



## Does the Balance Sheet Approach Improve the Usefulness of Accounting Information?\*

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### ABSTRACT

The purpose of this study is to investigate the effects of a change in the accounting model on accounting information for decision making. Especially, this study shows that net income (earnings) does not play an important role in providing useful information for decision making if the accounting model changes from flow-based accounting to stock-based accounting. If the IASB and the FASB adopt stock-based accounting and measure assets and liabilities at fair value, earnings persistence and predictive ability will decrease, and the usefulness of income information will be impaired due to the increasing transitory earnings and the effects of earnings volatility. Stock-based accounting that emphasizes the balance sheet will impair the valuation role of financial reporting because the combined usefulness of accounting information of the book value of net assets and earnings does not improve; the usefulness of stock information (the balance sheet) for decision making does not necessarily improve, and the usefulness of flow information (net income) decreases. This finding indicates that the balance sheet approach does not necessarily improve the usefulness of accounting information.

*JEL Classification:* M40; M41; G32

*Key Words:* Stock-Based Accounting; Flow-Based Accounting; Fair Value;  
Earnings Persistence; Earnings Volatility

\* Acknowledgements: This study is based on the study by Kusano (2012a, 2012b). The author gratefully appreciates the helpful comments and suggestions received from Hisakatsu Sakurai, Kenji Shiba, Kazumi Suzuki, Hiromi Wakabayashi, Takashi Obinata, Kenichi Akiba, and the participants of the 61th Kansai Regional Meeting of Japan Accounting Association and Current Accounting Forum at the University of Tokyo. The author also acknowledges the financial support offered by the Japanese Society for the Promotion of Science's Grant-in-Aid for Young Scientists (B) 2273035.

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*Received August 11, 2012; accepted August 21, 2012*

## 1. Introduction

The purpose of this study is to investigate the effects of a change in the accounting model on accounting information for decision making. Especially, this study shows that net income (earnings) does not play an important role in providing useful information for decision making if the accounting model changes from flow-based accounting to stock-based accounting.

The International Accounting Standards Board (IASB) and the U.S. Financial Accounting Standards Board (FASB) have been promoting the convergence of accounting standards. When we observe the standard setting processes of both these organizations, we find that they both consider fair value as a possible measurement basis in many situations (Barth, 2007, p. 11). In other words, they prioritize fair value measurements (Benston et al., 2006, p. 172). With regard to the movements in the standard setting processes, it is often noted that the IASB and the FASB adopt the balance sheet approach (AAA's FASC, 2007; Penman, 2007; Nissim and Penman, 2008; Dichev, 2008; O'Brien, 2009; AAA RITF, 2009; Demerjian, 2011).

The IASB and the FASB prescribe that the objective of financial reporting is to provide financial information about the reporting entity that is useful to existing and potential investors, lenders, and other creditors in making decisions about providing resources to the entity (IASB, 2010, par. OB2; FASB, 2010, par. OB2). Both standard setters adopt the decision-usefulness approach that treats the objective of financial reporting as providing useful information in making economic decisions and develop accounting standards based on this approach. Although it is noted that the IASB and the FASB adopt the balance sheet approach, it is not certain whether this approach improves the valuation role of financial reporting. Accordingly, this study investigates whether the accounting model that focuses on the balance sheet provides useful accounting information for decision making.

The remainder of the paper is organized as follows. Section 2 discusses two accounting models from the perspective of the equity valuation model, namely flow-based accounting and stock-based accounting, and analyzes the natures of these models. Section 3 investigates whether earnings play an important role in providing information for decision making if the accounting model changes from flow-based accounting to stock-based accounting. Section 4 summarizes the conclusions and the limitations of this research.

## 2. Two Accounting Models: Flows and Stocks

As flows and stocks are the most obvious and frequent dimensions of accounting tensions (AAA's FASC, 2012, p. 126), the views of flows and stocks are often used in analyzing issues in financial reporting. Especially, issues are analyzed by using two accounting models: the income statement approach, which emphasizes the determination of revenues and expenses, and the balance sheet approach, which emphasizes the valuation of assets and liabilities (Penman, 2007; Nissim and Penman, 2008; Dichev, 2008). This section discusses the two accounting models from the views of flows and stocks and analyzes their natures in depth.

