

Decision-Useful Asset Measurement from a Business Valuation Perspective

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September 2015

*Corresponding author. The authors thank Robert Herz, Gregory J. Jonas, Alfred King, Gary Previts, Gregory Waymire, G. Peter Wilson, and the work shop participants at Case Western Reserve University, University of Bristol, and University of Exeter for insightful comments and input that furthered the development of our thoughts. The authors gratefully acknowledge the financial support of the David Eccles School of Business and the A.B. Freeman School of Business.

ABSTRACT: This commentary proposes an approach to asset measurement rooted in business valuation theory and practice. In the context of a business valuation, investors' information needs and the asset measurement investors find useful vary with the manner in which the assets are expected to realize value for the firm. After reviewing arguments made in economic and accounting theory, accounting research, accounting standards, and practitioner and business valuation literature, we conclude that for in-exchange assets, investors need to determine the value expected to be realized in exchange. Exit price in a hypothetical market exchange (i.e. fair value) less expected costs to sell provides investors with decision-useful information in this regard; replacement cost and historical cost do not. For in-use assets investors require information useful in forecasting cash flows generated by using such assets in combination. Based on arguments and data presented in the aforementioned literature, we conclude that historical cost generally provides investors with decision-useful information for forecasting purposes; fair value does not. In addition, replacement cost can provide decision-useful information provided holding gains and losses are separately disclosed, but its decision-usefulness can be constrained by verifiability concerns.

Key Words: Asset measurement; Business valuation; Decision-useful financial reporting information; Value-in-use; Value-in-exchange; Conceptual framework.

INTRODUCTION

This commentary proposes an approach to asset measurement rooted in business valuation theory and practice. We employ concepts and definitions found in economic and accounting theory, accounting research, accounting standards, and practitioner and business valuation literature and propose that in a business valuation context investors' information needs and the asset measurement investors find useful vary with the manner in which assets are expected to realize value for the firm. Consistent with a business valuation perspective, this commentary focuses on the information needs of external users, lacking the power to direct the management and policies of the entity, ultimately interested in assessing the going concern value of the firm.¹

Examining decision-useful asset measurement from the point of view of investors undertaking a firm valuation complements and supplements other proposed approaches to asset measurement (e.g. Nissim and Penman 2008; Institute of Chartered Accountants of England and Wales (ICAEW) 2010; Milburn 2012; European Financial Reporting Advisory Group (EFRAG) 2013; Barth 2014). Unlike other proposed approaches to asset measurement, we draw on business valuation theory and practice to structure our arguments. We also draw on evidence from accounting research and arguments made in standard setting and practitioner literature to support our conclusions regarding the asset measurement investors find useful in estimating firm value.

Asset measurement continues to be a troublesome issue for standard setters, preparers and financial statement users alike. Standard setters lack a unified framework for asset measurement (see International Accounting Standards Board (IASB) 2013; Barth 2014). For example, Barth (2014, 332) writes, "...standard setting measurement decisions have been necessarily *ad hoc* and based more on historical

¹ Hereafter, we refer to such users as "investors." A rigorous consideration of the information needs of all users is impractical. Investors interested in assessing firm value comprise a significant and important set of financial statement users. Dichev et al. (2013) find that 94.7% of public company-CFOs surveyed identify valuation as the primary reason earnings are important to users. These authors point out that this emphasis on business valuation is consistent with prior surveys of investors, analysts and financial executives, a wealth of research in financial capital markets, and a stated goal of standard setters.

precedent and the combined judgment of individual [Financial Accounting Standards Board] FASB and IASB members derived from experience, expertise, and intuition than on agreed upon measurement concepts.” Further, the lack of a unified framework for asset measurement hinders standard setters’ ability to develop concepts-based accounting standards that are applied consistently (IASB 2013, ¶1.26).²

Assets realize value for the firm either in-exchange or in-use and in the context of a business valuation, investors’ information needs and the asset measurement investors find useful varies with the manner in which assets are expected to realize value for the firm. For in-exchange assets, investors need to determine the value expected to be realized in exchange. After reviewing various arguments presented in the practitioner, academic, and standard setting literatures, we conclude that exit price in a hypothetical market exchange (i.e. fair value) less expected costs to sell provides investors with decision-useful information regarding the value expected to be realized in exchange; replacement cost and historical cost do not.³ This conclusion holds even when fair value is imperfectly determined based on Level 2 or Level 3 inputs.⁴

For in-use assets, investors need to forecast the cash flows expected to be generated by the cash generating unit.⁵ After reviewing the various arguments presented in the practitioner, academic, and standard setting literatures, we conclude that both the amortized historical cost and replacement cost measurement bases can provide information relevant to investors in forecasting future cash flows expected to be generated by the cash generating unit; fair value does not.⁶ However, the decision-usefulness of

² Specifically, the Discussion paper (IASB 2013, ¶1.26) states that, “... the primary purpose of the revised *Conceptual Framework* is to assist the IASB by identifying concepts that it will use consistently when developing and revising IFRSs.”

³ Other measurement bases also exist – deprival value for example (Macve 2010). An examination of an exhaustive list of alternative measurement bases is beyond the scope of this paper. Similar to Barth (2014), we focus on the fair value, replacement cost and historical cost measurement bases because they are, or have been, used in financial reporting.

⁴ Recent empirical research supports this notion. For example, Altamuro and Zhang (2013) and Lawrence et al. (2014) find no difference in the value relevance of financial securities estimated using Level 1 versus Level 3 inputs under the fair value hierarchy established under Accounting Standards Codification (ASC) 820. The IASB also outlines approaches to estimating fair value in IFRS 13 that approximate the levels hierarchy (see Figure 1, IASB 2011a).

⁵ The set of in-use assets used in combination comprise a “cash-generating unit.”

⁶ In the case of replacement cost, however, holding gains and losses must be separately disclosed.

replacement cost information can be tempered by verifiability concerns. As a result, in periods of relatively stable prices, the incremental benefit of replacement cost information might not exceed the incremental cost of providing it.

