

MULTIDIMENSIONAL FINANCIAL STATEMENT COMPARABILITY

by

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MULTIDIMENSIONAL FINANCIAL STATEMENT COMPARABILITY

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The purpose of this study is to develop the first multidimensional measure of financial statement comparability. This measure is based on the disaggregated financial accounting components of earnings, and is constructed by applying a finer-earnings component approach (per Lipe 1986) to a popular financial statement comparability framework (De Franco et al. 2011; Barth et al. 2012). This study solves a previous limitation of the academic literature, while simultaneously recognizing information disaggregation theory and practical application. The multidimensional financial statement comparability measure in this paper is contrasted with the one-dimensional (i.e., based solely on aggregate earnings) financial statement comparability measure used in prior studies. The multidimensional approach allows for the measurement of comparability between two firms across several dimensions and allows for contrast-based analyses across companies. This framework not only more-informatively captures economic effects as they affect one company, but also enhances the ability to contrast that company's accounting system to that of other companies impacted by similar economic effects. Further, using a finer, multidimensional measure of financial statement comparability results in the ability to identify the underlying financial statement line items influencing the comparability of cross-company financial statements. This

comparability measure is robust to a rigorous set of analyses, including tests of incremental informativeness, alternative specifications of comparability, and considerations regarding information environment. Overall, relationships among firms' financial statements appear more complex than aggregate-earnings based measures of comparability may suggest. The metric developed in this study will be useful in future research based on its ability to capture and accommodate financial reporting within the comparability framework.

PREVIEW

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PREVIEW

Dedication

This work is dedicated to...

My parents, for always supporting me and giving me every opportunity to pursue my aspirations – and for never being ashamed to admit that their aging son was *still* in school.

My sister, for inspiring me to apply for the doctoral program – and for always being a source of valuable advice and insight (whether I like to admit it or not).

My wife, for being by my side every day of this process, making sacrifices and providing endless support and encouragement – and for never running away when it was proofreading time.

PREVIEW

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PREVIEW

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CHAPTER 1: INTRODUCTION

This study develops the first multidimensional measure of financial statement comparability that is based on broadly available disaggregated accounting information, solving a previous limitation of the academic literature, while recognizing seminal theory and practical application. Financial statement comparability is an important characteristic of financial accounting information, according to the FASB, the SEC, investors, and analysts (Financial Accounting Standards Board (FASB) 1978; Securities and Exchange Commission (SEC) 2000; Financial Accounting Standards Board (FASB) 2010; De Franco et al. 2011). Comparable data enables the accounting function to fulfill its purpose of providing useful information to financial statement users in predicting future firm performance (i.e., future benefits or cash flows, as well as the riskiness of those cash flows). To be most useful to these interested parties, the accounting information of one company should aid in predicting the future performance of another; this assistance can only be realized if the information is comparable. Two companies are considered financially comparable to the extent that when facing similar economic outcomes, similar financial statement amounts are reported (i.e., their underlying production functions respond similarly to economic effects) (Financial Accounting Standards Board (FASB) 1980).

De Franco, Kothari, and Verdi (2011) (hereafter, DKV) develop a framework for measuring financial statement comparability (FSC) in which stock returns (i.e., economic outcomes) are used to determine the extent to which a company's earnings (i.e., financial statements) are comparable to those of other companies in the same industry. This

framework has been utilized in the development and implementation of FSC measures in recent comparability research (Barth et al. 2012; Ciao-Wei Chen et al. 2015). However, these recent studies are subject to the same caveat originally identified by DKV: “only using earnings to capture financial statement comparability is a limitation [of the framework]” (De Franco et al. 2011, 899). In fact, the last sentence in DKV states: “An opportunity exists to create a multidimensional financial statement measure of comparability.” In this paper, I construct such a measure and base it on disaggregate financial information. The framework for this *disaggregate* FSC (DFSC) measure leverages Lipe (1986), who investigates the information content of the components of earnings. The DFSC metric is contrasted with aggregated (i.e., one-dimensional) measures of FSC (AFSC) from prior literature.