### *2.1 The Residual Income Model and the Two Accounting Models*

The residual income model has received considerable academic attention owing to the research by Ohlson (1995) and Feltham and Ohlson (1995). When we assume that the cost of capital is constant, the residual income model is stated as follows:

$$V_t = BV_t + \sum_{i=1}^{\infty} \frac{E_t [NI_t - r \times BV_{t+i-1}]}{(1+r)^{t+i}}$$

A strong point of the residual income model is its ability to estimate equity value by directly using the amounts on the balance sheet and the income statement. Equity value ( $V$ ) is determined by using the book value of net assets ( $BV$ ) on the balance sheet and future income ( $NI$ ) on the income statement plus the cost of capital ( $r$ ). Under the residual income model, we need both net assets and income to estimate equity value. However, it is ultimately possible to determine equity value from either net assets or income (Ohlson and Zhang, 1998; Ohlson, 1999; Penman, 2007; Nissim and Penman, 2008). One way is to use the accounting model that reports equity value from the book value of net assets when all assets and liabilities are recognized on the balance sheet at market price, and when the net amounts of market prices of assets and liabilities are equal to the book value of net assets. The other is to use the accounting model that estimates equity value by capitalizing current earnings by cost of capital when current earnings are expected to persist and indicate permanent earnings.

Under the ideal accounting models from the perspective of stocks and flows, equity value is determined by either the book value of net assets or current earnings. However, in reality, we cannot adopt either ideal accounting model. With regard to the ideal stock-based accounting model, we have to assume perfect and complete markets when the book value of net assets reports the equity value. However, real markets are neither perfect nor complete (Beaver and Demski, 1979; Beaver, 1998, chaps. 3–4; Whittington, 2010). Also, with regard to the ideal flow-based accounting model, firm managers forecast the stream of future cash flows indefinitely and allocate these cash flows to each period, and thus, current earnings indicate permanent earnings. However, even though managers are well informed about their investment projects, it is impossible for them to predict long-term future movements in markets and future directions of investment projects (Tokuga, 2012).

Accordingly, under real conditions, when we adopt the residual income model as a business valuation model, we have to use both net assets and income to estimate equity value (Ohlson and Zhang, 1998). When ideal accounting models based on flows and stocks are placed at either end of the spectrum, real accounting models exist somewhere in between. We can assume different accounting models that focus on either of “the two ‘bottom-line’ numbers, book value of equity (stocks) and earnings (flows) on which investors and analysts focus” (Nissim and Penman, 2008, p. 10). In other words, two different accounting models can be obtained by treating either of the “summary figures like earnings and [the] book value [of net assets]” (Black, 1993, p. 3) as an ultimate bottom line. In the next subsection, this study investigates flow-based accounting, which focuses on the income statement, and stock-based accounting, which focuses on the balance sheet from the perspective of flows and stocks.

## 2.2 Flow-Based Accounting and Stock-Based Accounting

Flow-based accounting uses the income statement as the primary vehicle to provide useful accounting information for decision making. It assumes that investors predict future flows (e.g., future earnings and future cash flows) from current earnings and estimate equity value (O’Brien, 2009). Investors place much value on recurring and highly persistent earnings and less value on non-recurring and transitory earnings (Obinata, 2011, pp. 271–272). Current earnings, on average, are an indicator of future earnings (Penman, 2003, p. 90), and thus, it indicates that highly persistent earnings have a high predictive ability for future flows. Since periodic earnings are expected to be an indicator of long-run or normal trend of earnings, it is

required to eliminate the financial effects of events that are irrelevant to assessing continuing performance and average the financial effects of events that affect performance only over the long term (FASB, 1976, par. 62). Accordingly, under flow-based accounting, the objective of income measurement is to determine net income (earnings), not comprehensive income.