Although there is substantial overlap between the concepts of financial and in-exchange assets and non-financial and in-use assets, the mapping between these concepts is imperfect. For example, excess equipment held for sale is a non-financial in-exchange asset and accounts receivable is a financial in-use asset. Similarly, although there can be substantial overlap between the concepts of non-operating and in-exchange assets and operating and in-use assets, the mapping here is also imperfect. For example, an investment security held by a mutual fund is an operating in-exchange asset. Thus, the concepts of financial/non-financial, non-operating/operating and in-exchange/in-use are not interchangeable. This commentary focuses on in-exchange versus in-use assets because this distinction is key to the practice of business valuation.

Finally, from a business valuation perspective, the measurement basis which provides investors with decision-useful information is linked to how an asset is expected to realize value – in-exchange or in-use. This is a function of the business model, and for assets used outside the business model – managerial intent. We recognize that the extent to which “business model” is defined, is definable, or is viewed as having a place in accounting standard setting is a matter of disagreement (Leisenring et al. 2012). The approach described in this paper does not resolve this issue. Although it might be wise for users, preparers and auditors of financial statements to understand the business model, practical categorization of assets as in-exchange or in-use is a function of how the asset is currently being used by the firm. In this sense, the approach described in this paper does not require explicit incorporation of the business model concept in standard setting guidance. How assets are employed to realize value for the firm is inescapably linked to the business model, however, and thus the business model operates in the background whether or not its role is explicitly recognized in standard setting literature.

OBJECTIVE OF FINANCIAL REPORTING

At a 2013 conference, Financial Accounting Foundation Chairman, Jeffrey J. Diermeier stated that accounting standards focused on the needs of investors attempting to determine firm value might meet the information needs of the vast majority of users.⁷ Mr. Diermeier encouraged standards setters to return to the basic objective of helping investors with the task of business valuation. The information needs of investors interested in assessing firm value is not the only objective of financial information, however. The stewardship or accountability objective of accounting is also important.

Rosenfield (1974, 126) states that the stewardship objective of accounting "... is to report on the control and use of resources by those accountable for their control and use to those to whom they are accountable." Similarly, in his model of the stewardship reporting problem, Gjesdal (1981) concludes that information is valuable in the stewardship reporting problem if it is informative of the manager's decision with respect to the control and use of resources.

While stewardship is an oft-touted objective of financial reporting, there is disagreement among some in the accounting community regarding whether the stewardship objective presents unique implications for financial reporting. For example, Gjesdal (1981, 209) concludes, "... once stewardship has been proposed as an objective, one would expect to find a discussion of the implications of this for the choice of reporting system. Few such discussions exist." More than thirty years later some in the accounting community would argue that little progress has been made in this regard. For example, this same concern is voiced in a response to the IASB's Conceptual Framework project. Pro-Active Accounting Activities in Europe (2007, 3) acknowledges, "It has also been suggested that the implications of keeping stewardship as a separate objective of financial reporting are not obvious and that some examples of its impact on financial reporting are required to demonstrate the point." Nevertheless, this report ultimately concludes that stewardship is grounded in agency theory and is a distinct objective with unique implications for financial reporting.

⁷ FASB@40 Conference, New York, New York, September 12, 2013.

Whether the asset measurement approach described herein, which links asset measurement to asset use (in-exchange or in-use) is or is not consistent with the stewardship objective is open to debate. On the one hand, linking asset measurement to asset use allows the measurement basis itself to convey information about the use of assets by those accountable for their use (Rosenfield 1974; Gjesdal 1981). On the other hand, our recommendation that fair value be employed for in-exchange assets might be viewed by some as violating the stewardship objective since it incorporates future-oriented information into the measurement of some assets. In any event, our intent is to focus on investors' information needs in the context of business valuation, and consequently, the remainder of the commentary focuses on this objective of financial reporting.

IN-EXCHANGE AND IN-USE ASSETS

Value-in-Exchange and Value-in-Use in Economic Theory

The concepts of value-in-exchange and value-in-use originated with Aristotle (Kauder 1953; Robertson and Taylor 1957; Porter 1965), but these concepts re-emerge in a significant manner in 1776 with the economic philosopher Adam Smith's *Wealth of Nations* (Tuttle 1891; Robertson and Taylor 1957; Porter 1965). Smith ascribed two meanings to "value": value-in-exchange and value-in-use. He writes, "The things which have the greatest value-in-use have frequently little or no value-in-exchange; and, on the contrary, those which have the greatest value-in-exchange have frequently little or no value-in-use" (Book I, Chapter IV, Smith 1776).

To Smith, value is a function of utility to the individual, not market price. Since Smith, various schools of economic thought adopted the concepts of value-in-exchange and value-in-use and define these terms with reference to an object's utility. For example, Tuttle (1891) defines exchange value as market value or the utility an object brings to society and in-use value as the utility an object brings to the individual. Eventually, the philosophical economic discourse on value embraced the concepts of value-in-exchange as economic value proper and value-in-use as utility to the individual (Porter 1965). Specifically,

value-in-exchange is value derived from market exchange, while value-in-use is value derived from an individual's use of the material good or service.

Value-in-Exchange and Value-In-Use in Accounting

Linking how an asset is expected to realize value for the firm (in-exchange or in-use) to decision-useful asset measurement dates back to the early development of modern accounting. For example, Littleton (1935, 270) ascribes measurement attributes to the concepts of value-in-exchange and value-in-use, stating “What we discuss in accounting as ‘cost versus value’ is, in fact, ‘value-in-use versus value-in-exchange’.” More recently, a 2009 Staff Paper prepared for the IASB and FASB states that “... the relevance of a specific measure for a particular asset or liability depends on how the future value flows it represents will arise. That characteristic is referred to as the method of ‘value realization’.”⁸

Nevertheless, linking asset measurement to how an asset is expected to realize value for the firm is not without its critics. For example, Leisenring et al. (2012, 341) equate the value realization approach outlined in the 2009 Staff Paper to intent-based accounting and conclude that “...the conceptual arguments for intent-based recognition and measurement standards are not compelling, and that combined relevance and comparability are enhanced by requiring similar recognition and measurement for similar rights and obligations in an item or arrangement, regardless of management intent for that item or arrangement.”

The concepts of value-in-exchange and value-in-use also appear in the accounting literature in the context of “fair value” accounting. Barth and Landsman (1995) define fair value in terms of exchange value determined using entry or exit prices. Barth and Landsman assert that entry or exit values and value-in-use are not necessarily equal and that the valuation of in-use assets can differ from firm to firm.

