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Diversity In Performance Reporting

Empirical Evidence From The London Stock Exchange Concerning The Classification Of Interest Components Within The Income Statement

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Abstract

This study is motivated by the concerns of researchers, practitioners, and regulators regarding the drawbacks of non-statutory earnings subtotals. We investigate whether the flexibility in classifying subtotals within the income statement provided to managers under IFRS serves its intended purpose of facilitating the needs of investors. Responding to criticism, the IASB is currently deliberating on explicitly defining an EBIT subtotal. However, such an endeavour requires a clarification of how various interest components should be classified. In light of the IASB's deliberations, we also investigate a European capital market's treatment of two typically diffuse interest components - interest on defined benefit obligations and finance leases - by assessing their abilities to predict stock price and stock return. Using a sample of 391 non-financial firms on the London Stock Exchange, we document diversity among European firms in classification of the two interest components. Results show that the diversity in reporting practices does not result in more relevant disaggregation of earnings, suggesting flexibility do not facilitate the needs of investors. Furthermore, an explicitly defined EBIT subtotal might prove more relevant when industry-specific factors are taken into account. Moreover, this paper does not provide inferences as to how an EBIT subtotal may or may not be defined, however the results shed some light on how investors classify two typically diffuse interest components as opposed to how European firms classify them. This paper also contributes to the work of standard setters by providing an indication of which type of EBIT subtotal could be more beneficial to European capital markets.

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Table of contents

1. Introduction

Earnings composed in accordance with Generally Accepted Accounting Principles (GAAP), or 'GAAP earnings', is increasingly being recognised as inadequate for investment decisions (Liu & Pae, 2005; Dichev & Tang, 2008; Kolev *et al*., 2008; Gordon *et al*., 2015). GAAP earnings typically aggregates non-recurring and transitory components, which investors generally deem irrelevant for assessing firm performance (Barton *et al*., 2010; Black *et al*., 2018). To overcome this deficiency, managers often disclose subtotals to clarify the distinction between recurring and non-recurring components. Such subtotals are often referred to as '*non-GAAP earnings*' or '*adjusted performance measures*' (APM), and are aimed at depicting the operational performance by excluding components deemed not pertinent to the firm's ongoing business by management (Liu & Pae, 2005; Graham *et al*., 2005; Bhattacharya *et al*., 2007; Dichev & Tang, 2008; Kolev *et al*., 2008; Young, 2014). The practice of APM reporting is facilitated by a general lack of guidance from standard setters. International Financial Reporting Standards (IFRS) does not explicitly define or restrict any subtotals in the income statement between revenue and profit before tax, and allows significant flexibility for managers to adjust said subtotals when responding to market demands such as to investors (IFRS, 1997).

Past decades have seen a rapid increase in frequency and magnitude of reported APMs (Graham *et al*., 2005; Hitz, 2010; Webber *et al*., 2013). Investors have also become more reliant on these numbers (Johnson *et al*., 2014; Bradshaw *et al*., 2018; Black *et al*., 2018), and APMs are increasingly being recognised as a prominent part of corporate communication (Graham *et al*., 2005). However, the proliferation of APMs has been met with concern, as researchers, practitioners, and regulators have all questioned whether the flexibility in APMs actually facilitates the needs of investors. Even though managers usually defend this practice by claiming APMs to be more informative than GAAP earnings (Liu & Pae, 2005; Curtis *et al*., 2014), researchers often argue that APMs are biased towards misleading investors, rather than informing (e.g. McVay, 2006; Landsman *et al*., 2007; Doyle *et al*., 2013; Isidro & Marques, 2015). Although the debate has been largely critical towards the use of APMs, there seem to be a consensus among practitioners and regulators that the practice is indeed useful, though in need of regulation. Practitioners have frequently issued statements on the subject, typically calling for increased transparency and comparability (PwC, 2014; EY, 2016; KPMG, 2016; Deloitte, 2017), and the European Securities and Market Authority (ESMA) recently issued guidelines aimed at increasing the transparency of APM reporting in Europe (ESMA, 2015).

Responding to the proliferation and criticism of APMs, the International Accounting Standard Board (IASB) has tentatively decided to explicitly define and require the presentation of an EBIT (*earnings before interest and tax*) subtotal (IASB, 2017a). EBIT, one of the most commonly reported APMs (Deloitte, 2016; EY, 2016), is used by firms to isolate profit relevant to the firm's operations from income and expenses related to its financing. Therefore, defining an EBIT subtotal requires a set of definitions or rules as to whether accounting items should be considered *financing* or *operating*, currently not done in IFRS. The IASB has addressed this task with a so-called "bottom-up" approach, meaning EBIT will be defined in terms of what *interest* is and thus should be excluded from the subtotal (IASB,

2017d). Consequently, the primary challenge for the IASB revolves around explicitly defining classification for different interest components.

As of today, the IASB has not communicated which interest components are of greatest concern, although it will most likely regard interest components typically deemed unclear as to whether they are part of a firm's capital structure or its operations. A case study presented at the IASB Research Forum 2017 identified some of the more problematic interest components as interest on defined benefit obligations (IAS 19) and finance leases (IAS 17) (IASB, 2017c). Each respective standard requires recognition of interest in the income statement (IFRS, 2003; 2009), however, the nature of each interest component can be interpreted differently by managers. In particular, the case study showed substantial inconsistencies as to whether participating firms considered interest on defined benefit obligations to be an operating or financing expense in the income statement (IASB, 2017c).

The purpose of this paper is twofold. Firstly, we set out to investigate whether the flexibility in classifying subtotals within the income statement currently provided to managers under IFRS serves its intended purpose of facilitating the needs of investors. Previous research have asserted APMs as being more relevant than GAAP earnings (Bradshaw & Sloan, 2002; Brown & Sivakumar, 2003; Bhattacharya *et al*., 2003; Albring *et al*., 2010; Entwistle *et al*., 2010; Wieland *et al*., 2012; Venter *et al*., 2014; Cormier *et al*., 2017). However, as the inherent flexibility in these measures enables managers to produce largely company-specific subtotals, thus causing diversity in practice (IASB, 2017b), APMs clearly deviate from the IASB's work on creating comparability across economic sectors (Hoogervorst, 2015). By comparing whether current reporting practices target the demands of investors, we examine if European firms disaggregate earnings to present the most relevant earnings measure. Secondly, in an attempt to provide useful insights to the IASB, we investigate which classification of two typically unclear interest components is more relevant in depicting firm performance to investors.

Using a sample of 391 non-financial firms on the London Stock Exchange's (LSE) *Main Market* list, we document diversity in classification of interest on defined benefit obligations and finance leases. We show that the majority of European firms disclose an EBIT subtotal excluding both types of interest components. Using stock price and return regressions based on the Ohlson (1995) and Feltham and Ohlson (1995) model, we find the majority of firms to make classifications considered relevant to investors. However, separate industry tests reveal an evident discrepancy between variations in reporting practices and what is perceived to be relevant to investors, suggesting managers and investors often make industry-specific adjustments which do not conform. Consequently, we argue that reducing diversity in performance reporting by explicitly defining an EBIT subtotal may be more beneficial to investors.

Furthermore, the relevance of the two interest components was shown to differ between industries. Interest on defined benefit obligations was more relevant for the service industry, whereas interest on finance leases was more relevant for the retail trade industry. In the manufacturing industry, neither interest component was shown to have any impact on the relevance of reported APMs. The results suggest that the relevance of including or excluding certain interest components in an APM may depend on the industry, indicating that the

flexibility currently provided by IAS 1 may be more beneficial to investors than a cross-industry specific EBIT subtotal, as it allows managers to account for industry-specific factors

This paper does not provide any inferences on how EBIT subtotals should be defined, however, the results shed some light on differences in classification of two typically unclear interest components between European firms and investors. In addition, this paper contributes to the work of standard setters by providing an indication of what type of EBIT subtotal could prove more beneficial to European capital markets. The results presented in this paper suggest the flexibility provided to managers in IAS 1 may be suitable, however, if the IASB pursues a standardisation of an EBIT subtotal, it could be made more relevant by accounting for industry-specific factors. Lastly, this is the first study to our knowledge comparing the relevance of individual interest components and subtotals presented within firms' financial statements. Previous APM studies have focused on subtotals presented, for instance, in press releases, interim reports, or unaudited sections of annual reports, and therefore do not explicitly provide inferences on the IASB's deliberations on amending IAS 1.