Flow-based accounting stresses “good matching and appropriate matching” (FASB, 1976, par. 50) between expenses and revenues for a period in order to indicate highly persistent earnings. The revenue and expense view (the revenue and expense approach) of that fundamental process is to measure revenues and expenses and time their recognition in order to relate effort (expenses) and accomplishment (revenues) for a period (FASB, 1976, par. 39), and belongs to flow-based accounting. However, if the matching between revenues and expenses is highly exaggerated, this approach may give a manager considerable discretion in allocating revenues and expenses to accounting periods. In fact, in the 1960s and the early 1970s, accounting problems such as arbitrary accounting treatments and abuse of choice of accounting methods with regard to deferred items have occurred and have been intensively criticized. Accordingly, the asset and liability view (the asset and liability approach), which calculates periodic income based on the definitions of assets and liabilities, was developed (Tsumori, 2002, pp. 282–283). If we treat the asset and liability view as the accounting view determining income based on the definitions of assets and liabilities to limit a manager's discretion, the asset and liability view belongs to flow-based accounting.<sup>1</sup>

On the other hand, stock-based accounting uses the balance sheet as the primary vehicle to provide useful accounting information for decision making. Although investors estimate equity value by using information about the company including financial reporting, stock-based accounting is expected to provide useful information for decision making by lowering the proportion of firm value that investors have to estimate (Scott, 2012, chap. 6). In other words, because there is an information asymmetry between the manager and investors, the balance sheet, from which the manager who has an information advantage, recognizes the items that meet the definitions of assets and liabilities and measures them at current value, narrows the gap between the book value of net assets and the market value of equity, thereby providing useful information for decision making (Hitz, 2007). Accordingly, the expansion of on-balance sheet items and the adoption of the fair value measurement are required to show the values of stocks on the balance sheet.

Stock-based accounting emphasizes the timely indication of the values of stocks on the balance sheet. The asset and liability view of that fundamental measurement process measures attributes of assets and liabilities and their changes in a timely manner, and belongs to stock-based accounting. However, we must keep in mind that the asset and liability view is used to specify “when identified assets and liabilities should be recognized and how they should be measured” (SEC, 2003, IIIB). In other words, the asset and liability view under stock-based accounting not only uses the definitions of assets and liabilities as recognition criteria of stocks, but also uses them to indicate the values of stocks on the balance sheet.<sup>2</sup> Consequently, under stock-based accounting, the objective of measurement is to measure assets, liabilities,

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<sup>1</sup> As already noted in previous studies, the asset and liability view has different levels (Storey and Storey, 1998; Tokuga, 2002; Tsujiyama, 2007; Saito, 2010, chap. 2). The difference between the asset and liability view and the revenue and expense view under flow-based accounting is definitional dependency in defining the elements in financial statements (assets and liabilities or revenues and expenses). Both views have the same objective, which is net income determination. The asset and liability view under flow-based accounting functions to complement the revenue and expense view because the asset and liability view is used as a recognition criterion to minimize the arbitrariness of the periodical allocation (Tsujiyama, 2007, pp. 34–35).

<sup>2</sup> The asset and liability view under stock-based accounting is related to “the question of what information is most useful or of how it is measured” (Gellein, 1986, p. 15). Thus, in contrast to the asset and liability view under flow-based accounting, the asset and liability view under stock-based accounting contrasts that under the revenue and expense view because it has significant effects on the measurements of assets and liabilities (Tsujiyama, 2007, p. 35).

and net assets, and thus, comprehensive income is calculated as a change in net assets for a period (excluding transactions with shareholders).

When we focus on the measurement methods, basically, historical cost is connected to flow-based accounting and market value/fair value is connected to stock-based accounting. It is expected that flow-based accounting will provide useful information for decision making through income measurement. Because earnings are assumed to be an indicator of the firm's or manager's usual, normal, or long-run performance or effectiveness (FASB, 1976, par. 62), it demands allocation/matching based on historical cost to produce a stable income for the periods of the investment projects. On the other hand, stock-based accounting is expected to provide investors with useful information through recognition and measurement of assets and liabilities. Thus, it demands measuring assets and liabilities at market value/value-in-use to report the values of stocks on the balance sheet.