Financial accounting standard setters have developed working definitions for in-exchange and in-use assets. For example, ASC 820-10-35-10E (formerly “SFAS 157”, FASB 2011a), defines an asset as an in-exchange asset if, “...the asset would provide maximum value to market participants on a standalone basis.” ASC 820-10-35-10E (FASB 2011a) defines an asset as an in-use asset if “...the asset would provide

⁸ Quote drawn from Leisenring et al. (2012, 336-337).

maximum value to market participants principally through its use in combination with other assets as a group.” These definitions incorporate the idea that an asset’s value is a function of how it is used, which might be on a standalone basis (i.e. in-exchange) or in combination with other assets (i.e. in-use).

The IASB has also developed notions of in-exchange and in-use assets that explicitly consider the way in which an asset realizes value – either directly or indirectly (IASB 2009). Directly realized assets generate inflows in one step, on a standalone basis, by being exchanged for cash or other economically valuable items (IASB 2009, ¶ME30). In effect, the IASB’s “directly realized assets” are similar in concept to in-exchange assets. Indirect value realization occurs in more than one step. For example, using machinery to convert raw materials into finished goods, which are sold, indirectly realizes the value of the machinery and raw materials (IASB 2009, ¶ME32). In effect, the IASB’s “indirectly realized assets” are similar in concept to in-use assets.

Value-in-Exchange and Value-In-Use in Business Valuation

Value-in-exchange and value-in-use are central concepts in the business valuation literature, which specifies an asset’s worth in terms of how it realizes value. For example, in valuing industrial real estate, an appraiser is obliged to consider the way the property will be used (Hartman 1976; Skogstad 1976; Hartman 1979). The value-in-exchange of an idle building is determined by comparable market values (Hartman 1976; Skogstad 1976; Hartman 1979), but if the property derives value-in-use, value is determined by the present value of the expected future benefits the property bestows on the user. Comparable market value is deemed an inappropriate measure of value in the latter case because in-exchange value fails to capture the incremental value created by using the asset in combination with other assets.

Characterization of In-Exchange and In-Use Assets

Building on the economic, accounting, and business valuation literatures as well as the definitions found in accounting standards, this paper adopts the following characterization of in-exchange assets. In-exchange assets are *assets expected to realize their contribution to firm value on a standalone basis in exchange for cash or other economically valuable assets. Use of such assets in combination with other firm*

assets generates little or no incremental firm-specific value (see Figure 1). For example, an investment certificate held for sale retained in a bank's vault is expected to realize its contribution to firm value on a standalone basis in exchange for cash. The investment certificate generates no firm-specific value in excess of exchange-value from being "used" in combination with the vault.

Building on the economic, accounting, and business valuation literatures as well as the definitions found in accounting standards, this paper adopts the following characterization of in-use assets. In-use assets are *assets expected to realize their contribution to firm value consumed or used in combination with other assets in the production and sale of goods or services. Use of such assets in combination is expected to generate firm-specific value incremental to the sum of the assets' individual values-in-exchange* (see Figure 1).⁹ For example, raw materials inventory realizes its contribution to firm value in combination with other assets (e.g. labor, buildings, and equipment, etc.). The raw materials inventory combined with these other assets forms a cash-generating unit, which is expected to generate value in excess of the sum of the standalone exchange values of the individual assets comprising the cash-generating unit. Further, this value is entity-specific since it is impacted by factors such as firm-specific production processes.

In-Exchange and In-Use Assets versus Financial and Non-Financial Assets

The definitions of in-exchange and in-use assets adopted in this paper are fairly consistent with those found in existing accounting standards. However, the focus on the concepts of in-exchange and in-use assets is a departure from U.S. standard setters' tendency to distinguish between financial versus non-financial assets when considering questions of asset measurement.¹⁰ For example, ASC 820-10-35-10E (FASB 2011a) relates assets that provide maximum value through use in combination with other assets to

⁹ In the absence of evidence to the contrary, it is reasonable to assume that when a manager employs an asset in-use, as opposed to in-exchange, he/she does so because the expected contribution to firm value from utilizing the asset in combination with other assets exceeds the asset's standalone exchange value. This is consistent with value maximization theory, which suggests that in equilibrium, managers act to maximize firm value (e.g. Jensen 2000). Further, the investors considered herein lack the power to direct the management and policies of the entity and accordingly from their perspective the going concern value of the firm is a function of how the firm is using its assets, not a function of how the firm could use its assets.

¹⁰ See, for instance, the language in ASC 820, which regularly employs the adjectives 'financial' and 'non-financial' in its discussion of fair value measurement for assets and liabilities.

“certain nonfinancial assets” and assets that provide maximum value on a standalone basis to financial assets. Similarly, Accounting Standards Update 2011-04 (FASB 2011b, 3) indicates that in-use value is not applicable to the fair value measurement of financial assets because, “... such items do not have alternative uses and their fair values do not depend on their use within a group of other assets or liabilities.” Thus, U.S. standard setters tend to focus on financial versus non-financial assets and closely link financial assets to in-exchange assets and non-financial assets to in-use assets.

As noted earlier, this commentary recognizes that the mapping from financial to in-exchange assets and from non-financial to in-use assets is not one-to-one such that the concept of a financial asset is distinct from that of an in-exchange asset and similarly for non-financial and in-use assets. From a business valuation perspective, focusing on financial and non-financial assets and treating these concepts as interchangeable with in-exchange and in-use assets can impede the asset measurement discussion.

DECISION-USEFUL ASSET MEASUREMENT FROM A BUSINESS VALUATION PERSPECTIVE

The literature discussed in the previous section argues that an item’s value is a function of how the item is used (Tuttle 1891); it is not a function of the item itself. Consider, for example, an asset held for sale (an in-exchange asset) versus the same asset used in operations (an in-use asset). An asset held for sale is expected to realize value from exchange, whereas the same asset used in operations is expected to realize value from use in combination with other assets. This has implications for the asset measurement investors, interested in determining firm value, will find decision-useful.¹¹ This section of the paper explores these asset measurement implications.