This paper is subject to some limitations. Firstly, to assess relevance, we look at the association between accounting earnings and market values of equity. However, these types of tests are sensitive to reporting bias. If investors trade on reported APMs, as opposed to making own adjustments, the results may be biased towards the reporting practises of firms. Secondly, due to several firms not explicitly disclosing either exact amounts or recognition of interest components, the sample was relatively small which may affect our ability to derive conclusive results for the population.

The remainder of this paper is structured as follows. Section 2 presents prior research on APMs, along with our research questions. This is followed by a section on research design and sample selection. Section 4 presents the results, followed by our conclusion provided in section 5.

2. Literature review

2.1 The proliferation of APM reporting

Earnings is widely considered as the most important output in a firm's financial statement (Graham *et al*., 2005; Venter *et al*., 2014). Given the emphasis of standard setters on a 'one size fits all' purpose for financial reporting, determinants of the earnings number have shifted from a profit-and-loss perspective to being balance sheet-based (Dichev & Tang, 2008). As a result, the earnings number becomes largely aggregated, containing various non-recurring and transitory components. This implies an earnings number which undeniably ignores idiosyncrasies at the micro level (Young, 2014). Many critics therefore argue that the earnings number has decreased in relevance from an equity valuation standpoint, as the aggregation of items with different value implications introduces noise (Liu & Pae, 2005; Dichev & Tang, 2008; Kolev *et al*., 2008; Gordon *et al*., 2015).

In response, firms often disclose adjusted measures in press releases and interim reports in an attempt to clarify the distinction between recurring and non-recurring components of earnings. These measures, often referred to as APMs, constitute a disaggregated form of

earnings aimed at depicting the operational performance by excluding components deemed not pertinent to the firm's ongoing business by management (Liu & Pae, 2005; Graham *et al.*, 2005; Bhattacharya *et al.*, 2007; Dichev & Tang, 2008; Kolev *et al.*, 2008; Young, 2014). The reporting of APMs has received much attention the last decades, and the increased frequency and magnitude of firms reporting APMs is widely documented (e.g. Graham *et al.*, 2005; Hitz, 2010; Webber *et al.*, 2013; Johnson *et al.*, 2014). Investors have also become more reliant on these numbers (Johnson *et al.*, 2014; Bradshaw *et al.*, 2018; Black *et al.*, 2018), and APMs are increasingly being recognised as a prominent part of corporate communication (Graham *et al.*, 2005). Research suggests it is almost entirely unsophisticated investors who rely on APMs (Lougee & Marquardt, 2004; Bhattacharya *et al.*, 2007). However, as this type of investors in many cases lack sufficient knowledge to determine the quality of the numbers (Johnson *et al.*, 2014), and given that they are often unregulated and unaudited, managements' motives behind the reporting have been heavily debated.

Traditionally, managers have defended this practice by claiming APMs to be more informative than GAAP earnings (Curtis *et al.*, 2014). Central to the argument is that no accounting item is completely recurring or non-recurring (Gu & Chen, 2004), though management are more capable of determining the persistence of earnings items than any outsider (Liu & Pae, 2005). A number of researchers provide evidence on this notion, where managers are driven by a legitimate desire to enhance investors' understanding of firm performance (e.g. Liu & Pae, 2005; Black & Christensen, 2009; Entwistle *et al.*, 2010). For example, Bhattacharya *et al.* (2003) find that managers systematically exclude non-recurring earnings components from APMs in order to provide investors with a better representation of operational performance, and similar results are also found in studies by Lougee and Marquardt (2004) and Curtis *et al.* (2014). Moreover, Bradshaw and Sloan (2002) present evidence that investors react more promptly to APMs rather than GAAP earnings, and Johnson *et al.* (2014) and Bradshaw *et al.* (2018) show that investors in fact prefer the management adjusted APM when gathering information. Nevertheless, sophisticated investors and analysts often produce their own disaggregation of earnings based on what they perceive to be operating. However, Malone *et al.* (2016) document increasingly aligned disaggregations of earnings made by analysts, sophisticated investors and managers respectively, suggesting APMs to have the same informative intentions.

Despite evidence suggesting APMs to be more representative of operational performance, research has also documented opportunistically employed APMs in attempts by managers to mislead investors into thinking the firm is performing better than it actually is. For example, several studies provide evidence on managers using APMs to meet or beat earnings benchmarks when GAAP earnings fall short (Graham *et al.*, 2005; McVay, 2006; Aubert, 2010; Elshafie, Yen & Yu, 2010; Doyle *et al.*, 2013; Isidro & Marquez, 2015), and that adjustments in some cases involve the exclusion of recurring items (Bhattacharya *et al.*, 2003; Black & Christensen, 2009; Barth *et al.*, 2012; Black *et al.*, 2017a). Furthermore, several researchers also show that APMs are sometimes used as a substitute to earnings management. For example, Doyle *et al.* (2013) find that managers are more likely to use APMs to beat analysts earnings forecasts when real earnings management is more costly or difficult to pursue. The results from Black *et al.* (2017b) also support this perception. Moreover, central to the concerns of APMs is also the inconsistencies in which these appear

within income statements. Several researchers illustrate that the classification of accounting information into such APMs often vary across firms as well. For example, McVay (2006) shows that managers vertically shift income and expenses in the income statement to embellish the presentation of operational performance, a cross-company heterogeneity considered particularly disruptive and misleading to investors (De Franco *et al*., 2011). The use of "classification shifting" is also reported by Davis (2002) and Kolev (2008).

In an effort to untangle the two conflicting sides, researchers have focused on establishing the value relevance of APMs. The general conclusion indicates that APMs are more value relevant, and thus more informative, than GAAP earnings (Bradshaw & Sloan, 2002; Brown & Sivakumar, 2003; Bhattacharya *et al*., 2003; Entwistle *et al*., 2010; Wieland *et al*., 2012; Venter *et al*., 2014; Cormier *et al*., 2017), which has virtually asserted APMs as a necessity to financial reporting. In spite of its potential role in misleading investors, along with inconsistencies both across firms and time, focusing on recurring and persistent earnings components undeniably provides a more informative earnings measure than GAAP earnings. This has lead several researchers to support the contention that reducing the drawbacks of APMs by explicitly defining a measure for operational performance, would likely be more beneficial to investors (Albring *et al*., 2010; Young, 2014).

Some researchers have tried to capture the effect of limiting management discretion and inconsistencies in classification by explicitly defining performance measures. For example, Baik *et al*. (2008) investigate the consequences when the real estate investment trust industry in the US explicitly defined the APM "funds from operations" (FFO). Apart from the expected decrease in diversity and management discretion, Baik *et al*. (2008) interestingly depict a notable increase in usefulness and relevance of the APM compared to when FFO was undefined. Albring *et al*. (2010) use Standard and Poor's Core Earnings as a proxy for an explicitly defined APM of operational income, since the measure is calculated consistently across firms, and find their proxy to be more value relevant than APMs. The results from Baik *et al*. (2008) and Albring *et al*. (2010) suggest that increasing comparability and limiting management discretion by explicitly defining performance measures may further increase the usefulness of said measure.

The proliferation of APM reporting has also become a concern to standard setters and regulators, particularly as the evidence of opportunistic behavior could threaten the integrity and credibility of financial reporting (Young, 2014). Despite evidence that the usefulness of GAAP earnings can be improved by disaggregating earnings into recurring and relevant components, the freedom currently given to managers is widely regarded by researchers as negative since it is commonly accompanied by opportunism. Researchers thus seem to be in agreement that the diversity of APMs could potentially be more harmful than helpful to investors. Furthermore, evidence on the effect of explicitly defined performance measures indicates that improvements can be made by standard setters, especially in terms of APMs presented within the income statement.

2.2 The IASB's view

The responsibility for providing regulatory guidance on the structure and presentation of financial statements generally lies at the hands of standard setters and local regulators. However, the two leading regulatory frameworks, IFRS and US GAAP, currently pose few

requirements on how APMs should be constructed. In the US, the Securities and Exchange Commission (SEC) imposed a reconciliation requirement for all APMs, and managers are restrained from presenting any APMs in the audited sections of the financial statements (SEC, 2002). IFRS generally provides firms with more flexibility than US GAAP regarding these matters (Gordon *et al*., 2017). IAS 1 *Presentation of Financial Statements* barely gives any guidance regarding the structure of subtotals between revenue and profit before tax, however, contrary to US GAAP, managers are free to provide "*additional line items in the statement of comprehensive income …. when this is necessary to explain the elements of financial performance*" (IFRS, 1997, §86). IFRS therefore allows for a significant amount of flexibility in classification of subtotals within the income statement, which inevitably causes diversity as well as management discretion.

