

**Fair Value Accounting and Procyclicality:  
Accounting for Securitization\***

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**First Version: January 5, 2011**

**Current Version: January 30, 2012**

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\* Acknowledgements: The author gratefully appreciates the helpful comments and suggestions received from the seminar participants at Kobe University, Université Paris-Dauphine, Nagoya City University, National Taiwan University, University of Tokyo, and Kyushu University. He also appreciates the participants of 22nd Asian-Pacific Conference on International Accounting Issues at Gold Coast, 2011 CAAA (Canadian Academic Accounting Association) Annual Conference at Toronto, and 2011 AAA (American Accounting Association) Annual Meeting at Denver. He gratefully acknowledges the financial support from the Zengin Foundation for Studies on Economics and Finance.

## Fair Value Accounting and Procyclicality: Accounting for Securitization

### Abstract

The purpose of this study is to examine whether fair value accounting promotes procyclicality by focusing on securitization transactions before the recent financial crisis. The financial crisis has led to heated debates on the pros and cons of fair value accounting from the perspectives of illiquidity and procyclicality. Previous studies investigated the relationship between fair value accounting and procyclicality and found mixed evidence of this relationship during the financial crisis (economic recessions). However, few studies examined this relationship before the financial crisis (economic booms).

This study investigates and demonstrates the relationship between securitization accounting and procyclicality using a parsimonious model. The findings are as follows. Sale accounting increases the capital ratio compared with that before a securitization transaction. Banks' executives have incentives to increase both assets and debt within the limits of their target capital ratio (leverage ratio) for executive compensation and market reputation; assets (lending) will be increased. When banks conduct securitization transactions and adopt sale accounting to enhance short-term profits, the capital ratio increases under the certain condition. Thus, banks will increase assets (lending) within the limit of their target capital ratio (leverage ratio). As banks increase and expand their lending during economic booms, the economic booms are accelerated. It is expected that both sale accounting and fair value accounting promote procyclicality during economic booms.

This study makes two contributions to the accounting literature and accounting standards setting. First, it proposes a new perspective on the relationship between fair value accounting and procyclicality. Second, this study suggests that accounting standard setters reconsider the movement in accounting for securitization.

**Keywords:** Fair Value Accounting, Procyclicality, Securitization Transactions, Sale Accounting

## 1. Introduction

The purpose of this study is to examine the relationship between fair value accounting and procyclicality. Especially, this study focuses on securitization transactions to investigate this relationship before the recent financial crisis.

The financial crisis arising from securitization of subprime loans has occurred during 2007-2008 (e.g., Ryan, 2008b; Brunnermeier, 2009; Acharya and Richardson eds., 2009; Allen et al., 2009). The recent financial crisis has led to heated debates on the pros and cons of fair value accounting (Laux and Leuz, 2009; Magnan, 2009). There are two opposing views on the relationship between fair value accounting and the financial crisis. One is that fair value accounting played a substantial role in the financial crisis. It is criticized as having triggered a liquidity death spiral and is blamed for the crisis (American Bankers Association, 2008; Wallison, 2008). The other is that fair value accounting did not play a substantial role in the financial crisis (Ryan, 2008a; SEC, 2008; Laux and Leuz, 2010; Barth and Landsman, 2010). Regardless of the accounting system, fair value (market price) is only linked to capital regulations and private contracts (e.g., collateral and margin requirements, haircuts), and therefore, fair value accounting does not cause the financial crisis (Ball, 2008; Véron, 2008).

Recently, studies of the relationship between fair value accounting and procyclicality have been conducted. Analytical research demonstrates that *pure* fair value accounting, namely measuring all assets and liabilities on the balance sheet at fair value and recognizing changes in fair value as gains and losses in the income statement, contributes to procyclicality (Cifuentes et al., 2005; Allen and Carletti, 2008; Plantin et al., 2008a; Novoa et al., 2009; Heaton et al., 2010; Downing, 2011). However, current accounting standards measure some assets at historical cost and other assets at fair value. Although analytical models show that *pure* fair value accounting contributes to procyclicality, it is not clear whether there exists a relationship between fair value accounting and procyclicality. Focusing on the impairment of asset-backed securities during the financial crisis, empirical studies investigate the relationship between fair

value accounting and procyclicality and find mixed evidence of this relationship (Shaffer, 2010; Bhat et al., 2011; Badertscher et al., 2012).

The causes of the financial crisis occurred before the crisis. However, few studies examined the relationship between fair value accounting and the financial crisis before the financial crisis.<sup>1</sup> To clarify the effects of fair value accounting on the financial crisis, it is necessary to investigate this relationship not only during the financial crisis but also before the crisis. We cannot find a comprehensive relationship between fair value accounting and the financial crisis if we focus on the investigation during the financial crisis.

Currently, banks do not hold loans until maturity and adopt an originate-to-distribute model that transfers loans for securitization. Banks use two accounting treatments for securitization transactions: the sale accounting approach and the secured borrowing accounting approach. Almost all banks use sale accounting for securitization transactions and report gains on sales (Dechow et al., 2010, p. 5; Barth and Landsman, 2010, p. 409). Fair value measurements of retained interests and recourse obligations indirectly affect the amount of gains on sales (Barth and Taylor, 2010). Furthermore, in some cases, gains on sales are offset by losses after securitization. Gains on sales as well as unrealized income under fair value accounting are associated with significant uncertainty. Because sale accounting of securitization transactions is expected to have the same income effects as fair value accounting (Takatera, 2004), sale accounting functions as a substitute for fair value accounting. Thus, it is possible to analyze the relationship between fair value accounting and procyclicality by focusing on accounting for securitization. This study investigates and demonstrates this relationship before the financial crisis (during economic booms).