The Business Valuation Model

We employ the following standard business valuation model (e.g. Easton et al. 2013, 13-6):

¹¹ It can also have implications for the classification of the asset – current versus long-term – but, this is beyond the scope of the paper.

$$V_t = E_t[ie_t] + \sum_{\tau=1}^{\infty} R^{-\tau} E_t[\tilde{c}_{t+\tau}] \quad (1)^{12}$$

Where:

- V_t = firm value, date t.
- ie_t = value of in-exchange assets, date t.
- R = one plus the risk-adjusted discount rate.
- E_t = expectation formed based on available information, date t.
- c_t = net cash flows from in-use assets, date t.

The model equates firm value to the value of a firm's in-exchange assets plus the value of its in-use assets that comprise a cash-generating unit (or units). The value of the in-exchange assets is determined by the net amount expected to be received on exchange. The value of the in-use assets is the present value of future cash flows expected to be generated by the cash generating unit (or units). As discussed earlier, this amount is expected to exceed the sum of the underlying individual assets' standalone exchange values (Fortgang and Mayer 1985). The excess value created by using the assets in combination is sometimes referred to as "goodwill" (Feltham and Ohlson 1995; Hitz 2007).

The excess value created by using the assets in combination is a joint value and cannot be meaningfully allocated among the assets comprising the cash generating unit (Fortgang and Mayer 1985; Feltham and Ohlson 1995; Hitz 2007). For example, the present value of the future cash flows generated by land, buildings, machinery, raw materials and labor inputs used to create finished goods, which are sold, to produce cash is expected to exceed the sum of the market exchange values of the individual assets. This excess value cannot be meaningfully attributed to any of these individual assets, however, since it is created by using them in combination. This point is made in Milburn (2012, ¶J5) who states, "It is well established that it is impossible to determine, even after the fact, how much an individual input has contributed to revenues achieved during the period. All that can be said unequivocally is that revenue recognized in a period is the result of the interactions of all the inputs to that revenue generating process."

¹² Equation (1) is agnostic regarding whether the cash flows incorporated in the second term are cash flows attributable to equity holders discounted at the cost of equity capital (i.e. a net-equity concept of valuation) or cash flows to all providers of capital discounted at the weighted average cost of capital (i.e. an invested capital concept of valuation). The choice between these two approaches is a matter of taste and has no bearing on the asset measurement issues addressed in this paper. This paper focuses on assets. We do not address measurement issues pertaining to liabilities.

From equation (1) it is apparent that investors require sufficient information to assess the value-in-exchange and value-in-use of a firm's in-exchange and in-use assets, respectively. The next section of the paper addresses the implications of these information needs for asset measurement.

Decision-Useful Asset Measurement for In-Exchange Assets

The expected contribution to firm value of an in-exchange asset is a function of the net amount expected to be received upon exchange on a standalone basis (see the first term in equation (1)). Fair value, as defined by the FASB (ASC 820) and the IASB (International Financial Reporting Standard (IFRS) 13) is a measure of the amount expected to be received upon exchange on a standalone basis. Specifically, ASC 820-10-35-3 (FASB 2011a) states, "...the objective of a fair value measurement is to determine the price that would be received to sell the asset ... at the measurement date (an exit price)."¹³ In the context of a business valuation, investors are interested in this value net of disposal costs. Thus, from a business valuation perspective, the asset measurement basis appropriate for in-exchange assets is fair value less cost to dispose.¹⁴

Empirical research provides substantial evidence that, for financial securities – a class of in-exchange assets – fair value measurement is more relevant to investors than historical cost (see, for example, Barth 1994; Ahmed and Takeda 1995; Bernard et al. 1995; Eccher et al. 1996). These findings extend to all three levels of the fair value measurement hierarchy defined by ASC 820 and IFRS 13: quoted prices for identical assets (Level 1), quoted prices of similar assets (Level 2), and fair value measured using valuation techniques (Level 3) (Kolev 2009; Song et al. 2010; Altamuro and Zhang 2013; Lawrence et al. 2014).

The extent to which fair value provides investors with decision-useful information for non-financial in-exchange assets is an avenue for future research to address. Extant research provides mixed findings and generally does not distinguish between in-exchange and in-use non-financial assets, rendering the findings unclear. For example, recent empirical research examines firms' measurement *choice* for non-financial

¹³ Similarly, IFRS 13 (IASB 2011, ¶24) states, "Fair value is the price that would be received to sell an asset... at the measurement date under current market conditions (ie an exit price)."

¹⁴ In the remainder of the paper, the terms "market exchange value" and "fair value" are used interchangeably.

assets upon adoption of IFRS and finds that U.K., Australian, and German firms almost exclusively choose historical cost measurement, not fair value, for their intangibles and PP&E asset classes (Cairns et al. 2011; Christensen and Nikolaev 2013). To the extent that these assets are in-use assets, this finding is consistent with the asset measurement approach developed in this paper. Nevertheless, research finds that when managers choose to revalue certain non-financial assets, the resulting gain is significantly associated with price (Easton et al. 1993), future cash flows and future operating income (Aboody et al. 1999). This finding supports the conclusions described in this paper *if* the non-financial assets included in this research are in-exchange assets, but not if they are in-use assets.

Further, recent research finds that investors view less reliable fair value measures to be value relevant for in-exchange assets (see Altamuro and Zhang 2013; Lawrence et al. 2014). These findings are consistent with a business valuation approach to asset measurement. Specifically, investors' information needs with respect to in-exchange assets – i.e. the estimated amount to be received upon exchange net of disposal costs – remain unchanged even in the absence of a Level 1 proxy for fair value. Unless replacement cost or historical cost measurement assist investors in estimating the amount expected to be received in exchange, investors' information needs are unlikely to be well-served by either of these measurement models. Consistent with this, the empirical evidence suggests that for financial securities, an imperfectly measured fair value is more decision-useful than historical cost (Barth 1994; Bernard et al. 1995; Eccher et al. 1996).

