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## **FAIR VALUE ACCOUNTING: VILLAIN OR INNOCENT VICTIM**

### **EXPLORING THE LINKS BETWEEN FAIR VALUE ACCOUNTING, BANK REGULATORY CAPITAL AND THE RECENT FINANCIAL CRISIS**



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## Fair Value Accounting: Villain or Innocent Victim

### Exploring the Links between Fair Value Accounting, Bank Regulatory Capital and the Recent Financial Crisis<sup>1</sup>

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#### Abstract

There is a popular belief that the confluence of bank capital rules and fair value accounting helped trigger the recent financial crisis. The claim is that questionable valuations of long term investments based on prices obtained from illiquid markets created a pro-cyclical effect whereby mark to market adjustments reduced regulatory capital forcing banks to sell off investments which further depressed prices. This ultimately led to bank instability and the credit effects that reached a peak late in 2008. This paper analyzes a sample of large banks to attempt to measure the strength of the link between fair value accounting, regulatory capital rules, pro-cyclicity and financial contagion. The focus is on large banks because they value a significant portion of their balance sheets using fair value. They also hold investment portfolios that contain illiquid assets in large enough volumes to possibly affect the market in a pro-cyclical fashion. The analysis is based on a review of recent historical financial data. The analysis does not reveal a clear link for most banks in the sample, but rather suggests that there may have been other more significant factors putting stress on bank regulatory capital.

*Keywords:* fair value; accounting; pro-cyclicity; financial crisis; financial institutions; banks

*JEL Codes:* G18; M41; M48

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*"Current mark-to-market rules have exacerbated the crisis as financial institutions have been forced into a self-reinforcing negative cycle of asset price declines forcing write-downs and thus asset sales and further price declines."* (Mark Zandi, Chief Economist, Moody's Economy.com, Knight Ridder, September 28, 2008)

## **1. INTRODUCTION**

Fair value accounting has become the target of many who link it closely to the recent financial crisis, reopening a debate that began more than a decade ago. This new debate is more visible in that it has caught the attention of Congress and the general public. As a result, there are many more voices and opinions being aired. Thus far, there has been very little analysis of the actual financial results from the period leading up to and including the crisis. This paper examines this published financial data in order to evaluate some of the specific links drawn between fair value accounting and the financial crisis.

Fair value measurement, commonly referred to as "mark to market", has been utilized in U.S. Generally Accepted Accounting Principles for several decades as a method to measure assets and liabilities. Early examples of the use of fair value include US Generally Accepted Accounting Standards No. 15, *Accounting by Debtors and Creditors for Troubled Debt Restructurings* (Issued 6/77), No. 65, *Accounting for Certain Mortgage Banking Activities* (Issued 9/82) and No. 87, *Employers' Accounting for Pensions* (Issued 12/85) among others. Although the term "fair value" had yet to be defined, similar terms were used such as "market value", "current value" and "lower of cost or market." The use of fair value expanded significantly in the 1990's when it was applied to measure investment securities as well as to record

derivatives.<sup>3</sup> And in this decade, the application of fair value accounting continued to expand to more financial assets and certain liabilities as well.

The current debate over fair value echoes many of the arguments presented in the 1990's before anyone had ever heard of FAS 157.<sup>4</sup> Proponents of fair value, including principal members of the FASB, IASB and SEC, argue that it is the most relevant measure for financial instruments providing investors with more transparent, timely and accurate information. They argue that it enhances market discipline and leads to more efficient markets, and that the alternative measurement models (lower of cost or market and historical cost) hide or delay the disclosure of important information and produce inefficient market decisions.

Critics claim that measuring financial instruments using fair value may have unintended consequences such as amplifying economic shocks. They also contend that fair value can increase income volatility, undermine public confidence and adversely affect economic stability. In addition they assert that fair value estimates can sometimes bear no relationship to expected cash flows or underlying economics, containing 'noise' determined by market sentiment rather than economic conditions or fundamentals.

Now as a result of the recent crisis, events have taken place that appear to support the views of fair value accounting critics. Many people now believe that fair value accounting is flawed and that it played a prominent role in the crisis. A study

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<sup>3</sup> Fair value was required to measure certain investment securities under US Generally Accepted Accounting Standard No. 115, *Accounting for Certain Investments in Debt and Equity Securities* (Issued 5/93). Derivatives were required to use fair value under Standard No. 133, *Accounting for Derivative Instruments and Hedging Activities* (Issued 6/98).