### 2.3 Summary

This section discusses the two accounting models from the perspective of flows and stocks based on the business valuation model (the residual income model), and analyzes the natures of flow-based accounting and stock-based accounting. Flow-based accounting emphasizes income determination to provide useful information for decision making. Highly persistent earnings are an indicator of future earnings and have a high predictive ability for future earnings and cash flows; flow-based accounting demands historical cost as a measurement basis of assets and liabilities in order to determine current net income. On the other hand, stock-based accounting focuses on the book value of net assets in order to provide investors with useful information. A manager who has an information advantage reports the values of stocks on the balance sheet and narrows the gap between the book value of net assets and the market value of equity; stock-based accounting demands market value/value-in-use as a measurement basis of assets and liabilities. Accordingly, flow-based accounting and stock-based accounting emphasize different bottom lines (summary figures) to provide useful information for decision making, thereby demanding different measurement bases.

The current accounting model adopts the mixed attribute approach, which uses several measurement bases.<sup>3</sup> As an example of the IASB's and the FASB's accounting for financial instruments, the movements in the current accounting model (mixed attribute accounting) are described as follows. The FASB issued Statement of Financial Accounting Standards (SFAS) 115, *Accounting for Certain Investments in Debt and Equity Securities*, and SFAS 133, *Accounting for Derivative Instruments and Hedging Activities*. Similarly, the International Accounting Standards Committee (IASC), which was the predecessor of the IASB, issued International Accounting Standards (IAS) 39, *Financial Instruments: Recognition and Measurement*. The FASB and the IASC required firms to measure securities and derivative instruments at fair value and expanded the use of fair value measurement of financial instruments. Because both standard setters separated accounting treatments based on managers' intentions for holding financial instruments and required accounting treatments to reflect the results of investments (Kusano, 2005, chap. 3), it is possible to interpret them as aiming for flow-based accounting.

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<sup>3</sup> Although flow-based accounting demands historical cost and stock-based accounting demands market value/value-in-use, nowadays, several measurement bases are used. In this case, the relationship between the accounting model and the measurement bases of assets and liabilities is explained as follows. Flow-based accounting uses several measurement bases to determine current net income appropriately from the perspective of investment objectives (expectations). On the other hand, although stock-based accounting demands a single measurement basis (i.e., market price/value-in-use) to measure assets and liabilities appropriately, it uses other measurement bases (e.g., historical cost) as second-best measurement bases to ensure reliability and verifiability.

However, the IASB issued amendments to IAS 39, *The Fair Value Option*, and permitted firms to use the fair value option. The FASB also issued SFAS 159, *The Fair Value Option for Financial Assets and Financial Liabilities*, to promote convergence with the IASB. The IASB and the FASB regarded the fair value option as an interim step toward full fair value accounting for financial instruments (Barth and Schipper, 2008, p. 184). In fact, both standard setters established long-term objectives, one of which was to adopt full fair value accounting for financial instruments (IASB, 2005b). Since the IASB and the FASB moved toward full fair value accounting for financial instruments, it is possible to interpret the movement as aiming for stock-based accounting.<sup>4</sup>

Accordingly, with regard to accounting for financial instruments, while the IASB (the IASC) and the FASB initially aimed for flow-based accounting, they have been changing the accounting model from flow-based accounting to stock-based accounting after adopting the fair value option.<sup>5</sup>

### 3. Stock-Based Accounting and Accounting Information

Nowadays, the IASB and the FASB, which have promoted the convergence of accounting standards, tend to develop (propose) accounting standards focusing on the recognition and measurement of assets and liabilities. In particular, although both standard setters had tried to revise the conceptual framework and accounting standards to achieve a single measurement basis (fair value), they have considered the conceptual framework and accounting standards (proposal) based on the mixed measurement approach since the occurrence of the financial crisis in 2008 (Kusano, 2011). However, the IASB and the FASB still emphasize fair value measurement. Accordingly, this section assumes a change in the accounting model from flow-based accounting to stock-based accounting and investigates the effects of stock-based accounting on accounting information.