The conclusion that fair value measurement should be applied to assets with characteristics of in-exchange assets is found in several other papers that consider the question of decision-useful asset measurement. For example, Nissim and Penman (2008) argue that fair value accounting is sufficient for reporting to shareholders when the firm does not add value to the input through its business model, i.e. an in-exchange asset. Similarly, a measurement framework developed by the ICAEW (2010, ¶3.2) advocates for market exchange values for assets that are not being used or created within the firm, i.e. in-exchange assets. Similarly, a recent Canadian Institute of Chartered Accountants' asset measurement framework (Milburn 2012) concludes that fair value is the appropriate measurement basis for investing and financing

assets, which are not part of the cash-generating process, i.e. in-exchange assets. Each of the aforementioned papers approach the issue of asset measurement from different perspectives, but ultimately recommend fair value measurement of assets with attributes of in-exchange assets. However, these studies limit the use of fair value measurement to situations in which a Level 1 or Level 2 proxy for fair value exists.

Decision-Useful Asset Measurement for In-Use Assets

In-use assets are expected to create value for the firm, which is assumed to be a going concern, by being used in combination to generate future cash flows (see the second term in equation (1)).¹⁵ This section of the paper examines the decision-usefulness from a business valuation perspective of several different asset measurement bases for in-use assets.

Managers' Estimated In-Use Value

It might be argued that the asset measurement that offers the most faithful representation of value-in-use is a manager's estimate of the in-use value of the cash generating unit. That is, managers could be tasked with reporting their estimate of the second term in equation (1) for each cash-generating unit comprising the firm. This asset measurement approach gives rise to at least two challenges. First, managers' estimates of value-in-use necessitate a fair degree of aggregation because the resulting value is for the cash generating unit as a whole. Recall that the joint value created by in-use assets in a cash-generating unit cannot be meaningfully allocated to the individual assets comprising the cash-generating unit (see Fortgang and Mayer 1985; Feltham and Ohlson 1995; Hitz 2007). Further, as May (1936, 19) points out, "...if the accountant were to assume the task of valuing the business as a whole, he would have met the assumed need, and it would be entirely supererogatory for him to attempt to allocate that value as between the different assets of the business." Thus, this asset measurement approach produces a balance sheet, which reports the aggregate value-in-use of each cash-generating unit.

The second challenge with employing managers' estimated in-use value as the measurement basis for in-use assets is investors' express discomfort with manager-provided estimates of firm value. Lee (2014)

¹⁵ If an entity is not a going concern and its assets are held for disposition on a standalone basis, such assets would be in-exchange assets and appropriately measured at fair value less costs to sell.

makes the point that investors prefer to generate their own forecasts and a PriceWaterhouseCoopers (2007, 5) survey of investment professionals, concludes that, “Respondents view the task of estimating the current value of the enterprise as theirs, not the role of management and/or accountants.”¹⁶ This might be because investors believe managers’ estimates of firm value might be biased, but it is also the case that managers are not privy to all information impounded in firm value. For example, empirical research finds that although management earnings forecasts impound information not in stock price, stock price impounds information not in management earnings forecasts (McNichols 1989). Moreover, Botosan and Stanford (2005) find that mean analyst forecast accuracy worsens after analysts abandon the acquisition of private information to rely on publicly disclosed segment information. This suggests that private information acquisition enriches the information set, on average.

Lee (2014, 6) argues that, “...accountants should not expect summary numbers taken from GAAP financial statements [i.e. measurement at fair value] to measure firm value directly. They were not designed to do so.” Accordingly, we next turn our attention to the question, which asset measurement basis aids investors in estimating in-use value?

Investors’ Information Needs for In-Use Assets

As discussed earlier, value-in-use is determined by the present value of expected future cash flows to be generated from the combined use of the assets comprising a cash-generating unit. In arriving at this value, investors forecast future cash flows and estimate a risk-adjusted discount rate (see Easton et al. 2013; Lundholm and Sloan 2013). This section of the paper outlines the information required by investors undertaking these tasks.

¹⁶ The investment professionals included in the survey were 50 buy-side and sell-side investment professionals in Boston, London and New York. The objectives of the survey are to understand the professionals’ use of the balance sheet in their analysis of firm performance and the measurement bases for assets and liabilities that suited their needs (PriceWaterhouseCoopers, 4). Accordingly, the survey provides insight into practitioners’ information needs from a business valuation perspective. Although we acknowledge that survey responses can be influenced by respondents’ incentives, we would be surprised if investors in general would routinely accept managers’ estimates of firm value at face value.

Forecasting future cash flows over an infinite horizon, as indicated in the second term of equation (1), is consistent with valuation theory, but is impossible in practice. In practice, investors partition cash flows between a finite forecast horizon spanning the foreseeable future and the infinite horizon. The earnings capitalization approach is frequently employed to estimate the present value of cash flows expected to be generated over the infinite horizon. The main assumption underlying the earnings capitalization approach is that the benefit stream is expected to grow at a constant rate (Campbell 1975). Thus, the primary inputs investors employ in estimating value-in-use are forecasted finite horizon cash flows; forecasted infinite horizon steady-state earnings before growth; forecasted infinite horizon perpetual growth rate; and a risk-adjusted discount rate.

In practice, investors' assumptions regarding the perpetual growth rate and the discount rate are not informed by the asset measurement issue we address. Investors look to economy-wide, not firm-specific factors in arriving at these estimates (Easton et al. 2013; Lundholm and Sloan 2013). For example, the assumed perpetual growth rate is often set to the expected rate of growth in Gross Domestic Product (GDP). Further, investors employ single- (e.g. the Capital Asset Pricing Model) or multi-factor models (e.g. CAPM with a size-adjustment) to estimate the risk-adjusted discount rate. Such models employ historical stock return data, market beta estimates, and estimated risk-free rates (see for example, Easton et al. 2013; Lundholm and Sloan 2013). Accordingly, the remainder of the discussion focuses on the extent to which alternative asset measurement bases support investors' estimates of the amount and timing of future cash flows (or earnings) expected to be generated by in-use assets over the finite forecasting horizon.

Investors' Information Needs for Forecasting Finite Horizon Cash Flows

Predicting future cash flows and/or earnings is an essential task in business valuation (Lee 2014). Investors begin the process of creating pro forma financial statements by forecasting revenues (Lundholm and Sloan 2013) because forecasted revenues play a central role in forecasting investments in in-use

assets and operating expenses.¹⁷ These latter amounts are forecasted by applying forecasted asset turnover ratios and expense margins, respectively, to forecasted revenues (Lundholm and Sloan 2013). Thus, three items – forecasted revenue, forecasted asset turnover ratios, and forecasted expense margins – are critical inputs into investors’ assessment of forecasted finite horizon cash flows from in-use assets (Lundholm and Sloan 2013). Thus, in a business valuation context, the asset measurement for in-use assets that is useful to investors is that which provides information useful in forecasting these inputs. The next section of the paper examines the extent to which alternative asset measurement bases support investors’ efforts to forecast these inputs.