This study makes two contributions to the accounting literature and accounting standards setting. First, it proposes a new perspective on the relationship between fair

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<sup>1</sup> Takatera and Kusano (2009) and Bryan et al. (2010) are exceptions; they investigate whether fair value accounting promote procyclicality before the financial crisis.

value accounting and procyclicality. As described above, previous studies examined this relationship by focusing on the impairment of asset-backed securities during the financial crisis (economic recessions). On the other hand, this study focuses on the pre-financial crisis (economic booms) in which the cause of a financial crisis was present. This study is expected to contribute to finding a comprehensive relationship between fair value accounting and the financial crisis.

Second, this study suggests that accounting standard setters reconsider the movement in accounting for securitization. The U.S. accounting standards adopted the financial component approach for transfer of financial assets (SFAS140; SFAS166). This approach assumes that financial assets are decomposed into components and that the measurement of each component is reliable. However, in securitization transactions, where the underlying assets are subprime mortgages, this assumption is not always satisfied. This suggests that it is difficult to apply the financial component approach to all securitized transactions.

The remainder of the paper proceeds as follows. Section 2 reviews the concept of procyclicality and considers the relationship between fair value accounting and procyclicality. Section 3 reviews previous studies that examined this relationship by focusing on the impairment of asset-backed securities during the financial crisis (economic recessions). Section 4 investigates whether fair value accounting promotes procyclicality from the perspective of accounting for securitization during the pre-financial crisis (economic booms). Section 5 provides the summary and concluding remarks.

## **2. Procyclicality**

The relationship between fair value accounting and procyclicality has been discussed for a long time. Full fair value accounting for financial instruments has been proposed for more than ten years (IASB and CICA, 1997; FASB, 1999; JWGS, 1999; JWGS, 2000), but has faced opposition. In particular, the banking regulatory and supervisory bodies

(central bank) have strongly opposed this proposal from the viewpoint of financial stability (procyclicality) (BIS, 2001; ECB, 2001; ECB, 2004; Enria et al., 2004; ECB, 2006). This section reviews the concept of procyclicality and considers the relationship between fair value accounting and procyclicality.

## **2.1 Concept of Procyclicality**

The development of financial systems has reinforced the momentum of underlying business cycles, and in some cases, has led to extreme swings in business activities (Borio et al., 2001, p. 1). These experiences show that the dynamic interactions (positive feedback mechanisms) between the financial and real sectors of the economy amplify business fluctuations and possibly cause or exacerbate financial instability (BIS, 2008, p. 1; FSF, 2009, p. 8).

The concept of these feedback mechanisms, which dates back at least to Fisher (1933), is known as the “Financial Accelerator” hypothesis (Stein, 2003, pp. 133-134; Panetta et al., 2009, p. 12). Decreases in firms’ net assets and collateral assets thorough negative shocks in the economy increase the probability of their defaults; firms decrease their borrowing amounts, which reduces their net assets and collateral assets. Such processes worsen business recessions. On the other hand, inverse relationships are observed during economic booms (Bernanke and Gertler, 1989; Bernanke et al., 1996; Kiyotaki and Moore, 1997; Bernanke et al., 1999).

It is possible to explain the dynamic interactions between financial and real sectors from the perspective of supply-side credit as well as demand-side credit (Shin, 2010, p. 131). When banks report losses and decrease net assets, they must restrict further lending and/or sell assets that they hold to control capital ratios (leverage ratios); such retrenchment weakens economic activities. In addition, because banks are extremely careful in assessing the risk of default when determining their interest in firms after a major financial crisis and the related bankruptcies of firms, credit risk becomes overvalued during economic recessions. Accordingly, banks restrict lending and firms

make borrowing difficult, and these reductions in credit worsen business activities.

On the other hand, when banks report gains and increase net assets, they must increase and expand lending to control capital ratios (leverage ratios); it is possible for firms to increase production capacity through debt financing. In addition, during economic booms, banks' risk appetite increases and external financing constraints are eased, which facilitates risk taking. Consequently, banks are likely to underestimate the credit risks of borrowers, and these optimistic risk assessments prompt further growth in credit.

Therefore, as banks' lending activities are by nature procyclical, the procyclicality of banks' credit is already observed under historical cost accounting (Boyer, 2007, p. 791). However, compared to historical cost accounting, fair value accounting is expected to increase procyclicality by making valuations more sensitive to economic cycles (BIS, 2008, p. 3). In the following subsection, this study considers and discusses the relationship between fair value accounting and procyclicality to determine the reason why fair value accounting promotes procyclicality compared to historical cost accounting.

## 2.2 Fair Value Accounting and Procyclicality

This study examines the relationship between fair value accounting and procyclicality using a parsimonious model.

Denote the value of assets by  $A$  and that of debt by  $D$ ; then,  $A - D$  is the value of equities ( $A > D > 0$ ). Many banks use leverage to expand their investment in and trading of financial assets and to increase their return on equity (ROE). Because leverage magnifies gains and losses relative to equity, a higher leverage ratio increases banks' risk.

When we use the leverage ratio  $L$ , which is  $\frac{A}{A - D}$ , as a measure of risk, we compute

$\frac{\partial L}{\partial A}$  by treating  $D$  as a constant:

$$\frac{\partial L}{\partial A} = \frac{-D}{(A - D)^2} < 0.$$

If  $A$  increases and  $D$  is held constant,  $L$  will decrease. Therefore, leverage is inversely related to the value of assets. Adrian and Shin (2010) show that for U.S. commercial banks, the relationship between changes in assets and changes in leverage ratio tends to be fixed, and there is a strong positive relationship between changes in assets and changes in leverage ratio for U.S. investment banks.<sup>2</sup> This implies that U.S. commercial banks and investment banks raise funds using debt and purchase assets to manage their leverage or capital ratio for changes in assets.