<sup>4</sup> FAS 157 refers to the US Generally Accepted Accounting Standard No. 157, *Fair Value Measurements* which became effective in 2007 for early adopters and 2008 for most companies. The Statement formally defines fair value and presents guidelines for how companies should develop fair value estimates. See FASB (2006).

performed by the Valuation Research Corporation in April 2009 found that a majority of financial professionals surveyed (58%) believe that the recent market stress and the collapse of many asset classes have negated fair value's validity.<sup>5</sup> A more pointed accusation was made in a letter to the SEC signed by sixty-five members of Congress that stated, "In periods of market turmoil, financial institutions are forced to write down the value of long term, non-trading assets below their true economic value. The "mark-to-market" rule, while well intended, has the unintended consequence of exacerbating economic downturns by hamstringing the ability of banks to make loans to consumers and businesses."<sup>6</sup>

Supporters of fair value make the counter argument that fair value accounting is not new. They point out that fair value did not cause managers to purchase risky investments or enter into speculative derivative contracts. Prominent supporters of fair value also sent a letter to the SEC in which they argued that prior to and during the crisis, fair value served to quickly identify problems giving management and policy makers more time to react and more transparent financial data which served to temper or shorten the crisis.<sup>7</sup>

To examine the impact of fair value accounting, it is useful to set the stage by looking back a few years prior to the crisis. In 2006, a new accounting standard (FAS 157) was issued requiring that existing mark to market or fair value measurements conform to a standard definition and methodology. Fair value was defined in FAS 157 as an 'exit price' that can be observed in an orderly market.<sup>8</sup> It attempts to answer the

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<sup>5</sup> Valuation Research Corporation (2009)

<sup>6</sup> U.S. Congress (2008)

<sup>7</sup> CFA et al. (2008)

<sup>8</sup> Exit price is the price that would be received to sell an asset or paid to transfer a liability. FASB (2006)

hypothetical question, “What are my assets or liabilities worth today?” If no price is available, then proxy market data and models can be used to estimate current price. FAS 157 removed some of the flexibility that management had to maneuver with auditors in estimating a market price. In addition, the threat of litigation against auditors and management led to conservative interpretation of the new rule.<sup>9</sup> At the same time, fair value usage expanded - particularly on the balance sheets of large financial institutions. A popular misconception is that FAS 157 caused this expansion. However FAS 157 only provides a formal definition and a methodology for estimating fair value, it did not expand its use. For large banks, this expansion was driven by market trends such as an increase in assets held on a short term basis (e.g. loans awaiting securitization), a higher volume of credit exposures reclassified to the trading book, higher derivatives exposures and the use of the fair value option accounting rule (FAS 159).<sup>10,11</sup> What followed in 2008 was the financial crisis, significant asset price declines and bank failures. Fair value critics point to these coinciding events as cause and effect.

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<sup>9</sup> During the crisis there were claims made of a bias in accounting practice to rely on the last transaction price for a security as the sole determinant for fair value, ignoring whether that transaction took place in an orderly market or whether the transaction was a result of distressed or forced sale. Katz D.M. (2009).

<sup>10</sup> FAS 159, *Fair Value Option*, is a US Generally Accepted Accounting Standard that allows a company to irrevocably elect to value most types of financial assets and liabilities at fair value. It was written to eliminate some of the complexity related to derivative hedge accounting. See FASB (2007).

<sup>11</sup> BIS (2009)

## 2. RELATED LITERATURE

A number of recent papers and studies have focused on analyzing the links between fair value and financial institution instability. Key among those was the SEC 2008 Report to Congress, undertaken as part of a mandate contained in the Emergency Economic Stabilization Act of 2008.<sup>12</sup> The SEC concluded that fair value was not the source of the bank failures that occurred around the time of their report. However, these failures were represented mostly by smaller banks. There was only one bank that was evaluated with assets greater than \$100 billion, and that bank was a thrift (Washington Mutual) with as little as 5% of assets recorded at fair value.

The International Monetary Fund released a study of fair value accounting's pro-cyclical effects in the 2007 to 2008 period.<sup>13</sup> The paper analyzed a three tiered sample of banks including traditional U.S. commercial banks, European banks and U.S. investment banks. The analysis was based on 2006 financial results and utilized models to predict the impact of particular economic shocks. The analysis concluded that fair value may magnify cyclical volatility of capital. However, the study's results were based on hypothetical scenarios, given that the real stress events of the recent crisis happened subsequent to when the study was written.