Fair Value Measurement Basis for In-Use Assets

In-use value is entity specific and expected to exceed the sum of the in-use assets’ standalone exchange values (Fortgang and Mayer 1985). This point is found throughout the economic, business valuation and accounting literatures dating back to the 1700’s (e.g. Smith 1776; Littleton 1935; Skogstad 1976; Barth and Landsman 1995).

Still, fair value measurement might provide investors with information useful in forecasting future cash flows, but extant accounting and practitioner literature questions the usefulness of fair value measurement in this respect (Cooper 2007; Lee 2014). It is not clear, for example, the extent to which the fair value of land employed by a manufacturing firm informs investors’ forecasts of cash flows generated from using the land in combination with other assets to produce goods for sale (Skogstad 1976). As May (1936, 20) writes, “...inasmuch as the value of a successful business is dependent mainly on its earning capacity, it follows that to anyone interested in determining that value [i.e. value-in-use] the greatest service which accounts can render is to throw light on earning capacity – not on the so-called values of assets which are not intended to be sold.” This might explain the finding in a PriceWaterhouseCoopers (2007, 5) survey of investment professionals, which found that those surveyed, “...question the relevance of current value

¹⁷ For example, Easton et al. (2013, 11-5) state, “The revenues (sales) forecast is, arguably, the most crucial and difficult estimate in the forecasting process. It is a crucial estimate because other income statement and balance sheet accounts derive either directly or indirectly, from the revenues forecast.”

measures for a number of assets that are ‘operational’ in nature.” Similarly, the IASB (2013, ¶6.13b) concludes that for in-use assets: “...some users of financial statements may consider information about current market prices to be less relevant than information about margins generated by past transactions [using historical cost accounting].”

The historical relationship between the asset base employed and the operating expenses incurred in the generation of revenues is an important input into the forecasting process (Holthausen and Zmijewski 2014). Fair value measurement complicates investors’ assessment of these relationships because unrealized gains or losses included in asset and income measurement impact the denominator of the asset turnover ratio and the numerator of expense margins, respectively. This difficulty is highlighted in the Asian-Oceania Standard Setters Group Issues Paper (IASB 2012), which argues that in-use (“bearer”) biological assets should be treated as PP&E and measured at historical cost, while in-exchange (“consumable”) biological assets should be measured at fair value. This conclusion was supported by a survey of analysts specializing in plantation valuations, a bearer biological asset. The survey (IASB 2012, ¶32a) found that analysts did not support the use of fair value measurement for bearer biological assets because fair value “...distorts the financial statements’ ability to reflect a ‘true & fair’ view of an agriculture company’s earnings.” Further, the analysts indicated that “... they always remove the biological gains or losses [from bearer biological assets] when looking at earnings and that end-users also do not look at fair value” (IASB 2012, ¶33).

Based on the above, we find little evidence to support a conclusion that in the context of business valuation fair value measurement of in-use assets is decision-useful to investors.

Replacement Cost Measurement Basis for In-Use Assets

Early research addressing the question of decision-useful asset measurement for in-use assets advocates for replacement cost accounting. In particular, Edwards and Bell (1961) and Revsine (1973) develop a theoretical basis for replacement cost accounting arguing that it allows asset measurement to reflect firm-specific price changes (Revsine 1973, 57) through the use of “entry” costs (i.e. the cost to replace the asset). In so doing, replacement cost measurement addresses the charge that fair value

measurement is a poor proxy for value-in-use because fair value is not entity specific (ASC 820-10-35-9, FASB 2011a), while replacement cost is entity specific (Revsine 1973).

The partitioning of income into income from operating activities and income from holding activities provides investors with information regarding gains or losses accruing to the firm as a result of operating decisions versus gains or losses arising from changes in entry prices (Edwards and Bell 1961; Revsine 1973). Revsine (1973) argues that this information is useful to investors in evaluating management's decisions. This partitioning is also important in the context of business valuation if the mapping of holding gains into future cash flows differs from the mapping of operating income into future cash flows.¹⁸ The ICAEW (2010, 28) takes note of the potentially more limited predictive ability of holding gains and losses stating, "The argument is not that holding gains are not profits. It is that they are a different type of profits from those attributable to the firm's business model and that they do not provide a useful figure of income either for judging past performance *or for predicting future performance.*"¹⁹

Empirical evidence on the decision-usefulness of replacement cost measurement is mixed. Several studies of ASC 255 (formerly "SFAS 33") fail to document incremental value relevance of current replacement cost earnings over historical cost (e.g. Beaver et al. 1983; Beaver and Ryan 1985; Bernard and Ruland 1987; Lobo and Song 1989). In contrast, Beaver and Landsman (1983) conclude that replacement cost income is at least as useful as historical cost income. All of these studies draw data from a period of relatively high inflation when replacement cost estimates might be expected to be particularly relevant to investors (Revsine 1973).

Six years after issuance, ASC 255 was superseded, and replacement cost has not subsequently been embraced as a main measurement basis in financial accounting standards promulgated by either the IASB or the FASB. Further, the PriceWaterhouseCoopers (2007, 9) survey of investment professionals concluded, "There is very little appetite in the primary statements for a measurement basis other than

¹⁸ Prakash and Sunder (1979) point out separate reporting of holding gains and losses might not be an issue when the rate of price change is constant.

¹⁹ Emphasis added.

amortized historical cost. However, disclosure is another matter, with 52% seeking information about replacement cost.” This raises questions regarding the market demand for replacement cost asset measurement in the primary financial statements perhaps due to concerns regarding the reliability of such measures. For example, the ICAEW (2010, 28) states, “Because of changes in markets and technologies, current replacement costs can be highly subjective, in which case information about them is likely to be less useful.”

Based on the above we find some, but not overwhelming evidence to support the conclusion that replacement cost measurement is decision-useful to investors in the context of business valuation. This conclusion is more cautious than that found in Milburn (2012), who embraces replacement cost measurement basis for in-use assets.