The IASB's Conceptual Framework names comparability as a characteristic enhancing the usefulness of information (IASB, 2015). However, the nature of APMs clearly deviates from this principle, and both regulators and the accounting profession have expressed concern towards the lack of control under IFRS. The European Financial Reporting Advisory Group (EFRAG) has issued warnings that large European firms often use APMs in an unclear and inconsistent manner (EFRAG, 2009), and the leading audit firms have released cautionary statements over the use of APMs, generally calling for increased transparency and comparability in practice (PwC, 2014; EY, 2016; KPMG, 2016; Deloitte, 2017). Recently, actions similar to the ones taken by the SEC in the US in the beginning of the century have started to surface in Europe. ESMA and the International Organization of Securities Commissions (IOSCO) have both published guidelines and recommendations for increased transparency and comparability for European listed firms (ESMA, 2015; IOSCO, 2016). However, both regard APMs communicated outside the financial statements, rather than the APMs stemming from the lack of guidance in IAS 1.

The issues with APMs have not gone by unnoticed for the IASB. Recently, the IASB acknowledged that APMs may not only be a threat to the integrity of IFRS, but also conceded that its proliferation may primarily be a result from IFRS shortcomings in providing the structure and subtotals for the income statements needed by investors (Hoogervorst, 2015; Shumsky, 2016; IFRS, 2017). Although admittingly stating the practice has great benefits, noting their ambition is not to remove any APM reporting, the IASB has also recognised the potential harm the increasingly misleading measures pose to investors in their current unregulated form (Hoogervorst, 2015; 2016). IFRS works to create comparability across economic sectors, however, the comparability is significantly impeded by the flexibility allowed in IAS 1 (Hoogervorst, 2015). Moreover, the IASB's chairman Hans Hoogervorst has explicitly stated that "*investors would benefit from greater discipline*" in terms of reporting, and more work from the IASB regarding APMs is expected (Hoogervorst, 2015).

Currently, the IASB is working on the *Disclosure Initiative*, a project started in 2013 with the objective of improving disclosures in financial reports. As a step in the project, the IASB made amendments to IAS 1 in 2014 in an attempt to ensure fair presentation of the subtotals disclosed in the income statements (IFRS, 2014). However, the IASB has indicated that more will have to be done to rein in the use of APM reporting (Hoogervorst, 2015; 2016; Shumsky, 2016). For instance, the IASB board member Gary Kabureck stated last year that

"Since APMs are so widely used by reporting entities, financial analysts and data aggregators, it is clear many people find them useful. Unfortunately, today's APMs are anything but uniformly applied. The challenge for us is to put some order and structure into the reporting of financial performance while simultaneously providing relevant information that faithfully represents the performance of the company" (Kabureck, 2017).

One of the most commonly disclosed APMs is '*earnings before interest and tax*' (EBIT) (Deloitte, 2016; EY, 2016). EBIT, and other EBIT-type subtotals such as 'operating profit', is used by firms to isolate profit relevant to the firm's operations from income and expenses related to its financing. Conceptually, an EBIT subtotal allows users to compare profitability of firms regardless of differences in capital structure. However, since IAS 1 permits management adjusted subtotals, disclosed EBIT subtotals are often company-specific and therefore not directly comparable between firms (IASB, 2017b). Much of the concerns among researchers, practitioners, regulators and the IASB are directed towards inconsistencies in APM calculations, and there is a consensus that an increase in comparability and transparency is necessary. In March 2017, the IASB made a preliminary decision to introduce an explicitly defined EBIT subtotal (IASB, 2017d), a suggestion which was later covered in a discussion paper on the *Disclosure Initiative* (IASB, 2017a).

Nevertheless, explicitly defining an EBIT subtotal requires a set of definitions or rules as to whether accounting items should be considered *financing* or *operating*. The IASB has addressed this task with a so-called "bottom-up" approach, meaning the subtotal will be based on exclusions rather than inclusions (IASB, 2017d). Framed differently, the IASB will define EBIT in terms of what *interest* is, and remaining items will be considered *operating* by default. Recent deliberations suggest that the IASB will define interest in EBIT as 'income and expenses related to an entity's capital structure' (IASB, 2017d). However, an important obstacle in the process is that "capital structure" is currently undefined in IFRS, meaning no standard defines finance income or expenses (IASB, 2017b). Likewise, this is why diversity and inconsistencies in calculations of subtotals arose in the first place: managers with different interpretations of what constitutes the "capital structure" of their company will adjust finance income and expenses accordingly. An issue which the IASB hopes to solve with EBIT.

2.3 Research questions
The IASB's Conceptual Framework states that *"If financial information is to be useful, it must be relevant and faithfully represent what it purport to represent"* (IASB, 2015, §2.4). Researchers have shown that disaggregating earnings into recurring and persistent components depicting the firm's ongoing business provides relevant earnings measures. That is, relevance increases when the earnings measure excludes non-recurring and transitory components. Furthermore, the IASB identifies comparability as a characteristic *"that enhance the usefulness of information that is relevant and faithfully represented"* (IASB, 2015, §2.22). More precisely, the IASB implies that financial information becomes more useful when it can be *"compared with similar information about other entities"* and *"with similar information about the same entity for another period or another date"* (IASB, 2015, §2.23). Although the proliferation of APMs provides users with more relevant earnings information, the measures clearly deviate from this principle and the concern from regulators and practitioners has primarily regarded the lack of comparability. Thus, explicitly defining

APMs would arguably increase comparability, and therefore further increase its relevance and usefulness. Baik *et al.* (2008) and Albring *et al.* (2010) provide evidence on such cases, where increasing comparability and limiting management discretion by explicitly defining performance measures increase the relevance of said measure.

The primary challenge for the IASB in defining EBIT revolves around explicitly defining a classification for *interest* components, and clarifying whether these are related to an entity's capital structure or not. While this may seem fairly straightforward in some cases, for instance, bank loans are unquestionably related to an entity's capital structure, other interest components are more difficult to classify. To this date, the IASB has not communicated which interest components are of greatest concern. However, a case study presented at the IASB Research Forum 2017 suggested a significant obscurity surrounding the nature of interests emanating from defined benefit obligations (IAS 19) and finance leases (IAS 17) (IASB, 2017c). Each respective standard requires recognition of interest in the income statement (IFRS, 2003; 2009), although the nature of each interest component is generally interpreted differently by managers. In particular, the case study showed substantial inconsistencies as to whether participating firms considered interest on defined benefit obligations to be an operating or financing expense in the income statement (IASB, 2017c).

In light of the literature on APM reporting and the IASB's deliberations on EBIT, we investigate whether the flexibility currently provided to managers under IFRS serves its intended purpose of facilitating the needs of investors. This question is driven by the concerns of researchers, regulators and practitioners regarding the drawbacks of non-statutory earnings measures, leading to our first research question:

Is diversity in performance reporting beneficial to equity investors?

In a response to the proliferation and criticism of APMs, the IASB has tentatively decided to explicitly define and require the presentation of an EBIT subtotal within the income statement. However, such an endeavor requires a clarification of how firms should classify various interest components. In an attempt to provide useful information to the IASB, we examine which classification of two interest componentes typically perceived as unclear is more relevant in depicting firm performance to investors. Our second research question is as follows:

Which classification of interest on defined benefit obligations and
finance leases is more relevant to equity investors?

Generally, researchers refer to the *value relevance* of accounting information when inferring whether said information is relevant to investors. Value relevance provides a linkage between the usefulness of accounting information and its ability to impact stock prices. Barth *et al.* (2001) state that value relevant accounting information reflects information relevant to investors when assessing firm value. Thus, a stronger relation between an accounting measure and stock price will indicate a higher usefulness of the measure for investors. Moreover, if an accounting amount has a predicted significant relation with stock prices, it is deemed value relevant (Francis & Schipper, 1999; Barth *et al.*, 2001). Based on the preceding deliberation, we expect a uniform classification of interest derived from defined benefit obligations and finance leases in APMs to be value relevant to capital markets.

3. Research design

3.1 Empirical Models

In order to assess the value relevance of different interest classifications into APMs, and to identify which classification of interest derived from defined benefit obligations and finance leases is more value relevant, we assess two different book value and earnings regression models (Collins *et al*., 1997). Consistent with previous studies, our regression models constitute an extension of the framework developed by Ohlson (1995) and Feltham and Ohlson (1995), which are generally regarded as the theoretical foundation in value relevance research. These models explain firm value as a function of book value of equity and accounting earnings:

$$MVE \ = \ \alpha_0 + \alpha_1 BVE \ + \alpha_2 EARN \ + \varepsilon$$

where MVE is the market value of equity, BVE is the book value of equity, $EARN$ is accounting earnings, and ε is other information reflected in market value of equity yet not known.