There have been numerous other papers on the topic that utilize theoretical models to hypothesize what impacts fair value accounting might have on banks. Laux and Leuz authored a recent working paper summarizing much of the theoretical work

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<sup>12</sup> SEC (2008)

<sup>13</sup> Scarlata et al. (2008)

performed on this topic.<sup>14</sup> The models that have been used to attempt to explain or predict fair value impacts rely on certain simplifying assumptions. The selection and judgments associated with these assumptions can often leave open questions. Utilizing actual financial results to analyze the impact of fair value will minimize the need to make modeling assumptions.

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<sup>14</sup> Laux and Leuz (2009)

### 3. ANALYSIS

The following analysis will attempt to determine whether fair value did in fact play a significant role in the crisis through the rapid destruction of bank capital and related pro-cyclical effects by observing the actual impact of stress events on the regulatory capital of financial institutions.

To test the link between fair value and the financial crisis, the analysis focuses on the largest banking institutions. Large institutions utilize fair value across a greater percentage of their balance sheets relative to smaller institutions.<sup>15</sup> In addition, smaller institutions do not generally invest in the type of complex or illiquid securities that are considered the key source of pro-cyclical asset price declines as they do not typically have the in-house expertise to manage the risks associated with these types of investment products.<sup>16</sup> Thus, to the extent that fair value had a significant effect on bank capital and promoted distressed asset sales, it stands to reason that this effect would be most pronounced at the largest banks.

The sample was defined as U.S. top-tier Bank Holding Companies with assets greater than \$100 billion.<sup>17</sup> This sample captures a significant number of large institutions – representing 65% of total assets of all top tier Bank Holding Companies at December 31, 2008. U.S. bank holding companies owned by foreign banking organizations were excluded because they do not actually represent a ‘top tier’ in that

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<sup>15</sup> 2008 SEC report to Congress noted that 39% of balance sheets of large issuers are valued at fair value as compared to 16% for small issuers. Large issuers in their sample included financial institutions with assets over \$135 billion. SEC (2008)

<sup>16</sup> Examples of complex, illiquid investments would include structured credit investments such as CDOs, CLOs, CMOs and other complex asset backed securities. Additional examples include OTC derivatives and private equity investments.

<sup>17</sup> At December 31, 2008, GMAC, Goldman Sachs, American Express and Morgan Stanley were approved as Bank Holding Companies but had not yet published regulatory reports. Therefore they were not included in the sample group.

they can obtain capital through a foreign parent company. MetLife, principally an insurance company, was also excluded from the review in order to achieve a more homogeneous sample group. Data was obtained from the annual financial statements (SEC 10-K) and holding company regulatory filings (Y-9C) for 2008. The end of 2008 is widely seen as the height of the crisis, thus any fair value impacts would be included in this period.

In order to isolate the impact of fair value accounting on bank regulatory capital it was first necessary to identify the principal balance sheet items where fair value is applied. For most large banks these items would include trading assets/liabilities including derivatives, investment portfolios, loans held for sale or elected to be measured at fair value, mortgage servicing rights, pension assets and certain liabilities including debt.

The analysis does not focus on the total net impact of fair value measurement on these institutions. The total net impact includes items where fair value is widely considered to be appropriate and accurate and other items where fair value adjustments do not flow through to regulatory capital. Therefore, the second step was to isolate the fair value impacts that 1) affected regulatory capital and 2) represented the fair value effects that were identified by critics to be the source of pro-cyclicality and financial statement inaccuracies.

There are few who would argue that fair value is inappropriate for measuring investments held for trading purposes where deep and active markets exist. Knowing the spot price is critical for managing a short term trading portfolio. Many derivatives have no initial cost, and fair value is the only sensible way to measure and record them. Mortgage servicing rights are non-financial assets and are not directly

impacted by falling investment prices. Their value is derived mainly from interest rate fluctuations and loan prepayment speeds. Loans can be measured at fair value if they are being held for sale (e.g. in anticipation of a securitization). As with trading assets, fair value is considered to be the appropriate measure for something that is intended to be sold in the short term. Loans and other financial assets can also be recorded at fair value under the fair value option (FAS 159). This is an explicit decision by management to value these assets this way and thus they are not included in the analysis. Fair value adjustments related to pension assets flow through an equity account and are neutralized in the calculation of regulatory capital. When fair value is applied to liabilities, a counter cyclical effect can occur. If a company is seen to be less credit worthy its debt would be worth less in a hypothetical market; therefore a write down of the debt is required. This results in the recording of a gain. Gains and losses attributable to changes in a bank's own creditworthiness are excluded from bank regulatory capital.<sup>18</sup>