Historical Cost Measurement Basis for In-Use Assets

Historical cost might not be relevant when making economic decisions with respect to a specific asset (Cooper 2007, 17), but for in-use assets investors seek information that helps them forecast cash flows from assets used in combination. Cooper (2007) argues that for in-use assets historical cost best captures the overall profitability of the business venture.

Historical cost represents the cost incurred to generate value (Penman 2013) and the application of historical cost measurement to in-use assets provides information that helps investors understand the level of investment in in-use assets necessary to support a given level of revenues, as well as the firm’s historical cost structure (Holthausen and Zmijewski 2014). These historical relationships, captured by asset turnover ratios and expense margins, are essential inputs into the process of forecasting future cash flows (Lee 2014).

Understanding the past is an essential first step in forecasting the future (Graham et al. 1962). Lee (2014, 13) argues that the critical role historical cost accounting information plays in the forecasting process “should be self-evident,” and describes fundamental analysis as the “art” of using information, including that provided by historical financial statements, to make better forecasts. The critical role historical cost information plays in helping investors understand the past as a jumping off point for forecasting the future is well-established in the business valuation literature and related educational materials. For example, White

et al. (2003) identify analyzing historical data as the first step in preparing forecasted financial statements, noting the importance to analysts of understanding historical trends. Fridson and Alvarez (2002) describe financial forecasting as an extension of historical patterns and relationships in which historical statements provide the starting point. Similarly, Graham et al. (1962) identify the consideration of past trends as the starting point for forming forecasts. The preceding references are a small sampling of the plethora of business valuation practice materials that highlight the foundational role historical cost information plays in the forecasting process.

Academic research focused on the value-relevance of historical cost measurement of in-use assets is limited in quantity. As mentioned previously, most (e.g. Beaver et al. 1983; Beaver and Ryan 1985; Bernard and Ruland 1987; Lobo and Song 1989), albeit not all (e.g. Beaver and Landsman 1983) of the studies examining the incremental value relevance of replacement cost vis-à-vis historical cost measurement during the ASC 255 regime, conclude that historical cost earnings provide investors with more decision-useful information. More recently, Huffman (2014) examines the value relevance of historical cost versus fair value measurement for in-use (bearer) biological assets and finds in favor of historical cost measurement for in-use biological assets.

Evidence that investors prefer historical cost measurement for in-use assets is also present in the practitioner and standard setting literatures. For example, the PriceWaterhouseCoopers (2007, 9) survey of investment professionals found that 74% were “satisfied with the status quo (that is, historical cost less depreciation and impairment)” for property, plant and equipment. As noted in earlier sections, that survey also found little appetite for fair value or replacement cost as the primary measurement basis for in-use assets. Investors’ apparent satisfaction with the historical cost measurement basis for in-use assets is also noted in the IASB’s (2013) recent revisions to the measurement section of its Conceptual Framework. Specifically, the IASB (2013, ¶6.13b) states that for assets deriving value in-use “...some users find cost-based information about property, plant and equipment that is used in operations to be more relevant than information about its current market price.”

Based on the materials discussed in this section, in the context of business valuation, historical cost measurement is a decision-useful measurement basis for in-use assets. This conclusion is consistent with the manner in which investors use historical cost information in the forecasting process and with the ICAEW (2010, 40) framework paper, which states, “Where the firm’s business model is to transform inputs so as to create new assets or services as outputs, we would expect that historical cost would generally be the most useful basis of measurement.”

BUSINESS MODEL AND MANAGERIAL INTENT

Whether an asset is expected to realize value in-exchange or in-use is generally a function of the business model, but sometimes a change in circumstances or economic conditions can result in a firm holding assets not encompassed by its business model. In such cases managerial intent plays a role in determining the expected use of the asset. The links between decision-useful asset measurement in a business valuation context, business model and managerial intent are explored below.

The Role of the Business Model

The IASB’s (2013, ¶9.25) review of the Conceptual Framework acknowledges that it does not define an entity’s business model but notes the following: the entity’s management is responsible for determining the objective of the business model; an entity’s business model is not a choice but a matter of fact that can be observed by the way the entity is managed; a single entity may have more than one business model for managing different types of assets; and a business model is distinct from managerial intent. The depiction of a business model as an observable feature of a business which is not a matter of choice is consistent with the characterization found in IFRS 9 (IASB 2010, BC4.20), which concludes, “The Board noted that an entity’s business model does not relate to a choice (i.e. it is not a voluntary designation) but rather is a matter of fact that can be observed by the way an entity is managed and information is provided to its management.”

The business model, as described in the preceding paragraph, specifies the manner by which an entity delivers value to its customers and realizes profits under “normal” operating conditions. Accordingly,

it establishes the main avenues through which a firm realizes the value of its assets (ICAEW 2010; EFRAG 2013). This has implications for how assets are used (in-exchange or in-use). Thus, the business model is *fundamental* to asset use which, in the context of business valuation, dictates the asset measurement basis that is decision-useful to investors (see Figure 1).

To illustrate the links between business model, asset type and measurement, consider the following example involving one asset (platinum) and three firms employing that asset in the context of different business models.²⁰ The first firm is a fiberglass manufacturer that uses platinum in the machines that manufacture fiberglass. In this case, platinum is an in-use asset since it is expected to realize value for the firm used in combination with other assets. Fiberglass manufacturers measure platinum at historical cost and account for it as a component of property, plant and equipment. The second firm manufactures catalytic converters and uses platinum as a raw material in the production process. Once again platinum is an in-use asset. Catalytic converter manufacturers measure platinum used in the production process at historical cost. The third firm is a platinum trader, which buys and sells platinum on the open market. In this case, platinum is an in-exchange asset. Platinum traders classify platinum as a trading asset measured at fair value.

The above real-life example demonstrates the connection between business model, asset use, and asset measurement described in this commentary. In the platinum example, asset measurement is not innate to the asset itself (platinum), but is a function of how the asset is employed by the firm to realize value. Further, asset use and the asset measurement basis vary across firms as a function of differences in firms' business models. That said, from a business valuation perspective, linking asset measurement to asset use does not require explicit identification of the business model employed, but would require an understanding of which assets are employed by the firm in-exchange versus in-use.