Then, this study investigates whether fair value measurement of assets have an effect on procyclicality compared to historical cost measurement.<sup>3</sup> In the case of historical cost measurements, the capital ratio is written as:

$$CR_H = \frac{A - D}{\sum r_i a_i},$$

where  $CR_H$  is the capital ratio,  $A = \sum a_i$  is value of assets,  $D$  is value of debt, and  $r_i$  is the risk weight for each asset  $a_i$ .<sup>4</sup> First, this study considers that banks measure assets at fair value during economic booms. Suppose that the price of the assets increases by  $\alpha A$  ( $\alpha > 0$ ) and the value of the assets ( $A_{F1}$ ) is  $(1 + \alpha)A$ . In the case of fair value measurement during economic booms, the capital ratio is written as:

$$CR_{F1} = \frac{A_{F1} - D}{(1 + \beta)\sum r_i a_i} = \frac{(1 + \alpha)A - D}{(1 + \beta)\sum r_i a_i},$$

where  $CR_{F1}$  is the capital ratio.<sup>5</sup> Comparing  $CR_{F1}$  to  $CR_H$ ,  $CR_{F1}$  is greater than

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<sup>2</sup> GAO (2009) shows that the leverage ratio for the five largest U.S. investment banks increased for changes in assets, and that the leverage ratio for the five largest U.S. commercial banks was relatively flat for changes in assets between 2003 and 2007.

<sup>3</sup> This study does not investigate the effect of the fair value measurement of liabilities on procyclicality.

<sup>4</sup> To clarify the argument, this study only considers credit risks in calculating the capital ratio.

<sup>5</sup> In many cases, as the risk weight meets  $0 \leq r_i \leq 1$ , this study assumes the following relation:  $0 < \beta \leq \alpha$ .



$CR_H$  through the following relation:

$$CR_{F1} = \frac{A - \left(\frac{1}{1+\alpha}\right)D}{\left(\frac{1+\beta}{1+\alpha}\right)\sum r_i a_i} > \frac{A-D}{\sum r_i a_i} = CR_H.$$

Banks are limited in their leverage holdings by regulations. When the fair value measurement of assets increases the capital ratio, banks can afford to hold leverage. Because executive compensation is linked to banks' performance and stock price (e.g., Clinch and Magliolo, 1993; Becher et al., 2005; Livne et al., 2011), bank executives use leverage to invest in and trade financial assets, expecting to earn income and increase their stock price. They increase both assets and debt within the limits of the target capital ratio (leverage ratio) to increase their compensation.<sup>6</sup>

Suppose that banks maintain the same capital ratio that is measured using historical costs. Banks must then take on additional debt of  $B$  to purchase assets valued at  $B$ . Denoting the adjusted capital ratio by  $CR_{F1}^*$ , the following equality meets:

$$CR_{F1}^* = \frac{(1+\alpha)A + B - (D+B)}{(1+\beta)\sum r_i a_i + r_j B} = \frac{A-D}{\sum r_i a_i} = CR_H,$$

where  $r_j$  is the risk weight of the purchased asset. Therefore, the increased amount of assets and debt is written as:

$$B = \frac{(\alpha - \beta)A + \beta D}{r_j CR_H}.$$

In this manner, if banks measure assets at fair value during economic booms, they will

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<sup>6</sup> Banks can choose to increase dividends using fair value gains to decrease their capital ratio. Fair value accounting is expected to introduce additional transitory components in earnings; fair value gains and losses are transitory (e.g., Ball, 2006). Prior literature shows that dividends are related to permanent earnings and not to transitory earnings (e.g., Lintner 1956; Jagannathan et al., 2000; Brav et al., 2005). Goncharov and van Triest (2011) find that dividends do not increase in response to fair value gains. This study assumes that banks do not increase dividends using fair value gains to decrease the capital ratio.

increase both assets and debt within the limits of their target capital ratio (leverage ratio). When we compute  $\frac{\partial B}{\partial CR_H}$  and  $\frac{\partial B}{\partial r_j}$ , they are written as:

$$\frac{\partial B}{\partial CR_H} = \frac{-[(\alpha - \beta)A + \beta D]}{r_j CR_H^2} < 0,$$

$$\frac{\partial B}{\partial r_j} = \frac{-[(\alpha - \beta)A + \beta D]}{r_j^2 CR_H} < 0.$$

Banks with smaller capital ratio (larger leverage ratio) and the ones that purchase smaller risk-weighted assets must increase their assets and debt by larger amounts.

Next, this study examines that banks measure assets at fair value during economic recessions. Suppose that asset prices decrease by  $-\gamma A = -\gamma \sum a_i$  ( $0 < \gamma < 1$ ) and the value of assets ( $A_{F_2}$ ) is  $(1 - \gamma)A_H$ . In the case of fair value measurement during economic recessions, the capital ratio is written as:

$$CR_{F_2} = \frac{A_{F_2} - D}{(1 - \delta) \sum r_i a_i} = \frac{(1 - \gamma)A - D}{(1 - \delta) \sum r_i a_i},$$

where  $CR_{F_2}$  is the capital ratio ( $0 < \delta \leq \gamma < 1$ ). Comparing  $CR_{F_2}$  to  $CR_H$ ,  $CR_{F_2}$  is smaller than  $CR_H$  through the following relation:

$$CR_{F_2} = \frac{A - \left(\frac{1}{1 - \gamma}\right)D}{\left(\frac{1 - \delta}{1 - \gamma}\right) \sum r_i a_i} < \frac{A - D}{\sum r_i a_i} = CR_H.$$

Because banks are limited in their leverage holdings by regulations, they must raise equity or decrease both assets and debt to manage their capital ratio (leverage ratio) when the capital ratio decreases.

