardEx
<i>BONUS_VALUE</i>	Variable that represents the value of bonus compensation that the executive received. Based on ctype2 of Capital IQ	Capital IQ – people intelligence
<i>BONUS_COMPENSATION</i>	Variable that indicates whether the executive received bonus compensation. <i>BONUS_COMPENSATION=1</i> indicates that the executive received bonus compensation, 0 means otherwise	Capital IQ - people intelligence
<i>COUNTRY</i>	Variable indicating in which country the firm is domiciled: Germany, Italy, Spain, the Netherlands, United Kingdom or France	Hand-collected
<i>ESMA</i>	Dummy variable indicating in an observation is before the issue of the ESMA regulation on 3 rd July 2016 or after this date. <i>EMSA=1</i> indicates that the source date of the earnings press release is after 3 rd July 2016, 0 means otherwise	Hand-collected
<i>EPS</i>	Dummy variable indicating if a firm has a main non-GAAP financial measure that is measured on a per share basis. <i>EPS=1</i> indicates that the firm has a main non-GAAP financial measure that is measured on a per share basis, 0 means otherwise	Hand-collected

Variable	Definition	Source
<i>END_DATE_FYEAR</i>	Indicates on which date the fiscal year ends	Hand-collected
<i>FYEAR</i>	Indicates into which fiscal year the observation is related to	Hand-collected
<i>GROWTH</i>	The three-year average growth in sales	Compustat
<i>INDUSTRY</i>	indicates in which industry the firm operates, based on the four-digit SIC code a classification of SIC codes can be found in the notes at table 2	Compustat
<i>INSIDER</i>	The percentage of shares held by insiders. The following type of shareholder is considered as insider: employees/managers/directors	Amadeus
<i>INSTITUTIONAL</i>	The percentage of shares held by institutional investors. The following types of shareholders are considered as institutional: financial firms; insurance firms; and mutual & pension funds/nominees/trusts/trustees	Amadeus
<i>INTANGIBLES</i>	Measure of the proportion of intangibles included in the assets. Calculated by the ratio intangibles-to-assets	Compustat
<i>LEVERAGE</i>	Measure of the leverage of the firm. Calculated by the ratio debt-to-assets	Compustat
<i>LONG_TERM</i>	Dummy variable indicating whether the executive received long-term performance compensation. <i>LONG_TERM=1</i> indicates that the executive received long-term performance compensation, 0 means otherwise	Capital IQ - people intelligence
<i>NG_YES_NO</i>	Dummy variable indicating whether a firm reported a non-GAAP financial measure in their press release. <i>NG_YES_NO=1</i> indicates that the firm reported a non-GAAP financial measure, 0 indicates otherwise	Hand-collected
<i>NG_GAAP_DIFFERENCE</i>	Indicates the difference in value of the main non-GAAP financial measure and the equivalent GAAP financial measure. Proxied by <i>NG_GAAP_DIFFERENCE_ABS</i> and <i>NG_GAAP_DIFFERENCE_REL</i>	Hand-collected
<i>NG_GAAP_DIFFERENCE_ABS</i>	The absolute difference between the main non-GAAP financial measure and the GAAP financial measure. $NG_GAAP_DIFFERENCE_ABS = NG_MAIN_METRIC_VALUE - NG_EQUIVALENT_VALUE$	Hand-collected
<i>NG_GAAP_DIFFERENCE_REL</i>	The relative difference between the main non-GAAP financial measure and the GAAP financial measure. $NG_GAAP_DIFFERENCE_REL = NG_GAAP_DIFFERENCE_ABS / absolute\ value\ of\ NG_GAAP_EQUIVALENT_VALUE$	Hand-collected
<i>NG_MAIN_METRIC</i>	The reported non-GAAP financial measure which is considered as the most important	Hand-collected
<i>NG_MAIN_METRIC_VALUE (in millions)</i>	The value of the main non-GAAP financial metric, stated in millions	Hand-collected
<i>NG_EQUIVALENT_VALUE (in millions)</i>	The value of the relevant GAAP financial metric, stated in millions	Hand-collected
<i>NG_MAIN_METRIC_VALUE (EPS)</i>	The value of a non-GAAP financial measure that is reported on a per share basis	Hand-collected
<i>NG_EQUIVALENT_VALUE (EPS)</i>	The value of a GAAP financial measure that is reported on a per share basis	Hand-collected