What remains for further analysis is the application of fair value to investment portfolios. Critics assert that fair value distorts the true financial picture and influences behavior when it is applied to assets held as long term investments such as debt or equity securities. They further assert that this distortion is amplified when investments are traded in illiquid markets, when investors are behaving irrationally, where auditors or management are overly conservative due to the threat of litigation, or when de-leveraging is taking place. All of these elements existed in 2008. And as distressed transactions increased and market liquidity collapsed, fair value rules did

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<sup>18</sup> Instructions for Preparation of Consolidated Financial Statements for Bank Holding Companies, March 2007, p. HC-R-3 item 7.b

appear to generate accounting for certain asset classes that diverged from the underlying economic value that would be expected based on projected estimates of cash flows. But to what extent did this have an impact on banks' regulatory capital?

Banks held a significant percentage of long duration investment securities in the beginning of 2008 (12% of Total Assets in Q1 2008<sup>19</sup>) in their available for sale (AFS) and held to maturity (HTM) portfolios.<sup>20</sup> Fair value is applied to investment securities depending on how they are classified. Investment securities classified as available for sale are measured at fair value each reporting period. The resulting adjustments are termed unrealized gains or losses. These adjustments are recorded in an equity account called Accumulated Other Comprehensive Income. An important point here is that fair value adjustments related to debt securities and unrealized gains on equity securities are excluded when computing Tier 1 regulatory capital.<sup>21,22</sup> Unrealized losses on equity securities are included in Tier 1; however equity securities typically make up a much smaller proportion of a bank's investment portfolio. Unrealized losses on equity securities for the sample banks were immaterial.

An unrealized loss on an AFS security can become a realized loss if it is determined that the loss represents an other-than-temporary impairment (OTTI). Losses are considered other-than-temporary if management determines that an

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<sup>19</sup> SEC (2008)

<sup>20</sup> FAS 115, *Accounting for Certain Investments in Debt and Equity Securities*, defines three investment categories which determine the accounting treatment for debt and equity securities. An investment can be designated as Trading if it is being held principally for the purpose of selling it in the short term, Held to Maturity if the intent is to hold the security to maturity, and if undesignated it would fall under the Available for Sale category. See FASB (1993).

<sup>21</sup> Tier 1 capital is a primary measure for regulators to gauge a bank's ability to absorb losses and to determine capital adequacy ratios.

<sup>22</sup> Instructions for Preparation of Consolidated Financial Statements for Bank Holding Companies, March 2007, p. HC-R-2 item 2

investment will not recover its value either prior to sale or at maturity. OTTI losses have a direct impact on current earnings and regulatory capital.<sup>23</sup>

Securities classified as held to maturity are recorded at amortized cost however; they are also subject to fair value adjustments through other-than-temporary impairment write downs. Realized gains and losses can also result from sales of securities, however these are an outcome of an actual transacted price rather than a fair value estimate.<sup>24</sup> Table 1 provides a breakdown of the investment portfolio fair value impacts and their percentage impact on Tier 1 capital for the sample banks.

**Table 1**

(\$ in 000's)	AFS		AFS and HTM	
	YoY Change in Unrealized Loss on Equity	% Impact on Tier 1 Capital	Realized Loss from OTTI	% Impact on Tier 1 Capital
Data as of 12/31/08				
JPMorgan Chase	-\$5,000	0.0%	-\$76,000	-0.1%
Citigroup	\$0	0.0%	-\$2,800,000	-2.3%
Bank of America	\$0	0.0%	-\$4,100,000	-3.3%
Wells Fargo	-\$7,000	0.0%	-\$1,790,000	-2.0%
PNC	-\$2,706	0.0%	-\$312,000	-1.3%
US Bancorp	-\$65,000	-0.3%	-\$470,000	-1.9%
Bank of NY Mellon	-\$17,000	-0.1%	-\$1,628,000	-9.6%
Suntrust	\$0	0.0%	-\$83,800	-0.5%
State Street	-\$16,149	-0.1%	-\$122,000	-0.9%
Capital One	\$2,351	0.0%	-\$10,900	-0.1%
BB&T	-\$13,974	-0.1%	-\$104,000	-0.8%
Regions	-\$13,341	-0.1%	-\$28,300	-0.2%
Fifth Third	-\$3,545	0.0%	-\$104,000	-0.9%
KeyCorp	-\$9,700	-0.1%	\$0	0.0%