The Role of Managerial Intent

²⁰ The authors thank Gregory J. Jonas for sharing this anecdote based on his experiences while a Managing Director at Moody's Investor Services.

“Managerial intent” refers to how a manager intends to employ an asset to realize value. Under normal operating conditions, managerial intent is a function of the business model. Thus under normal operating conditions, there is no substantive difference between the business model and managerial intent.

Nevertheless, some situations give rise to assets not encompassed by the business model. These situations can occur when normal operating conditions fail to hold due to new economic circumstances, changing economic conditions, or the existence of transactions or events that fall outside of the business model. Leisenring et al. (2012, 331) make a somewhat similar point stating, “...to summarize, we believe there is no substantive distinction to be made between business-model-based accounting and intent-based accounting *except, possibly, at the level of an individual item or arrangement whose characteristics make it amenable to short-term changes in management’s plans for the item’s use, disposition or settlement.*”²¹

In such cases managerial intent impacts the manner in which the asset is expected to realize value for the firm and consequently, from a business valuation perspective, managerial intent can play a role in the determination of the decision-useful asset measurement basis (see Figure 1). For example, in response to a decline in demand for its products a manager might decide to downsize operations and dispose of certain assets (e.g. production equipment) previously employed as in-use assets. Since the firm is not in the business of selling equipment, the firm’s business model does not direct the use of these excess assets. Instead, it is the manager’s intent to dispose of the asset, which determines how the asset is expected to realize value for the firm.

In this situation, an asset that was an in-use asset becomes an in-exchange asset as a result of the manager’s intent to dispose of it. From a business valuation perspective, prior to the manager’s decision to dispose of the asset amortized historical cost is the decision-useful asset measurement basis, but following the decision to dispose, fair value less expected costs to sell provides investors with decision-useful information.

The Role of Business Model and Managerial Intent in Accounting Standards

²¹ Emphasis added.

It is beyond the scope of this paper to develop standards of evidence and other regulatory parameters pertaining to the use of business model and managerial intent in accounting standards. Indeed, as noted above, although asset use (in-exchange or in-use) is inextricably linked to the business model, determining how an asset is employed for purposes of determining the decision-useful asset measurement basis does not require explicit identification of the business model.

In any event, the concepts of business model and managerial intent are not new to the accounting standard setting literature. For example, business model played a role in the FASB's now defunct Financial Statement Presentation Project, which proposed that entities choose the classification of financing, investing and operating items for financial statement presentation purposes based on managements' view of what constitutes its business. IFRS 9 requires an entity to measure a financial asset at amortized cost only if the entity's *business model* entails holding the asset to collect contractual cash flows. The adoption of the management approach in ASC 280 (formerly "SFAS 131") was in response to investors' expressed preference for segmentation that corresponds to the internal organization of the entity's operating activities, which is a function of the firm's business model (AICPA 1994). The amount and timing of the recognition of restructuring charges, the reclassification of short-term debt as a long-term liability, and the reclassification and re-measurement of productive assets held for sale are examples of where the classification and/or measurement of an asset or liability is a function of managerial intent. Several of these examples are consistent with managerial intent playing a role when a change in circumstances or economic conditions results in items not encompassed by the business model.

INCOME STATEMENT PRESENTATION FROM A BUSINESS VALUATION PERSPECTIVE

When in-exchange assets are valued at fair value less costs to dispose, the balance sheet provides investors with sufficient information regarding in-exchange assets for business valuation purposes. In the case of in-use assets, however, the income statement plays an essential role in providing information useful to investors in estimating the present value of expected future cash flows to be realized from in-use assets.

Given the income statement's key informational role the paper now explores the implications of a business valuation perspective for income statement presentation.

Historical "core," "permanent" or "non-transitory" earnings factor prominently in the forecasting of future cash flows. This issue is discussed extensively in the business valuation literature and business valuation textbooks. For example, White et al. (2003, 702) provide the following instruction, "Thus, it is important, when using an earnings-based valuation model, to normalize earnings for non-recurring items..." Similarly, Comiskey and Mulford (2000) state, "...special charges and credits cloud investment analysis. They are nonrecurring items and should be removed from income in a first step toward analyzing business earnings." Consequently, in order to better forecast future cash flows, investors' desire separate income statement disclosure of the transitory components of earnings.

In addition, historical operating expense margins generally form the basis for projecting expense margins during the finite forecast horizon. This is why investors prefer separate income statement disclosure of items of income or expense that might interfere with the ability of historical operating expense margins to inform investors' beliefs about the future. For example, the impact of a LIFO liquidation buried in cost of goods sold can materially impact the cost of goods sold percentage, thereby rendering the amounts reported on the income statement less useful in projecting the future. In such cases, investors use information provided in the footnotes to adjust reported information.

Investors also generally prefer that gains and losses arising from fair value measurement be separately disclosed on the income statement. Such items can be transitory in nature and disruptive to historical operating expense margins if not separately disclosed. Consistent with this some research suggests that more prevalent measurement of assets at fair value increases one-time charges to earnings that decrease the relevance of income statement information to investors (Dichev and Tang 2008).

CONCLUSION

The objective of this commentary is to connect and integrate key concepts and definitions found in economic, accounting, and business valuation literature to structure an approach to asset measurement

rooted in business valuation theory and practice. Fundamental to this approach is the recognition that assets realize value via two alternative mechanisms – in-exchange or in-use – and that in the context of a business valuation, investors’ information needs and decision-useful asset measurement is linked to asset use. From a business valuation perspective, exit price in a hypothetical market exchange (i.e. fair value) less expected costs to sell provides investors with decision-useful information with respect to in-exchange assets. For in-use assets, however, investors require information useful in forecasting the cash flows expected to be generated by the cash generating unit. Based on a review of the arguments presented in practitioner, academic, and standard setting literatures, we conclude that amortized historical cost generally provides investors with decision-useful information for forecasting purposes. In addition, replacement cost can provide decision-useful information provided holding gains and losses are separately disclosed, but the decision-usefulness of replacement cost information is tempered by cost concerns. As with other asset measurement framework papers, whether the conclusions reached in this paper hold empirically is an important question, which we leave for future research to address.

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Figure 1