Banks are expected to be reluctant to raise equity because of the debt overhang problem and sending a negative signal (Kashyap et al., 2008). Therefore, banks must choose to sell assets to deal with the capital ratio limits. For example, commercial banks

decrease their (risk-weighted) assets to avoid violating the regulatory capital rule. When banks raise finances using collateralized debt, lenders require them to increase their collateral or pay back some cash if the market value of the collateral declines. Banks increase more collateral or return some cash to avoid having the collateral liquidated by lenders (Shleifer and Vishny, 2011).

Suppose that banks maintain the same capital ratio that is measured using historical costs. When banks sell  $C$  worth of assets and pay off  $C$  worth of debt, this amount is written as:

$$C = \frac{(\gamma - \delta)A + \delta D}{r_j CR_H},$$

where  $r_j$  is the risk weight of the sold asset. In this manner, when banks measure assets at fair value during economic recessions, they will decrease both assets and debt to maintain their target capital ratio (leverage ratio) if they find it difficult to raise equity. Banks with smaller capital ratio (larger leverage ratio) and the ones that sell smaller risk-weighted assets must decrease larger amounts of assets and debt.

Accordingly, when banks manage their capital ratio (leverage ratio) for price changes in assets, fair value accounting makes assets and debt increased or decreased compared to historical cost accounting; fair value accounting promotes procyclicality through the “accounting accelerator effect” (Boyer, 2007, p. 780). If financial markets are not perfectly liquid so that greater demand for assets increases their prices, fair value measurements increase the capital ratio. Banks increase their assets within the limit of the target capital ratio (leverage ratio) to increase executive compensation. Therefore, as greater demand for assets puts pressure on their prices, assets are increased within the target capital ratio limit under fair value measurement. Such processes increase asset prices and accelerate economic booms. On the other hand, inverse relationships are observed during economic recessions (Plantin et al., 2008b).

### 3. Impairment and Procyclicality: Literature Review

When banks manage their capital ratio (leverage ratio), fair value measurement of assets contribute to procyclicality compared to historical cost measurement. In particular, if financial markets are not perfectly liquid to ensure that a greater supply of assets reduces their prices, banks will sell assets to maintain or increase their capital ratio; this reduces asset prices and thus banks decrease their asset holdings (Cifuentes et al., 2005; Allen and Carletti, 2008; Downing, 2011). Banks can also sell relatively illiquid assets to preempt the anticipated sales made by other market participants when bank executives focus on short-term earnings to boost their compensation (Plantin et al., 2008a).

Analytical research demonstrates that as compared to *pure* historical cost accounting, *pure* fair value accounting contributes to procyclicality in illiquid markets.<sup>7</sup> However, existing accounting standards measure some assets at historical cost and others at fair value. Neither *pure* historical cost accounting nor *pure* fair value accounting has been adopted. In fact, for U.S. banks, loans and leases held for investment that apply historical cost accounting comprise half or more of their total assets (SEC, 2008; Laux and Leuz, 2010). Although theoretical models show that *pure* fair value accounting promotes procyclicality, it is not clear whether the relationship between fair value accounting and procyclicality is actually observed.

When the fair value of asset-backed securities was below its cost basis and this decline was judged to be other-than-temporary impairment, the carrying amounts of these securities were written down to fair value and impairment losses were recognized in earnings.<sup>8</sup> With regard to procyclicality, impairment of asset-backed securities is

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<sup>7</sup> Analytical research did not consider the fair value measurement of liabilities. When financial liabilities are measured at fair value during economic recessions, there is a case that holding losses of assets are offset by holding gains of liabilities arising from changes in reporting entities' own creditworthiness. In this case, the fair value measurement of liabilities is expected to mitigate procyclicality (Novoa et al., 2009; Barth and Landsman, 2010, p. 407). However, the case also exists that holding losses of assets are not offset by holding gains of liabilities; it is not certain whether the fair value measurement of liabilities reduces procyclicality.

<sup>8</sup> The U.S. Financial Accounting Standards Board (FASB) amended accounting for

expected to have the same effects as fair value accounting (Plantin et al., 2008a). Thus, prior empirical research examines the relationship between fair value accounting and procyclicality by focusing on impairment.

Shaffer (2010) analyzes the relationship between fair value accounting and procyclicality by using a sample of 14 large bank holding companies in 2008. The analysis verifies that other-than-temporary impairments of available-for-sale and held-to-maturity securities have quite small effects on regulatory capital (Tier 1), and the evidence of procyclical behavior, namely the fire-sale of assets, is not found. Shaffer (2010) shows that for many banks, loan loss provisions have larger effects on regulatory capital than other-than-temporary impairments.<sup>9</sup>

Badertscher et al. (2012) investigate whether fair value accounting promotes procyclicality by using a sample of 150 bank holding companies. The industry-level analyses find that although other-than-temporary impairments of available-for-sale and held-to-maturity securities increase during the financial crisis (2007–2008), other-than-temporary impairments have minimal impacts on regulatory capital (Tier 1) compared to loan loss provisions. Sales of available-for-sale and held-to-maturity securities during the financial crisis are in line with the levels seen before the crisis (2004–2006); Badertscher et al. (2012) find no evidence of banks' fire-sale of assets during the crisis. On the other hand, firm-level analyses show that sales of securities are significantly correlated with the amount of other-than-temporary impairments and with decreases in capital ratios. This result suggests a relationship between fair value accounting and procyclicality. However, as other analyses find no evidence of procyclical

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impairment of financial assets to mitigate the effects of the financial crisis. In April 2009, the FASB issued FASB Staff Position No. FAS115-2 and FAS124-2, *Recognition and Presentation of Other-Than-Temporary Impairments*, and required that other-than-temporary impairment be separated into credit loss and other factors and be recognized in earnings for the former and in other comprehensive income for the latter (FASB, 2009, pars. 29–30).