Prior value relevance studies typically rely on two types of models: stock price models and return models (Kothari & Zimmerman, 1995). The underlying hypothesis for both models is the same: current accounting earnings convey information about expected future cash flow (Kothari & Zimmerman, 1995). However, conceptually similar in economic intuition, both models are drawn with econometric weaknesses. While stock price models generally provide a less biased slope than return models, they are more prone to specification problems and heteroscedasticity, potentially leading to incorrect standard errors (Kothari & Zimmerman, 1995). The potential problems with heteroscedasticity is accounted for in section 4.2. In line with previous studies (e.g. Dhaliwal *et al*., 1999; Kanagaretnam *et al*., 2009; Albring *et al*., 2010; Entwistle, *et al*., 2010; Wieland *et al*., 2012), and as recommended by Kothari and Zimmerman (1995), we opted for the use of both stock price and stock return data to enable more robust results.

The traditional composition of standard valuation models includes net income as an explanatory variable for stock price and return. However, since APMs comprise items included in net income, we decompose net income into two components, which produces a control variable. This control variable constitutes the difference between net income and APM, a setup bearing close resemblance with comparable studies (e.g. Brown & Sivakumar, 2003; Albring *et al*., 2010; Venter *et al*., 2014). To determine which classification of interest on defined benefit obligations and finance leases is more value relevant, we compare which valuation equation has the higher explanatory power (adjusted R^2) of market values of equity (Biddle *et al*., 1997). We also compare which classification has the highest coefficient.

A concern in stock price models relates to the potentially spurious effect that size may have on the statistical significance and explanatory power of the regressions (Easton, 1999; Barth & Clinch, 2009; Gjerde *et al*., 2008). Since our sample comprises firms of different size, we deflate our regression specifications by the number of outstanding shares as proposed by Ota (2003) and Barth and Clinch (2009), leading us to the following stock price models:

$$Stockprice_{i,t} = \alpha_0 + \beta_1 Bookvalue_{i,t} + \beta_2 EBIT_{i,t} + \beta_3 (NI - EBIT)_{i,t} + \varepsilon_{i,t} \tag{1a}$$

$$Stockprice_{i,t} = \alpha_0 + \beta_1 Bookvalue_{i,t} + \beta_2 EBITpen_{i,t} + \beta_3 (NI - EBITpen)_{i,t} + \varepsilon_{i,t} \tag{1b}$$

$$Stockprice_{i,t} = \alpha_0 + \beta_1 Bookvalue_{i,t} + \beta_2 EBITleas_{i,t} + \beta_3 (NI - EBITleas)_{i,t} + \varepsilon_{i,t} \tag{1c}$$

$$Stockprice_{i,t} = \alpha_0 + \beta_1 Bookvalue_{i,t} + \beta_2 EBITpenleas_{i,t} + \beta_3 (NI - EBITpenleas)_{i,t} + \varepsilon_{i,t} \tag{1d}$$

where,

- $Stockprice_{i,t}$ is the stock price four months[1] after the fiscal year-end for firm i at time t
- $Bookvalue_{i,t}$ is book value of equity for firm i at time t, divided by number of common shares outstanding at fiscal year-end
- $NI_{i,t}$ is "bottom line" net income for firm i at time t, divided by number of common shares outstanding
- $EBIT_{i,t}$ is APM excluding interests on defined benefit obligations and finance leases for firm i at time t, divided by number of common shares outstanding
- $EBITpen_{i,t}$ is APM including interests on defined benefit obligations but excluding interest on finance leases for firm i at time t, divided by number of common shares outstanding
- $EBITleas_{i,t}$ is APM including interests on finance leases but excluding interest on defined benefit obligations for firm i at time t, divided by number of common shares outstanding
- $EBITpenleas_{i,t}$ is APM including interests on defined benefit obligations and finance leases for firm i at time t, divided by number of common shares outstanding
- $\varepsilon_{i,t}$ is the regression error term

A general concern in return models relates to the fact that accounting information lag behind the market. Because of prudence and reliability requirements in accounting standards, market values may be reflected in future, rather than contemporaneous, earnings numbers. However, since we use one-year return windows, the effect of accounting recognition lag is mitigated (Ota, 2003). The return models used are conceptually similar to the price models, although with the difference that book value is not included as an explanatory variable. We estimate the following return models:

$$Return_{i,t} = \alpha_0 + \delta_1 EBIT_{i,t} + \delta_2 (NI - EBIT)_{i,t} + \mu_{i,t} \tag{2a}$$

$$Return_{i,t} = \alpha_0 + \delta_1 EBITpen_{i,t} + \delta_2 (NI - EBITpen)_{i,t} + \mu_{i,t} \tag{2b}$$

$$Return_{i,t} = \alpha_0 + \delta_1 EBITleas_{i,t} + \delta_2 (NI - EBITleas)_{i,t} + \mu_{i,t} \tag{2c}$$

$$Return_{i,t} = \alpha_0 + \delta_1 EBITpenleas_{i,t} + \delta_2 (NI - EBITpenleas)_{i,t} + \mu_{i,t} \tag{2d}$$

where,

- $Return_{i,t}$ is the total return for the 12 month window ending four months after the fiscal year-end for firm i at time t
- $\mu_{i,t}$ is the regression error term
- All other variables are as described in model (1a) to (1d)[2]

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[1] The London Stock Exchange require firms to publish annual reports within four month of fiscal year end. By extending the window, we allow sufficient time for accounting information to be impounded in stock prices, and further ensure the information is available to all market participants. This approach is commonly used (see e.g. Brown & Sivakumar, 2003; Entwistle *et al.*, 2010; Wieland *et al.*, 2012). Albring *et al.* (2010) is the only study to our knowledge using contemporaneous market values ending on fiscal year-end.

[2] We adopt a design established by Easton and Harris (1991) where the independent variables in the *return* models are also deflated by beginning-of-period stock price. Another approach common in value relevance research involves scaling by the lagged market value of equity (e.g. Biddle & Choi, 2006; Kanagaretnam *et al.*, 2009).

3.2 Sample

The initial sample comprises 914 firms on the LSE's *Main Market* list during the year of 2016. The delimitation to the LSE was due to the advantages of using a homogenous sample, and also by reason of its size and accessibility. From this sample, 523 firms were eliminated due to not explicitly disclosing either the exact amount or recognition of interests, leaving us with a final sample of 391 firms. The final sample represents approximately 41 percent of the total market capitalisation on the LSE's *Main Market*. In addition, no firm which primarily provides financial services, i.e. financial institutions, is included in the sample. The IASB board member Gary Kabureck states that EBIT subtotals are not commonly used for financial institutions, and there are indications that an EBIT subtotal in IAS 1 will not apply, at least not in the same format, to financial institutions (IASB, 2017c; Kabureck, 2017). Table 1 illustrates the structure of the total sample.

Stock market and financial data were obtained from the *Compustat* database. The measures for APMs and the interest components on defined benefit obligations and finance leases were not readily available for research purposes and consequently needed to be obtained and adjusted for by hand. Information about the earnings components was obtained from the firms' annual reports and the respective reported APMs were further constructed into different combinations, yielding alternative measures depending on the inclusion and exclusion of interest components. The calculation of EBIT combinations therefore required that firms explicitly express whether disclosed interest components are included or excluded from the APM, which otherwise leads to missing values and exclusion from the final sample.

Table 1 - Sample composition

	Number of firms
LSE *Main Market*	1 615
Financial institutions excluded	(701)
Initial sample	914
Insufficient data	(523)
Final sample	391
Firms disclosing pension interest	290
Firms disclosing leasing interest	202
Firms disclosing pension and leasing interest	101

Notes: The final sample are divided into nine different industries: Agriculture, Forestry and Fishing = 5; Mining = 22; Construction = 20; Manufacturing = 149; Transportation, Communication, Electric, Gas and Sanitary service = 43; Wholesale Trade = 15; Retail Trade = 44; Insurance and Real Estate = 3; Services = 90

4. Results

4.1 Descriptive statistics

Table 2 presents descriptive statistics on the deflated variables for the full sample of firms. The average firm in the sample has a $Stockprice$ of 5.48 expressed in Pound Sterling (GBP) and a $Return$ of 12.5 percent. The mean GBP earnings per share of $EBIT$, $EBITpen$, $EBITleas$, and $EBITpenleas$, was 0.44, 0.52, 0.30, and 0.42 respectively. This indicates that on average, firms in our sample who report operating profit which excludes interest on finance leases, but includes interest on defined benefit obligations, report higher measures of operating profit than those who do not. We remark upon that $EBIT$, on average, should yield the highest earnings per share given that interest on defined benefit obligations was positive (i.e. income) for only 5 percent of firms. Tests suggest this effect to be driven by variations in number of observations between the four different $EBITmeasures$, and descriptive statistics on a reduced sample (untabulated) consisting exclusively of firms providing all four EBIT combinations show $EBIT$ to yield the highest and $EBITpenleas$ to yield the lowest average earnings per share.