#### 3.1 Stock-Based Accounting and Fair Value

The IASB and the FASB move toward the balance sheet approach, which focuses on measuring assets and liabilities at fair value. The FASB issued SFAS 157, *Fair Value Measurements*, and the IASB issued International Financial Reporting Standards (IFRS) 13, *Fair Value Measurement*, to define fair value and establish a framework for measuring fair value (SFAS 157, par. 1; IFRS 13, par. 1). These accounting standards define fair value as “the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date”

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<sup>4</sup> By adopting the fair value option, it is possible to measure financial liabilities other than derivative instruments at fair value. When we measure financial instruments at fair value, gains are recognized in the income statement, as the reporting entity’s credit quality deteriorates. Although the gains due to the deterioration of the reporting entity’s credit quality represent “the transfer of wealth from creditors to equityholders” (Barth and Landsman, 1995, p. 104), many firms cannot realize these gains since they do not have enough money to pay back their liability because their funds are restricted to operating businesses or they are unable to negotiate with creditors to change their credit amount (ASB, 1996, par. 3.3.25; Upton, 2009, pars. 58–61). In other words, even if a firm reports gains due to a deterioration of credit quality, we cannot regard these gains as the results of investments because liabilities are increased and losses are recognized for a period of maturity, in many cases. This means that the fair value option aims for stock-based accounting.

<sup>5</sup> In March 2008, the IASB and the FASB issued the discussion paper, *Reducing Complexity in Reporting Financial Instruments*, and described that fair value seems to be the only measurement basis that is appropriate for all types of financial instruments (IASB, 2008, pars. 3.7–3.39). Although both standard setters had considered moving toward full fair value accounting (stock-based accounting) for financial instruments, they have conducted a financial instruments project based on the mixed measurement approach. It is necessary to deliberately consider that this project is explained from the perspective of flow-based accounting or stock-based accounting.



(SFAS 157, par. 5; IFRS 13, par. 9). The IASB and the FASB define fair value as an exit price and emphasize that fair value is a market-based measurement, not an entity-specific measurement (SFAS 157, pars. 29D and C32; IFRS 13, pars. 2 and B42).

Because fair value is determined by “the assumptions that market participants would use in pricing the asset or liability” (SFAS 157, par. 11; IFRS 13, par. 22), it reflects “market risk preferences and market expectations with respect to the amounts, timing, and uncertainty of future cash flows” (IASB and AcSB, 2005, par. 99). On the other hand, since value-in-use attempts to capture the values of assets and liabilities in the context of a particular reporting entity (FASB, 2000, par. 24(b)), it depends on the reporting entity’s expectation and assessment of future cash flows (ASB, 1997, par. 3.1).

Under perfect and complete markets, where market prices reflect all value-relevant information (Barth and Landsman, 1995, p. 99), market price (fair value) equals value-in-use. Accordingly, if we recognize all assets and liabilities on the balance sheet and measure them at market price (fair value), the book value of net assets reports the market value of equity. That is, under perfect and complete markets, investors do not need to estimate equity value because the balance sheet reports the equity value through the ideal stock-based accounting.

However, even when a market price exists, the potential for private information can result in a market price that does not reflect all value-relevant information since we usually assume imperfect and incomplete markets (Barth and Landsman, 1995, p. 101). In other words, because only value-in-use always reflects differential management skill based on private information, there is a difference between market price (fair value) and value-in-use (Barth and Landsman, 1995, p. 101). The difference reflects “the intangible value of management’s skill in selective investments” (Barth and Landsman, 1995, p. 100), that is, the value of self-developed goodwill.<sup>6</sup>

Even under imperfect and incomplete markets, where we adopt stock-based accounting and measure all assets and liabilities at fair value, investors cannot estimate equity value only by using the book value of net assets because fair value does not reflect self-developed goodwill. Nevertheless, stock-based accounting is aimed for because when we adopt the residual income model as the business valuation model, we expect it to provide useful information for decision making by putting more weight on the first term (the book value of net assets) and less weight on the second term (the present value of residual income) of the residual income model (Hitz, 2007). *Ceteris paribus*, the measurement bases of assets and liabilities do not affect equity value. However, if a firm can prepare more accurate estimates of the current values of assets and liabilities and these estimates are reasonably reliable, it is expected that the financial statements improve the decision usefulness since the book value of net assets shows a greater proportion of the firm value (Scott, 2012, pp. 212–213).<sup>7</sup>

Except in the ideal stock-based accounting, investors have to estimate part of the goodwill in

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<sup>6</sup> When we have to use the mark-to-model to estimate fair value, it is possible to reflect entity-specific components into the measure; it is difficult to distinguish between fair value and value-in-use. In this case, the concept of fair value is ambiguous (Benston, 2008; Milburn, 2008), and thus, it is possible to include self-developed goodwill into the measure of fair value. This study conceptually makes a distinction between fair value (exit price) and value-in-use.