<sup>9</sup> SEC (2008) examines the cause of the failure of 50 failed banks in 2008. The result shows that although the failed banks report larger amounts of fair value losses, the failure is the result of loan losses rather than fair value losses.

behavior, such as fire-sales of assets, Badertscher et al. (2012) conclude that fair value accounting does not contribute to procyclicality.

While Shaffer (2010) and Badertscher et al. (2012) focus on the relationship between fair value losses and sales of securities, Bhat et al. (2011) investigate whether fair value accounting causes procyclicality by focusing on the relationship between sales of securities and changes in security prices. The results of the analyses find a relationship between decreases in the liquidity of nonagency mortgage-backed securities (MBSs) and sales of nonagency MBSs. In particular, the results show that the relationship is more significant for banks with greater nonagency MBSs holdings, greater nonperforming loans, and lower capital ratios. Furthermore, Bhat et al. (2011) find reduced procyclical behavior after a change in accounting rules for impairments; that is, the easing of the fair value accounting rule.<sup>10</sup> These findings suggest the relationship between fair value accounting and procyclicality.

In summary, analytical research demonstrates that *pure* fair value accounting contributes to procyclicality in illiquid markets. However, current accounting standards adopt mixed attribute accounting. Focusing on the impairment of securitized instruments during economic recessions, previous empirical research investigates whether fair value accounting causes procyclicality and has found mixed evidence.<sup>11</sup>

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<sup>10</sup> In addition, Bhat et al. (2011) find higher abnormal stock returns on event dates related to the easing of fair value accounting rules for banks with greater nonagency MBSs holdings and greater nonperforming loans. Furthermore, Bowen et al. (2010) investigate whether bank stock prices are affected by events related to relaxing (or retaining) fair value accounting or impairment rules during the financial crisis. They generally provide evidence that relaxing (retaining) fair value accounting or impairment rules produce positive (negative) abnormal returns on event dates.

<sup>11</sup> Khan (2009) investigates whether fair value accounting is associated with an increase in systemic risk in bank networks. The results of the analysis show that more fair-value oriented banks experience negative returns when money-center banks perform poorly. Moreover, the result shows that fair value accounting is associated with an increase in systemic risk during periods of market illiquidity. Furthermore, Khan (2009) finds that banks with lower capital ratios or relatively higher proportions of fair value assets and liabilities affect the increase in systemic risk associated with fair value accounting.

#### **4. Accounting for Securitization and Procyclicality**

Although the causes of the financial crisis were present during the economic booms that preceded the economic downturns, very few studies examined the relationship between fair value accounting and procyclicality before the financial crisis. Because previous literature focused on the impairment of securitized instruments and investigated the relationship between fair value accounting and the financial crisis, prior studies examined only the partial effect of fair value accounting on the financial crisis. This section shows the nature of accounting for securitization and investigates whether accounting for securitization promotes procyclicality.<sup>12</sup>

##### **4.1 Accounting for Securitization**

Currently, banks do not hold loans until maturity; instead, they have adopted an originate-to-distribute model that transfers loans for securitization. The economic reasons why banks conduct asset securitizations are the following: diversifying holding assets, obtaining greater liquidity for future growth, and reducing financing costs (Shipper and Yohn, 2007; Affinito and Tagliaferri, 2010; Wilson et al., 2010). In addition, transferors (banks) conduct securitization transactions for the purpose of accounting motivations such as management of bank regulatory capital (Ambrose et al., 2005; Karaoglu, 2005) and earnings management (Karaoglu, 2005; Dechow and Shakespeare, 2009; Dechow et al., 2010).<sup>13</sup>

Firms use two accounting treatments to account for securitization transactions. One approach is sale accounting, which treats asset transfers as financial asset sales. The

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<sup>12</sup> Asset securitization is a financing method that transfers financial assets (e.g., mortgages, automobile loans, and credit card loans) from transferors (originators) to special purpose entities (SPEs) and issues securities that back the cash flows from the financial assets. This securitization process clarifies that securitization transactions are related to the following two accounting treatments: accounting for transfers of financial assets and accounting for consolidation of SPEs. This study focuses on accounting for transfers of financial assets and uses the term “accounting for securitization.”

<sup>13</sup> Cheng et al. (2011) show that securitization transactions have a significant impact on bank information uncertainty.

other approach is secured borrowing accounting, which treats asset transfers as borrowings by pledging financial assets. Under sale accounting, transferors remove financial assets from the balance sheet and report gains or losses, which are calculated as the difference between the sale proceeds and the book value of the financial assets sold in the income statement. On the other hand, under secured borrowing accounting, financial assets remain on the balance sheet and transferors recognize the proceeds as liabilities. Compared with secured borrowing accounting, sale accounting reduces reported debt and increases reported net income when a gain on sale is recognized. Accordingly, sale accounting has accounting benefits. Almost all firms structure securitization transactions to meet the requirements of sale accounting and report gains on sales (Dechow et al., 2010, p. 5; Barth and Landsman, 2010, p. 409).