Variable	Definition	Source
<i>NG_RECONCILIATION</i>	Dummy variable indicating whether a firm presented a reconciliation between the main non-GAAP financial measure and the relevant GAAP financial measure. <i>NG_RECONCILIATION=1</i> indicates that the firm provided a reconciliation, 0 means otherwise	Hand-collected
<i>NG_RECONCILIATION_FROM_TO PERFORMANCE</i>	Shows how the reconciliation goes in the following way: top line; bottom line Measures the performance of the firm, based on the following ratio: <i>PERFORMANCE</i> = market capitalization / shareholder funds	Hand-collected Amadeus
<i>R&D</i>	Measures the extent to which the firm has R&D expenses, which is scaled by total assets	Compustat
<i>SHORT_TERM_VALUE</i>	Variable that represents the value of short-term compensation that the executive received, based on ctype16 of Capital IQ	Capital IQ - people intelligence
<i>SIZE</i>	Measure of the size of the firm. Based on the logarithm of total assets of the firm	Compustat
<i>SOURCE_DATE_PR</i>	Indicates on which date the press release was issued	Hand-collected
<i>SPECIAL_ITEM</i>	Dummy variable indicating whether a firm reported an (positive or negative) amount as special items. <i>SPECIAL_ITEM=1</i> indicates that the firm report an (positive or negative) amount as special item, 0 means otherwise	Compustat
<i>VARIABILITY</i>	The standard deviation of ROA over the previous three years	Compustat

Appendix B

Examples of possible reconciliations for non-GAAP financial measures not reported on a share basis

1: reconciliation goes from top of income statement (revenue) to bottom of income statement	2: separate reconciliation within the income statement	3: separate reconciliation without the income statement
Main NG financial measure is EBITDA	Main NG financial metric is EBITDA	Main NG financial metric is EBITDA
<u>Income statement</u> (amounts in €million)	<u>Income statement</u> (amounts in €million)	<u>Reconciliation EBITDA</u> (amounts in €million)
Revenue	Revenue	EBITDA
100	100	69
Cost of goods sold	EBITDA	Depreciation
-20	69	-5
Personnel expenses	Depreciation	Amortization
-8	-5	-2
Other expenses	Amortization	Financial result
<u>-3</u>	-2	<u>-2</u>
EBITDA	Financial result	EBIT
69	<u>-2</u>	60
Depreciation	EBT	Income tax
-5	60	<u>10</u>
Amortization	Income tax	Net result
<u>-2</u>	<u>10</u>	50
EBIT	Profit from operating activities	
62	50	
Financial result	Discontinued operations	
<u>-2</u>	0	
EBT	Net result	
60	50	
Income tax		
<u>10</u>		
Profit from operating activities		
50		
Discontinued operations		
0		
Net result		
50		
Reconciliation: Revenue; Net result	Reconciliation: EBITDA; Net result	Reconciliation: EBITDA; Net result

Appendix C

Examples of possible reconciliations for non-GAAP financial measures reported on a share basis

1: reconciliation of non-GAAP EPS to GAAP EPS

400 million shares (basic and diluted)

	Net income (€million)	EPS
Basic	100	0.25
Exceptional items	34	0.085
Deferred tax	8	0.02
Pension scheme liabilities	<u>14</u>	<u>0.035</u>
Adjusted	156	0.39

2: reconciliation of GAAP net income to non-GAAP net income and number of shares provided

	(€million)
Net income	100
Exceptional items	34
Deferred tax	8
Pension scheme liabilities	<u>14</u>
Adjusted net income	156

Basic weighted average number of shares in issue: 400 million

Effect of dilutive potential shares: 30 million

Diluted weighted average number of shares in issue: 430 million

Basic EPS 0.25

Diluted EPS 0.23

Adjusted basic EPS 0.39

Adjusted diluted EPS 0.36

Reconciliation: Adjusted EPS; Basic EPS

Reconciliation: Net income; Adjusted net income