Moreover, Abarbanell and Lehavy (2007) pinpoint a problem in APM studies where the inclusion of extreme, negative observations for which there are no corresponding extreme, positive observations, may distort the interpretation of results. Following a winsorization of the variables at the 10 and 90 percent level, the descriptive information provided in table 2 indicates that the four combinations of $EBITmeasures$ are not dominated by a few extreme, negative observations. Consequently, our sample is not concerned with the problem suggested by Abarbanell and Lehavy (2007).

Table 2 - Descriptive statistics

Variable	Obs.	Mean	Std. Dev.	Min.	Median	Max.
Stockprice	391	5.480153	6.022449	.315	2.51	18.92
Return	391	.1252973	.3068876	-.3212963	.0986159	.6486014
Bookvalue	391	2.197753	2.260761	.1064979	1.269395	7.127003
EBIT	391	.4380236	.4848757	-.0056433	.2316008	1.444806
EBITpen	290	.5233118	.4936067	.0330485	.3260407	1.486525
EBITleas	202	.298043	.3866502	-.021375	.1414344	1.170321
EBITpenleas	101	.422818	.4024689	.0198655	.2792099	1.182758

Description of variables: *Stockprice* = stock price four months after the fiscal year-end; *Return* = total returns for the 12 month period ending four months after fiscal year-end; *Bookvalue* = book value of equity per share; *EBIT* = reported APM excluding interests on defined benefit obligation and finance leases, divided by number of outstanding shares; *EBITpen* = reported APM including interests on defined benefit obligation but excluding interest on finance leases, divided by number of outstanding shares; *EBITleas* = reported APM including interests on finance leases but excluding interest on defined benefit obligation, divided by number of outstanding shares; *EBITpenleas* = reported APM including interests on defined benefit obligation and finance leases, divided by number of outstanding shares.

Table 3 provides Pearson's correlation coefficients on the deflated variables used in the *Stockprice* and *Return* models. Table 3 shows that all variables are positively and significantly correlated with each other at a 0.01 level of significance, apart from the correlation between *Return* and *NetIncome* which is insignificant (p-value >0.1). The insignificant p-value can be explained by the correlation factor being close to zero, indicating no linear relationship between *Return* and *NetIncome*. Furthermore, the *EBIT measures* yield overall weaker correlations for *Return* than *Stockprice*. In line with expectations on the explanatory variables, the aggregated earnings measure *NetIncome* yields the weakest correlation with *Stockprice*, likely due to the inclusion of transitory and non-recurring earnings components generally considered noisy by investors.

Table 3 - Pearson's correlation coefficients

	Obs	Stockprice	Return	Bookvalue	NetIncome	EBIT	EBITpen	EBITleas	EBITpenleas
Stockprice	391	1.0000 –	–	–	–	–	–	–	–
Return	391	0.1404 0.0054	1.0000 –	–	–	–	–	–	–
Bookvalue	391	0.7211 0.0000	0.0233 0.6461	1.0000 –	–	–	–	–	–
NetIncome	391	0.7152 0.0000	-0.0186 0.7146	0.6223 0.0000	1.0000 –	–	–	–	–
EBIT	391	0.8265 0.0000	0.1650 0.0011	0.7642 0.0000	0.7946 0.0000	1.0000 –	–	–	–
EBITpen	290	0.8212 0.0000	0.1986 0.0007	0.7315 0.0000	0.7408 0.0000	0.9987 0.0000	1.0000 –	–	–
EBITleas	202	0.8050 0.0000	0.1318 0.0615	0.7211 0.0000	0.8429 0.0000	0.9929 0.0000	0.9853 0.0000	1.0000 –	–
EBITpenleas	101	0.8006 0.0000	0.2689 0.0066	0.6431 0.0000	0.7630 0.0000	0.9925 0.0000	0.9890 0.0000	0.9988 0.0000	1.0000 –

Description of variables: *Stockprice* = stock price four months after the fiscal year-end; *Return* = total returns for the 12 month period ending four months after fiscal year-end; *Bookvalue* = book value of equity per share; *NetIncome* = "bottom line" net income divided by number of outstanding shares; *EBIT* = reported APM excluding interests on defined benefit obligation and finance leases, divided by number of outstanding shares; *EBITpen* = reported APM including interests on defined benefit obligation but excluding interest on finance leases, divided by number of outstanding shares; *EBITleas* = reported APM including interests on finance leases but excluding interest on defined benefit obligation, divided by number of outstanding shares; *EBITpenleas* = reported APM including interests on defined benefit obligation and finance leases, divided by number of outstanding shares.

A problem associated with multiple regression analysis is when two or more explanatory variables highly correlate with one another, commonly referred to as *multicollinearity*. Alin (2010) states that data characterised by multicollinearity may disrupt inferences made about the strength of any individual independent variable. Due to the significant correlations between our independent variables shown in table 3, the *Stockprice* and *Return* models used in table 5 and 6 were consequently controlled for multicollinearity. Problems may arise when the variance inflation factor (VIF) exceeds 5, and are likely to occur when exceeding 10 (Alin, 2010). Untabulated tests yield a maximum VIF-number of 3.02, indicative of no significant problems with multicollinearity in the regression models.

Table 4 provides a description of how managers structure EBIT subtotals in terms of interest emanating from defined benefit obligations and finance leases. Table 4 shows that 20 percent of firms disclosing interest on defined benefit obligations include the interest component within the EBIT subtotal, typically recognised under '*staff costs*' as an operating expense. Accordingly, the results suggest managers to a greater extent (80 percent of firms) perceive interest on defined benefit obligations to be part of the firm's capital structure, and therefore regarded as a finance cost (income) rather than operating cost (income). In terms of finance leases, only four percent of firms included the interest component within the EBIT subtotal, suggesting managers generally consider interest on finance leases to be part of the firm's capital structure as opposed to its operations.

A frequency table by SIC code (untabulated) revealed that manufacturing firms comprise 38 percent of total firms in the sample, and the manufacturing industry contains 65 percent more firms than the second most represented industry (service). The manufacturing industry is therefore the largest industry in our sample by a wide margin. Moreover, 15 percent of all manufacturing firms include interest on defined benefit obligations within EBIT subtotals, while no manufacturing firm includes interest on finance leases within EBIT subtotals. In contrast, service firms were shown to exclude as well as include both interest components in EBIT subtotals. Consequently, the sample is indicative of diversity in how firms structure and disclose EBIT subtotals in terms of the two interest components, and hints that there may be cross-industry differences in reporting practices.

<div align="center">Table 4 - Reporting practices</div>

	Number of firms	Proportion
Pension interest disclosed	290	
Pension interest included in EBIT	58	20%
Pension interest excluded from EBIT	232	80%
Finance lease interest disclosed	202	
Finance lease interest included in EBIT	8	4%
Finance lease interest excluded from EBIT	194	96%

Notes: Reporting practices of firms per industry: Agriculture, Forestry and Fishing = $EBIT$ (60%), $EBITpen$ (40%), $EBITleas$ (0%), $EBITpenleas$ (0%); Mining = $EBIT$ (77%), $EBITpen$ (36%), $EBITleas$ (9%), $EBITpenleas$ (0%); Construction = $EBIT$ (85%), $EBITpen$ (17.6%), $EBITleas$ (12.5%), $EBITpenleas$ (20%); Manufacturing = $EBIT$ (88%), $EBITpen$ (15.6%), $EBITleas$ (0%), $EBITpenleas$ (0%); Transportation, Communication, Electric, Gas and Sanitary service = $EBIT$ (86%), $EBITpen$ (16%), $EBITleas$ (6.7%), $EBITpenleas$ (6%); Wholesale Trade = $EBIT$ (85.7%), $EBITpen$ (8.3%), $EBITleas$ (12.5%), $EBITpenleas$ (0%); Retail Trade = $EBIT$ (88.6%), $EBITpen$ (15.6%), $EBITleas$ (0%), $EBITpenleas$ (0%); Insurance and Real Estate = $EBIT$ (33%), $EBITpen$ (100%), $EBITleas$ (0%), $EBITpenleas$ (0%); Services = $EBIT$ (76%), $EBITpen$ (31.5%), $EBITleas$ (5%), $EBITpenleas$ (5%)

In the next section, we make the transition from managerial classification to the capital market's treatment of the two interest components. Using regression analysis, we investigate whether the capital market treats the two interest components as part of the firm's capital structure or its operations, i.e. whether they are included or excluded from the EBIT subtotal, and further test whether the perceived diversity in reporting practices is justified from the capital market's point of view.