Statement of Financial Accounting Standards (SFAS) 140, *Accounting for Transfers and Servicing of Financial Assets and Extinguishments of Liabilities*, distinguishes between sale accounting and secured borrowing accounting from the viewpoint of whether or not control over transferred assets is surrendered.<sup>14,15</sup> That is, if control is surrendered, firms can account for securitization transactions using sale accounting and vice versa (SFAS140, pars. 11–12). Under SFAS140, firms can use sale accounting for securitization transactions if control over transferred assets is surrendered, although they retain large portions of the risks.<sup>16</sup>

When transferors retain significant risks for transferred assets, gains on sales under

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<sup>14</sup> SFAS140 considers that control over transferred assets is surrendered if all of the following three conditions are met: (1) the transferred assets have been isolated from a transferor; (2) a transferee has the right to pledge or exchange the received assets; and (3) the transferor does not maintain effective control over the transferred assets (SFAS140, par. 9).

<sup>15</sup> In June 2010, the FASB issued SFAS166, *Accounting for Transfers of Financial Assets*, and amended SFAS140. This section examines the relationship between accounting treatments before the financial crisis and procyclicality; thus, this study uses original rules.

<sup>16</sup> This applies to International Accounting Standard (IAS) 39, *Financial Instruments: Recognition and Measurement*. However, the basic approach for treating transfers of financial assets (derecognition) is different in SFAS140 and IAS39 (Schipper and Yohn, 2007; Adhikari and Betrancourt, 2008).



sale accounting are substantially treated as unrealized income. Securitization gains are highly uncertain because gains on sales are expected to be offset by losses after securitization. In many securitization transactions, transferors (originators) provide contractual (explicit) recourse including retained interests and recourse obligations for credit enhancement.<sup>17</sup> When defaults occur after securitization, transferors recognize impairments of retained interests. In particular, if risky assets such as subprime mortgages are transferred, transferors are expected to report impairments of retained interests. Thus, there is a relatively high possibility that gains on sales can be offset by losses after securitization.

Furthermore, transferors provide non-contractual (implicit) recourses as well as contractual (explicit) recourses. Transferors buy back transferred assets to absorb losses from transferred assets to protect their reputation (OCC et al., 2002).<sup>18</sup> Non-contractual (implicit) recourses require cash outflows in certain events. However, the amount and timing of the cash outflows are not specified. Therefore, it is not clear whether non-contractual (implicit) recourses meet the current definitions of liability in conceptual frameworks or are treated as constructive obligations (Shipper and Yohn, 2007, p. 75). Because non-contractual (implicit) recourses are not recognized as liabilities on the balance sheet, gains on sales would be offset by losses on recourse in the event that non-contractual (implicit) recourses are provided.

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<sup>17</sup> For credit enhancement, it is possible to issue high credit-rated asset-backed securities and to prevent SPEs from becoming bankrupt. Holders with retained interests such as subordinated interests and residual interests have the right to receive cash flows only after all payments of principal and interest for senior interests have been made, and thus have to bear losses for not collecting cash flows at the beginning. Moreover, recourse obligations are obligations to absorb losses or to repurchase transferred assets when certain events such as defaults occur. Thus, transferors (originators) retain numerous risks for transferred assets by holding retained interests and recourse obligations for credit enhancement. Chen et al. (2008) show that the type of transferred assets determines the extent to which transferors (originators) retain risks for transferred assets.

<sup>18</sup> If retained interests cover most potential losses from transferred assets, it is not necessary for transferors to provide implicit recourse. For instance, Amiram et al. (2010) suggest that impairments of retained interests contain information on implicit recourses.

In this manner, when transferors retain significant risks for transferred assets, gains on sales under sale accounting are substantially treated as unrealized income because they are offset by losses after securitization through contractual (explicit) and non-contractual (implicit) recourses.<sup>19</sup> Therefore, if risky assets such as subprime mortgages are transferred, gains on sales under sale accounting have the same income effects as unrealized income under fair value accounting (Takatera, 2004).<sup>20</sup>

In summary, banks use two accounting treatments to account for securitization transactions: sale accounting and secured borrowing accounting. Sale accounting has accounting benefits compared with secured borrowing accounting. Although transferors hold significant risks for transferred assets through contractual (explicit) and non-contractual (implicit) recourses, they can adopt sale accounting. Because gains on sales are expected to be offset by losses after securitization, securitization gains are highly uncertain; gains on sales can be substantially treated as unrealized income. When transferors retain significant risks for transferred assets, gains on sales under sale accounting have the same characteristics as unrealized income under fair value accounting.

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<sup>19</sup> Whether or not a gain on sale is treated as realized income is related to the nature of securitization transactions. Niu and Richardson (2006) show that off-balance-sheet securitization debt has the same risk relevance for explaining market measures of risk as on-balance-sheet debt. Chen et al. (2008) also show that originators' risk is positively associated with their off-balance-sheet securitized assets. Similarly, Landsman et al. (2008) find that the stock market treats securitized assets and liabilities held by SPEs as assets and liabilities of transferors. These evidences suggest that securitization transactions are treated not as sale but as secured borrowing.

<sup>20</sup> The measurement of securitization gains is sometimes unreliable. Gains on sales are calculated as the differences between the sale proceeds and the book value of transferred assets. However, fair value measurements of retained interests and recourse obligations have effects on the amounts of gains on sales. It is possible for transferors to record larger gains on sales by overestimating the fair value measurement of retained interests and/or by underestimating the fair value measurement of recourse obligations. Because retained interests and recourse obligations that transferors hold are traded only occasionally, transferors must estimate fair value using internal valuation models (e.g., Meder et al., 2011). Accordingly, the accuracy of a transferor's reported gain on sale depends on its ability to estimate the fair value of retained interests and recourse obligations (Ryan, 2007, pp. 218–219).