<sup>23</sup> In 2009, FASB issued FSP FAS 115-2 and 124-2. This FSP revised the rules on recognition of OTTI losses on debt securities. Under certain conditions, losses could be separated into two components 1) credit related losses recorded in current earnings and 2) non-credit related losses recorded in Other Comprehensive Income. The effect of this guidance generally reduced OTTI losses recorded in earnings. The guidance was effective for reporting periods after June 15, 2009 and is not reflected in the reported balances used in this analysis. See FASB (2009).

<sup>24</sup> Most banks in the sample recorded a net gain on the sale of securities for the year ended 12/31/08; US Bancorp and Keycorp posted small net losses (see Table 3, column 4 for actual amounts).

Table 2 column 2 combines the fair value impacts identified in Table 1 and calculates the effect on year-end Tier 1 regulatory capital. Most banks in the sample experienced a small reduction in capital in a 0.1% to 3.9% range. Bank of New York Mellon was the one outlier with an 11.0% reduction. The third column of Table 2 adds gains and losses related to both trading portfolios and most assets measured under the fair value option. These gains and losses represent both unrealized and realized amounts. This measure captures a broader impact where it might be argued that fair value played a role. The impact ranges from a 21.8% reduction in capital for Citigroup to an increase of 9.1% for State Street with the majority of banks clustered in a range of .6% increase to 8.5% reduction. The apparent outliers, Bank of New York Mellon and Citigroup, will be addressed further on in the analysis.

**Table 2**

Data as of 12/31/08	Fair Value Impacts <sup>25</sup>	Broadly Defined Fair Value Impacts <sup>26</sup>	Dividends paid on Common Stock
% Impact on Tier 1 Capital			
JPMorgan Chase	-0.1%	-8.1%	-4.8%
Citigroup	-2.6%	-21.8%	-5.5%
Bank of America	-3.9%	-8.5%	-9.1%
Wells Fargo	-2.8%	-2.4%	-6.5%
PNC	-1.9%	-2.2%	-5.3%
US Bancorp	-2.5%	-2.3%	-12.4%
Bank of NY Mellon	-11.0%	-1.9%	-7.7%
Suntrust	-0.6%	-4.2%	-6.5%
State Street	-1.3%	9.1%	-3.6%
Capital One	-0.1%	0.0%	-3.7%
BB&T	-1.0%	-0.2%	-8.4%
Regions	-0.4%	-0.1%	-6.1%
Fifth Third	-1.0%	0.6%	-3.8%
KeyCorp	-0.1%	0.1%	-2.7%

<sup>25</sup> Fair Value Impacts = (Realized Losses from OTTI + Year Over Year Change in Unrealized Loss on Equity Securities) / (Tier 1 Capital - Numerator)

<sup>26</sup> Broadly Defined Fair Value Impacts = (Realized Losses from OTTI + Year Over Year Change in Unrealized Loss on Equity Securities + Net Gain or Loss from Trading and Fair Value Option) / (Tier 1 Capital - Numerator)

The conclusion reached here is that for most banks in the sample, fair value adjustments had only a small percentage impact on regulatory capital; thus the link between fair value and capital destruction is not evident. Moreover, it should be noted that OTTI losses include both the impact of probable credit losses and the effects of distressed and illiquid markets. It would be difficult to argue that capital should not be affected by probable credit losses. The concerns about fair value focus on the effect of market dislocation and other pricing ‘noise’ amplified by the crisis. Thus if credit loss is factored out, the fair value impact due specifically to pricing ‘noise’ is likely to be an even smaller amount.<sup>27</sup>

The second question to be answered is whether capital impacts related to fair value were enough to force banks to raise additional capital through the sale of investments in order to meet regulatory requirements. All banks in the sample were well above the capital adequacy thresholds at the start of the market crisis. Losses related to fair value were not on a scale to push any of the sample banks out of the higher tier category of ‘Well Capitalized’.<sup>28</sup>

This analysis does not address whether raising capital through the sale of investments in a distressed market would be a first choice or last resort. However, one may be able to infer that if banks were actually being forced into distressed sales, they would first try to reduce more discretionary items. Dividends on common stock are discretionary and can be reduced or suspended as a method to maintain capital ratios. Table 2 column 4 illustrates that in most instances the impact related to fair

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<sup>27</sup> Tax impacts were also not included in this analysis due to lack of data. Tax effects can further lessen the impact of losses.