When earnings are decomposed within the FSC framework, rather than having only one coefficient relating accounting information to stock returns, there is a unique coefficient for each disaggregate component of earnings (Lipe 1986). In the returns-earnings model, the regression coefficients can be interpreted as “component shocks” which represent the new information conveyed by each of the components. Persistence in this context is defined as the impact of earnings information on stock returns, and higher (lower) levels of persistence are associated with increased (decreased) levels of stock return response to information in earnings. The stock return reactions to new component information (i.e., the persistence) vary across components because each induces different levels of revisions in expected future benefits. In other words, varying levels of revision are observed because the information conveyed by each component possesses unique

properties; this effect cannot be captured with the sole use of aggregate earnings information. In contrast, a multidimensional system in this setting not only more-informatively captures economic effects as they affect the one company, but also enhances the ability to contrast that company's accounting system to that of other companies, which are impacted by similar economic effects.

Since finer measures of financial performance capture more information about a particular company, there is more information available for use in comparing a company with its industry cohorts. Finer information includes expanded disclosures and/or additional line items (Scott 2012), and earnings disaggregation is an operationalization of finer information. This is important, as the theoretical findings regarding the value of finer information help explain the increased informativeness of disaggregated earnings. It follows that a multidimensional measure of comparability constructed from disaggregated earnings data is able to capture more information to be used in such comparisons. In other words, the DFSC approach described in this paper captures more information about a company – such as its underlying operations and financial reporting system – which then allows for an expanded number of dimensions on which to measure comparability between two firms.

The prior financial reporting literature supports the current study as it illustrates the informational benefits that may be realized in utilizing disaggregated earnings data. These studies suggest that the individual components of earnings provide insights not captured by aggregate, obtuse measures such as aggregate earnings due to the

incorporation of finer information.¹ A disaggregate-earnings approach to measuring FSC also coincides with practical application, as empirical financial statement analysis research encourages information dissection and focuses on the forecasting power of decomposed financial data (Kothari 2001; Ou and Penman 1989a, 1989b). Specifically, market participants do not solely consider aggregate earnings in company evaluation, but rather use multiple dimensions of the accounting information disclosed by companies. While the use of greater amounts of information in company comparisons is undoubtedly advantageous and consistent with practical application, a measure of comparability constructed from disaggregated data has been absent from the literature to date. Such a measure would effectively link the principles of information disaggregation theory to the study of financial statement comparability, and provide a tool for future research that is also consistent with practical application.

In this study, I begin by describing the development and construction of the multidimensional FSC metric using an disaggregate-earnings approach that follows Lipe (1986). Next, the explanatory power of the accounting system within the FSC framework is examined, wherein the analyses demonstrate the favorable statistical properties of the DFSC metric over the prior AFSC metric, including the usefulness of each component under the FSC framework. This is consistent with disaggregate data capturing greater amounts information that can be used in contrasting companies, and supports the need for a comparability measure based on the same principles. Following this, I compare the

¹ Prior literature includes: Lipe, 1986; Ou and Penman, 1989a, 1989b; Mcvay, 2006; Ohlson and Penman, 1992; Rayburn, 1986; Weintrop and Swaminathan, 1991; Wilson, 1986; Ball, Gerakos, and Linnainmaa, 2014; Novy-Marx, 2013, Holthausen and Zmijewski, 2014; Kothari, 2001, Fairfield and Yohn, 2001. This literature is discussed as part of the literature review of this paper.

DFSC metric to the aggregate-based measure of FSC (AFSC) from prior literature, and perform numerous analyses. I conduct tests that illustrate the incremental informativeness and usefulness of the DFSC measure over prior AFSC measures. I also provide a setting in which the DFSC more appropriately captures FSC than the AFSC metric. In conducting these analyses, I also demonstrate that the desirable and expected characteristics of the prior AFSC measures are still present in the DFSC metric, which suggests my approach is capturing comparability in an appropriate manner.

Following these analyses, I conduct numerous validation analyses for the DFSC metric. The validation procedures performed in this paper are consistent with those presented in recent studies that develop empirical constructs (Sheng and Thevenot 2012; Fengli et al. 2013; Hribar et al. 2014; Chen et al. 2015). The results of the validation procedures in this paper not only demonstrate the importance of cross-component shock accommodation, but also reinforce the preservation of expected attributes of prior measures of FSC. From these validation procedures, I conclude that the DFSC metric contributes and conveys a significant amount of unique and incremental information beyond that of AFSC measures. Following this, I investigate the individual components underlying the DFSC metric. Based on the nature inherent in the DFSC methodology in this paper, the metric constructed has the ability to identify the underlying influences of financial comparability between companies. The impact of each component on the composite relationship between FSC and the information environment is evaluated. This investigation provides additional insights for isolating influential mechanisms in the relationship between FSC and the information environment, and is consistent with more

disaggregate measures of financial performance capturing increased levels of useful information in comparing companies.