## 4.2 Accounting for Securitization and Procyclicality

When transferors retain significant risks for transferred assets, sale accounting functions as a substitute for fair value accounting because sale accounting of securitization transactions has the same income effects as fair value accounting. Therefore, it is possible to investigate the relationship between fair value accounting and procyclicality by focusing on accounting for securitization. This study examines the relationship between securitization accounting (sale accounting) and procyclicality by using the following example.<sup>21</sup>

### [Example]

A bank that holds total assets ( $A$ ) and total liabilities ( $D$ ) transfers loans (the book value:  $a_j$ ) to a special purpose entity (SPE). The SPE issues two types of interests: senior interests ( $x$ ) and unrated subordinated interests ( $y$ ). The bank (transferor) obtains cash and subordinated interests (retained interests). Suppose that the fair value of senior interests and the amount of cash that the transferor accepts are same.

The capital ratio before the securitization transaction ( $CR$ ) is  $\frac{A-D}{\sum r_i a_i}$ , where  $r_i$  is

the risk weight for each asset  $a_i$ . When the bank adopts secured borrowing accounting for a securitization transaction, the capital ratio does not change. On the other hand, when the bank adopts sale accounting for a securitization transaction, it has effects on the capital ratio. Suppose that the bank classifies subordinated interests (retained interests) as available-for-sale securities. For example, Basel II requires banks to deduct a securitization exposure of unrated subordinated interests (retained interests) from the

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<sup>21</sup> For details about accounting treatments of sale accounting and secured borrowing accounting under SFAS140, see the appendix.

regulatory capital (BIS, 2006).<sup>22</sup> When unrated subordinated interests (retained interests) are deducted from the regulatory capital, the capital ratio under sale accounting ( $CR_s$ ) is written as:

$$CR_s = \frac{A - D - \frac{ya_j}{x+y}}{\sum r_i a_i - r_j a_j},$$

where  $r_j$  is the risk weight for transferred asset  $a_j$ .<sup>23</sup> When banks adopt sale accounting for the securitized transaction,  $CR_s > CR$  is met under the certain condition.<sup>24</sup>

Therefore, under the above condition, sale accounting increases the capital ratio compared to the pre-securitization transaction. During economic booms, debtors of underlying assets are expected not to default and transferors (originators) receive principal and interest. Thus, the amount of senior interests is relatively large. In addition, the capital ratio is more likely to be high during economic booms. In these cases, the possibility of meeting the above condition is high and sale accounting increases banks' capital ratio.

As described above, banks are limited in their leverage holdings by regulations.

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<sup>22</sup> U.S. commercial banks are required to ensure that unrated subordinated interests (retained interests) are subject to a dollar-for-dollar capital charge by regulation (OCC et al., 2001). The basic concept for a dollar-for-dollar capital charge is the same as that for Basel II.

<sup>23</sup> Basel II also requires banks to deduct gains on sales from their required capital (BIS, 2006). This study deducts gains on sales from the regulatory capital in calculating  $CR_s$ .

<sup>24</sup> To satisfy  $CR_s = \frac{A - D - \frac{ya_j}{x+y}}{\sum r_i a_i - r_j a_j} > \frac{A - D}{\sum r_i a_i} = CR$ , the following condition has to be met:

$y < \left( \frac{r_j CR}{1 - r_j CR} \right) x$ . This suggests that the amounts of retained interests are restricted to meet  $CR_s > CR$ . Even if the regulatory capital is calculated by a dollar-for-dollar capital charge, the amounts of retained interests are limited to ensure that the capital ratio under sale accounting is larger than that before the securitization transaction.

When sale accounting increases the capital ratio, banks can afford to hold leverage. Because executive compensation is linked to banks' performance and stock price (e.g., Clinch and Magliolo, 1993; Becher et al., 2005; Livne et al., 2011), bank executives increase both assets and debt within the limit of the target capital ratio (leverage ratio) to increase their compensation.<sup>25</sup> Furthermore, when executives' reputation is linked to stock prices and demand for securitized instruments is large, bank executives increase both assets and debt for securitization.

Suppose that the bank maintains the same capital ratio as before the securitization transaction. When the bank takes additional debt of  $E$  to purchase  $E$  worth of assets, this amount is written as:

$$E = \frac{1}{r_k} \left[ r_j - \frac{y}{(x+y)CR} \right] a_j,$$

where  $r_k$  is the risk weight of the purchased asset.<sup>26</sup> In this manner, when banks adopt sale accounting for securitization transactions during economic booms, they increase both assets and debt within the limit of their target capital ratio (leverage ratio). When

we compute  $\frac{\partial E}{\partial CR}$  and  $\frac{\partial E}{\partial r_k}$ , they are written as:

$$\frac{\partial E}{\partial CR} = \frac{y a_j}{r_k (x+y) CR^2} > 0,$$

$$\frac{\partial E}{\partial r_k} = -\frac{1}{r_k^2} \left[ r_j - \frac{y}{(x+y)CR} \right] a_j < 0.$$

Banks with larger capital ratio (smaller leverage ratio) and the ones that purchase smaller risk-weighted assets must increase larger amounts of assets and debt.

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<sup>25</sup> Dechow et al. (2010) show that executive compensation is sensitive to gains on sales and that the gains appear to be treated as a regular earnings component.

<sup>26</sup> Denoting the adjusted capital ratio by  $CR_s^*$ , the following equality meets:

$$CR_s^* = \frac{(A+E) - (D+E) - \frac{y a_j}{x+y}}{\sum r_i a_i - r_j a_j + r_k E} = \frac{A-D}{\sum r_i a_i} = CR.$$

In summary, under the certain condition, sale accounting increases the capital ratio compared to holding financial assets. Therefore, banks will increase their assets within the limit of the target capital ratio (leverage ratio) for executive compensation and market evaluations. When banks conduct securitization transactions and adopt sale accounting to enhance short-term profits, the capital ratio increases under the certain condition. Thus, assets (lending) are increased within the limit of the target capital ratio (leverage ratio). Banks usually increase their lending during economic booms because borrowers can increase their borrowings. Furthermore, banks lower their lending standards and expand their lending to new borrowers for securitization (Dell’Ariccia et al., 2009; Keys et al., 2010; Demyanyk and Hemert, 2011; Purnanandam, 2011).<sup>27</sup> Such increasing and expanding lending accelerates economic booms. Through these processes, sale accounting is expected to promote procyclicality before the financial crisis (during economic booms).