4.2 Inferential statistics

Table 5 and 6 present regression results for the *Stockprice* and *Return* models established in chapter 3. A Breusch-Pagan test revealed that the sample was characterised by heteroscedasticity. To mediate the resulting effect of biased standard errors, t-statistics were calculated using White's (1980) heteroscedastic-consistent robust standard errors for every regression model. The F-statistics are significant at the 0.01 level for model 1a-d and 2a-b, whereas model 2d is significant at the 0.05 level. Model 2c is not significant (p-value >0.1), meaning the model has no explanatory power for *Return*.

Table 5 provides the regression results for model 1a-d using *Stockprice* as the measure of firm value and *EBIT*, *EBITpen*, *EBITleas*, and *EBITpenleas* respectively as measures of accounting earnings. Model 1a-d are statistically significant (p-value <0.01), with adjusted R^2 of 70.2, 69.4, 67.9, and 68.2 percent respectively. The models explain variances in *Stockprice* to a degree comparable with previous studies. The respective *EBITmeasure* is significantly related with *Stockprice* in all four models, suggesting EBIT subtotals to be incorporated within firm value. Notably, the control variables in model 1a-d are not significant (p-value >0.1), indicating that earnings components not pertinent to the firm's ongoing business are not related with *Stockprice*. The results are in line with the notion that explicitly defined earnings subtotals containing earnings components pertinent to the firm's ongoing business are value relevant to capital markets, as opposed to information which is considered part of the capital structure.

Table 5 - Multivariate regression for Price models

Variable	Model 1a	Model 1b	Model 1c	Model 1d
_cons	.66966 (4.07)***	.6410457 (2.94)***	.417018 (2.08)**	-.0186765 (-0.05)
Bookvalue	.5804969 (3.28)***	.5783635 (3.01)***	.7087583 (2.53)**	.8302689 (2.21)**
EBITmeasure	8.8554 (9.58)***	9.240325 (8.43)***	8.592177 (5.64)***	9.624353 (3.94)***
$(NI - EBITmeasure)$	1.739295 (1.17)	1.923166 (1.08)	1.173245 (0.585)	1.589265 (0.42)
Adj. R^2	0.7017	0.6941	0.6792	0.6821
Obs.	391	290	202	101
Test of differences in *EBITmeasure* coefficients	1.06 0.7867			

Notes: *Significant at the 0.1 level. **Significant at the 0.05 level. ***Significant at the 0.01 level.

Model 1a: $Stockprice_{i,t} = \alpha_0 + \beta_1 Bookvalue_{i,t} + \beta_2 EBIT_{i,t} + \beta_3 (NI - EBIT)_{i,t} + \varepsilon_{i,t}$
Model 1b: $Stockprice_{i,t} = \alpha_0 + \beta_1 Bookvalue_{i,t} + \beta_2 EBITpen_{i,t} + \beta_3 (NI - EBITpen)_{i,t} + \varepsilon_{i,t}$
Model 1c: $Stockprice_{i,t} = \alpha_0 + \beta_1 Bookvalue_{i,t} + \beta_2 EBITleas_{i,t} + \beta_3 (NI - EBITleas)_{i,t} + \varepsilon_{i,t}$
Model 1d: $Stockprice_{i,t} = \alpha_0 + \beta_1 Bookvalue_{i,t} + \beta_2 EBITpenleas_{i,t} + \beta_3 (NI - EBITpenleas)_{i,t} + \varepsilon_{i,t}$

To test which of $EBIT$, $EBITpen$, $EBITleas$, and $EBITpenleas$ is more value relevant to capital markets, we compare respective $EBITmeasure$'s adjusted R^2 and coefficient. Table 5 shows $EBIT$ to have the highest explanatory power for $Stockprice$. However, the similarities in magnitude of explanatory power means we are unable to fully ensure whether $EBIT$ is in fact more relevant than the other $EBITmeasures$, suggesting variations in reporting practices did not have any significant impact on the relevance of the earnings measures. Furthermore, $EBITpenleas$ is shown to have higher coefficient (9.624) than any of the other $EBITmeasures$, thus imposing greatest effect on $Stockprice$. However, tests of differences in coefficients show there are no significant differences in coefficients between model 1a-d. To mediate any potential disturbance arising from variations in observations between models (see table 2), untabulated tests on a reduced sample where all four models have an equal number of observations (101) yield identical results. Hence, variations in number of observations between models did not affect the results presented in table 5.

Table 6 provides the regression results for model 2a-d using $Return$ as the measure of firm value and $EBIT$, $EBITpen$, $EBITleas$, and $EBITpenleas$ respectively as measures of accounting earnings. Model 2a-b and 2d are statistically significant at the 0.01 and 0.05 level respectively, whereas model 2c is not significant (p-value >0.1), meaning $EBITleas$ is not able to explain $Return$. Similar to the results on $Stockprice$ models, the $EBITmeasures$ are significantly (p-value <0.05) related to $Return$, whereas the control variables remain insignificant (p-value >0.1). The results provide further support to the notion that explicitly defined earnings subtotals related to the firm's ongoing business are value relevant to capital markets, as opposed to information related to the firm's capital structure.

Table 6 - Multivariate regression for Return models

Variable	Model 2a	Model 2b	Model 2c	Model 2d
_cons	.0491657 (1.61)	-.0040806 (-0.10)	.0598036 (1.74)*	-.1117715 (-1.98)*
$EBITmeasure$	.6786381 (2.04)**	1.041602 (2.21)**	.4037037 (1.21)	1.62816 (2.43)**
$(NI - EBITmeasure)$	-.414685 (-0.93)	-.5927818 (-0.84)	-.3634496 (-0.72)	-.4152774 (-0.45)
$Adj. R^2$	0.0252	0.0359	0.0109	0.0555
$Obs.$	391	290	202	101
Test of differences in $EBITmeasure$ coefficients	4.90 0.1792			

Notes: *Significant at the 0.1 level. **Significant at the 0.05 level. ***Significant at the 0.01 level.

Model 2a: $Return_{i,t} = \alpha_0 + \delta_1 EBIT_{i,t} + \delta_2 (NI - EBIT)_{i,t} + \mu_{i,t}$

Model 2b: $Return_{i,t} = \alpha_0 + \delta_1 EBITpen_{i,t} + \delta_2 (NI - EBITpen)_{i,t} + \mu_{i,t}$

Model 2c: $Return_{i,t} = \alpha_0 + \delta_1 EBITleas_{i,t} + \delta_2 (NI - EBITleas)_{i,t} + \mu_{i,t}$

Model 2d: $Return_{i,t} = \alpha_0 + \delta_1 EBITpenleas_{i,t} + \delta_2 (NI - EBITpenleas)_{i,t} + \mu_{i,t}$

In contrast to the results summarised in table 5, the adjusted R^2 and respective *EBITmeasure*'s coefficient for *Return* models in table 6 are close to zero. This indicates that although *EBIT*, *EBITpen* and *EBITpenleas* are significantly related to *Return*, *Stockprice* models constitute a much better fit than *Return* models. Untabulated tests on a reduced sample with the amount of observations constant between models (101) show no improvement in adjusted R^2, implying that model 2a-d did not fit the data.

Moreover, the indication of diversity in reporting practices across industries could potentially be a source of concern. With manufacturing firms constituting the most represented industry by a wide margin in the sample (see table 1), the results reported in table 5 and 6 could be biased towards the reporting practices of manufacturing firms. To ensure the results are not driven by industry specific reporting practices, we chose to conduct sensitivity tests where the *Stockprice* and *Return* models used in table 5 and 6 were repeated on a subsample excluding firms from the manufacturing industry.

Table 7 shows the regression results from sensitivity tests where *Stockprice* is used as a measure of firm value. Model 1a-d are significant at the 0.01 level, with adjusted R^2 of 69, 69, 66 and 67 percent respectively. All *EBITmeasures* are significantly related with *Stockprice* (p-value <0.01), although no *EBITmeasure* seems more relevant than the other. *EBITpen* has the greatest effect on *Stockprice*, however no *EBITmeasure* coefficient is significantly different from another. The tests reveal that the results on *Stockprice* models summarised in table 5 were not driven by manufacturing firms. Untabulated sensitivity tests on *Return* models show the fit of model 2a-d did not improve.