Finally, I conduct several industry-level analyses. Financial ratios can provide information regarding different dimensions of a company's production function that can be used in comparisons. While all companies report basic financial statement items from which ratios can be calculated, the information relied upon by interested parties can vary by company and industry, as the disaggregated components of earnings may be more or less pertinent to some than others. I find that DFSC provides informational benefits across all industries, and that the information usefulness of DFSC may depend on industry and/or company-specific characteristics. Overall, it appears that disaggregation of information exhibits benefits across all industries, and at slightly varying magnitudes.

This study makes several important contributions. First, I develop a more informative, enhanced measure of FSC – in the sense that the underlying framework incorporates disaggregated accounting information in the prediction of economic outcomes – that is backed by both theoretical and practical support. Measuring comparability with aggregate data has been a caveat of prior studies, as it is inconsistent with information disaggregation research. As disaggregate measures of financial performance capture greater amounts information about companies, it follows that a measure of comparability constructed from disaggregated data captures higher levels of information available in making comparisons. While advantageous and consistent with practical application, this is the first study to date to construct such a measure of comparability. The DFSC measure in this paper exhibits favorable statistical properties

and is supported by validation and robustness tests. Such a metric will be useful to a broad variety of future research based on its ability to capture and convey companies' financial reporting information. From my work, I conclude that FSC relationships among firms are more complex than aggregate-earnings based AFSC measures may suggest. The DFSC metric allows for further exploration of the underlying influences of FSC among firms from various perspectives, and has the capability to disentangle the influences of financial statement line items to reveal additional insights that prior AFSC approaches overlook. For example, while prior literature examines the composite relationship between FSC and analyst forecast qualities, the DFSC measure identifies the influential factors within the relationship; this is just one example of potential contexts that future research could revisit using DFSC instead of the one-dimensional AFSC measure.

In addition, this study contributes to the applicability and robustness of prior disaggregation research as it relates to financial statement comparability. Previous disaggregation studies have found that the information contained within the components of earnings is incremental to that contained in aggregated earnings (Wilson 1987), financial figures other than bottom line earnings containing information about future performance (Ou 1990), and revenue and expense income statement items providing information beyond their net calculation (Swaminathan and Weintrop, 1991). The current study provides a crucial link between the financial reporting, information disaggregation, and financial comparability literatures. Finally, a link to real-world behavior is also provided. Specifically, this study is valuable as it aligns academic research with professional practice, while incorporating the FASB sentiment that focusing on one type

of information in financial reporting is sub-optimal (Financial Accounting Standards Board (FASB) 2010). The DFSC framework in this study integrates the manner in which financial statement users and market participants actually evaluate companies.

The remainder of this paper is organized as follows. In Section II, I discuss the relevant background and theoretical and practical motivation. The metric development process is described in Section III. In Section IV, the design of the study is outlined, followed by the sample selection process details in Section V. Section VI includes the analyses and findings, and Section VII concludes.

CHAPTER 2: BACKGROUND

2.1 Financial Statement Comparability

The purpose of accounting information is to aid financial statement users in predicting future cash flows (i.e., future benefits) and the riskiness of those cash flows. One vital quality of accounting information is that the accounting information of one company be comparable to that of other relevant companies. In other words, for such data to be both comparable and useful, the accounting information of one company must help investors in predicting the future benefits and related risks for another company. This sentiment is consistent with analyst and investor evaluation methods, which involve an in-depth investigation of the comparative components of earnings.

In the academic literature, the basic idea behind FSC is that accounting amounts are considered comparable if two companies facing similar economic outcomes report similar financial statement amounts. De Franco et al. (2011) explain that comparability is important because financial ratios constructed from accounting information are not necessarily useful by themselves, but rather when contrasted with ratios of comparable firms. The implication here is that comparable accounting information is useful because it allows investors to better separate economic effects related to a set of companies in a given industry from all firms in the economy. In other words, the reporting of comparable accounting information of one company can aid in the prediction of future benefits and risks other companies.

While the FSC framework of De Franco et al. (2011) employs “reverse regressions” of financial information on economic outcomes according to Barth et al.