## **5. Concluding Remarks**

This study considers whether fair value accounting promotes procyclicality and finds the relationship between fair value accounting and procyclicality by focusing on securitization transactions before the financial crisis. There are two accounting treatments for securitization transactions: sale accounting and secured borrowing accounting. Sale accounting has accounting benefits compared with secured borrowing accounting; almost all banks structure securitization transactions to meet the requirements for sale accounting. Although transferors hold numerous risks for transferred assets through contractual (explicit) and non-contractual (implicit) recourses, they can adopt sale accounting. When transferors retain significant risks for transferred assets, sale accounting has the same income effects as fair value accounting and

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<sup>27</sup> Bleck and Gao (2011) show that, as compared to historical cost accounting, when banks adopt fair value accounting for retained interests, fair value accounting induces banks to retain excessive exposure to risks related to transferred assets and to reduce their incentive to originate good loans.

functions as a substitute for fair value accounting.

Under the certain condition, sale accounting increases the capital ratio compared with that before the securitization transaction. Bank executives have incentives to increase both assets and debt within the limits of their target capital ratio (leverage ratio) for executive compensation and market reputation; assets (lending) are increased. When banks conduct securitization transactions and adopt sale accounting to enhance short-term profits, the capital ratio increases under the certain condition. Thus, banks will increase assets (lending) within the limit of their target capital ratio (leverage ratio). As banks increase and expand their lending during economic booms, economic booms will be accelerated. Through these processes, both sale accounting and fair value accounting are expected to promote procyclicality during the pre-financial crisis (economic booms).

This study showed the relationship between fair value accounting and procyclicality by focusing on securitization transactions before the financial crisis. The study makes two contributions to the accounting literature and accounting standards setting. First, it proposes a new perspective on the relationship between fair value accounting and procyclicality by focusing on the pre-financial crisis (economic booms). Second, this study suggests that accounting standard setters reconsider the movement in accounting for securitization when transferors retain significant risks for transferred assets.

However, this study has several limitations. First, as this study theoretically indicates the relationship between fair value accounting and procyclicality, it is necessary to empirically investigate the relationship between sale accounting and procyclicality, including the characteristics of gains on sales (e.g., persistence of income). Next, it is necessary to identify the mechanisms of procyclicality before and during the financial crisis and examine the relationship between fair value accounting and procyclicality. These examinations clarify a comprehensive relationship between fair value accounting and the financial crisis.

## Appendix

Under sale accounting, transferors derecognize transferred assets and recognize all assets obtained and liabilities incurred in consideration as proceeds of sales, and recognize in earnings the difference between sale proceeds and the carry amounts of transferred assets as gains or losses on the sale (SFAS140, par. 11). The assets and liabilities, except for retained interests (e.g., cash, service assets and liabilities, and recourse obligations) are measured at fair value<sup>28</sup>. Retained interests such as subordinated and residual interests are measured at relative fair value<sup>29</sup>. Because SFAS140 requires firms to classify retained interests as trading or available-for-sale securities (SFAS140, par. 14), the difference between relative fair value and the fair value of retained interests is measured immediately and recognized in earnings for trading securities or in other comprehensive income (OCI) for available-for-sale securities under SFAS115, *Accounting for Certain Investments in Debt and Equity Securities*.

Following is a journal entry of the example in this text under sale accounting (to recognize gains on sales, it is necessary to meet the following condition:  $x + y > a_j > 0$ ).

Dr.	Amount	Cr.	Amount
Cash	$x$	Loans	$a_j$
Subordinated Interests	$a_j \times \frac{y}{x + y}$	Gains on Sales	$x \left( 1 - \frac{a_j}{x + y} \right)$
Subordinated Interests	$y \left( 1 - \frac{a_j}{x + y} \right)$	Earnings / OCI	$y \left( 1 - \frac{a_j}{x + y} \right)$

Under secured bellowing accounting, transferors recognize a liability for cash and other assets except for retained interests and service assets and remain transferred assets on their balance sheet (SFAS140, pars. 12 and 62A). Therefore, gains or losses on the sale are not recognized. Transferors reclassify the transferred assets as pledged

<sup>28</sup> However, if it is not practicable to estimate the fair value measurement of assets obtained, SFAS140 prescribes that transferors measure those assets at zero. Furthermore, if it is not practicable to estimate the fair value measurement of liabilities incurred, SFAS140 requires that transferors recognize no gains on sales and measure those liabilities at the greater of: (1) the excess of (a) the fair value of assets obtained less the fair value of other liabilities incurred, over (b) the carrying value of transferred assets, (2) the amount that is recognized in accordance with SFAS5, *Accounting for Contingencies*.

<sup>29</sup> Relative fair value for retained interests is computed by multiplying the carrying amount of a transferred financial asset by the percentage of the fair value of the asset attributable to the retained interests.



collateral and separate them from other assets not encumbered (SFAS140, par. 15).

Following is a journal entry of the example in this text under secured borrowing accounting.

Dr.	Amount	Cr.	Amount
Cash	$x$	Loans Payable	$x$
Pledged Collateral	$a_j$	Loans	$a_j$

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