Table 7 - Multivariate regression for Price models, excluding manufacturing firms

Variable	Model 1a	Model 1b	Model 1c	Model 1d
_cons	.8756136 (4.95)***	1.030539 (4.19)***	.5547167 (2.67)***	.1407455 (0.41)
Bookvalue	.3464448 (1.94)*	.3343859 (1.69)*	.6022772 (2.05)**	.8266571 (1.91)*
EBITmeasure	7.581379 (7.23)***	8.003679 (6.27)***	6.907404 (4.45)***	7.666799 (2.69)***
$(NI - EBITmeasure)$	1.159285 (0.68)	2.644315 (1.13)	-.0377845 (-0.02)	.5233485 (0.14)
$Adj. R^2$	0.6925	0.6925	0.6625	0.6699
Obs.	242	167	144	69
Test of differences in *EBITmeasure* coefficients	0.73 0.8655			

Notes: *Significant at the 0.1 level. **Significant at the 0.05 level. ***Significant at the 0.01 level.

Model 1a: $Stockprice_{i,t} = \alpha_0 + \beta_1 Bookvalue_{i,t} + \beta_2 EBIT_{i,t} + \beta_3 (NI - EBIT)_{i,t} + \varepsilon_{i,t}$

Model 1b: $Stockprice_{i,t} = \alpha_0 + \beta_1 Bookvalue_{i,t} + \beta_2 EBITpen_{i,t} + \beta_3 (NI - EBITpen)_{i,t} + \varepsilon_{i,t}$

Model 1c: $Stockprice_{i,t} = \alpha_0 + \beta_1 Bookvalue_{i,t} + \beta_2 EBITleas_{i,t} + \beta_3 (NI - EBITleas)_{i,t} + \varepsilon_{i,t}$

Model 1d: $Stockprice_{i,t} = \alpha_0 + \beta_1 Bookvalue_{i,t} + \beta_2 EBITpenleas_{i,t} + \beta_3 (NI - EBITpenleas)_{i,t} + \varepsilon_{i,t}$

One benefit of disclosing EBIT subtotals is management's ability to take into account industry-specific factors, which otherwise would be disregarded by GAAP measures (PwC, 2014). Table 4 indicates that reporting practices of firms in the sample may in fact differ across industries in terms of how interest on defined benefit obligations and finance leases are classified. In this section, we investigate whether the capital market classifies interest on defined benefit obligations and finance leases differently across industries. Table 8-10 repeat the tests summarised in table 5 for the three most represented industries within our sample: manufacturing; service; and retail trade.

Table 8 presents the regression results for model 1a-d using $Stockprice$ as the measure of firm value, and $EBIT$, $EBITpen$, $EBITleas$, and $EBITpenleas$ respectively as measures of accounting earnings, on a subsample constituting only manufacturing firms. Model 1a-d are statistically significant at the 0.01 level. All four $EBITmeasures$ significantly explain $Stockprice$ (p-value <0.05), with adjusted R^2 of 79, 76, 78, and 70 percent respectively. Table 8 shows $EBIT$ to have the highest explanatory power and impact on $Stockprice$, suggesting EBIT subtotals where interest on defined benefit obligations and finance leases are excluded to be more value relevant than the other $EBITmeasures$. The results are in line with the reporting practices of manufacturing firms, where 88 percent excluded both interest components from EBIT subtotals. Notable is that manufacturing firms seem more inclined to report subtotals where interest on defined benefit obligations are included (15 %), than interest on finance leases (0 %). However, table 8 suggests the capital market perceives interest on finance lease to be more relevant than interest on defined benefit obligations. Nonetheless, the results cannot ensure whether $EBIT$, $EBITpen$ and $EBITleas$ actually differ in terms of relevance and impact on $Stockprice$.

Table 8 - Multivariate regression for Price models, manufacturing firms

Variable	Model 1a	Model 1b	Model 1c	Model 1d
_cons	.2102381 (0.86)	.2432027 (0.77)	.515204 (1.53)	.2631037 (0.37)
Bookvalue	1.188013 (3.65)***	1.173001 (3.37)***	1.125617 (2.51)**	1.100591 (1.75)*
EBITmeasure	9.90566 (5.80)***	9.651989 (5.24)***	9.880365 (3.60)***	9.632504 (2.52)**
$(NI - EBITmeasure)$	2.744293 (1.19)	2.687572 (1.08)	2.515387 (0.62)	2.652113 (0.38)
$Adj. R^2$	0.7896	0.7626	0.7760	0.6968
Obs.	149	123	58	32
Test of differences in $EBITmeasure$ coefficients	0.98 0.8067			

Notes: *Significant at the 0.1 level. **Significant at the 0.05 level. ***Significant at the 0.01 level.

Model 1a: $Stockprice_{i,t} = \alpha_0 + \beta_1 Bookvalue_{i,t} + \beta_2 EBIT_{i,t} + \beta_3 (NI - EBIT)_{i,t} + \varepsilon_{i,t}$

Model 1b: $Stockprice_{i,t} = \alpha_0 + \beta_1 Bookvalue_{i,t} + \beta_2 EBITpen_{i,t} + \beta_3 (NI - EBITpen)_{i,t} + \varepsilon_{i,t}$

Model 1c: $Stockprice_{i,t} = \alpha_0 + \beta_1 Bookvalue_{i,t} + \beta_2 EBITleas_{i,t} + \beta_3 (NI - EBITleas)_{i,t} + \varepsilon_{i,t}$

Model 1d: $Stockprice_{i,t} = \alpha_0 + \beta_1 Bookvalue_{i,t} + \beta_2 EBITpenleas_{i,t} + \beta_3 (NI - EBITpenleas)_{i,t} + \varepsilon_{i,t}$

Table 9 repeats the tests summarised in table 8 for a subsample constituting only service firms. Model 1a-d are significant at the 0.01 level, while $EBIT$, $EBITpen$, $EBITleas$, and $EBITpenleas$ are significantly related with $Stockprice$ (p-value <0.05) with adjusted R^2 of 73, 84, 58, and 79 percent respectively. The results suggest $EBITpen$ to be more value relevant than the other $EBITmeasures$, as well as imposing the greatest effect on $Stockprice$. Contrary to manufacturing firms, the capital market perceives EBIT subtotals including either interest on defined benefit obligations, or combined with interest on finance leases, to be more relevant than EBIT subtotals excluding both interest components. The disparity is also reflected in differences in reporting practices between the two industries, where more than 31 percent of service firms include interest on defined benefit obligations compared to 15 percent among manufacturing firms. Furthermore, the decline in relevance of $EBIT$ also seems to follow the reporting practices of the industry, where 88 percent of manufacturing firms reported EBIT subtotals excluding both interest components compared to 76 percent of service firms.

Table 9 - Multivariate regression for Price models, service firms

Variable	Model 1a	Model 1b	Model 1c	Model 1d
_cons	.7935137 (2.84)***	.6663142 (2.64)**	.9177918 (2.42)**	1.143812 (2.00)*
Bookvalue	.7182071 (1.85)*	.4608989 (1.42)	.8123868 (1.24)	.0421287 (0.08)
EBITmeasure	9.02475 (4.57)***	12.82881 (5.63)***	6.518499 (2.60)**	13.00422 (4.13)***
$(NI - EBITmeasure)$	2.372619 (0.64)	7.130159 (1.59)	.8092929 (0.27)	9.877541 (1.84)*
$Adj. R^2$	0.7255	0.8426	0.5780	0.7947
Obs.	90	58	56	24
Test of differences in EBITmeasure coefficients	10.26 0.0165			

Notes: *Significant at the 0.1 level. **Significant at the 0.05 level. ***Significant at the 0.01 level.
Model 1a: $Stockprice_{i,t} = \alpha_0 + \beta_1 Bookvalue_{i,t} + \beta_2 EBIT_{i,t} + \beta_3 (NI - EBIT)_{i,t} + \varepsilon_{i,t}$
Model 1b: $Stockprice_{i,t} = \alpha_0 + \beta_1 Bookvalue_{i,t} + \beta_2 EBITpen_{i,t} + \beta_3 (NI - EBITpen)_{i,t} + \varepsilon_{i,t}$
Model 1c: $Stockprice_{i,t} = \alpha_0 + \beta_1 Bookvalue_{i,t} + \beta_2 EBITleas_{i,t} + \beta_3 (NI - EBITleas)_{i,t} + \varepsilon_{i,t}$
Model 1d: $Stockprice_{i,t} = \alpha_0 + \beta_1 Bookvalue_{i,t} + \beta_2 EBITpenleas_{i,t} + \beta_3 (NI - EBITpenleas)_{i,t} + \varepsilon_{i,t}$

The regression results for retail trade firms are presented in table 10. Model 1a-c are significant at the 0.01 level, and model 1d is significant at the 0.05 level. $EBIT$, $EBITpen$, and $EBITleas$ are significantly related with $Stockprice$ (p-value <0.1) with adjusted R^2 of 55, 50, and 59 percent respectively, whereas $EBITpenleas$ is insignificant (p-value >0.1). No $EBITmeasures$ coefficient is significantly different. The results suggest $EBITleas$ to be more value relevant than the other $EBITmeasures$, however no firm includes interest on finance leases in EBIT subtotals. Furthermore, 15.6 percent of firms report EBIT subtotals which include interest on defined benefit obligations, the $EBITmeasure$ perceived to be least

relevant for the capital market. We further remark upon that, although reporting practices are very much alike for manufacturing and retail trade firms, the capital market seems to value the interest components differently across the two industries. The results suggest the capital market classifies interest on defined benefit obligations and finance leases differently across industries, and not always in accordance with the reporting practices of firms.