<sup>7</sup> However, Hann et al. (2007) compare the value relevance between the smoothing (SFAS 87) model and the fair value model of pension accounting and report that the fair value model significantly deteriorates the value relevance of financial statements compared with the smoothing model. In particular, because the fair value model does not improve the value relevance of the stock information (balance sheet) and impairs the value relevance of the flow information (net income), the value relevance of the combined stock and flow information is impaired (Hann et al., 2007, Table 3). Similarly, Werner (2011) compares the value relevance between the SFAS 87 model and the fair value model and does not find any statistically significant difference between the two models (Table II).

estimating equity value. Only when we do not treat the book value of net assets as a proxy, investors need to forecast future flows (e.g., future earnings and future cash flows) based on the current information and estimate the values of stocks. Even if stock-based accounting is adopted, it would be difficult for investors to estimate equity value only by using stock information on the balance sheet in many situations; investors have to use both stock information and flow information to estimate equity value.<sup>8</sup>

### *3.2 Stock-Based Accounting and Accounting Information*

Under the current definition of fair value (exit price), this subsection examines the effects of stock-based accounting on income information if we assume a change in the accounting model from flow-based accounting to stock-based accounting.

When fair value is emphasized as the measurement basis of assets and liabilities, the proportion of transitory earnings in current income is larger, and thus, it is possible to decrease earnings persistence and predictive ability for future earnings and future cash flows. Under active markets, where we use the mark-to-market to measure fair value, it is assumed that changes in market price follow a “random walk.” Accordingly, the fact that unrealized gains or losses are recognized in the current period does not give an indication of whether gains or losses will be recognized next period (AAA’s FASC, 1997, p. 124). For example, since past changes in the value of investment securities have no implications for future changes, and thus are unlikely to be related to future earnings or cash flows of investment securities and other business activities, changes in market prices are completely transitory (Skinner, 1999, p. 107). In other words, gains and losses in fair value are transitory in nature, and thus are unlike recurring and highly persistent operating earnings (Ball, 2006, p. 13).<sup>9</sup>

In this manner, transitory earnings have no relations with forecasts of future earnings of its items and other items, and thus, with estimation of equity value (Ohlson, 1999). Even if we measure assets and liabilities at fair value and the proportion of transitory earnings in the current income is larger, under the situation where transitory earnings are separated from highly persistent earnings and investors can distinguish them from transitory earnings, the usefulness of income information will not decrease. This is because the earnings components such as operating earnings that are sufficiently persistent and predictable are aggregated with transitory earnings that are less persistent and predictable, and the extent of aggregation is not known by investors, thereby resulting in an operating earnings amount with less predictive ability (AAA’s FASC, 2000, p. 369); otherwise it is expected not to decrease the usefulness of income information.<sup>10</sup>

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<sup>8</sup> Using the book value of net assets as a surrogate of equity value and estimating equity value only by using stock information are possible under very limited situations where the value of goodwill is zero or negligible, or the relation between the book value of net assets and equity value is stable (Yoneyama, 2008, chap. 5; Saito, 2010, chap. 2).

<sup>9</sup> For example, Jones and Smith (2011) investigate the persistence and predictive ability of net income before special items, special items, and other comprehensive income by using a panel data on companies between 1986 and 2005. They show that net income before special items exhibits a positive persistence and special items are transitory, while other comprehensive income exhibits negative persistence (Jones and Smith, 2011, Table 5). Also, special items have a predictive ability for future net income before special items and future operating cash flows, while other comprehensive income has a predictive ability for future net income before special items and future operating cash flows in some periods (Jones and Smith, 2011, Table 6). Their additional test, which separates items of other comprehensive income, shows that gains or losses of available-for-sale securities are transitory and have no cumulative predictive ability for future operating cash flows (Jones and Smith, 2011, pp. 2066–2067).

<sup>10</sup> Hann et al. (2007) do not find a statistically significant difference between the smoothing model and the fair value model with regard to the value relevance of flow information when gains or losses related to pension are disaggregated into highly persistent earnings and transitory earnings (Table 4).