<sup>28</sup> Regulator guidance refers to a ‘Well Capitalized’ bank as having Total Risk Based Capital of 10% or higher, Tier 1 Risk Based Capital of 6% or higher and a Leverage Ratio of 5% or higher.

value accounting was smaller as a percentage of regulatory capital than common stock dividends granted in the same year.

Significant outflows from a bank's investment portfolio might indicate distressed asset sales had taken place. Table 3 column 2 provides the net inflows/outflows of each bank's investment portfolio from 2008. Due to acquisition/merger activity, it is difficult to see if large outflows took place using this measure. Table 3 column 4 displays net realized gains/loss on sales of investment portfolio securities for the year. These results can be used to gauge the magnitude and character of portfolio sales. As can be seen, most banks recorded net gains for the year with US Bancorp and Keycorp recording small net losses. This does not appear to be evidence of distressed selling activity, although it is possible that gains on sales of government or agency securities could have masked some losses in lower quality securities.

**Table 3**

<b>(\$ in 000's)</b>	<b>AFS and HTM Net Portfolio Inflows(Outflows)</b>	<b>% of Total Portfolio (at cost)</b>	<b>AFS and HTM Net Realized Gain(Loss) on Sales</b>	<b>% of Total Portfolio (at cost)</b>
<b>Data as of 12/31/08</b>				
<b>JPMorgan Chase</b>	\$124,606,000	59.5%	\$1,636,000	0.8%
<b>Citigroup</b>	\$51,710,000	19.6%	\$739,000	0.3%
<b>Bank of America</b>	\$77,166,000	26.3%	\$750,869	0.3%
<b>Wells Fargo</b>	\$91,010,000	56.4%	\$1,835,000	1.1%
<b>PNC</b>	\$18,678,000	38.2%	\$106,429	0.2%
<b>US Bancorp</b>	-\$1,374,000	-3.2%	-\$508,000	-1.2%
<b>Bank of NY Mellon</b>	-\$1,660,000	-3.6%	\$1,000	0.0%
<b>Suntrust</b>	\$4,827,543	26.4%	\$1,157,100	6.3%
<b>State Street</b>	\$7,098,000	8.6%	\$68,185	0.1%
<b>Capital One</b>	\$12,363,214	38.5%	\$16,463	0.1%
<b>BB&amp;T</b>	\$11,000,000	33.0%	\$210,532	0.6%
<b>Regions</b>	\$1,718,370	9.1%	\$120,795	0.6%
<b>Fifth Third</b>	\$1,838,000	14.2%	\$135,345	1.0%
<b>KeyCorp</b>	\$404,000	4.9%	-\$2,120	0.0%

To summarize, this analysis looked at the largest financial institutions. It then isolated the impacts that critics have linked to capital destruction, namely the application of fair value to banks' investment portfolios. The analysis shows that the impact on regulatory capital was quite small and does not appear to be large enough to be considered the driver of the pro-cyclical dynamic whereby declining asset prices lead to lower capital, then on to sales of assets to replenish capital, creating further pressure on prices and so on. In addition, there was no evidence found in reported financial data which would be indicative of distressed selling activity during the crisis period of 2008.

#### 4. FURTHER ANALYSIS

Based on the previous analysis, there does not appear to be a strong link between fair value accounting, regulatory capital and pro-cyclical market impacts. Thus it is reasonable to question what other factors contributed to capital declines and bank instability. Based on further analysis of 2008 financial results, it was noted that loan loss provision had a significant impact on regulatory capital for most institutions in the sample. Although this finding is not a surprise, the results in Table 4 are nonetheless interesting because they re-emphasize that provisions are often an order of magnitude larger than fair value effects. For example, loan loss provision depleted 20.8% of Bank of America's capital and 30.4% of capital at Fifth Third. Provision expense was clearly the most significant source of capital depletion for most banks in 2008.