Table 10 - Multivariate regression for Price models, retail trade firms

Variable	Model 1a	Model 1b	Model 1c	Model 1d
_cons	1.045497 (2.50)**	1.164257 (1.86)*	-.1806595 (-0.29)	-.9587285 (-1.05)
Bookvalue	.0218979 (0.04)	.0121803 (0.02)	.6795971 (1.38)	.3528616 (0.64)
EBIT measure	8.704928 (2.27)**	8.732791 (1.95)*	12.02975 (2.40)**	7.337113 (0.78)
$(NI - EBIT measure)$	3.621785 (1.03)	3.121901 (0.58)	7.068021 (1.14)	-15.50785 (-0.63)
$Adj. R^2$	0.5517	0.5027	0.5860	0.5890
Obs.	44	32	28	16
Test of differences in EBIT measure coefficients	1.31 0.7263			

Notes: *Significant at the 0.1 level. **Significant at the 0.05 level. ***Significant at the 0.01 level.

Model 1a: $Stockprice_{i,t} = \alpha_0 + \beta_1 Bookvalue_{i,t} + \beta_2 EBIT_{i,t} + \beta_3 (NI - EBIT)_{i,t} + \varepsilon_{i,t}$

Model 1b: $Stockprice_{i,t} = \alpha_0 + \beta_1 Bookvalue_{i,t} + \beta_2 EBITpen_{i,t} + \beta_3 (NI - EBITpen)_{i,t} + \varepsilon_{i,t}$

Model 1c: $Stockprice_{i,t} = \alpha_0 + \beta_1 Bookvalue_{i,t} + \beta_2 EBITleas_{i,t} + \beta_3 (NI - EBITleas)_{i,t} + \varepsilon_{i,t}$

Model 1d: $Stockprice_{i,t} = \alpha_0 + \beta_1 Bookvalue_{i,t} + \beta_2 EBITpenleas_{i,t} + \beta_3 (NI - EBITpenleas)_{i,t} + \varepsilon_{i,t}$

4.3 Additional test

This section presents a test of appropriateness of using four-month lagged stock price and return data in regression model 1a-d and 2a-d respectively. The majority of researchers on the value relevance of accounting earnings use a similar approach with lagged market value data in the regression models. However, Albring *et al.* (2010), a study bearing close resemblance to ours, rely on contemporaneous fiscal year-end data for stock price and 12-months returns. With this in mind, we want to test whether the choice of using lagged stock market data as compared to contemporaneous stock market data ending on fiscal year-end will influence our results.

Untabulated tests using *Stockprice* obtained at the end of fiscal year as a measure of firm value, and *EBIT*, *EBITpen*, *EBITleas*, and *EBITpenleas* as measures of accounting earnings, yield similar results as the lagged *Stockprice* regressions summarised in table 5. However, with the difference being that adjusted R^2 overall is higher. Tests of *Return* regression for the 12-month period ending on fiscal year-end yield similar results as the test of lagged *Return* summarised in table 6. The results suggests using lagged market value data in the regression models was appropriate.

5. Conclusion

This paper sets out to investigate whether the flexibility in classifying subtotals within the income statement currently provided to managers under IFRS serves its intended purpose of facilitating the needs of investors. The paper is driven by the concerns of researchers, regulators and practitioners regarding the drawbacks of non-statutory earnings subtotals. In response to the criticism and proliferation of APMs, the IASB has tentatively decided to explicitly define and require the presentation of an EBIT subtotal. However, such an endeavor requires a clarification of how firms should classify various interest components. In an attempt to provide useful insight to the IASB, we examine which classification of two typically diffuse interest components is more relevant in depicting firm performance to investors.

Using a sample of 391 non-financial firms on the LSE's *Main Market* list, we compare how European firms classify interest on defined benefit obligations and finance leases into subtotals as opposed to respective interest component's usefulness in determining market values of equity. We document diversity in reporting practices with the majority of firms excluding both interest on defined benefit obligations and finance leases from respective EBIT subtotal. Cross-industry tests show no difference in strength of relationship between the different classification options, suggesting the variability in disaggregations made by the firms in our sample did not have any significant impact on the relevance of the earnings measures. However, separate industry tests depict an evident discrepancy between variations in reporting practices among firms and what is perceived to be relevant to investors. Results suggest that, although both managers and investors make industry-specific adjustments to APMs, these adjustments do not always conform, and in fact seem to diverge more often than not. Therefore, in line with previous research (e.g. Baik *et al*., 2008; Albring *et al*., 2010), this may indicate that reducing diversity in performance reporting by explicitly defining an EBIT subtotal could prove more beneficial to investors.

Furthermore, interest on defined benefit obligations was shown to be more relevant in the service industry, whereas interest on finance leases was shown to be more relevant in the retail trade industry. In the manufacturing industry, neither interest component was shown to increase the relevance of APMs, suggesting investors do not consider the two interest components to be of significance for manufacturing firms. Moreover, the results of cross-industry variability in relevance of certain interest components suggest there to be a demand for company-specific disaggregations of earnings, indicating that the current flexibility in IAS 1 may in fact be a better option than a cross-industry specific EBIT subtotal.

While this paper does not provide evidence on how any EBIT subtotal should be defined, the results shed some light on how investors classify two typically diffuse interest components as opposed to how European firms classify them. In addition, the paper contributes to the work of standard setters by providing an indication of whether explicitly defining an EBIT subtotal would be more beneficial to European capital markets than the current IAS 1. The results indicate that the relevance of classification of certain interest components varies between industries, suggesting the flexibility provided to managers in IAS 1 may be more fruitful than explicitly defining an EBIT subtotal. However, as voiced by practitioners and regulators, comparability will then continue to be diminished. If the IASB would pursue an explicitly

defined EBIT subtotal, the results of this study suggest that it could be made more relevant by accounting for industry-specific factors. Lastly, this is the first study to our knowledge comparing the relevance of individual interest components and subtotals presented within firms' financial statements. Previous APM studies have focused on subtotals presented, for instance, in press releases, interim reports, or unaudited sections of annual reports, and therefore do not explicitly provide inferences on the IASB's deliberations on amending IAS 1.

This study is subject to certain limitations. Firstly, test of association between accounting earnings and market values of equity is sensitive to reporting bias, as it measures whether the information has been used by investors rather than if the information itself is relevant. This is significant because one of every fourth $EBIT measure$ applied in our tests is in fact disclosed within the financial statements, supposedly asserting a risk that investors trading on reported APMs as opposed to making own adjustments may bias the value relevance towards the reporting practices of firms. Secondly, due to several firms not explicitly disclosing either exact amounts or recognition of interest components emanating from defined benefit obligations or finance leases, the sample was relatively small which may affect our ability to derive conclusive results for the population.

Explicitly defining an EBIT subtotal applicable to a range of different industries is a current issue for the IASB, and would require a comprehensive set of definitions on how the subtotal should be derived. The main issue regards the exclusion and inclusion of various interest components based on whether they are relevant to the firm's capital structure or its operations. Although the results in this paper are pertinent to this discussion, they merely scratch the surface of the issue. Future research could extend our paper by further examining inconsistencies in reporting practices, and investigate which classification of other diffuse interest components is relevant to investors. Future research could also study differences in reporting practices and relevance between industries to evaluate our impression of an industry-specific EBIT subtotal being more beneficial to investors. Moreover, since this study use hypothetically constructed EBIT subtotals, future research could also examine the impact of differences in actual disclosed EBIT subtotals.

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