However, the usefulness of income information will decrease if stock-based accounting moves toward the level of daily transactions such as revenue recognition. For example, if the IASB and the FASB adopt the fair value model (the current exit price approach) in revenue recognition, revenues are recognized and measured through the fair value measurement of performance obligation (Schipper et al., 2009). In this case, it is difficult to distinguish between highly persistent earnings components and transitory earnings components. Thus, since both earnings are aggregated, and the extent of aggregation is not known by investors, the usefulness of income information will decrease. Accordingly, it is expected that stock-based accounting affects the persistence and predictive ability of earnings through the fair value measurement of assets and liabilities.

Also, earnings persistence and predictive ability are affected by earnings volatility that is due to measurement errors. When market prices of assets and liabilities do not exist and a manager has to use the mark-to-model to estimate fair value, measurement errors are included in stock measures.<sup>11</sup> In addition, it is possible to increase the measurement errors of flow measures (Peasnell, 2006, pp. 7–8).

Measurement errors of assets and liabilities are divided between intrinsic measurement errors and management-induced errors (Song et al., 2010, p. 1379). Intrinsic measurement errors are measurement errors caused by uncertainties regarding measurement objects and measurement systems. When we measure the objects that have a larger uncertainty and a larger variable of measurement, errors of measurement objects occur (Tokuga, 2008). Also, model errors due to imperfect pricing models and imperfect estimates of model parameters cause errors in the measurement system (Ball, 2006). Intrinsic measurement errors occur due to uncertainties about measurement objects and measurement systems even if a manager's (intended or unintended) bias does not exist. It is expected that intrinsic measurement errors increase measurement errors of flow measures, thereby increasing earnings volatility.

On the other hand, management-induced errors are measurement errors caused by a measurer's (a firm manager) intended or unintended bias. Because a firm manager can intentionally influence both the choice of models and the parameter estimates when she/he uses the mark-to-model to estimate fair value (Ball, 2006, p. 13), measurement errors emerge. Also, even if a manager does not intend to bias the fair value measurement, assets and liabilities can be overestimated or underestimated due to the effects of business cycles. Because risk is underestimated in booms and overestimated in recessions (Boyer, 2007, p. 783), measurement errors are included in fair value measures. It is expected that intrinsic measurement errors affect measurement errors of flow measures, thereby affecting earnings volatility.

Accordingly, accounting measurement consists of three factors, namely a measurement object, a measurement system, and a measure (Ijiri and Jaedicke, 1966, p. 476), and measurement errors are included in stock measures through these three factors when a manager uses the mark-to-model to estimate fair value (Tokuga, 2008). Fair value measurement is often insisted by the claim that earnings volatility should be revealed rather than concealed by accounting practices. However, this claim misses the fact that spurious signals are sent not only by reporting false non-volatility where volatility exists, but also by reporting false earnings volatility where none exists when we use the mark-to-model to estimate fair value (Miller and Bahnson, 2010, p. 433). Through these "estimation

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<sup>11</sup> When we use the mark-to-market to measure fair value under the situation where market liquidity decreases, measurement errors are included in stock measures because market price deviates from fundamental value. Measurement errors of fair value occur not only when we use the mark-to-model but also when we use the mark-to-market.

error volatility” (Barth, 2004, pp. 325–326), earnings volatility becomes a disadvantage to investors whenever it reflects estimation noise or managerial manipulation (Ball, 2006, p. 13). This is because it is difficult for investors to grasp the extent of measurement errors in many situations. Therefore, stock-based accounting affects earnings persistence and predictive ability due to the effects of earnings volatility, thereby decreasing the usefulness of income information.

### *3.3 Summary*

This section explained the IASB’s and the FASB’s definitions of fair value and investigated how a change in the accounting model from flow-based accounting to stock-based accounting affects accounting information (income information). Stock-based accounting reduces the weight of the proportion of the investors’ estimation in equity value and is expected to provide useful information for decision making. Because self-generated goodwill is not included in stock measures even if we measure assets and liabilities at fair value due to the definition of fair value (exit price), investors have to estimate a portion of the goodwill by using flow information. When fair value measurement is expanded, earnings persistence and predictive ability will decrease and the usefulness of income information will be impaired due to the increasing transitory earnings and the effects of earnings volatility. When the usefulness of income information decreases, investors may use other accounting information as a substitute for income information to estimate equity value. Accordingly, if the accounting model changes from flow-based accounting to stock-based accounting, income information will not play the important role that has long been expected of it.