**Table 4**

<b>Data as of 12/31/08</b>	<b>Loan Loss Provision Expense</b>	<b>Fair Value Impacts (defined in footnote 25)</b>
	<b>% Impact on Tier 1 Capital</b>	
<b>JPMorgan Chase</b>	-15.7%	-0.1%
<b>Citigroup</b>	-24.5%	-2.6%
<b>Bank of America</b>	-20.8%	-3.9%
<b>Wells Fargo</b>	-20.6%	-2.8%
<b>PNC</b>	-8.6%	-1.9%
<b>US Bancorp</b>	-12.9%	-2.5%
<b>Bank of NY Mellon</b>	-1.0%	-11.0%
<b>Suntrust</b>	-14.6%	-0.6%
<b>State Street</b>	0.0%	-1.3%
<b>Capital One</b>	-25.9%	-0.1%
<b>BB&amp;T</b>	-11.4%	-1.0%
<b>Regions</b>	-16.7%	-0.4%
<b>Fifth Third</b>	-30.4%	-1.0%
<b>KeyCorp</b>	-15.7%	-0.1%

Two outliers in Table 4 are Bank of NY Mellon (BNYM) and State Street who did not recognize significant provision expense due to the composition of their

balance sheets. They are primarily custody/servicing banks and do not have significant loan portfolios; investments and other assets make up a much larger portion of their balance sheets. But there may be an interesting story to tell here by taking a step back from regulatory capital and looking at an alternate measure for capital, tangible common equity (TCE).

In 2008, TCE received increasing attention from investors and analysts as an alternate, more conservative indicator of stability. A basic calculation for TCE, referred to as Simple Tangible Common Equity (STCE), is calculated by taking total stockholders' equity less preferred stock, goodwill and intangible assets (excluding mortgage servicing rights)<sup>29</sup>. To the extent that a bank was required to liquidate, this capital measure is a rough estimate of what would be left over to pay common shareholders.

Investment portfolios principally comprised of debt securities made up a significant component of the balance sheets of State Street and BNYM (relative to other banks that had a more loan-based balance sheet). Although realized losses related to these portfolios might have been manageable, unrealized losses had a significant impact on their STCE ratios [See Table 5].

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<sup>29</sup> For purposes of comparison and data availability the 'Simple' TCE Ratio (STCE) is used. STCE is a basic measure that can be derived using publically available information. Financial institutions and bank analysts often use more complex measures for TCE which would likely differ from the values contained in the table.

**Table 5**

<b>Data as of 12/31/08</b>	<b>Simple TCE Ratio<sup>30</sup></b>	<b>Simple TCE Ratio Excluding Unrealized Gain or Loss on AFS</b>	<b>% Change in STCE Due to Unrealized Gain or Loss on AFS</b>
<b>JPMorgan Chase</b>	3.8%	4.0%	-3.9%
<b>Citigroup</b>	1.6%	1.9%	-19.2%
<b>Bank of America</b>	2.8%	3.4%	-17.7%
<b>Wells Fargo</b>	2.3%	3.1%	-24.5%
<b>PNC</b>	2.7%	4.6%	-40.0%
<b>US Bancorp</b>	3.2%	4.2%	-24.8%
<b>Bank of NY Mellon</b>	1.6%	4.5%	-64.1%
<b>Suntrust</b>	5.4%	4.7%	15.8%
<b>State Street</b>	2.7%	6.4%	-57.9%
<b>Capital One</b>	7.0%	7.7%	-8.7%
<b>BB&amp;T</b>	4.7%	5.1%	-6.6%
<b>Regions</b>	5.2%	5.2%	-0.2%
<b>Fifth Third</b>	4.3%	4.2%	3.5%
<b>KeyCorp</b>	5.9%	5.7%	3.5%

Table 5 shows that unrealized losses from the AFS investment portfolio accounted for a 57.9 percent drop in STCE for State Street and 64.1 percent for BNYM. At the height of the crisis, State Street stock fell 59 percent in one day when it was announced that unrealized losses had doubled, and analysts noted that TCE was approaching zero based on pro-forma calculations that added in the impact of consolidating certain off-balance sheet investment conduit programs.<sup>31,32</sup> It is not known how much emphasis was placed on TCE versus other significant factors that were also affecting bank stocks at the same time. That being said, State Street and BNYM are two possible examples in this analysis where fair value accounting may

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<sup>30</sup> The Simple TCE Ratio is calculated as STCE/tangible assets. Tangible assets = total assets - goodwill - intangible assets (excluding Mortgage Servicing Rights).