(2012) (hereafter, BLLW), BLLW opt in favor of more “direct regressions” of economic outcomes (i.e., stock returns) on financial information (i.e., earnings) (Barth et al., 2012). Similar to De Franco et al. (2011), the approach in Barth et al. (2012) defines accounting amounts as being comparable if one company’s accounting system (i.e., the mapping between accounting amounts and economic outcomes) produces an estimate of economic outcomes that is similar to that produced by another company’s accounting system. For example, consider two companies: Company I and Company J. To the extent that the financial statements of Company I and Company J are comparable to one another, the use of the accounting information of Company J within the mapping-derived “accounting system” of Company I should approximate the economic outcomes of Company J in a manner similar to the actual economic outcomes for Company J. This approach allows for the measurement of the difference in the estimation of the economic outcomes between the two accounting systems, holding the accounting information constant. This framework is discussed in further detail within the metric development section of this paper, at which time Appendix B is referenced to provide an example.

2.2 Returns, Earnings, and Information Disaggregation

Underlying the FSC methodology is the empirical value of the returns-earnings relationship. The study of this relationship begins with Ball and Brown (1968), who argue that due to the importance of earnings data to investors, the usefulness of earnings can be observed by the impact it has in predicting future performance (Ball and Brown, 1968). While groundbreaking, the work of Ball and Brown (1968) focuses on aggregate earnings. In general, subsequent empirical studies have provided evidence in support of

the informational benefits of disaggregating earnings into its components, which are able to capture more information about companies, as observed via the relationship between stock returns and accounting (Kormendi and Lipe 1987; Lipe 1990; Easton and Harris 1991; Barth et al. 2013).

Specifically, these studies have considered the informational value of financial statement line items and concluded the following: decomposed earnings contain incremental information and usefulness beyond that of the aggregate sum (Jane A. Ou and Penman 1989; Jane a Ou and Penman 1989), the information content within individual revenue and expense items is unique and incrementally informative (Swaminathan and Weintrop, 1991), and there are distinct and exclusive qualities amongst the components of earnings that generate the incremental usefulness (Fairfield, Sweeney, and Yohn 1996). The underlying theme of these studies can be partially traced back to Lev (1989), where it is maintained that capital markets research should focus on the role of accounting measurement rules – such as understanding the use of the financial statement analysis process – and consider the impact of accounting techniques on the predictive power of financial statement items. The same advice can be applied to FSC research, as is done in the current study.

2.3 Disaggregation in the Comparability Framework

It is important to fully understand the implications of incorporating disaggregated accounting information into the FSC framework. Stock price can be defined as the present value of future benefits and cash flows (and related risks) to financial statement users and market participants. Newly reported accounting information leads to revisions

in these estimates of future benefits/cash flows, which influences the stock price and thus the stock return. The extent of the effect of earnings information on stock returns is referred to as "persistence" in this context, and is explained thoroughly by Lipe (1986) and Kormendi and Lipe (1987). This stream of research considers the persistence of the return-earnings regression coefficients as measures of risk in the sense that the sensitivity of changes in earnings for a given company corresponds to changes in returns of that company. Each component allows for a unique persistence (i.e., a unique impact of each component of earnings on stock returns) to be observed. The regression coefficients can be interpreted as "component shocks" which represent the new information conveyed by each of the components. Stock return reactions to new earnings component information vary across components because each component induces different levels of revisions in future expected benefits; these revisions differ because the information conveyed by each component possesses unique properties (i.e., the autocorrelations and/or cross-correlations of the components are not equal). Specifically, this research finds that higher (lower) levels of persistence are associated with increased (decreased) levels of stock return response to information in earnings – and the relationship varies across companies depending on the content of the information as it relates to revisions of future expected benefits/cash flows (Kormendi and Lipe 1987).

Empirically, Lipe (1986) shows that new component information is positively related to component persistence, consistent with the view that the additional explanatory power of the components is caused by differences in the properties of the components, which also causes unique investor reaction to each component. Lipe (1986) provides the

following example regarding disaggregate accounting information and future performance: When a company has a new bond issuance, there will be a negative impact on future net income due to increased amounts of interest expense. The bond issuance thus leads to revisions of future interest expense expectations, which correspond to reduced expectations of future earnings, and in turn, to downward stock return revisions. This example demonstrates that a particular component of earnings provides incremental information about future expectations that would be missing if only aggregate earnings in total were observed. In summation, revisions (to expected future earnings) attributable to new information stem from the unique and varying properties of the component of earnings, and in turn, produce unique and varying stock return responses. Applying this theory and research to the current comparability framework enables for the creation of a more informative measure of comparability, as an aggregate FSC approach is unable to allow for the consideration of the unique informational influences underlying the returns-earnings relationship within the FSC framework.