This study shows that stock-based accounting, which focuses on the balance sheet, will not provide useful information for decision making.<sup>12</sup> In particular, under imperfect and incomplete markets, self-generated goodwill is not included in fair value measure because fair value is a market-based measure. Fair value measurement provides useful information for decision making with regard only to items that have active markets and if goodwill is negligible; otherwise it is not expected to provide investors with useful information. Under this case, even if we measure assets and liabilities at fair value, it is possible to impair the valuation role of financial reporting because the combined usefulness of accounting information of the book value of net assets and earnings does not improve; the usefulness of stock information for decision making does not necessarily improve, and the usefulness of income information decreases.

## **4. Concluding Remarks**

This study investigated how a change in the accounting model from flow-based accounting to stock-based accounting affects accounting information from the perspective of the valuation role of financial reporting. First, it described the two accounting models from the perspective of flows and stocks and then analyzed flow-based accounting and stock-based accounting. Next, it analyzed the IASB’s and the FASB’s definitions of fair value and showed that a change in the accounting model from flow-based accounting to stock-based accounting will impair the usefulness of income information. This study indicates that the balance sheet approach does not necessarily improve the usefulness of accounting information.

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<sup>12</sup> Empirical research regarding recent fair value information is comprehensively surveyed by prior studies such as those by Shuto (2011), Obinata (2012a, 2012b), and Tokuga (2012).

Although this study examined the effects of stock-based accounting on accounting information based on the current definition of fair value (exit price), the results of this study will still hold even if we performed the analysis from the perspective of stock-based accounting based on value-in-use. Because the objective of value-in-use is to reflect the reporting entity manager's best estimates of future cash flows (IASB and AcSB, 2005, par. 87), self-generated goodwill is included in value-in-use. Under the residual income model of equity valuation, when we plug in the measures of value-in-use in the first term of the residual income model, we may obtain useful information for decision making. However, under imperfect and incomplete markets, we cannot directly use stock measures based on value-in-use. This is because value-in-use measures include intrinsic measurement errors and management-induced errors. Thus, investors have to estimate the values of stocks by using flow information again. If we measure assets and liabilities at value-in-use, as is the case with measuring them at fair value, earnings persistence and predictive ability will decrease, as will the usefulness of income information, because of the increasing transitory earnings and the effects of earnings volatility. Accordingly, even if we assume stock-based accounting based on value-in-use, it is possible to impair the valuation role of financial reporting because the usefulness of stock information for decision making does not improve due to a manager's discretion, and the usefulness of income information decreases.

However, despite the useful insights it obtained, this study has several limitations. First, this study investigated the effects of a change in the accounting model from flow-based accounting to stock-based accounting on flow information and did not examine the effects on cost of capital. Future flows and cost of capital are very important inputs for estimating equity value. A change in the accounting model will affect equity value through cost of capital.<sup>13</sup> Second, this study investigated the effects of a change in the accounting model on accounting information from the perspective of the valuation role of financial reporting and did not investigate them from the point of view of the contracting role of financial reporting. Because financial reporting is expected to play the contracting role as well as the valuation role (Watts and Zimmerman, 1986; Suda, 2000), a change in the accounting model affects the contracting role of financial reporting.<sup>14</sup> These examinations clarify a comprehensive relationship between a change in the accounting model and accounting information.

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<sup>13</sup> Nowadays, it is noted that while the accounting model or the economic environment changes, the corresponding relation between revenues and expenses decline and earnings volatility increases (Dichev and Tang, 2008; Donelson et al., 2011). Based on the results of previous studies that showed information uncertainty affects cost of capital (Easley and O'Hara, 2004; Lambert et al., 2007), if earnings volatility gives rise to information uncertainty, it is possible that a change in the accounting model affects cost of capital through earnings volatility.

<sup>14</sup> For example, Demerjian (2011) reports that while standard setters move toward stock-based accounting, the use of balance sheet covenants declines and the use of income statement covenants does not change by using the private debt contracts issued between 1996 and 2007. This indicates that a change in the accounting model affects the contracting role of financial reporting.

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