<sup>31</sup> State Street's published calculation of TCE for Q4 2008 was 4.46%. Their pro-forma TCE calculation was 1.05% which included the impact of consolidating certain off balance sheet investment vehicles. State Street sponsored a number of off balance sheet investment vehicles in the form of asset backed commercial paper conduits, which under proposed accounting rules would likely have to be consolidated, leading most analysts to track the pro-forma figure. Condon (2009).

<sup>32</sup> The conduit programs were consolidated in May 2009.

have contributed to bank instability based on the significant affect on TCE. It should be noted though that State Street and BNYM did not sell investment assets in response to capital depletion or market stress. They were able to rely on debt and equity issuances as well as participation in government capital programs. So although fair value may have contributed to some instability, the link between fair value and procyclicality did not necessarily come to fruition here, at least partially due to government intervention.

Other banks where STCE was significantly impacted by unrealized losses included US Bancorp, Wells Fargo and PNC. However as noted earlier in the analysis, loan losses were a much more significant source of capital destruction than fair value related losses from their investment portfolios. Thus it is more difficult to argue that fair value was the key cause of distress at these institutions. Citigroup also saw a large percentage decline in STCE however this is also a bit misleading as their STCE excluding unrealized losses was already very low due mainly to significant loan and trading portfolio losses.

## 5. CONCLUSION

Based on this simple analysis it would appear that fair value accounting had a minimal impact on the capital of most banks in the sample during the crisis period through the end of 2008. Capital destruction was due to deterioration in loan portfolios and was further depleted by items such as proprietary trading losses and common stock dividends. These are a result of lending practices and the actions of bank management, not accounting rules. Furthermore, the data suggests that banks were not raising significant capital through distressed asset sales; rather they were relying on government programs as well as debt and equity markets. There was no clear observable evidence to back the assertion that fair value accounting, linked to regulatory capital rules, caused banks to sell investments at distressed prices and thus promote a pro-cyclical effect that accelerated the decline in investment asset prices.

## 6. SUGGESTIONS FOR FUTURE ANALYSIS

This paper only explored one possible link between the financial crisis and fair value accounting. The focus was on banks, capital requirements and fair value accounting rules because it has become a popular belief that this was a key source of financial distress. The analysis concluded that banks with significant loan portfolios were challenged much more by loan losses than by fair value impacts.

Yet there are other alternate links between fair value accounting and the financial crisis that might be explored. Management performance pay is often linked to point in time measures such as earnings per share or stock price. Earnings include fair value adjustments, which can create earnings volatility that may negatively (or positively) impact stock price. How does this dynamic affect management decision making and risk management behavior?

Another possible link involves certain institutions, beyond traditional banks, that played a prominent role in the recent crisis. Investment banks, broker/dealers, private equity and hedge funds as well as some of the largest global banking institutions were significantly impacted by falling asset prices, liquidity needs and capital shortfalls. Their investment portfolios were used mainly for proprietary trading purposes. These portfolios contained high risk derivative 'bets' and complex, new investment products. They relied on short term funding sources to support their highly leveraged, high risk investment strategies. Many of these entities were forced to sell investments to cover margin/collateral calls and pay off investors as asset values declined and their short term funding sources dried up.

Developing an understanding about fair value's role related to these types of institutions may provide a clearer understanding about the impact it may have had

leading up to and during the financial crisis. Here we come full circle back to the debate first mentioned in this paper. Many would argue that fair value is the most relevant accounting measure for these types of entities and that accounting rules are not applied in a vacuum. What roles did other notable factors play; factors such as large global imbalances, market incentives for short term gains, investor speculation, excessive leverage, poorly understood investments and weak risk management practices? Some simply argue that fair value reflected this economic environment and the resulting repercussions of management decisions.

Other possible bank specific links between fair value accounting and the crisis could also be explored. Can it be determined whether banks that measure a majority of their balance sheet at fair value behave differently than 'traditional' banks that hold a smaller proportion of fair value assets? Does fair value accounting create incentives for certain risk taking behavior and decision making that negatively impact financial institutions? Does it push institutions to take on more risk, increase leverage, and shorten portfolio maturities? Does it add excess volatility or 'noise' that can influence investors and stock price but have no bearing on business performance? A follow up paper is planned to explore some of these questions.

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